



# **Traffic Analysis Technical Report**

**September 2008**





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# 1. Introduction to Purple Line Study

The Maryland Transit Administration (MTA) is preparing an Alternatives Analysis and Draft Environmental Impact Statement (AA/DEIS) to study a range of alternatives for addressing mobility and accessibility issues in the corridor between Bethesda and New Carrollton, Maryland. The corridor is located in Montgomery and Prince George's Counties, just north of the Washington, D.C. boundary. The Purple Line would provide a rapid transit connection along the 16-mile corridor that lies between the Metrorail Red Line (Bethesda and Silver Spring Stations), Green Line (College Park Station), and Orange Line (New Carrollton Station). This *Traffic Analysis Technical Report* presents the analysis of the impacts to automobile travel within the corridor that were summarized in the AA/DEIS. It describes the methodology used for the analysis and the results of that analysis.

This Technical Report presents the methodology and data used in the analyses documented in the Purple Line Alternatives Analysis/Draft Environmental Impact Statement. The results presented in this report may be updated as the AA/DEIS is finalized and in subsequent study activities.

## 1.1. Background and Project Location

Changing land uses in the Washington, D.C. area have resulted in more suburb-to-suburb travel, while the existing transit system is oriented toward radial travel in and out of downtown Washington, D.C. The only transit service available for east-west travel is bus service, which is slow and unreliable. A need exists for efficient, rapid, and high capacity transit for east-west travel. The Purple Line would serve transit patrons whose journey is solely east-west in the corridor, as well as those who want to access the existing north-south rapid transit services, particularly Metrorail and MARC commuter rail service.

The corridor has a sizeable population that already uses transit and contains some of the busiest transit routes and transfer areas in the Washington, D.C. metropolitan area. Many communities in the corridor have a high percentage of households without a vehicle, and most transit in these communities is bus service. Projections of substantial growth in population and employment in the corridor indicate a growing need for transit improvements. The increasingly congested roadway system does not have adequate capacity to accommodate the existing average daily travel demand, and congestion on these roadways is projected to worsen as traffic continues to grow through 2030.

A need exists for high quality transit service to key activity centers and to improve transit travel time in the corridor. Although north-south rapid transit serves parts of the corridor, transit users who are not within walking distance of these services must drive or use slow and unreliable buses to access them. Faster and more reliable connections along the east-west Purple Line Corridor to the existing radial rail lines (Metrorail and MARC trains) would improve mobility and accessibility. This enhanced system connectivity would also help to improve transit efficiencies. In addition, poor air quality in the region needs to be addressed, and changes to the existing transportation infrastructure would help in attaining federal air quality standards.



### 1.1.1. Corridor Setting

The Purple Line Corridor, as shown in Figure 1-1, is north and northeast of Washington, D.C., with a majority of the alignment within one to three miles of the circumferential I-95/I-495 Capital Beltway.

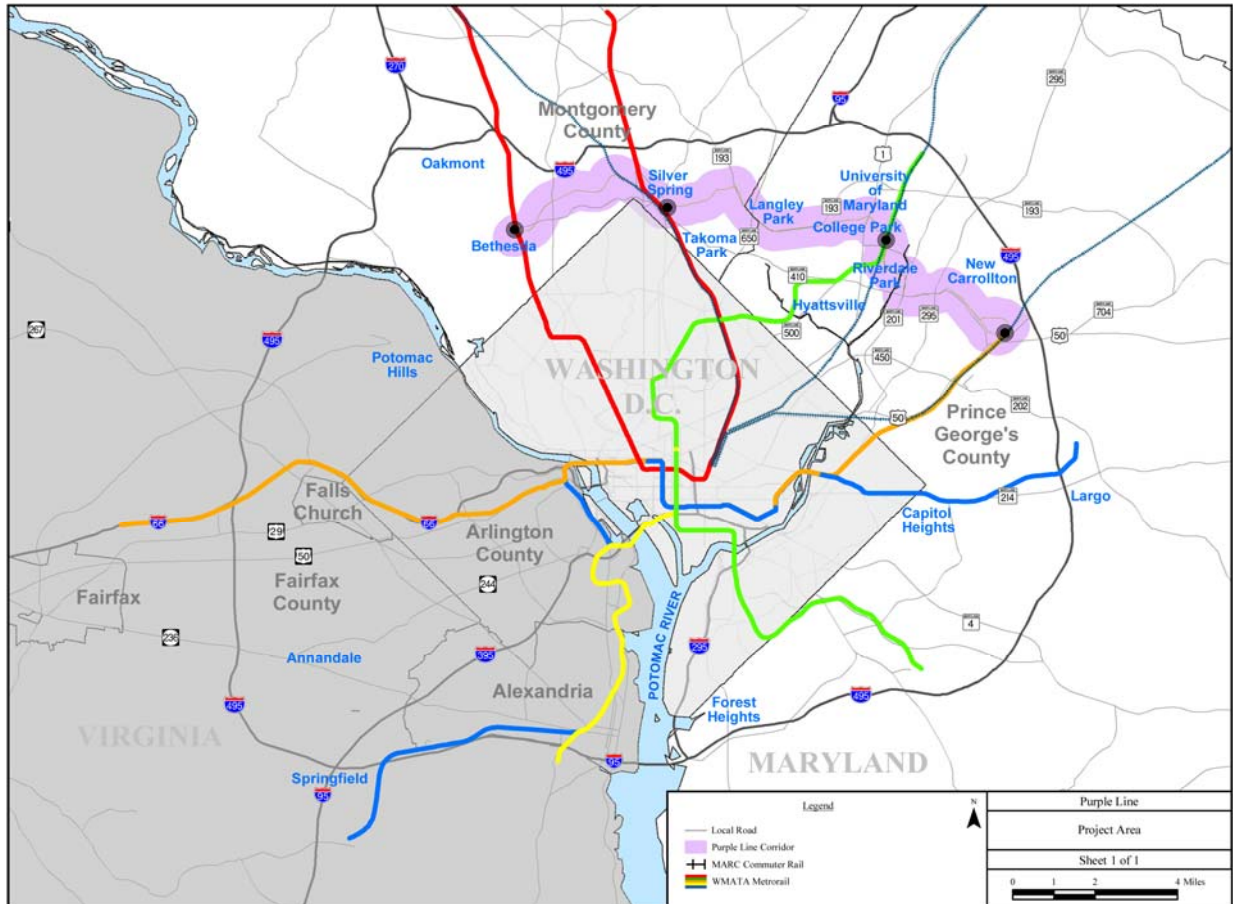


Figure 1-1: Project Area

### 1.2. Alternatives Retained for Detailed Study

The Purple Line study has identified eight alternatives for detailed study, shown on Figure 1-2. The alternatives include the No Build Alternative, the Transportation System Management (TSM) Alternative, and six Build Alternatives. The Build Alternatives include three using bus rapid transit (BRT) technology and three using light rail transit (LRT) technology.



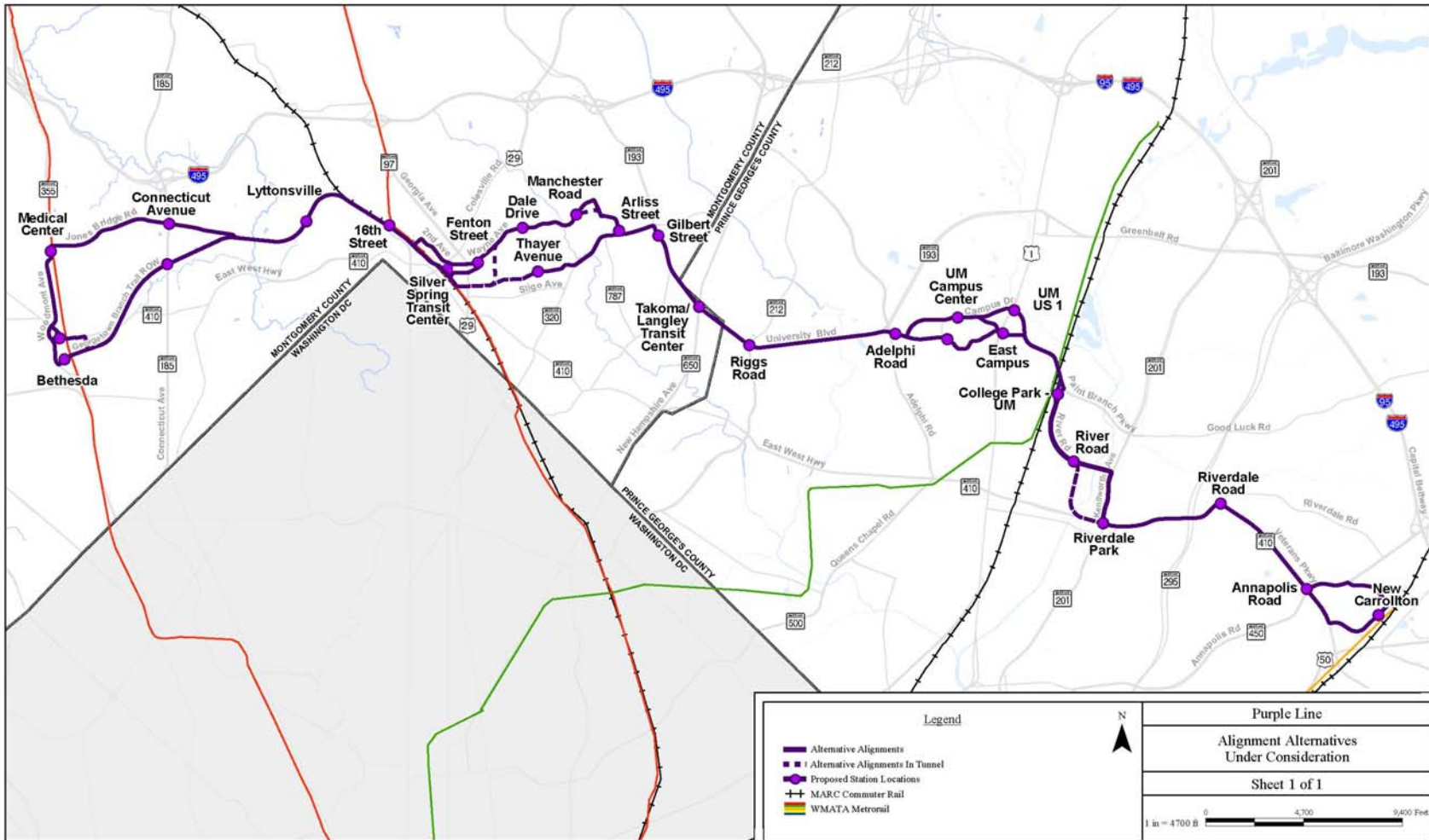


Figure 1-2: Alternative Alignments



All alternatives extend the full length of the corridor between the Bethesda Metro Station in the west and the New Carrollton Metro Station in the east, with variations in alignment, type of running way (shared, dedicated, or exclusive), and amount of grade-separation options (e.g., Tunnel segments or aerial). For purposes of evaluation, complete alignments need to be considered. These alternatives were used to examine the general benefits, costs, and impacts for serving major market areas within the corridor.

### ***1.2.1. Alternative 1: No Build Alternative***

The No Build Alternative is used as the baseline against which the other alternatives are compared for purposes of environmental and community impacts. The No Build Alternative consists of the transit service levels, highway networks, traffic volumes, and forecasted demographics for horizon year 2030 that are assumed in the local Constrained Long Range Plan of the local metropolitan planning organization (in this case, the Metropolitan Washington Council of Governments).

### ***1.2.2. Alternative 2: TSM Alternative***

The TSM Alternative provides an appropriate baseline against which all major investment alternatives are evaluated for the Federal Transit Administration's New Starts funding program. The New Starts rating and evaluation process begins when the project applies to enter preliminary engineering and continues through final design.

The TSM Alternative represents the best that can be done for mobility in the corridor without constructing a new transitway. Generally, the TSM Alternative emphasizes upgrades in transit service through operational and minor physical improvements, plus selected highway upgrades through intersection improvements, minor widening, and other focused traffic engineering actions. A TSM Alternative normally includes such features as bus route restructuring, shortened bus headways, expanded use of articulated buses, reserved bus lanes, express and limited-stop service, signalization improvements, and timed-transfer operations.

### ***1.2.3. Build Alternatives***

The six Build Alternatives generally use the same alignments; only a few segments have locations where different roadways would be used. The differences between the alternatives are more often the incorporation of design features, such as grade separation to avoid congested roadways or intersections.

### **Alternative 3: Low Investment BRT**

The Low Investment BRT Alternative would primarily use existing streets to avoid the cost of grade separation and extensive reconstruction of existing streets. It would incorporate signal, signage, and lane improvements in certain places. This alternative would operate mostly in mixed lanes with at-grade crossings of all intersections and queue jump lanes at some intersections. Southbound along Kenilworth Avenue and westbound along Annapolis Road, Low Investment BRT would operate in dedicated lanes. This is the only alternative that would operate on Jones Bridge Road, directly serving the National Institutes of Health and the National



Naval Medical Center near Wisconsin Avenue and Jones Bridge Road. It is also the only alternative that would use the bus portion of the new Silver Spring Transit Center (SSTC). A detailed description of the alternative follows.

From the western terminus in Bethesda, Low Investment BRT would originate at the Bethesda Metro Station bus terminal. The alignment would operate on Woodmont Avenue within the existing curb. At the Bethesda Station, the buses would enter the station via Edgemoor Road and exit onto Old Georgetown Road.

At Wisconsin Avenue, just south of Jones Bridge Road, the transitway would remain on the west side of the road in exclusive lanes. Low Investment BRT would turn onto Jones Bridge Road where the transit would operate in shared lanes with queue jump lanes westbound at the intersection with Wisconsin Avenue and westbound for the intersection at Connecticut Avenue. Some widening would be required at North Chevy Chase Elementary School.

The alignment would continue along Jones Bridge Road to Jones Mill Road where it would turn right (south) onto Jones Mill Road. Eastbound on Jones Bridge Road would be a queue jump lane at the intersection. From Jones Mill Road, the alignment would turn east onto the Georgetown Branch right-of-way, where a new exclusive roadway would be constructed, with an adjacent trail on the south side.

Low Investment BRT would continue on the Georgetown Branch right-of-way, crossing Rock Creek Park on a new bridge, replacing the existing pedestrian bridge. The trail would also be accommodated on the bridge or on an adjacent bridge. A trail connection to the Rock Creek Trail would be provided east of the bridge. The alignment would continue on the Georgetown Branch right-of-way until the CSX corridor at approximately Kansas Avenue.

At this point, the alignment would turn southeast to run parallel and immediately adjacent to the CSX tracks on a new exclusive right-of-way. The trail would parallel the transitway, crossing the transitway and the CSX right-of-way east of Talbot Avenue on a new structure and continuing on the north side of the CSX right-of-way. The transitway would continue on a new roadway between the CSX tracks and Rosemary Hills Elementary School and continue past the school. The transitway would cross 16<sup>th</sup> Street at -grade, where a station would be located. The transitway would continue parallel to the CSX tracks to Spring Street where it would connect to Spring Street and turn to cross over the CSX tracks on Spring Street. The alignment would continue on Spring Street to 2<sup>nd</sup> Avenue where it would turn east. Buses would operate in shared lanes on Spring Street and Second Avenue.

Low Investment BRT would cross Colesville Road at-grade and continue up Wayne Avenue to Ramsey Street, where the buses would turn right to enter the SSTC at the second level.

The buses would leave the SSTC and return to Wayne Avenue via Ramsey Street. Low Investment BRT would continue east on Wayne Avenue in shared lanes. After crossing Sligo Creek Parkway, the alignment would operate in shared lanes.



At Flower Avenue, the alignment would turn left (south) onto Arliss Street, operating in shared lanes to Piney Branch Road. At Piney Branch Road, the alignment would turn left to continue in shared lanes to University Boulevard.

Low Investment BRT would follow University Boulevard to Adelphi Road. The lanes on University Boulevard would be shared. At Adelphi Road, the alignment would enter the University of Maryland campus on Campus Drive. The alignment would follow the Union Drive extension, as shown in the University of Maryland Facilities Master Plan (2001-2020), through what are currently parking lots. The alignment would follow Union Drive and then Campus Drive through campus in mixed traffic and the main gate to US 1.

Low Investment BRT would operate on Paint Branch Parkway to the College Park Metro Station in shared lanes. The alignment would then follow River Road to Kenilworth Avenue in shared lanes. Along Kenilworth Avenue, the southbound alignment would be a dedicated lane, but northbound would be in mixed traffic.

The alignment turns east from Kenilworth Avenue on East West Highway (MD 410) and continues in shared lanes on Veterans Parkway. This alignment turns left on Annapolis Road and then right on Harkins Road to the New Carrollton Metro Station. The westbound alignment on Annapolis would be dedicated, but the eastbound lanes would be shared.

#### **Alternative 4: Medium Investment BRT**

Alternative 4, the Medium Investment BRT Alternative, is, by definition, an alternative that uses the various options that provide maximum benefit relative to cost. Most of the segments are selected from either the Low or High Investment BRT Alternatives.

This alternative follows a one-way counter-clockwise loop from the Georgetown Branch right-of-way onto Pearl Street, East West Highway, Old Georgetown Road, Edgemoor Lane, and Woodmont Avenue and from there onto the Georgetown Branch right-of-way under the Air Rights Building. The buses stop at both the existing Bethesda Metro Station on Edgemoor Lane and at the new southern entrance to the Metro station under the Air Rights Building.

The alignment continues on the Georgetown Branch right-of-way with an aerial crossing over Connecticut Avenue and a crossing under Jones Mill Road.

This alignment, and all others that use the Georgetown Branch right-of-way, includes construction of a hiker-biker trail between Bethesda and the SSTC.

The alignment would continue on the Georgetown Branch right-of-way until the CSX right-of-way. The alignment would cross Rock Creek Park on a new bridge, replacing the existing pedestrian bridge. The trail would also be accommodated on the bridge or on an adjacent bridge. The alignment would continue on the Georgetown Branch right-of-way until the CSX corridor at approximately Kansas Avenue. This segment of the alignment, from Jones Mill Road to the CSX corridor, would be the same for all the alternatives.



As with Low Investment BRT, this alternative would follow the CSX corridor on the south side of the right-of-way, but it would cross 16<sup>th</sup> Street and Spring Street below the grade of the streets, at approximately the same grade as the CSX tracks. The station at 16<sup>th</sup> Street would have elevators and escalators to provide access from 16<sup>th</sup> Street.

After passing under the Spring Street Bridge, Medium Investment BRT would rise above the level of the existing development south of the CSX right-of-way. East of the Falklands Chase apartments, Medium Investment BRT would cross over the CSX tracks on an aerial structure to enter the SSTC parallel to, but at a higher level than, the existing tracks.

After the SSTC, Medium Investment BRT would leave the CSX right-of-way and follow Bonifant Street at-grade, crossing Georgia Avenue, and just prior to Fenton Street turn north toward Wayne Avenue. The alignment would continue on Wayne Avenue in shared lanes with added left turn lanes to Flower Avenue and then Arliss Street. At Piney Branch Road, the alternative would turn left into dedicated lanes to University Boulevard.

Medium Investment BRT would be in dedicated lanes on University Boulevard with an at-grade crossing of the intersections. The alignment would continue through the University of Maryland campus in dedicated lanes on Campus Drive and then continue at grade in a new exclusive transitway through the parking lots adjacent to the Armory and turns on to Rossborough Lane south of the Visitor's Center.

Crossing US 1 at grade, Medium Investment BRT would pass through the East Campus development on Rossborough Lane to Paint Branch Parkway. The alignment would continue on Paint Branch Parkway and River Road in shared lanes, as with Low Investment BRT. At Kenilworth Avenue, both lanes would be dedicated.

Turning left on East West Highway, Medium Investment BRT would be in dedicated lanes. As with Low Investment BRT, this alternative would travel in shared lanes on Veterans Parkway.

Medium Investment BRT would continue on Veterans Parkway to Ellin Road, where it would turn left into dedicated lanes to the New Carrollton Metro Station.

#### **Alternative 5: High Investment BRT via Master Plan Alignment**

The High Investment BRT Alternative is intended to provide the most rapid travel time for a BRT alternative. It would make maximum use of vertical grade separation and horizontal traffic separation. Tunnels and aerial structures are proposed at key locations to improve travel time and reduce delay. When operating within or adjacent to existing roads, this alternative would operate primarily in dedicated lanes. Like Medium Investment BRT, this alternative would serve the Bethesda Station both at the existing Bethesda bus terminal at the Metro station and at the new south entrance to the Metro station beneath the Apex Building.

High Investment BRT would follow a one-way loop in Bethesda from the Master Plan alignment onto Pearl Street, then travel west on East West Highway and Old Georgetown Road into the Bethesda Metro Station bus terminal, exit onto Woodmont Avenue southbound, and then



continue left under the Air Rights Building to rejoin the Georgetown Branch right-of-way. Elevators would provide a direct connection to the south end of the Bethesda Metro Station in the tunnel under the Air Rights Building.

High Investment BRT would be the same as Medium Investment BRT until it reaches the CSX corridor. As with the Low and Medium Investment BRT Alternatives, this alternative would follow the CSX corridor on the south side of the right-of-way, but it would cross 16<sup>th</sup> Street and Spring Street below the grade of the streets, at approximately the same grade as the CSX tracks. The station at 16<sup>th</sup> Street would have elevators and escalators to provide access from 16<sup>th</sup> Street.

The crossing of the CSX right-of-way would be the same as for Medium Investment BRT. From the SSTC, High Investment BRT would continue along the CSX tracks until Silver Spring Avenue, where the alignment would turn east entering a tunnel, passing under Georgia Avenue, and turning north to Wayne Avenue. The alignment would return to the surface on Wayne Avenue near Cedar Street. It would continue on Wayne Avenue in dedicated lanes, crossing Sligo Creek Parkway, and entering a tunnel approximately half-way between Sligo Creek and Flower Avenue, then turning east to pass under Plymouth Street, crossing under Flower Avenue, and emerging from the tunnel on Arliss Street.

High Investment BRT would be the same on Piney Branch Road and University Boulevard except that the alignment would have grade-separated crossings over New Hampshire Avenue and Riggs Road.

Approaching University of Maryland, the alignment would cross under Adelphi Road. After Adelphi Road, the alignment would follow Campus Drive and turn onto the proposed Union Drive extended. The alignment would enter a tunnel while on Union Drive, prior to Cole Field House, and pass through the campus under Campus Drive. After emerging from the tunnel east of Regents Drive, the alignment would be the same as Medium Investment BRT, until Paint Branch Parkway.

The alignment would continue east on Paint Branch Parkway in shared lanes to the College Park Metro Station. The alternative would then follow River Road in dedicated lanes.

From River Road near Haig Drive, the alignment would turn right and enter a tunnel heading south, roughly parallel to Kenilworth Avenue. Near East West Highway (MD 410), the alignment would turn left and continue in the tunnel under Anacostia River Park. The alignment would transition to a surface alignment west of the Kenilworth Avenue/East West Highway intersection. The alternative would follow East West Highway in dedicated lanes.

High Investment BRT would turn right down Veterans Parkway in dedicated lanes. Unlike Medium Investment BRT, this alignment would cross under Annapolis Road before continuing on to Ellin Road.



### **Alternative 6: Low Investment LRT**

The Low Investment LRT Alternative would operate in shared and dedicated lanes with minimal use of vertical grade separation and horizontal traffic separation. All LRT Alternatives would serve only the south entrance of the Bethesda Station and would operate there in a stub-end platform arrangement.

Low Investment LRT would begin on the Georgetown Branch right-of-way near the Bethesda Metro Station under the Air Rights Building. The hiker-biker trail connection to the Capital Crescent Trail would not be through the tunnel under the Air Rights Building, but rather through Elm Street Park on existing streets. The terminal station would be the Bethesda Metro Station with a connection to the southern end of the existing station platform.

After emerging from under the Air Rights Building, the transitway would follow the Georgetown Branch right-of-way, crossing Connecticut Avenue at-grade and crossing under Jones Mill Road. Between approximately Pearl Street and just west of Jones Mill Road, the trail would be on the north side of the transitway; elsewhere it would be on the south side.

The segment from Jones Mill Road to Spring Street in the CSX corridor would be the same as for Low and Medium Investment BRT.

After crossing Spring Street, Low Investment LRT would be the same as the Medium and High Investment BRT Alternatives.

Low Investment LRT would be the same as Medium Investment BRT from the SSTC to Bonifant Street to Wayne Avenue.

Turning right, Low Investment LRT would continue at-grade on Wayne Avenue in shared lanes, crossing Sligo Creek Parkway and entering a tunnel from Wayne Avenue to pass under Plymouth Street. As with High Investment BRT, the alignment emerges from the tunnel on Arliss Street.

The Low Investment LRT Alternative would then follow Piney Branch Road and University Boulevard at-grade in dedicated lanes. In keeping with the low investment definition of this alternative, the major intersections of New Hampshire Avenue and Riggs Road would not be grade-separated.

As this alternative approaches Adelphi Road, the grade of the existing roadway is too steep for the type of LRT vehicles being considered. For this reason, the transitway would cross the intersection below grade.

At Adelphi Road, the alignment would enter the University of Maryland campus on Campus Drive. The alignment would follow the same alignment to the College Park Metro Station as described for Medium Investment BRT.



From the College Park Metro Station to the terminus at the New Carrollton Metro Station, Low Investment LRT would be in dedicated lanes on River Road. On Kenilworth Avenue, the LRT would be in a dedicated lane southbound, but a shared lane northbound. On East West Highway, the LRT would be in dedicated lanes with shared left turn lanes and in shared lanes under Baltimore-Washington Parkway. On Veterans Parkway, the LRT is in dedicated lanes.

As with Low Investment BRT, this alignment turns left on Annapolis Road from Veterans Parkway and then right on Harkins Road to the New Carrollton Metro Station. The segments on Annapolis Road and Harkins Lane would be dedicated.

#### **Alternative 7: Medium Investment LRT**

Medium Investment LRT is the same as Low Investment LRT from Bethesda to the CSX corridor, except that the alignment would cross over Connecticut Avenue.

Along the CSX corridor, the alignment would be the same as High Investment BRT, grade-separated (below) at 16<sup>th</sup> and Spring Streets. The alignment would be the same as Medium and High Investment BRT and Low Investment LRT from Spring Street through the SSTC.

From the SSTC, the alignment would follow Bonifant Street in dedicated lanes to Wayne Avenue. On Wayne Avenue, this alternative would be in shared lanes with added left turn lanes. The alignment would be the same as Low Investment LRT until Annapolis Road. The LRT would follow River Road, Kenilworth Avenue, East West Highway, and Veterans Parkway in dedicated lanes. At the intersection of Veterans Parkway and Annapolis Road the LRT continues across Annapolis, turning left at Ellin Road still in dedicated lanes.

#### **Alternative 8: High Investment LRT**

Alternative 8, High Investment LRT, would be the same as the High Investment BRT Alternative, except for the Bethesda terminus. The alignment would begin just west of the tunnel under the Air Rights Building. The hiker-biker trail would follow the alignment through the tunnel under the Air Rights Building. Because of physical constraints, the trail would be elevated above the westbound tracks. The trail would return to grade as it approaches Woodmont Avenue. The terminal station would be the Bethesda Metro Station with a connection to the southern end of the existing station platform.

### ***1.2.4. Design Options***

#### **North Side of CSX**

This design option is based on the Georgetown Branch Master Plan. From the eastern end of the Georgetown Branch right-of-way, the alignment would cross under the CSX corridor and then continue down the north side. It would emerge from the tunnel near Lyttonsville Road in Woodside. The alignment would be below the grade of 16<sup>th</sup> Street, passing under the bridge, but providing a station at that location. It would also pass under the Spring Street Bridge but would begin to rise on an aerial structure over the CSX right-of-way 1,000 feet northwest of Colesville Road due to the location of the Metro Plaza Building. The aerial structure over the CSX right-





of-way would provide the required 23-foot clearance from top of rail to bottom of structure. The alternative would enter the SSTC parallel to, but at a higher level than, the existing tracks.

### **South Side of CSX with a Crossing West of the Falklands Chase Apartments**

This option would operate on the south side of the CSX, as described either at or below grade at 16<sup>th</sup> Street. The alignment would cross the CSX corridor between Spring Street and Fenwick Lane. This option would continue along the north side of the CSX right-of-way on an aerial structure over the CSX right-of-way 1,000 feet northwest of Colesville Road, due to the location of the Metro Plaza Building. The aerial structure over the CSX right-of-way would provide the required 23-foot clearance from top of rail to bottom of structure. The alternative would enter the SSTC parallel to, but at a higher level than, the existing tracks.

### **Silver Spring/Thayer Tunnel**

This design option would begin at the SSTC where the alignment leaves the CSX corridor near Silver Spring Avenue. It would enter a tunnel on Silver Spring Avenue passing under Georgia Avenue and Fenton Street. At approximately Grove Street, the alignment would shift northward to continue under the storm drain easement and backyards of homes on Thayer and Silver Spring Avenues. The transitway would emerge from the tunnel behind the East Silver Spring Elementary School on Thayer Avenue and follow Thayer Avenue across Dale Drive to Piney Branch Road. If the mode selected were LRT, the grade of Piney Branch Road would require an aerial structure from west of Sligo Creek and Sligo Creek Parkway and would return to grade just west of Flower Avenue. This aerial structure requires that the road be widened. For this design option, a station would be located on Thayer Avenue where the alignment would emerge from the tunnel.

### **Preinkert/Chapel Drive**

The Preinkert/Chapel Drive design option is being evaluated for both BRT and LRT through the campus of University of Maryland. The alignment would run from the west on Campus Drive turning right onto Preinkert Drive where it would head southeast. The transitway would turn left to pass directly between LeFrak Hall and the South Dining Campus Hall and then northeast through the Lot Y parking lot. From there, the alignment would run east along Chapel Drive between Memorial Chapel and Marie Mount Hall and eventually would pass to the south of Lee Building at Chapel Fields. The alignment would continue onto Rossborough Lane, passing directly north of Rossborough Inn to cross US 1, and continues east through the East Campus development.

### ***1.2.5. Stations and Station Facilities***

Between 20 and 21 stations are being considered for each of the alternatives. Table 1-1 provides the stations for each of the Build Alternatives.



**Table 1-1: Stations by Alternative**

Segment Name	Low Invest. BRT	Medium Invest. BRT	High Invest. BRT	Low Invest. LRT	Medium Invest. LRT	High Invest. LRT
Bethesda Metro, North Entrance	Yes	Yes	Yes	N/A	N/A	N/A
Medical Center Metro	Yes	N/A	N/A	N/A	N/A	N/A
Bethesda Metro, South Entrance	N/A	Yes	Yes	Yes	Yes	Yes
Connecticut Avenue	Yes	Yes	Yes	Yes	Yes	Yes
Lyttonsville	Yes	Yes	Yes	Yes	Yes	Yes
Woodside/16 <sup>th</sup> Street	Yes	Yes	Yes	Yes	Yes	Yes
Silver Spring Transit Center	Yes	Yes	Yes	Yes	Yes	Yes
Fenton Street	Yes	Yes	N/A	Yes	Yes	N/A
Dale Drive	Yes	Yes	Yes	Yes	Yes	Yes
Manchester Road	Yes	Yes	Yes	Yes	Yes	Yes
Arliss Street	Yes	Yes	Yes	Yes	Yes	Yes
Gilbert Street	Yes	Yes	Yes	Yes	Yes	Yes
Takoma/Langley Transit Center	Yes	Yes	Yes	Yes	Yes	Yes
Riggs Road	Yes	Yes	Yes	Yes	Yes	Yes
Adelphi Road	Yes	Yes	Yes	Yes	Yes	Yes
University of Maryland Campus Center	Yes	Yes	Yes	Yes	Yes	Yes
US 1	Yes	N/A	N/A	N/A	N/A	N/A
East Campus	N/A	Yes	Yes	Yes	Yes	Yes
College Park Metro	Yes	Yes	Yes	Yes	Yes	Yes
River Road	Yes	Yes	Yes	Yes	Yes	Yes
Riverdale Park	Yes	Yes	Yes	Yes	Yes	Yes
Riverdale Heights	Yes	Yes	Yes	Yes	Yes	Yes
Annapolis Road	Yes	Yes	Yes	Yes	Yes	Yes
New Carrollton Metro	Yes	Yes	Yes	Yes	Yes	Yes

The design of the Purple Line stations has not been determined at this stage of the project; however, the stations would likely include the following elements: shelters, ticket vending machines, seating, and electronic schedule information. The stations would be located along the transitway and would be on local sidewalks or in the median of the streets, depending on the location of the transitway. Because both the BRT and LRT vehicles under consideration are “low floor,” the platforms would be about 14 inches above the height of the roadway. The platforms would be approximately 200 feet long and between 10 and 15 feet wide, depending on the anticipated level of ridership at each particular station. No new parking facilities would be constructed as part of the Purple Line. Municipal parking garages exist near the Bethesda and Silver Spring Metro Stations, and transit parking facilities exist at the College Park and New Carrollton Metro Stations.

Additional kiss-and-ride facilities would be considered at the stations at Connecticut Avenue on the Georgetown Branch right-of-way and Lyttonsville. The SSTC, College Park Metro Station, and New Carrollton Metro Station already have kiss-and-ride parking facilities available and the



Purple Line would not add more. It has been determined that kiss-and-ride facilities are not needed at the Takoma/Langley Transit Center.

### ***1.2.6. Maintenance and Storage Facilities***

LRT and BRT both require maintenance and storage facilities; however, the requirements in terms of location and size are not the same. LRT requires a facility located along the right-of-way while a BRT facility can be located elsewhere. Depending on the construction phasing and mode chosen, two maintenance facilities (one in Montgomery County and one in Prince George's County) are ideal.

The size of the facility depends on the number of vehicles required. A fleet of 40 to 45 LRT vehicles or 40 to 60 buses (including spares) would require approximately 20 acres. The Purple Line would also require storage for non-revenue vehicles and equipment such as: maintenance, supervisory, and security vehicles.

Activities at the maintenance facility would include:

- Vehicle Storage area (tracks for LRT)
- Inspection/Cleaning
- Running Repairs
- Maintenance/Repair
- Operations/Security
- Parking
- Materials/Equipment Storage

Two sites improve operations by providing services and storage near the ends of the alignment. It is possible to have one site provide the majority of the services and the other function as an auxiliary site.

Five potential sites were identified during the course of the alternatives analysis and were evaluated for environmental impacts. As part of the screening process three were eliminated from further consideration. These five sites are listed below:

- Lyttonsville – This is a maintenance facility on Brookville Road in Lyttonsville, currently used by Montgomery County Ride On buses and school buses. The Purple Line would require the use of some additional adjacent property.
- Haig Court – This site is located on River Road at Haig Court. It would require minimal grading, but is partly wooded, and is very close to the residential neighborhood of Riverdale, which is also a historic district.
- North Veterans Parkway – This site is located on the north side of Veterans Parkway. This site is heavily wooded and includes steep grades.



- Glenridge Maintenance Facility – This site is located on the south side of Veterans Parkway near West Lanham Shopping Center. It is currently being used as a maintenance facility for Prince George’s County Park vehicles.
- MTA New Carrollton property – This site is a parcel owned but the MTA on the east side of the New Carrollton Metro station. It is not particularly well located for use by the Purple Line because it would require the Purple Line to pass under or around the New Carrollton Metro Station.

The Lyttonsville site and the Glenridge Maintenance Facility were identified as the two sites most appropriate for maintenance and storage facilities for the project based on potential environmental effects and location. These two sites would provide sufficient capacity for either BRT or LRT operations; and are well located near either end of the alignment.

### ***1.2.7. Traction Power Substations***

Light rail’s electric traction power system requires electrical substations approximately every 1.25 miles, depending on the frequency and size of the vehicles. These substations, which are approximately 10 feet by 40 feet, do not need to be immediately adjacent to the tracks. This flexibility means the substations can be located to minimize visual intrusions and can be visually shielded by fencing, landscaping, or walls, or can be incorporated into existing buildings. The number and location of these substations will be determined during the preliminary engineering phase of project development.

## **2. Traffic and Travel Data Collection**

This section details the data collection which was undertaken to support the traffic and travel time analyses conducted for the Purple Line AA/DEIS. The collection of recent traffic data is vital to establishing the existing baseline traffic conditions to which the future No Build, TSM, and Build Alternatives can be compared.

### **2.1. Scope of Traffic Data Collection Efforts**

The purpose of conducting traffic analyses at this stage in the planning process is to assist in the development of feasible alternatives and to evaluate meaningful differences between those potential alternatives. Given the regional scale of this project, which is the evaluation of a 16-mile transit link across heavily developed and densely populated counties, the first effort was to define a practical traffic analysis approach that would allow for a comparison of the projected impacts to vehicular traffic from the various alternatives.

The proposed transitway would operate within or adjacent to the existing street network for the majority of the project length. This existing street network is composed primarily of signalized arterial roadways, where the primary constraints on roadway capacity and the primary contributor to delay for passenger auto traffic and existing bus service are the signalized intersections. Therefore, the data collection and traffic analysis efforts focused on the signalized intersections that intersect the proposed alignments for the various Build Alternatives.

Additionally, the weekday AM and PM peak travel periods were identified as the critical periods for the purpose of traffic and travel time analysis for this project. If the alternatives are designed to provide reasonably fast travel times, reliable service, and minimal impacts to automobile traffic during these peak periods of congestion; then during other time periods, the system's operations would only be expected to improve.

### **2.2. Types of Data Collected**

Data collected for this study includes turning movement volumes for evaluating peak hour intersection operations, daily traffic volumes for determining the classification of vehicles within the corridor, and real-time travel time data for calibrating traffic simulation models and evaluating the existing baseline driving times between key activity centers. A summary of the various data collected is presented in Appendix A.

#### ***2.2.1. Turning Movement Volumes***

Given the focus of the analysis efforts, the primary type of data required for this study were turning movement volumes at each of the signalized intersections located along the corridor. To develop a realistic picture of the existing conditions, the data was collected between the hours of 6 AM and 7 PM on a Tuesday, Wednesday, or Thursday, with Montgomery County and Prince George's County public schools in session. Pedestrian traffic volumes were also obtained for the same 13-hour period.



For a number of intersections, particularly those located along Maryland State Highway Administration (SHA) owned roadways, these 13-hour turning movement volume counts were obtained from SHA’s online Traffic Monitoring System. This system allows the public or other agencies to access and download traffic data on state routes (and some county or municipal roadways as well). For the remaining intersections, those which SHA did not recent data available for, counts were collected starting in May 2005. Data collection continued into the Fall of 2005 and Spring of 2006. It is common for the traffic data used to evaluate the existing conditions for planning projects to be collected several years ahead of the publication of study.

Thirteen-hour turning movement volume data was collected for a number of signalized intersections along proposed alignments which were not ultimately included in the six Build Alternatives included in the AA/DEIS. These roadways included Riverdale Road and Sligo Avenue.

**2.2.2. Daily Traffic Volumes**

In addition to the 13-hour intersection turning movement volumes, classified 24-hour traffic volumes were also required for this study. This data was used to separate vehicles into the 13 Federal Highway Administration vehicle classifications (ranging from motorcycles to vehicles exceeding six axles). This classification data was applied to the peak hour turning movement volumes to account for the influence of heavy vehicles within the traffic stream.

The SHA Online Traffic Monitoring System was used to locate recent daily traffic data for the key state routes, and several county routes (including Paint Branch Parkway), throughout the corridor. Additional 24-hour traffic data was collected on several key county-owned routes in the corridor, including Jones Bridge Road and Wayne Avenue.

Table 2-1 summarizes the existing (2005) Average Annual Daily Traffic (AADT) for several key roadways located within the Purple Line corridor.

**Table 2-1: Summary of Existing (2005) Average Annual Daily Traffic**

Location	2005 AADT
Capital Beltway, Wisconsin Avenue (MD 355) to Georgia Avenue (MD 97)	227,575
Capital Beltway, Georgia Avenue (MD 97) to I-95	215,150
Capital Beltway, I-95 to US 50	241,425
Jones Bridge Road, at Connecticut Avenue (MD 185)	22,300
East West Highway (MD 410), at Connecticut Avenue (MD 185)	29,375
East West Highway (MD 410), at 16 <sup>th</sup> Street (MD 390)	32,475
Georgia Avenue at Colesville Road	50,850
University Boulevard (MD 193), at New Hampshire Avenue (MD 650)	49,825
East West Highway (MD 410), at US 1	25,925
US 1 at Paint Branch Parkway	56,175
Kenilworth Avenue (MD 201) at East West Highway (MD 410)	35,325
East West Highway (MD 410), at Kenilworth Avenue (MD 201)	40,950
Annapolis Road (MD 450), at Veterans Parkway (MD 410)	37,925

### Additional Data Collection in East Silver Spring:

In response to requests from two community associations in the East Silver Spring area, additional daily traffic volume data was collected in early 2008 on six residential streets that run parallel to or intersect Wayne Avenue. This data was collected as part of an evaluation of potential diversions of traffic from Wayne Avenue to the surrounding street network.

### Vehicle Classification

As noted above, a breakdown of vehicles into the various vehicle types (personal automobiles, buses, light trucks, heavy trucks, etc.) during each of the AM and PM peak periods was developed using the classified daily traffic counts. For roadways where specific data was available, the classified data for that facility was used. For the remaining roadways, a composite vehicle classification was used. Given that there is some variation in the level of truck traffic across the 16-mile study corridor, four different composite vehicle classifications were calculated for arterial roadways and ramps for different geographic areas. A fifth vehicle classification was developed for local streets and frontage roads, which typically serve residential communities and have lower volumes of truck traffic. These various classifications are summarized in Table 2-2.

**Table 2-2: Vehicle Classification by Geographic Area**

Area	Time Period	Personal Autos	Buses	Light Trucks	Heavy Trucks
Bethesda	AM	95%	1%	2%	2%
	PM	97%	1%	1%	1%
Silver Spring	AM	93%	2%	3%	2%
	PM	95%	1%	2%	1%
Takoma Langley/College Park	AM	94%	1%	3%	2%
	PM	96%	1%	2%	1%
Riverdale/New Carrollton	AM	89%	2%	6%	3%
	PM	93%	1%	4%	2%
Local Streets	AM	98%	0%	1%	1%
	PM	98%	0%	1%	1%

### 2.3. Existing Auto Travel Times

In addition to the peak period and daily traffic volume obtained for this study, existing automobile travel time data was collected along the Purple Line corridor. This field data was used to verify the estimated travel delay calculated at the various signalized intersections, was used in the initial evaluation of potential alternative street-running alignments (such as along Riverdale Road and Sligo Avenue) which were subsequently dropped from consideration, and was used to calibrate simulation models developed for various roadway segments along the corridor.

Travel time data was typically collected between 7 AM and 9 AM and 4 PM and 6 PM. A GPS-device was used to provide real-time data, thus enabling the development of detailed speed



and distance profiles along the various roadway corridors. Data was collected on a Tuesday, Wednesday, or Thursday with schools in both counties in session. Generally, three to five runs were conducted in each direction for each segment and the results were averaged to determine the typical travel times. Peak period travel times were collected for the following roadway segments:

- Jones Bridge Road and Jones Mill Road: MD 410 to MD 355
- Woodmont Avenue: MD 355 to Montgomery Avenue
- Wayne Avenue/2<sup>nd</sup> Street: Spring Street to Flower Avenue
- Flower Avenue: Wayne Avenue to Piney Branch Road
- Sligo Avenue: MD 320 to US 29
- MD 320 (Piney Branch Road): MD 193 to Sligo Avenue
- Fenton Street: Sligo Avenue to Wayne Avenue
- MD 193: MD 320 to Adelphi Road
- Campus Drive: Adelphi Road to US 1
- Paint Branch Parkway: US 1 to River Road
- River Road: Paint Branch Parkway to MD 201
- MD 201: River Road to MD 410
- MD 410: MD 201 to Ellin Road
- Riverdale Road: MD 410 to MD 450
- MD 450: Riverdale Road to MD 410
- Ellin Road: Harkins Road to MD 410

All of the existing peak period auto travel time data is presented in the Appendix B. A summary of the existing auto travel times between key activity centers along the Purple Line corridor is presented in Table 2-3. The starting and endpoints of the travel times reported in this segment were selected to correspond with proposed Purple Line station locations.

**Table 2-3: Summary of Existing Peak Period Auto Travel Times**

Segment	Auto Travel Times*
Bethesda Metro to Silver Spring Metro	14 minutes
Bethesda Metro to New Carrollton Metro	58 minutes
Silver Spring to College Park Metro	29 minutes
Silver Spring Metro to Takoma-Langley Transit Center	13 minutes
Takoma-Langley Transit Center to College Park	16 minutes

\* Average of both directions and AM and PM peak periods.





## **2.4. Signal Timing Data**

Existing signal timings and signal phasing were obtained from Montgomery County, Prince George's County, and SHA for use in analyzing the various signalized intersections in the corridor.





### 3. Traffic Forecasting

After collecting existing traffic data for the Purple Line corridor, it was necessary to develop projections of the traffic volumes within the corridor for the design year of 2030. A conservative approach was used, coordinated with SHA, in the development of the design year traffic forecasts.

The year 2030 traffic projections were developed using a two-step process. The first step was the development of a conservative estimate of the rate of traffic growth expected over the next 20-plus years. The second step was applying the selected growth rate to the existing peak hour turning movement volumes at the study intersections.

#### 3.1. Development of Traffic Growth Rate

The development of an annual traffic growth rate was accomplished using output from the Metropolitan Washington Council of Governments (MWCOC) regional travel demand model. In order to develop a reasonable growth rate, two methods were used to evaluate the output from the MWCOC model.

A growth rate was first estimated using a series of eight screenlines; five screenlines bisecting major east-west routes and three screenlines bisecting major north-south routes were identified. The daily link volumes for each route bisected by the screenline were totaled for both the existing base year (2000) model assignment and the future (2030) model assignment. These total existing and 2030 screenline volume assignments were then compared and an average annual growth rate was calculated for each screenline. The routes included in each screenline, as well as the calculated average annual growth rates, are summarized in Table 3-1.

**Table 3-1: MWCOC Average Growth Rate by Screenline**

Screenline	Routes Included	Average Annual Growth Rate (%)
A	Jones Bridge Road, MD 410 (East West Hwy)	0.4%
B	Wayne Avenue, Sligo Avenue, MD 410 (East West Hwy)	0.7%
C	Metzerott Road, MD 193 (University Boulevard), MD 410 (East West Highway)	0.2%
D	MD 410 (East West Highway), Paint Branch Parkway	0.3%
E	MD 410 (Veterans Parkway), Riverdale Road, Paint Branch Parkway	0.7%
F	MD 355, MD 185, MD 97, US 29, MD 193	0.4%
G	MD 193, MD 650, US 1	0.4%
H	US 1, MD 201, MD 450	0.8%
<b>Average Growth Rate</b>		<b>0.5%</b>



In addition to the screenline method described above, an alternative method was used to measure the change in home-based work person-trips on a zonal basis. A total of 139 traffic analysis zones (TAZs) covering the corridor were selected for use in this analysis. For each of these TAZs, the total inbound and outbound HBW trips in both the 2000 and 2030 MWCOG person-trip tables were computed. The growth from 2000 to 2030 in these 139 TAZs was then calculated. Using this method, an annual average growth rate of 0.7 percent was determined. A full list of the TAZs used in this analysis, as well as the total inbound and outbound HBW trips in 2000 and 2030 is presented in Table 3-2.

**Table 3-2: MWCOG Average Growth Rate by Total Inbound and Outbound Home-based Work (HBW) Trips**

TAZ	2000		2030		TAZ	2000		2030	
	Total O	Total D	Total O	Total D		Total O	Total D	Total O	Total D
215	2,094	534	2,202	450	373	2,754	493	3,067	536
216	2,859	157	3,028	184	374	3,544	228	3,964	169
217	2,066	150	2,212	134	375	4,968	295	5,240	305
218	0	0	0	0	640	830	17	895	18
219	393	26	421	29	641	5,058	715	5,383	1,117
220	0	0	0	0	642	6,210	1,101	6,431	1,807
221	3,948	381	4,203	315	643	1,118	979	1,450	1,583
222	568	47	606	22	644	983	187	1,042	255
223	454	12	488	11	645	946	249	1,040	351
224	1,205	53	1,294	40	646	1,544	1,211	2,711	1,520
225	1,199	5	1,273	0	647	68	14,258	436	17,316
226	661	45	686	33	648	2,154	665	2,151	749
227	1,593	239	1,654	222	649	3,866	667	3,842	898
228	653	733	697	707	650	2,708	2,400	2,648	2,460
229	765	476	801	414	651	2,933	723	3,166	1,051
230	1,102	135	1,173	154	652	984	140	958	303
231	1,661	793	1,745	720	653	2,431	102	2,415	132
232	2,365	197	2,571	171	654	1,651	693	1,548	785
233	1,274	53	1,353	44	655	777	7	960	47
234	650	822	689	733	656	565	13	739	32
235	1,536	1,529	1,640	1,350	657	1,489	1,911	2,266	2,529
236	2,296	344	2,414	308	658	909	58	822	144
237	3,923	442	4,273	371	659	1,463	557	1,519	761
238	541	8,120	557	7,420	660	327	5,341	506	8,930
239	904	55	958	60	661	363	505	328	1,131
240	529	246	570	268	662	1,253	211	1,110	208
330	451	35	491	26	663	1,046	1,065	967	1,078
331	5,068	7,269	5,080	9,397	664	1,655	970	1,720	1,632
332	1,712	72	1,943	53	665	1,351	722	1,431	747
333	770	118	1,017	94	666	1,369	446	1,409	691
334	1,548	982	1,751	955	667	3,014	216	2,952	317



**Table 3-2: MWCOG Average Growth Rate by Total Inbound and Outbound Home-based Work (HBW) Trips**

TAZ	2000		2030		TAZ	2000		2030	
	Total O	Total D	Total O	Total D		Total O	Total D	Total O	Total D
335	3,042	507	3,748	426	668	0	382	207	828
336	897	312	1,495	357	669	1,056	696	1,049	751
337	2,527	309	3,493	236	670	2,279	678	2,631	1,111
338	2,935	447	3,243	402	671	541	578	565	631
339	1,201	1,583	1,614	1,699	672	1,786	1,744	1,633	1,918
340	1,358	0	1,850	138	673	331	385	307	458
341	3,149	1,334	3,836	1,037	674	345	201	312	155
342	3,850	761	4,641	669	675	172	2,285	466	7,622
343	2,848	5,915	5,517	5,703	676	0	944	139	3,232
344	2,714	18,718	5,139	21,514	677	514	441	627	509
345	2,759	6,560	4,046	7,508	678	204	286	249	238
346	441	15,601	385	17,955	679	497	816	1,431	3,637
347	123	6,928	200	5,250	680	44	639	254	2,948
348	4,877	627	4,573	757	681	1,403	909	1,791	1,332
349	587	92	1,010	140	682	749	455	941	609
350	1,448	398	1,729	863	683	1,096	68	1,307	108
351	2,751	1,537	2,523	1,665	684	0	1,388	0	2,185
352	2,126	242	2,693	124	685	3,206	3,813	3,252	4,332
353	4,496	128	4,540	167	686	0	1,199	388	5,758
354	1,432	51	1,421	64	687	2,200	920	2,626	1,168
355	360	2,668	988	2,864	688	1,055	1,078	1,251	1,722
356	2,465	1,083	3,781	1,125	689	1,018	1,338	1,182	1,865
357	3,534	1,020	5,020	869	690	1,237	2,733	1,206	4,116
358	848	139	1,127	107	691	587	493	609	569
359	1,466	470	1,573	398	692	1,105	2,073	1,028	2,503
360	3,740	6,896	6,801	6,723	693	935	1,919	957	2,545
361	3,147	13,807	5,143	14,619	694	990	1,510	916	1,477
362	671	5,384	5,132	6,363	695	1,528	2,393	1,590	2,529
363	2,806	233	2,954	283	696	5,462	1,220	5,689	1,567
364	2,158	801	2,762	682	697	2,286	3,105	2,306	4,236
365	2,826	259	2,869	230	698	0	3,157	321	8,076
366	2,081	215	1,767	59	699	1,701	4,967	3,091	9,267
367	594	749	483	764	700	2,872	973	2,854	1,131
368	2,374	405	2,613	386	701	1,235	86	1,223	78
369	3,708	1,363	3,571	1,429	702	2,229	427	2,307	619
370	1,061	34	1,075	35	703	2,535	464	2,708	516
371	1,938	15	1,866	23	704	1,493	774	1,555	951
372	3,703	62	3,619	57	705	2,503	1,356	2,617	1,742
					<b>Total</b>	<b>237,354</b>	<b>207,761</b>	<b>277,331</b>	<b>263,016</b>
						445,115		540,347	



The two methods used to estimate the rate of growth in traffic between existing conditions and the year 2030, based on the MWCOG travel demand model, resulted in similar estimates of the growth rate in the corridor. The estimates ranged from 0.5 percent to 0.7 percent per year based on these two methods.

To verify the reasonability of these growth rate estimates, a review of historical growth rates on key routes within the Purple Line corridor was conducted. Using data obtained from SHA’s online Traffic Monitoring System, MTA developed estimates of traffic growth in the corridor over time. Several relevant key roadway sections were identified and the historical growth rates along these segments were calculated. These segments and the corresponding average annual growth rate over the past 11 years (1994 to 2005) are summarized in Table 3-3.

**Table 3-3: Historical Growth Trends on Key Roadways (1994 – 2005)**

Segment	Average Annual Growth Rate (%)
I-495, West of MD 650	0.9%
MD 410, West of MD 185	0.7%
MD 185, South of I-495	1.0%
MD 410, West of 16 <sup>th</sup> Street	1.5%
MD 201, North of MD 410	1.9%
MD 193, East of MD 212	1.3%

Though the estimates developed using output from the MWCOG model indicated the average growth in traffic between 2000 and 2030 would be between 0.5 and 0.7 percent, the historical data indicated slightly faster growth in traffic, ranging from 0.7 to 1.9 percent. Therefore, to be conservative, MTA proposed that an average annual growth rate of approximately 1 percent be used to develop year 2030 traffic forecasts for this project. This means that the year 2005 peak hour turning movement volumes would be increased by 25 percent to determine the year 2030 traffic volumes to be used in the traffic analyses. Given that peak hour traffic typically grows at a slower rate than total average daily traffic, it can be reasonably assumed that the development of a peak hour growth traffic rate using daily link volumes, daily trip tables, and the daily historical traffic growth rates will result in a conservative estimate of peak hour traffic in the year 2030.

Prior to developing the 2030 traffic projections used in this study, this methodology was submitted to SHA’s Travel Forecasting Division for its review. SHA reviewed the methodology and found that the proposed average annual growth rate of approximately 1 percent was conservative and reasonable for the corridor. The proposed traffic growth rate was also submitted to both Montgomery County and Prince George’s County; neither jurisdiction raised any objections to the proposed growth rate.

## **3.2. Development of Year 2030 Peak Hour Traffic Forecasts**

The second step in the forecasting process was applying the proposed growth rate to the existing traffic counts collected for the Purple Line. Based on an average growth rate of approximately 1 percent per year, the existing 2005 peak hour turning movement volumes and daily link volumes were increased by 25 percent to determine the design year 2030 traffic volumes used for this study. All turning movements at the intersections were projected to grow proportionally.

For many highway and transit projects, it is common to develop a unique set of traffic forecasts for each of the alternatives under evaluation. In this case, given the built-out nature of the corridor, the existing levels of traffic congestion, and the very similar routing between all of the Build Alternatives, it was expected that there would be relatively little variation in the design year traffic volumes between alternatives. Therefore, for the purposes of analyzing the impacts to traffic operations with the corridor, it was assumed that the same volume of traffic would be present on the street network under each of the eight alternatives under evaluation.

It should be noted that this assumption is conservative; as subsequent sections will show, each Build Alternative is projected to result in a reduction in the number of trips made by personal automobiles with the corridor relative to the No Build and TSM alternatives. One result of this assumption is that the impact of the Build Alternatives to traffic operations may be less than these analyses imply, since any potential reductions in auto traffic due to an increase in transit use were not considered.

### ***3.2.1. Impacts of BRAC Implementation at the Bethesda National Naval Medical Center.***

The proposed expansion of the National Naval Medical Center in Bethesda will result in up to an additional 2,500 employees and approximately 1,860 new visitors per day to the facility. The Department of the Navy, in accordance with federal regulations, developed an environmental impact statement (EIS) for the proposed expansion. That document included an evaluation of the impacts of increased traffic on the roadway network surrounding the medical center. A question was raised whether the proposed annual growth rate (25 percent total increase in traffic by 2030) assumed in the Purple Line traffic analyses was sufficient to account for the growth in traffic associated with BRAC.

The MTA reviewed the National Naval Medical Center EIS, specifically the proposed increase in traffic at three key intersections that intersect the Low Investment BRT Alternative along Jones Bridge Road. This evaluation compared the future year 2011 peak hour traffic volumes for full build-out at the Medical Center to the existing peak hour traffic volumes. This comparison is summarized in Table 3-4.



**Table 3-4: Peak Hour Traffic Growth from NNMC Expansion  
(Existing to 2011)**

<b>Intersection</b>	<b>AM Peak (Total % Increase)</b>	<b>PM Peak (Total % Increase)</b>
Jones Bridge Road at Jones Mill Road	10%	10%
Jones Bridge Road at MD 185	8%	10%
Jones Bridge Road at MD 355	5%	6%

As the data in the table indicates, the total growth in peak hour traffic due to the NNMC expansion ranges from 5 to 10 percent across the key intersections. The year 2030 traffic forecasts developed for the Purple Line represent an increase of 25 percent from the existing traffic volumes, meaning that the peak hour traffic could increase by an additional 15 to 20 percent (beyond the increase projected due to the National Naval Medical Center expansion) between 2011 and 2030 and it would not exceed the 2030 traffic forecasts. This demonstrates that the Purple Line year 2030 forecasts are sufficient to account for the impacts from the National Naval Medical Center expansion as well as additional growth in traffic that may occur due to further development in the Bethesda area.



## 4. Impacts to Automobile Transportation

The impacts to travel by personal automobile of the proposed Purple Line Build Alternatives were evaluated on a number of different levels, including the projected changes in regional travel and congestion, the projected reduction in trips made by automobiles on a district level, and the projected impacts to traffic operations on an intersection-by-intersection basis.

### 4.1. Regional Impacts on Travel and Congestion

The Build Alternatives have the potential to slightly reduce traffic congestion and slightly improve regional air quality by prompting a shift in the mode of travel from private automobiles to public transit, with either BRT or LRT. The potential regional traffic benefits of both the TSM Alternative and the six Build Alternatives were evaluated based on the change in daily vehicle trips, vehicle miles traveled (VMT), vehicle hours traveled (VHT), and highway operating speeds.

The results of these analyses are presented in the following discussion and in Table 4-1. The regional travel demand model, developed under the auspices of the MWCOCG, was used to generate the data contained in Table 4-1. This data represents daily trips, VMT, VHT, and average highway speeds for the entire region contained in the MWCOCG model.

**Table 4-1: Year 2030 Regional Travel Impacts**

	Daily Vehicle Trips	Daily VMT	Average Highway Speeds (mph)
<b>No Build</b>	25,804,975	261,054,037	24.5
<b>TSM</b>	25,803,554	261,110,445	24.5
Change over No Build	-1,421	56,408	
% Change over No Build	-0.006%	0.022%	
<b>Low Investment BRT</b>	25,795,970	261,001,838	24.5
Change over No Build	-9,005	-52,199	
% Change over No Build	-0.035%	-0.020%	
Change over TSM	-7,584	-108,607	
% Change over TSM	-0.029%	-0.042%	
<b>Medium Investment BRT</b>	25,792,838	260,940,475	24.4
Change over No Build	-12,137	-113,562	
% Change over No Build	-0.047%	-0.044%	
Change over TSM	-10,716	-170,032	
% Change over TSM	-0.042%	-0.024%	
<b>High Investment BRT</b>	25,790,959	260,878,947	24.4
Change over No Build	-14,016	-175,090	
% Change over No Build	-0.054%	-0.067%	
Change over TSM	-12,595	-231,498	
% Change over TSM	-0.049%	-0.089%	



**Table 4-1: Year 2030 Regional Travel Impacts**

	Daily Vehicle Trips	Daily VMT	Average Highway Speeds (mph)
<b>Low Investment LRT</b>	25,790,505	260,886,581	24.4
Change over No Build	-14,470	-167,456	
% Change over No Build	-0.056%	-0.064%	
Change over TSM	-13,049	-223,864	
% Change over TSM	-0.051%	-0.086%	
<b>Medium Investment LRT</b>	25,789,722	260,870,434	24.4
Change over No Build	-15,253	-183,603	
% Change over No Build	-0.059%	-0.070%	
Change over TSM	-13,832	-240,011	
% Change over TSM	-0.054%	-0.092%	
<b>High Investment LRT</b>	25,788,222	260,876,637	24.4
Change over No Build	-16,753	-177,400	
% Change over No Build	-0.065%	-0.068%	
Change over TSM	-15,332	-233,808	
% Change over TSM	-0.059%	-0.090%	

#### **4.1.1. Vehicle Trips**

In a travel demand model, a vehicle trip represents a vehicle traveling from a unique origin to a unique destination; a tabulation of the total vehicle trips account for neither the number of passengers in a vehicle nor the length of the trip.

The Build Alternatives pass through a built-out urban area, and the station locations were selected to maximize walk and bus transfer access. Additionally, no new park-and-ride facilities and only limited formal kiss-and-ride facilities are being proposed as part of the Build Alternatives. Therefore, it is expected that the change in vehicle trips would provide the most complete representation of the overall change in automobile usage. Each trip removed from the network is one less automobile traveling through the corridor each day.

For this project, the total number of vehicle trips in 2030 would decrease from 25,804,975 to 25,803,544 (-1,431 trips) from the No Build Alternative to the TSM Alternative. The Low, Medium, and High Investment BRT Alternatives would further decrease the total number of vehicle trips compared to the TSM Alternative, by 9,005; 12,137; and 14,016 trips, respectively. The Low, Medium, and High Investment LRT Alternatives would result in a slightly larger decrease in total vehicle trips than the BRT Alternatives. The Low, Medium, and High Investment LRT Alternatives would decrease total daily vehicle trips by 14,470; 15,253; and 16,753 trips, respectively, compared to the TSM Alternative. The reduction in daily vehicle trips under the various Build Alternatives represents changes in magnitude of 0.03 to 0.06 percent relative to the TSM Alternative.



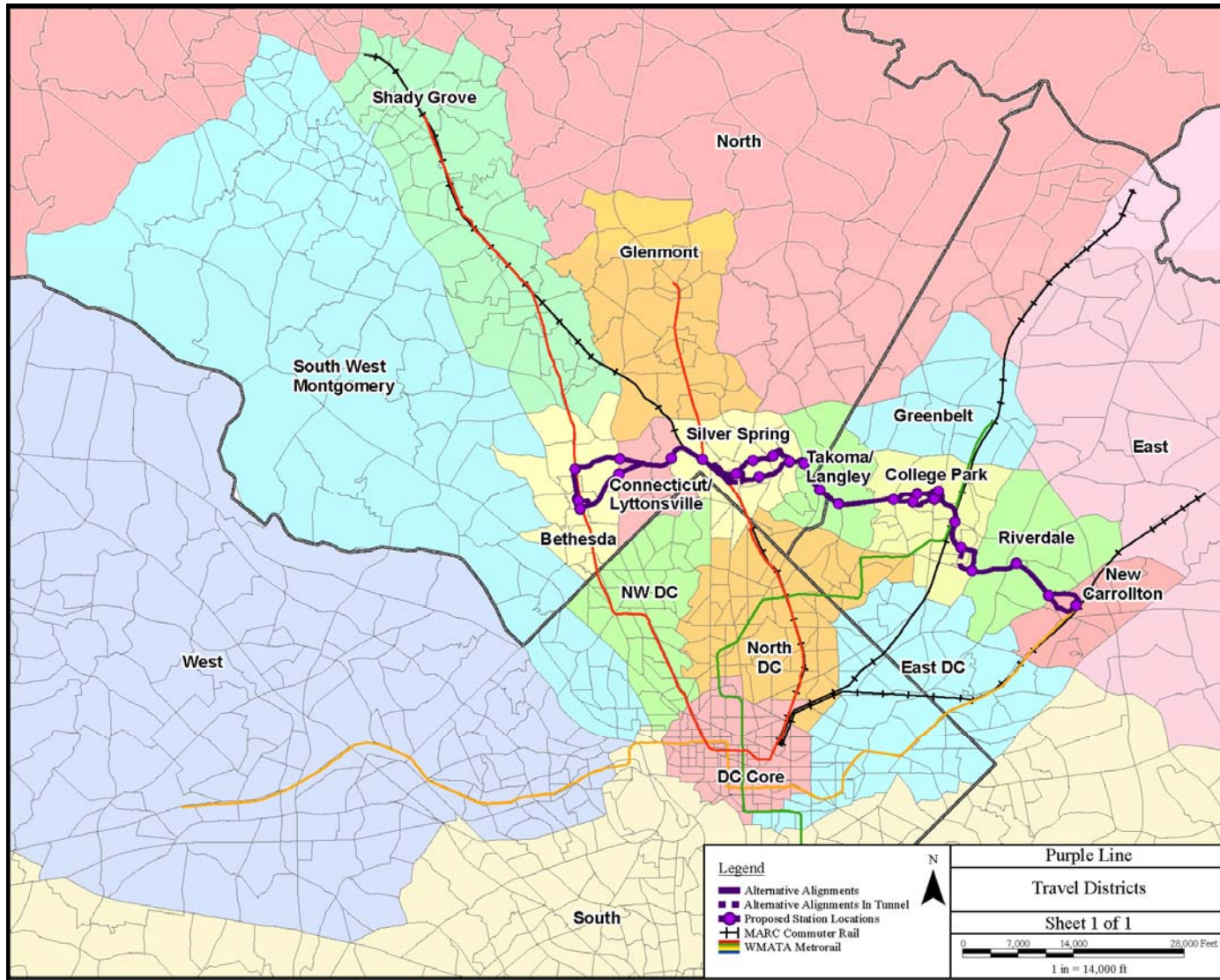
These values represent the change in total daily vehicle trips on all the various roadway facilities throughout the 16-mile corridor; therefore, the reduction in traffic on an individual facility would be relatively small. However, for a point of comparison, the decrease in automobile trips across the roadway network under the six Build Alternatives is equivalent to removing between 15 and 40 percent of the current daily traffic on University Boulevard (MD 193).

Reduction in Vehicle Trips by District: The change in vehicle trips was further broken down into nineteen districts, identified in Figure 4-1. This analysis provides additional insight into the expected reduction in total auto trips in the areas immediately surrounding the Purple Line corridor. Table 4-2 indicates the total reduction in auto trips relative to the No Build Alternative, both into and out of, each of the nineteen districts for each of the six Build Alternatives. To determine the reduction of the number of vehicles on the existing street network, the data in Table 4-2 should be reduced by approximately 10 percent to account for the typical auto occupancy of 1.1 per vehicle.

The results presented in Table 4-2 indicate that the three LRT alternatives generally result in a greater reduction in auto trips than the BRT alternatives within the various districts. The table shows that the change in auto travel is expected to be greatest within the districts that surround the Purple Line corridor. The largest change in auto traffic is expected within the College Park district, with a net decrease in auto trips between 5,500 and 7,100 per day. The Silver Spring district is expected to see a net decrease in auto trips between 2,800 and 5,900 per day. The Build Alternatives are expected to reduce the number of trips made by auto in the Bethesda (900 to 4,300 trips per day), Takoma-Langley (1,300 to 3,900 trips per day), Riverdale (2,500 to 2,900 trips per day), Connecticut/Lyttonsville (1,000 to 1,300 trips per day), and New Carrollton (1,000 to 1,500 trips per day) districts, which also directly adjoin the Purple Line corridor.

Note that all the values in Table 4-2 represent trips which *start or end* in these particular districts; it is reasonable to expect that the actual reduction in auto trips within a particular district will be higher due to a reduction in trips passing through the district. For example, a trip from Bethesda to Silver Spring is represented in the Bethesda and Silver Spring values; however, there is a high likelihood such a trip would pass through the Connecticut/Lyttonsville district, further reducing the number of cars on the road in that area.

A measurable reduction in auto trips is also projected for districts that do not directly adjoin the Purple Line corridor; this trend is most pronounced in those districts that are served by a direct Metro connection. Within the Shady Grove district (served by the Red Line), auto trips are projected to decrease between 1,000 and 2,200 per day, depending on the Build alternative. Similarly, the Glenmont (Red Line) and Greenbelt (Green Line) districts are projected to see decreases in auto trips. A substantial reduction in auto trips (between 2,200 and 3,900) is projected within Washington, D.C.



**Figure 4-1: Travel Districts**



**Table 4-2: Reduction in Auto Trips by District Compared to No Build**

<b>District</b>	<b>Low Invest. BRT</b>	<b>Medium Invest. BRT</b>	<b>High Invest. BRT</b>	<b>Low Invest. LRT</b>	<b>Medium Invest. LRT</b>	<b>High Invest. LRT</b>
Bethesda	900	2,000	2,200	3,700	4,200	4,300
Connecticut/Lyttonsville	1,000	1,000	1,000	1,200	1,300	1,300
Silver Spring	2,800	4,300	4,900	5,200	5,600	5,900
Takoma/Langley	1,300	2,400	3,400	3,000	3,300	3,900
College Park	5,500	6,300	6,900	6,500	6,600	7,100
Riverdale	2,400	2,600	2,900	2,700	2,600	2,900
New Carrollton	1,000	1,200	1,500	1,300	1,200	1,500
Shady Grove	1,000	1,300	1,500	1,800	2,000	2,200
Glenmont	500	900	1,000	1,300	1,400	1,500
Greenbelt	700	900	1,000	900	900	1,100
Washington, DC (all four Districts)*	2,200	2,800	3,300	3,300	3,400	3,900
Southwest Montgomery County	100	400	500	500	600	700
North	1,000	1,700	1,900	2,100	2,300	2,500
South	900	1,100	1,200	1,200	1,200	1,300
East	1,200	1,500	1,800	1,600	1,500	1,900
West	100	100	200	100	100	200

\* The four districts comprising Washington, D.C. have been combined.



#### **4.1.2. Vehicle Miles Traveled (VMT)**

A second parameter that can be used to evaluate the impact of transit alternatives on overall automobile usage is the overall VMT in the region. Vehicle miles represent the total miles traveled during all of the vehicle trips within a region, without regard to the number of passengers in a vehicle.

In 2030, under the No Build Alternative, a total of 261,054,037 vehicle miles would be traveled each day in the Washington metropolitan region. Under the TSM Alternative, that total would be increased by 56,408 vehicle miles (0.022%). Under the Low Investment BRT Alternative, the total VMT is projected to decrease by 108,607 vehicle miles compared to the TSM Alternative. Under the Medium Investment BRT Alternative, the total VMT is projected to decrease by 170,032 relative to the TSM alternative, and under the High Investment BRT Alternative, the total VMT would be reduced by 231,498 vehicle-miles (0.017%) relative to the TSM Alternative. The Low Investment LRT (-223,864 vehicle miles), Medium Investment LRT (-240,011 vehicle miles), and High Investment LRT (-233,808) Alternatives would also decrease total daily VMT, relative TSM Alternative..

For many transit facilities with park-and-ride and kiss-and-ride facilities at many of the stops, the reduction in vehicle trips is often combined with a more substantial reduction (on a percentage basis) in total VMT. This trend occurs because, not only do vehicle trips decrease, but also some portion of the remaining vehicle trips are shortened as people drive to a transit stop and then transfer to transit for the remainder of their trip. Given the lack of formal kiss-and-ride and park-and-ride facilities associated with the Build Alternatives, the daily VMT results could provide a skewed picture of the impacts of the Purple Line on automobile traffic. The vehicle trip data indicate that there is a small, but measurable, decrease in the number of daily vehicle trips associated with each alternative. Due to this reduction in vehicle trips, levels of congestion may slightly decrease on particular routes, which may lead to some of the remaining vehicle trips selecting routes that are longer in terms of distance (more vehicle miles traveled).

#### **4.1.3. Highway Operating Speeds**

The average highway speed represents the operating speed on the roadways in the region. For some projects, this can be used as a measure of the reduction in traffic congestion. However, given the small magnitude of the reduction in total daily vehicle trips for the Build Alternatives, the change in the average highway speeds is projected to be quite small. For this project, the average highway speed in 2030 under the No Build Alternative is 24.5 mph. There would be no measurable increase in the regional average highway speeds under any of the Build Alternatives.

### **4.2. Changes in Intersection Levels of Service**

The potential for negative impacts to traffic operations along the existing street network were given detailed consideration throughout the development and evaluation of the various Build Alternatives. As the following analyses will show, there are relatively few potential negative impacts to traffic operations at signalized intersections along the corridor due to the Build

Alternatives. During the preliminary engineering phase, mitigation measures will be developed to address any potential impacts to traffic operations under the selected Alternative.

#### **4.2.1. General Discussion of Impacts of Build Alternatives to Signalized Intersection Operations**

The Build Alternatives evaluated for the AA/DEIS include a variety of operating environments. In some segments, the BRT or LRT vehicles would operate within existing traffic lanes in mixed traffic. In other segments, the BRT or LRT vehicles would operate in new, dedicated transit lanes (either along the curb or the in the median). At other locations, the BRT or LRT vehicles will operate in exclusive transit rights-of-way. What follows is a brief discussion of the types of modifications necessary at signalized intersections to accommodate transit vehicles operating within these different types of rights-of-way.

##### **Mixed Traffic Operations**

When operating in mixed traffic, both BRT and LRT vehicles would operate similarly to today's buses. Some geometric changes would be included at certain heavily congested intersections to provide some priority of movement to the BRT or LRT vehicles. An example of a typical modification would be the provision of a queue jump lane, allowing transit vehicles to bypass a queue of vehicles and clear the intersection within the upcoming green phase.

There would also be some minor modifications to the signal timing and phasing (including transit signal priority) at some signalized intersections for segments where the alternatives operate in mixed traffic. Potential examples of phasing changes would be a short leading green phase to allow buses in a queue jump lane to move into the intersection (and back into the primary lanes) before other through vehicles are given a green indication on that approach. This phase would only be called when a transit vehicle is detected in the queue jump lane during the red phase. The impacts of these treatments to intersection operations are quite minor, slightly increasing delays on the minor street approach, while slightly decreasing delay along the major street.

##### **Operations in Dedicated Lanes**

When operating in dedicated lanes in an existing street, whether in the median or along the curb, BRT and LRT vehicles would typically have minor impacts to signal phasing and timing. For median-running options, transit vehicles would pass to the left of left-turning traffic traveling in the same direction. This configuration requires the conversion of permissive or exclusive-permissive phasing for left turns to exclusive-only phasing. At many of the most congested intersections in the corridor, the left turn movements already operate with exclusive phasing under existing conditions; since no phasing changes would be required at these already congested locations, the inclusion of the LRT and BRT in dedicated lanes would not be expected to negatively impact the intersection operations.

At a limited number of intersections a new signal phase would be required to serve the BRT or LRT vehicles. For these analyses, a worst-case condition was assumed. This worst-case condition is that a new phase would be inserted into the existing signal phasing, reducing the



available green time for all other movements at the intersection. This phase would only operate when a Purple Line transit vehicle is detected at the intersection; when no transit vehicle is detected the extra green time would be applied to the coordinated phases. In practice, a new transit signal phase can often be implemented as an “alternate” phase; when a transit vehicle is detected, the phase would be called to serve the transit vehicles in place of one of the existing signal phases (typically a phase serving a left-turn or lower volume movement).

### **Operations in Exclusive Rights-of-Ways**

When operating in exclusive rights-of-ways, the BRT and LRT alternatives would have little interaction with auto traffic. This interaction would be limited to any at-grade crossing locations. For the Build Alternatives, many of these crossings are proposed to occur at existing signalized intersections; by utilizing opportunities to cross a roadway at a location when traffic on the cross-street is already stopped, the impacts to automobile traffic can be reduced. In limited cases, it was not possible to locate a proposed grade crossing at an existing signalized intersection. In those instances, a new signalized crossing would generally be required; the projected levels of service for those new signalized crossings were evaluated for this study.

#### **4.2.2. Summary of Transit/Auto Interfaces for Build Alternatives**

The following section provides a comparison, by segment, of the number of signalized interfaces between Purple Line transit vehicles and general traffic along the corridor. The number of new at-grade crossings is also listed for each alternative.

### **Bethesda Metro to Silver Spring Metro**

The proposed routing of the Build Alternatives between Bethesda and Silver Spring was summarized in detail above. Briefly, the three LRT Alternatives would operate within an exclusive transit right-of-way for the entirety of this segment. The Medium and High BRT Alternatives would operate within an exclusive transit right-of-way with the exception of the segment west of Pearl Street, where these two alternatives would operate on-street in mixed traffic as part of a one-way loop through downtown Bethesda. The Low BRT alternative would operate primarily in mixed traffic west of Rock Creek Park. East of Jones Mill Road and west of Spring Street, the Low BRT Alternative would operate in an exclusive transit right-of-way. East of Spring Street, the Low BRT Alternative would operate on-street in mixed traffic.

**Table 4-3: Grade-Crossings Summary: Bethesda-Silver Spring**

	<b>Low Invest. BRT</b>	<b>Medium Invest. BRT</b>	<b>High Invest. BRT</b>	<b>Low Invest. LRT</b>	<b>Medium Invest. LRT</b>	<b>High Invest. LRT</b>
# of At-Grade Crossings at Existing Signalized Intersections	20	10	10	1	0	0
# of New At-Grade Transit Crossings	3	4	2	3	1	1



### Silver Spring Metro to College Park Metro

Within this segment, the six Build Alternatives each operate primarily within the existing street network, with varying levels of operations within mixed traffic lanes and dedicated transit lanes. Exclusive transit rights-of-way would be provided in the following segments:

- Tunnel from Silver Spring Transit Center to Cedar Street (High LRT and High BRT)
- Tunnel from Wayne Avenue (Manchester Place) to Arliss Street (Low, Med, High LRT & High BRT)
- Regents Drive to Baltimore Avenue (all except Low BRT)

**Table 4-4: Grade-Crossings Summary: Silver Spring-College Park**

	Low Invest. BRT	Medium Invest. BRT	High Invest. BRT	Low Invest. LRT	Medium Invest. LRT	High Invest. LRT
# of At-Grade Crossings at Existing Signalized Intersections	27	26	14	22	22	14
# of New At-Grade Transit Crossings	0	0	1	1	1	1

### College Park Metro to New Carrollton Metro

Within this segment, there is a balance between operations in new exclusive transit rights-of-ways (mostly adjacent to the existing roadways) and operations within the existing street network. The Low Investment BRT would generally operate in mixed traffic, though dedicated transit lanes would be provided along Kenilworth Avenue and Annapolis Road. The Medium and High Investment BRT alternatives, as well as all three LRT alternatives, would generally operate in new dedicated transit lanes through this segment; new exclusive transit rights-of-way would be provided parallel to Kenilworth Avenue and Ellin Road.

**Table 4-5: Grade-Crossings Summary: College Park to New Carrollton**

	Low Invest. BRT	Medium Invest. BRT	High Invest. BRT	Low Invest. LRT	Medium Invest. LRT	High Invest. LRT
# of At-Grade Crossings at Existing Signalized Intersections	12	11	8	10	10	8
# of New At-Grade Transit Crossings	0	0	0	0	0	0

As the data in Tables 4-3, 4-3, and 4-5 indicates, the Low Investment BRT Alternative would interface with 59 existing signalized intersections along the 16-mile corridor; more than any of the other Build Alternatives. The Medium and High Investment BRT Alternatives would interface with 47 and 32 existing signalized intersections, respectively. The Low and Medium Investment LRT Alternatives would interface with 33 and 32 existing signalized intersections,



respectively. The High Investment LRT Alternative would interface with 22 existing signalized intersections; fewer than any of the other Build Alternatives.

#### ***4.2.3. Capacity Analysis Methodology***

Traffic congestion for this project has been quantified using the capacity analysis procedures contained in the *2000 Highway Capacity Manual (HCM)*, the national standard for evaluating traffic operations.

All signalized intersections were analyzed using SYNCHRO Version 6.0, Build 612. SYNCHRO is based on current HCM procedures and is widely used and accepted by public and private agencies.

All traffic analysis results for this project are reported in terms of level of service (LOS). Level of service is a measure of the efficiency of traffic flow through an intersection or along a roadway segment. Levels of service are represented by letter grades ranging from A (best) through F (worst). For signalized intersections, LOS A represents uncongested operations with an average delay of less than ten (10) seconds for each vehicle that passes through the intersection. LOS F represents congested conditions with traffic demand that exceeds the intersection capacity with an average delay in excess of 80 seconds per vehicle. LOS F is often characterized by cycle failures, where vehicles fail to clear the intersection within one cycle of the traffic signal, and lengthy queues on the approaches to the intersection.

Key factors influencing LOS at signalized intersections include traffic characteristics (volumes, directional distribution, vehicle types, etc.), the number and width of lanes, pedestrian activity, and signal timing and phasing.

#### ***4.2.4. Summary of Results***

A total of 64 intersections were evaluated in detail across the 16-mile corridor. This included existing signalized intersections, new at-grade crossings on major cross-streets, and selected key unsignalized intersections (primarily within the University of Maryland). The AM and PM intersection levels of service were calculated for existing conditions, as well as projected conditions in the year 2030 under the eight alternatives. The results of this evaluation are summarized in Tables 4-6 and 4-7.

**Table 4-6: AM Peak Hour Intersection Levels of Service**

Intersection	Existing	No Build	TSM	BRT			LRT		
				Low	Med	High	Low	Med	High
<b>Bethesda to Silver Spring</b>									
Woodmont Avenue at Old Georgetown Road	B	B	B	C	B	B	B	B	B
Woodmont Avenue at Edgemoor Lane	A	A	A	A	A	A	A	A	A
Old Georgetown Road at Edgemoor Lane	A	B	B	B	B	B	B	B	B
Woodmont Avenue at Norfolk Avenue	A	A	A	A	A	A	A	A	A
Woodmont Avenue at St. Elmo Avenue	A	A	A	A	A	A	A	A	A
Woodmont Avenue at Cordell Avenue	A	A	A	A	A	A	A	A	A
Woodmont Avenue at Battery Lane	B	B	B	B	B	B	B	B	B
Jones Bridge Road at Wisconsin Avenue	D	E	E	F	E	E	E	E	E
Jones Bridge Road at Glenbrook Parkway	A	A	A	A	A	A	A	A	A
Jones Bridge Road at Grier Road	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Jones Bridge Road at Platt Ridge Road	A	A	A	A	A	A	A	A	A
Jones Bridge Road at Connecticut Avenue	F	F	F	F	F	F	F	F	F
Jones Bridge Road at Manor Road	A	A	A	A	A	A	A	A	A
Jones Bridge Road at Jones Mill Road	E	F	F	F	F	F	F	F	F
Connecticut Avenue at Chevy Chase Lakes Drive	A	A	A	A	A	A	B	A	A
16 <sup>th</sup> Street at New Purple Line Crossing	N/A	N/A	N/A	A	A	N/A	A	N/A	N/A
<b>Silver Spring to College Park</b>									
2 <sup>nd</sup> Avenue at Spring Street	B	B	B	B	B	B	B	B	B
2 <sup>nd</sup> Avenue at Fenwick Avenue	A	A	A	A	A	A	A	A	A
2 <sup>nd</sup> Avenue at Cameron Avenue	A	A	A	A	A	A	A	A	A
Colesville Road at 2 <sup>nd</sup> Avenue	D	C	C	C	C	C	C	C	C
Wayne Avenue at Ramsey Road	C	C	C	C	C	C	C	C	C
Wayne Avenue at Dixon Avenue	Unsig.	A	A	A	B	A	B	B	A
Wayne Avenue at Georgia Avenue	C	D	D	D	D	D	D	D	D
Georgia Avenue at Bonifant Street	A	A	A	A	A	A	A	A	A



**Table 4-6: AM Peak Hour Intersection Levels of Service**

Intersection	Existing	No Build	TSM	BRT			LRT		
				Low	Med	High	Low	Med	High
Georgia Avenue at Thayer Avenue	A	A	A	A	B	A	B	B	A
Wayne Avenue at Fenton Street	C	C	C	D	C	C	C	C	C
Wayne Avenue at Cedar Street	B	C	C	C	A	C	B	B	C
Wayne Avenue at Dale Drive	B	C	C	D	B	F	B	B	F
Wayne Avenue at Mansfield Road	A	A	A	A	A	D	A	A	D
Wayne Avenue at Sligo Creek Parkway	D	E	E	E	C	F	C	C	F
Wayne Avenue at Flower Avenue	B	B	B	C	B	B	B	B	B
Piney Branch Road at Arliss Street	A	A	A	A	A	A	A	A	A
Piney Branch Road at Barron Street	B	B	B	B	B	B	B	B	B
University Boulevard at Piney Branch Road	E	F	F	F	F	F	F	F	F
University Boulevard at Carroll Avenue	E	E	E	E	E	E	E	E	E
University Boulevard at Shopping Center West	A	B	B	B	A	A	B	B	B
University Boulevard at New Hampshire Avenue	E	F	F	F	F	F	F	F	F
University Boulevard at Shopping Center East	A	B	B	B	B	B	B	B	B
University Boulevard at 15 <sup>th</sup> Avenue	B	B	B	B	B	B	B	B	B
University Boulevard at Riggs Road*	E	D	D	D	D	D	D	D	D
University Boulevard at 23 <sup>rd</sup> Avenue	A	A	A	A	A	A	B	B	B
University Boulevard at W. Park Drive	A	A	A	B	A	A	B	B	B
University Boulevard at Campus Drive	B	C	C	C	C	C	C	C	C
Adelphi Road at Campus Drive	E	E	E	F	E	E	E	E	E
Campus Drive at Regents Drive	D	D	D	C	C	C	C	C	C
Baltimore Avenue at Campus Drive	D	E	E	F	F	F	F	F	F
Baltimore Avenue at Rossborough Lane	A	B	B	B	B	B	B	B	B
Paint Branch Parkway at Fire Academy	B	D	D	D	D	D	D	D	D
Paint Branch Parkway at Metro Parking	B	B	B	B	B	B	B	B	B
Paint Branch Parkway at River Road	B	B	B	B	B	B	B	B	B

**Table 4-6: AM Peak Hour Intersection Levels of Service**

Intersection	Existing	No Build	TSM	BRT			LRT		
				Low	Med	High	Low	Med	High
<b>College Park to New Carrollton</b>									
Kenilworth Avenue at River Road	B	C	C	C	C	C	C	C	C
Kenilworth Avenue at Rittenhouse Street	A	A	A	A	A	A	A	A	A
Kenilworth Avenue at East West Highway	E	F	F	F	F	F	F	F	F
East West Highway at 62 <sup>nd</sup> Place	A	A	A	A	B	B	B	B	B
East West Highway at 64 <sup>th</sup> Avenue	A	A	A	A	A	A	A	A	A
East West Highway at B-W Parkway Southbound Ramps	B	B	B	B	C	C	C	C	C
East West Highway at B-W Parkway Northbound Ramps	B	B	B	B	C	C	C	C	C
East West Highway at 67 <sup>th</sup> Avenue	A	A	A	A	A	A	A	A	A
East West Highway at Riverdale Road	C	D	D	E	D	D	D	D	D
Annapolis Road at Veterans Parkway	F	F	F	F	F	F	F	F	F
Annapolis Road at Harkins Road	A	A	A	B	A	A	A	A	A
Harkins Road at W. Lanham Road	A	A	A	B	A	A	B	A	A
Veterans Parkway at Ellin Road	B	B	B	B	D	D	B	D	D



**Table 4-7: PM Peak Hour Intersection Levels of Service**

Intersection	Existing	No Build	TSM	BRT			LRT		
				Low	Med	High	Low	Med	High
<b>Bethesda to Silver Spring</b>									
Woodmont Avenue at Old Georgetown Road	B	B	B	B	B	B	B	B	B
Woodmont Avenue at Edgemoor Lane	A	A	A	A	A	A	A	A	A
Old Georgetown Road at Edgemoor Lane	A	A	A	A	A	A	A	A	A
Woodmont Avenue at Norfolk Avenue	A	A	A	A	A	A	A	A	A
Woodmont Avenue at St. Elmo Avenue	B	B	B	B	B	B	B	B	B
Woodmont Avenue at Cordell Avenue	A	A	A	A	A	A	A	A	A
Woodmont Avenue at Battery Lane	B	B	B	B	B	B	B	B	B
Jones Bridge Road at Wisconsin Avenue	E	F	F	F	F	F	F	F	F
Jones Bridge Road at Glenbrook Parkway	B	B	B	B	B	B	B	B	B
Jones Bridge Road at Grier Road	A	B	B	B	B	B	B	B	B
Jones Bridge Road at Platt Ridge Road	A	A	A	A	A	A	A	A	A
Jones Bridge Road at Connecticut Avenue	F	F	F	F	F	F	F	F	F
Jones Bridge Road at Manor Road	B	B	B	B	B	B	B	B	B
Jones Bridge Road at Jones Mill Road	F	E	E	F	E	E	E	E	E
Connecticut Avenue at Chevy Chase Lakes Drive	A	B	B	B	B	B	C	B	B
16 <sup>th</sup> Street at New Purple Line Crossing	N/A	N/A	N/A	A	A	N/A	A	N/A	N/A
<b>Silver Spring to College Park</b>									
2 <sup>nd</sup> Avenue at Spring Street	C	C	C	C	C	C	C	C	C
2 <sup>nd</sup> Avenue at Fenwick Avenue	A	A	A	A	A	A	A	A	A
2 <sup>nd</sup> Avenue at Cameron Avenue	A	A	A	A	A	A	A	A	A
Colesville Road at 2 <sup>nd</sup> Avenue	D	C	C	C	C	C	C	C	C
Wayne Avenue at Ramsey Road	C	C	C	C	C	C	C	C	C
Wayne Avenue at Dixon Avenue	Unsig.	B	B	B	B	B	B	B	B
Wayne Avenue at Georgia Avenue	C	D	D	D	D	D	D	D	D
Georgia Avenue at Bonifant Street	A	A	A	A	A	A	A	A	A

**Table 4-7: PM Peak Hour Intersection Levels of Service**

Intersection	Existing	No Build	TSM	BRT			LRT		
				Low	Med	High	Low	Med	High
Georgia Avenue at Thayer Avenue	B	B	B	B	B	B	B	B	B
Wayne Avenue at Fenton Street	C	C	C	C	D	C	D	D	C
Wayne Avenue at Cedar Street	C	D	D	D	C	C	D	D	C
Wayne Avenue at Dale Drive	C	E	E	F	D	F	D	D	F
Wayne Avenue at Mansfield Road	A	A	A	A	A	C	A	A	C
Wayne Avenue at Sligo Creek Parkway	C	E	E	F	E	F	E	E	F
Wayne Avenue at Flower Avenue	B	C	C	C	C	C	C	C	C
Piney Branch Road at Arliss Street	B	B	B	B	C	C	C	C	C
Piney Branch Road at Barron Street	B	B	B	B	B	B	B	B	B
University Boulevard at Piney Branch Road	F	F	F	F	F	F	F	F	F
University Boulevard at Carroll Avenue	C	C	C	C	C	C	C	C	C
University Boulevard at Shopping Center West	B	A	A	A	A	A	B	B	B
University Boulevard at New Hampshire Avenue	F	F	F	F	F	F	F	F	F
University Boulevard at Shopping Center East	B	B	B	B	B	B	B	B	B
University Boulevard at 15 <sup>th</sup> Avenue	C	C	C	C	C	C	C	C	C
University Boulevard at Riggs Road*	F	F	F	F	F	F	F	F	F
University Boulevard at 23 <sup>rd</sup> Avenue	B	B	B	B	B	C	C	C	C
University Boulevard at W. Park Drive	B	B	B	B	B	B	B	B	B
University Boulevard at Campus Drive	C	D	D	D	D	D	D	D	D
Adelphi Road at Campus Drive	F	F	F	F	F	F	F	F	F
Campus Drive at Regents Drive	F	F	F	E	E	E	E	E	E
Baltimore Avenue at Campus Drive	D	F	F	E	E	E	E	E	E
Baltimore Avenue at Rossborough Lane	B	E	E	E	E	E	E	E	E
Paint Branch Parkway at Fire Academy	B	B	B	B	B	B	B	B	B
Paint Branch Parkway at Metro Parking	A	A	A	A	A	A	A	A	A
Paint Branch Parkway at River Road	B	B	B	B	B	B	B	B	B



**Table 4-7: PM Peak Hour Intersection Levels of Service**

Intersection	Existing	No Build	TSM	BRT			LRT		
				Low	Med	High	Low	Med	High
<b>College Park to New Carrollton</b>									
Kenilworth Avenue at River Road	B	B	B	C	B	B	B	B	B
Kenilworth Avenue at Rittenhouse Street	A	B	B	B	B	B	B	B	B
Kenilworth Avenue at East West Highway	F	F	F	F	F	F	F	F	F
East West Highway at 62 <sup>nd</sup> Place	B	C	C	D	C	D	C	C	D
East West Highway at 64 <sup>th</sup> Avenue	A	A	A	A	A	A	A	A	A
East West Highway at Baltimore Washington Parkway Southbound Ramps	C	C	C	C	E	D	E	E	D
East West Highway at Baltimore Washington Parkway Northbound Ramps	B	B	B	B	D	B	D	D	B
East West Highway at 67 <sup>th</sup> Avenue	A	B	B	C	B	B	B	B	B
East West Highway at Riverdale Road	D	F	F	F	F	F	F	F	F
Annapolis Road at Veterans Parkway	E	F	F	F	F	F	F	F	F
Annapolis Road at Harkins Road	B	B	B	B	B	B	B	B	B
Harkins Road at W. Lanham Road	A	A	A	B	A	A	B	A	A
Veterans Parkway at Ellin Road	C	B	B	B	C	C	B	C	C



## **Existing Conditions**

Of the 64 intersections analyzed, nine currently operate at or near capacity (LOS E or F) in the AM peak hour, and nine currently operate at or near capacity in the PM peak hour. The specific intersections and their overall level of service are described below.

- Between Bethesda and Silver Spring
  - Jones Bridge Road at Wisconsin Avenue (LOS E, PM)
  - Jones Bridge Road at Connecticut Avenue (LOS F, AM and PM)
  - Jones Bridge Road at Jones Mill Road (LOS E, AM and LOS F, PM)
- Silver Spring to College Park
  - University Boulevard at Piney Branch Road (LOS E, AM and LOS F, PM)
  - University Boulevard at Carroll Avenue (LOS E, AM)
  - University Boulevard at New Hampshire Avenue (LOS E, AM and LOS F, PM)
  - University Boulevard at Riggs Road (LOS E, AM and LOS F, PM)
  - Adelphi Road at Campus Drive (LOS E, AM and LOS F, PM)
- College Park to New Carrollton
  - Kenilworth Avenue at East West Highway (LOS E, AM and LOS F, PM)
  - Annapolis Road at Veterans Parkway (LOS F, AM and LOS E, PM)

The remaining study intersections currently operate at LOS D or better during the AM and PM peak hours. LOS D is generally considered acceptable operations for intersections, though in congested urban areas, LOS E is sometimes considered acceptable.

## **Future Year 2030 Conditions**

### No Build Alternative

The increase in volumes (25 percent greater than existing traffic) projected under the No Build Alternative would result in increased congestion throughout the study corridor; this trend is most obvious at the intersections currently operating at or near capacity and are projected to experience a substantial increase in queuing and delay in 2030.

The analysis of the No Build Alternative indicates that the level of service in the AM peak hour would degrade to LOS F from LOS E under existing conditions at four intersections:

- Jones Bridge Road at Jones Mill Road
- University Boulevard at Piney Branch Road
- University Boulevard at New Hampshire Avenue
- Kenilworth Avenue at East West Highway



One additional intersection would undergo degradation in its level of service from LOS D to LOS E in the AM peak. In the PM peak hour, under the No Build Alternative, two intersections would experience a decrease in their level of service from LOS E under existing conditions to LOS F:

- Jones Bridge Road at Wisconsin Avenue
- Annapolis Road at Veterans Parkway

TSM Alternative

Under the TSM Alternative, which would not add queue jump lanes at any of the Purple Line intersections and would only provide transit signal priority treatments to increase travel time reliability and slightly reduce transit travel times, no intersections are expected to experience a decrease in the overall intersection level of service. Isolated minor street approaches may experience minor increases in delay due to the provision of signal priority; however, this increase in delay would typically be balanced by decreases in delay for the major street movements.

Build Alternatives

Table 4-8 summarizes the number of intersections projected to undergo a substantial decrease in overall level of service, compared to the No Build/TSM Alternatives, during both the AM and PM peak hours.

**Table 4-8: Summary of LOS Impacts to Signalized Intersections**

Alternative	AM Peak # of Adverse LOS Impacts	PM Peak # of Adverse LOS Impacts
Low Investment BRT	3	3
Medium Investment BRT	1	3
High Investment BRT	2	2
Low Investment LRT	2	4
Medium Investment LRT	1	3
High Investment LRT	2	2

The six Build Alternatives each result in similar numbers of substantial impacts to the overall level of service at the signalized intersections along the corridor. Additional detail regarding the impacts of each alternative is summarized below.

*Low Investment BRT Alternative.* Under the Low Investment BRT, three intersections are projected to experience a substantial traffic impact during the AM peak hour. In two cases, the overall intersection level of service would degrade from LOS E to LOS F:

- Jones Bridge Road at Wisconsin Avenue
- Adelphi Road at Campus Drive

In the third case, the overall intersection level-of-service would degrade from LOS D to LOS E.

During the PM peak hour, three intersections are projected to experience a substantial traffic impact. In one case, the overall intersection level of service would decrease from LOS E to LOS F:

- Jones Bridge Road at Jones Mill Road

In the remaining two cases, an intersection projected to operate at LOS F under the No Build and TSM Alternatives would experience a substantial increase in overall delay and queuing under the Low Investment BRT Alternative. This result is due to the provision of a new exclusive signal phase to serve the bus rapid transit movements at those two intersections:

- Jones Bridge Road at Wisconsin Avenue
- Kenilworth Avenue at East West Highway

*Medium Investment BRT Alternative.* Under the Medium Investment BRT, one intersection is projected to experience a substantial impact to its overall level of service (substantial increase in delay for LOS F operations) during the AM peak hour:

- Kenilworth Avenue at East West Highway

During the PM peak hour, three intersections are projected to experience a substantial impact to their overall level of service. In one case, an intersection that would operate at LOS F under the No Build and TSM alternatives is projected to experience a substantial increase in delay under the Medium Investment BRT Alternative:

- Kenilworth Avenue at East West Highway

The other two intersections are projected to operate at LOS C and LOS B, respectively, under the No Build and TSM Alternatives. These intersections are projected to operate at LOS E and LOS D under the Medium Investment BRT Alternative; these operations are still acceptable, but there would be noticeable increases in delay and queuing experienced by motorists.

*High Investment BRT Alternative.* Under the High Investment BRT, two intersections, both located along Wayne Avenue, are projected to experience a substantial impact to their level of service due to the conversion of Wayne Avenue from two-lanes in each direction to one-lane in each direction during the AM and PM peak hours:

- Wayne Avenue at Dale Drive
- Wayne Avenue at Sligo Creek Parkway

*Low Investment LRT Alternative.* Under the Low Investment LRT, two intersections are projected to experience a substantial impact to their overall level of service during the AM peak hour. In both cases, the intersection is projected to operate at LOS F under the No Build and TSM Alternatives and is projected to experience a substantial increase in average delay:



- Kenilworth Avenue at East West Highway
- Annapolis Road at Veterans Parkway

During the PM peak hour, four intersections are projected to experience a substantial impact to their overall level of service. In two cases, the intersection is projected to operate at LOS F under the No Build and TSM Alternatives and is projected to experience a substantial increase in average delay:

- Kenilworth Avenue at East West Highway
- Annapolis Road at Veterans Parkway

The other two intersections are projected to operate at LOS C and LOS B, respectively, under the No Build and TSM Alternatives. These intersections are projected to operate at LOS E and LOS D under the Low LRT Alternative; these operations are still acceptable, but there would noticeable increases in delay and queuing experienced by motorists.

*Medium Investment LRT Alternative.* Under the Medium Investment LRT Alternative, one intersection is projected to experience a substantial impact to its overall level of service during the AM peak hour. This intersection is projected to operate at LOS F under the No Build and TSM Alternatives, and is projected to experience a substantial increase in the average delay per vehicle:

- Kenilworth Avenue at East West Highway

During the PM peak hour, three intersections are projected to experience a substantial impact to their overall level of service. In one case, the intersection is projected to operate at LOS F under the No Build and TSM Alternatives, and is projected to experience a substantial increase in average delay:

- Kenilworth Avenue at East West Highway

The other two intersections are projected to operate at LOS C and LOS B, respectively, under the No Build and TSM Alternatives. These intersections are projected to operate at LOS E and LOS D under the Medium LRT Alternative; these operations are still acceptable, but there would noticeable increases in delay and queuing experienced by motorists.

*High Investment LRT Alternative.* Under the High Investment LRT Alternative, two intersections along Wayne Avenue are projected to experience a substantial impact to their overall level of service due to the conversion of Wayne Avenue from two-lanes in each direction to one-lane in each direction during the AM and PM peak hours:

- Wayne Avenue at Dale Drive
- Wayne Avenue at Sligo Creek Parkway

## **Mitigation of Adverse Traffic Impacts**

The six Build Alternatives would result in adverse impacts to traffic at up to four of the 64 key intersections during the peak hours of operation, or around 6 percent of study intersections. Upon selection of a locally preferred alternative and approval to commence Preliminary Engineering, potential mitigation strategies will be developed at those intersections where operations are projected to suffer an adverse impact.

### **4.3. Evaluation of Potential Traffic Diversions to Alternate Routes**

One area of particular concern to communities affected by transportation projects, particularly within residential areas, is the potential for travel patterns to change and traffic to shift from arterial and collector streets to smaller local streets. To address this concern, MTA conducted a qualitative evaluation of the potential for substantial traffic diversions to alternate routes due to the implementation of the Purple Line along the existing street network.

The previous sections have demonstrated that the Build Alternatives would result in a limited number of negative impacts to the capacity of signalized intersections located along the 16-mile study corridor. Mitigation strategies will be developed to address these impacts to intersection capacity. Considering that these capacity analyses were based on the assumption that auto traffic would not decrease during the peak periods under the Build Alternatives (though additional analyses have shown that the number of auto trips would be reduced in the corridor), it is reasonable to assume that the impacts to the traffic-carrying capacity of the roadways would be minor. Since the existing roadway capacity is maintained and the additional delays due to the Purple Line transit vehicles are expected to be quite minor, it does not appear likely that substantial volumes of traffic would divert to alternate routes due to the Purple Line.

Wayne Avenue: Along the Wayne Avenue corridor, residents requested a more detailed evaluation of the potential for traffic diversions from Wayne Avenue to the adjoining residential street network. These residents noted that traffic on the residential streets has been increasing rapidly in recent years due to congestion in the Silver Spring area. This indicates that there is an existing issue with traffic diversions in this area; a problem which may continue to worsen with or without the Purple Line. Nonetheless, MTA did further evaluate existing traffic patterns in this area and the potential for future traffic diversions due to the Purple Line. This evaluation resulted in the following conclusions:

#### ***4.3.1. Existing Traffic Patterns***

Between Cedar Street and Flower Avenue, Wayne Avenue is primarily a residential area; the local street network serves these residences, providing access to Wayne Avenue and the downtown Silver Spring area. One important feature of the local and collector road system surrounding Wayne Avenue is that it is separated by Sligo Creek Park. The only crossings of Sligo Creek Park are along Wayne Avenue itself and along two major parallel routes: MD 320 (Piney Branch Road) and US 29 (Colesville Road). This is a key factor that must be considered when evaluating the potential for traffic to divert from Wayne Avenue.



For any “through” traffic (based on field observations, this type of traffic appears to make up a majority of the peak period traffic along Wayne Avenue), which crosses Sligo Creek Park or uses Sligo Creek Parkway, there does not appear to be a viable local street alternative to bypass any potential congestion at the signalized intersections along Wayne Avenue. This through traffic would need to use Colesville Road or Piney Branch (two state roads) to cross the park and bypass congestion on Wayne Avenue.

Additionally, there are a number of existing features of the roadway network west of Sligo Creek Park, which would deter more localized diversions. In the western section, the most prominent feature is the prevalence of one-way streets. One-way streets in this area include segments of Cloverfield Road, Pershing Drive, Greenbrier Drive, Dartmouth Avenue, Cedar Street, and Ellsworth Drive. These one-way streets act to lengthen any potential routes that motorists could use to avoid congestion along Wayne Avenue; making such routes less attractive alternatives.

In early 2008, the MTA collected data during a weeklong period on six local streets near Wayne Avenue. These streets were selected based on community input. The intent of these counts was to determine the existing levels of traffic using these local streets and to determine if any trends were apparent. These counts indicated an existing pattern of traffic using Dale Drive, Bonifant Street, and Grove Street, potentially to bypass congestion in downtown Silver Spring along Colesville Road, Georgia Avenue, and Fenton Street. Volumes along Bonifant Street and Grove Street were approximately 1,700 vehicles per day.

#### ***4.3.2. Potential Impacts of the Purple Line***

Three of the Purple Line Build Alternatives were identified as potentially resulting in an increase in congestion along Wayne Avenue compared to the No Build condition: the Low Investment BRT, High Investment BRT, and High Investment LRT. This increase in congestion could be likely be at least partially mitigated by additional intersection improvements at the intersections at Dale Drive and Sligo Creek Parkway. However, given the nature of the traffic utilizing this corridor and the features of the surrounding local street network, the volume of traffic likely to use the local road network to bypass Wayne Avenue appears to be relatively small. If diverting traffic were identified as a problem on a route as the planning process continues or after the construction of one of these alternatives, additional mitigation measures could then be developed to help reduce those diversions.

The remaining three Build Alternatives, the Medium Investment BRT, Low Investment LRT, and Medium Investment LRT, are actually projected to improve the overall intersection operations at two key intersections (Dale Drive and Sligo Creek Parkway) along Wayne Avenue relative to the No Build and should therefore reduce the potential for any traffic diversions from Wayne Avenue to the local street network. Again, if diverting traffic were identified as a problem after the construction of an alternative, additional mitigation measures could then be developed to reduce those diversions.



## **On-Street Parking Impacts**

The TSM Alternative would not require the removal of on-street parking. However, several of the Build Alternatives would require peak-hour restrictions of on-street parking along certain roadway segments. Several of the Build Alternatives would also require the complete removal of on-street parking along several short roadway segments.

### Low Investment BRT

The Low Investment BRT would require the restriction during the AM and PM peak periods of all on-street parking in both directions along Woodmont Avenue, between Old Georgetown Road and Wisconsin Avenue. There are currently peak-hour parking restrictions along this segment, but those restrictions would need to be expanded to accommodate the Low Investment BRT Alternative.

A short section of on-street parking would also need to be restricted during peak travel periods along Jones Bridge Road near the intersection of Jones Mill Road. This segment would serve as a queue bypass lane for eastbound buses.

On-street parking would need to be restricted during peak travel periods on Wayne Avenue, between Cedar Street and Mansfield Road, to accommodate the Low Investment BRT. There are currently peak-hour parking restrictions along this segment, but those restrictions would need to be expanded to accommodate the Low Investment BRT.

### Medium Investment BRT

On-street parking along the north curb line of Bonifant Street would need to be removed to accommodate the Medium Investment BRT. Parking along the south curb could remain under the Medium BRT Alternative if Bonifant Street is converted to one-way usage.

On-street parking would need to be restricted during peak travel periods on Wayne Avenue, between Cedar Street and Mansfield Road to accommodate the Medium Investment BRT. There are currently peak-hour parking restrictions along this segment, which may need to be modified or expanded. Additionally, on-street parking along both the north and south sides of East West Highway, between 61<sup>st</sup> Place and 64<sup>th</sup> Avenue would need to be removed to accommodate the two new dedicated transit curb lanes proposed for this segment.

### High Investment BRT

On-street parking along Wayne Avenue between Cedar Street and Mansfield Road would need to be removed to accommodate the High Investment BRT. Additionally, on-street parking along both the north and south sides of East West Highway, between 61<sup>st</sup> Place and 64<sup>th</sup> Avenue would need to be, at a minimum, restricted during peak travel periods to accommodate the two new dedicated median transit lanes.



### Low Investment LRT

On-street parking along the north curb line of Bonifant Street would need to be removed to accommodate the Low Investment LRT. Parking along the south curb would also need to be removed to maintain Bonifant Street as a two-way street.

On-street parking would need to be restricted during peak travel periods on Wayne Avenue between Cedar Street and Mansfield Road to accommodate the Low Investment LRT. There are currently peak-hour parking restrictions along this segment, which would need to be expanded.

Additionally, on-street parking along both the north and south sides of East West Highway, between 61<sup>st</sup> Place and 64<sup>th</sup> Avenue would need to be, at a minimum, restricted during the peak travel periods to accommodate the two new dedicated median transit lanes.

### Medium Investment LRT

On-street parking along the north curb line of Bonifant Street would need to be removed to accommodate the Medium Investment LRT. Parking along the south curb could remain.

On-street parking would need to be restricted during peak travel periods on Wayne Avenue between Cedar Street and Mansfield Road to accommodate this alternative. There are currently peak-hour parking restrictions along this segment, which would need to be expanded.

Additionally, on-street parking along both the north and south sides of East West Highway, between 61<sup>st</sup> Place and 64<sup>th</sup> Avenue would need to be, at a minimum, restricted during peak travel periods to accommodate the two new dedicated median transit lanes.

### High Investment LRT

On-street parking along Wayne Avenue between Cedar Street and Mansfield Road would need to be removed to accommodate the High Investment LRT Alternative.

Additionally, on-street parking along both the north and south sides of East West Highway between 61<sup>st</sup> Place and 64<sup>th</sup> Avenue would need to be, at a minimum, restricted during peak travel periods to accommodate the two new dedicated median transit lanes.

### **Pedestrian and Bicycle Access**

Numerous pedestrian and bicycle facilities are located throughout the corridor. The Interim Capital Crescent Trail along the Georgetown Branch right-of-way, which extends from Bethesda to Silver Spring along a former railroad alignment, is a mixed-use trail on an exclusive alignment. The trail continues across Rock Creek Park, runs parallel to Brookville Road, and then turns and runs parallel to the CSX corridor. All Build Alternatives involving construction of the transitway along the Master Plan alignment (Georgetown Branch right-of-way) would include construction of the Capital Crescent Trail extension east from its current terminus in Bethesda at Woodmont Avenue. The Build Alternatives would accommodate plans for integration of the Capital Crescent Trail with the Metropolitan Branch Trail in Silver Spring and the Green Trail along Wayne Avenue in East Silver Spring.





Bicycle lanes would be added to University Boulevard as part of its reconstruction under the Medium Investment BRT, High Investment BRT, Low Investment LRT, Medium Investment LRT, and High Investment LRT Alternatives.

The Purple Line corridor passes through several areas with substantial existing pedestrian activity. Existing pedestrian volumes are in the moderate to high ranges in downtown Bethesda, downtown Silver Spring, Takoma Park/Langley Park, and the University of Maryland areas. In other areas along the corridor, pedestrian volumes are quite low. Table 4-9 summarizes the existing peak hour pedestrian volumes at selected intersections along the corridor. Both BRT and LRT systems operate safely today in comparable environments and would in the future.

**Table 4-9: Peak Hour Pedestrian Volumes**

<b>Intersection</b>	<b>AM Peak Total Pedestrian Volumes</b>	<b>PM Peak Total Pedestrian Volumes</b>
MD 187 at Woodmont Avenue	372	538
MD 384 at Wayne Avenue	401	212
Piney Branch Road at Arliss Street	45	52
MD 193 at MD 650	108	118
Paint Branch Parkway at River Road	33	25
Harkins Road at Ellin Road	26	22

The station locations for the Purple Line were selected to maximize walk and bus transfer access to the system. Therefore, an increase in pedestrian volumes would be expected due to the Purple Line. The magnitude of the changes in pedestrian volumes is a function of the specific station and projected levels of ridership at those locations; this will be evaluated more fully during the more detailed design of the stations. A qualitative analysis of pedestrian facilities along the alignment indicates that they are likely to be sufficient to accommodate an increase in pedestrian activity. There is a well-developed network of sidewalks and pedestrian walkways in the area, and pedestrian signals (including pedestrian-actuated signals) are already provided at the vast majority of signalized intersections traversed by the Purple Line. Additionally, many of the projected users of the Purple Line are existing transit users who already make up a portion of the pedestrian activity along the corridor. These existing transit users would simply be shifting from the existing bus service to the Purple Line and would not represent new pedestrians in the station areas. Therefore, the net increase in pedestrians due to the Purple Line would likely be less than the total ridership projections alone would indicate.

Additional measures to accommodate any potential increases in pedestrian volumes in and around the proposed station areas may include: the widening of existing crosswalks, the installation of pedestrian-actuated signals at those locations that lack them, the enhancement of roadside signing alerting motorists of areas of increased pedestrian activity. Additionally, it may be useful to install median fencing or other measures at the station locations to encourage pedestrians to use the marked crosswalks at the signalized intersections.



## **Deliveries**

Generally, all of the LRT Alternatives and the High Investment BRT would operate in dedicated transit lanes, to be constructed in the median, or in the case of mixed traffic operations, in the inside travel lane. In most areas, there would be at least two general purpose travel lanes in each direction; which is sufficient to provide access to properties adjacent to the roadway alignment.

In the limited instances where the alternatives would limit general purpose traffic to a single travel lane, such as Wayne Avenue between Cedar Street and Sligo Creek Parkway under the High Investment LRT and BRT Alternatives, stopping would not generally be permitted. This configuration may also make access to and from driveways more difficult, though vehicles could encroach on the trackway if necessary.

The Low and Medium BRT Alternatives would generally operate in the curb lanes, in either mixed traffic or dedicated transit lanes. These curb lanes could be used by vehicles accessing adjacent properties.

## **Emergency Vehicles**

Emergency vehicles can be affected by a transit project due to changes in traffic volumes or operations along a corridor. The Build Alternatives are generally expected to maintain, or in some cases, slightly improve the projected traffic operations compared to the No Build condition. Minor signal modifications would be required at a number of locations throughout the corridor, but these modifications would not prevent the continuing use or implementation of emergency vehicle preemption at those signals.

Both the BRT and LRT Alternatives would result in the removal of a limited number of existing buses, which operate on routes that provide unneeded duplicate transit service. Additionally, the BRT and LRT Alternatives would typically operate in dedicated transit lanes; the net effect would be to reduce the number of transit vehicles operating in the general purpose lanes. Overall, these Build Alternatives are not projected to affect emergency vehicles operating in this corridor.

For the Purple Line, there is one major medical facility located adjacent to the proposed alternatives. The National Naval Medical Center is located along Jones Bridge Road, adjacent to the Low BRT Alternative. However, the National Naval Medical Center is a United States Naval facility, intended for treatment of servicemen and women; this facility is not an emergency treatment center for area residents. Regardless, access to this facility would not be affected by the presence for BRT vehicles along Jones Bridge Road.

There is one fire station located adjacent to Annapolis Road and the Low Investment LRT and Low Investment BRT in the New Carrollton area. This fire station currently uses a dedicated traffic signal to access Annapolis Road. Neither alternative is expected to substantially impact the operations of this station; the LRT would operate in a dedicated right-of-way, along the south side of MD 450 in this area. However, due to the length of the LRT vehicles (up to 180 feet), there would be increased potential that the exit from the fire station could be blocked by a



stopped light rail vehicle. This scenario is unlikely due to the provision of a dedicated transit right-of-way, but could be caused by another vehicle encroaching on the tracks. The remaining Build Alternatives do not use Annapolis Road and would not impact the access at this fire station.

There are fire stations on some of the roads crossed by the Purple Line, including Connecticut Avenue, Georgia Avenue, Riggs Road, and US 1; but the Purple Line would not impede access from these stations as it would not be operating on the roads in front of the stations. Where the Purple Line is in dedicated lanes emergency vehicles would benefit by the opportunity to travel in these lanes.

#### ***4.3.3. Construction Impacts***

The Build Alternatives would be constructed in a manner that would minimize potential negative impacts to traffic, businesses, and neighborhoods. Potential traffic impacts of construction could include the narrowing of travel lanes, temporary lane closures (which should be limited to off-peak or nighttime periods when traffic volumes are low), speed reductions, or short-term detours. Some existing bus routes may experience minor delays or be re-routed for short durations; however, no major transit service disruptions are expected. Prior to construction, a Traffic Management Plan would be developed in coordination with SHA and both counties to minimize potential traffic impacts.

Public outreach would be conducted to inform motorists about upcoming changes to traffic patterns and/or detours. Emergency services would be consulted during the development of the Traffic Management Plan, and such providers kept up to date regarding any detours or potential delays due to construction.





## 5. References

- Department of the Navy. (2008). *Final Environmental Impact Statement for Activities to Implement 2005 Base Realignment and Closure Actions at National Naval Medical Center Bethesda, Maryland.*
- Transportation Research Board. (2000). *Highway Capacity Manual.* National Research Council. Washington, D.C.





**Appendix A**  
**Traffic Counts**





Sabra, Wang & Associates Inc  
 1504 Joh Avenue  
 Suite 160  
 Baltimore, MD 21227

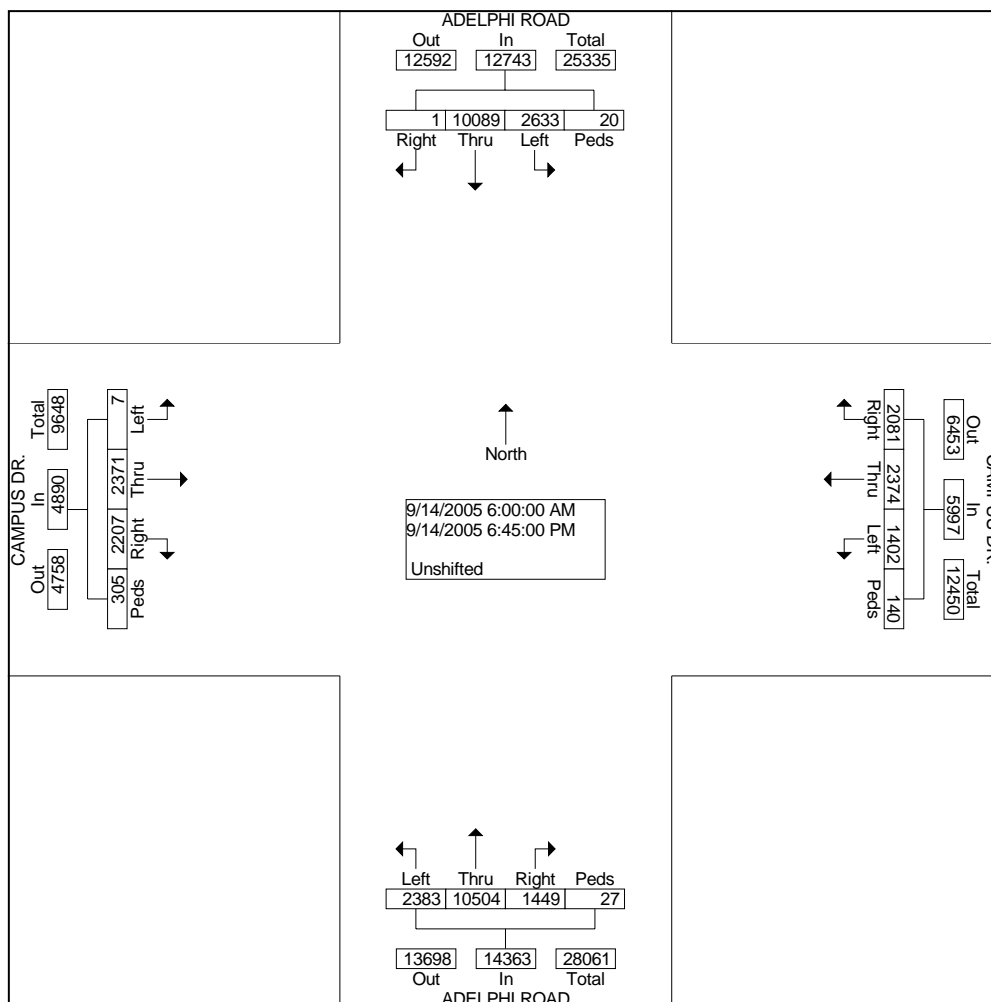
Weather: SUNNY  
 Counted By: AK, CK  
 Town: ADELPHI  
 County: P.G.

File Name : ADELPH-3  
 Site Code : 00000000  
 Start Date : 09/14/2005  
 Page No : 1

Groups Printed- Unshifted

Start Time	ADELPHI ROAD From North					CAMPUS DR. From East					ADELPHI ROAD From South					CAMPUS DR. From West					Int. Total
	Left	Thru	Rght	Peds	App. Total	Left	Thru	Rght	Peds	App. Total	Left	Thru	Rght	Peds	App. Total	Left	Thru	Rght	Peds	App. Total	
Factor	1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		
06:00 AM	8	103	0	0	111	5	4	14	0	23	30	103	6	0	139	0	13	21	0	34	307
06:15 AM	11	111	0	0	122	4	17	4	0	25	38	96	11	0	145	0	10	27	0	37	329
06:30 AM	21	169	0	0	190	4	25	10	0	39	32	110	9	0	151	0	14	48	1	63	443
06:45 AM	17	199	0	0	216	19	39	19	0	77	64	212	21	1	298	0	26	43	1	70	661
Total	57	582	0	0	639	32	85	47	0	164	164	521	47	1	733	0	63	139	2	204	1740
07:00 AM	24	250	0	0	274	6	33	26	1	66	44	161	24	0	229	5	36	45	0	86	655
07:15 AM	37	291	0	0	328	16	43	14	1	74	40	185	27	0	252	0	39	40	1	80	734
07:30 AM	40	296	0	0	336	18	46	18	0	82	46	196	29	0	271	0	42	45	0	87	776
07:45 AM	43	303	0	0	346	24	51	17	0	92	51	207	24	1	283	0	50	50	0	100	821
Total	144	1140	0	0	1284	64	173	75	2	314	181	749	104	1	1035	5	167	180	1	353	2986
08:00 AM	51	306	0	0	357	45	70	20	2	137	60	194	27	2	283	0	51	55	5	111	888
08:15 AM	87	265	0	0	352	34	56	24	1	115	42	244	44	0	330	0	45	48	15	108	905
08:30 AM	88	271	0	0	359	37	48	29	0	114	48	256	50	0	354	0	54	51	7	112	939
08:45 AM	148	183	0	0	331	30	50	34	0	114	52	177	27	0	256	0	91	43	22	156	857
Total	374	1025	0	0	1399	146	224	107	3	480	202	871	148	2	1223	0	241	197	49	487	3589
09:00 AM	134	180	0	0	314	34	56	38	0	128	57	184	29	0	270	0	85	38	0	123	835
09:15 AM	106	183	0	1	290	27	44	31	1	103	59	179	23	2	263	0	66	35	17	118	774
09:30 AM	91	176	0	2	269	25	40	24	0	89	54	163	20	0	237	0	60	36	13	109	704
09:45 AM	82	171	0	0	253	15	26	21	0	62	51	155	17	0	223	0	55	27	0	82	620
Total	413	710	0	3	1126	101	166	114	1	382	221	681	89	2	993	0	266	136	30	432	2933
10:00 AM	59	145	0	0	204	18	30	25	0	73	43	142	19	1	205	0	46	23	11	80	562
10:15 AM	58	152	0	0	210	21	37	19	0	77	47	149	19	0	215	0	47	21	0	68	570
10:30 AM	44	137	0	0	181	17	46	18	0	81	50	131	23	1	205	0	37	19	8	64	531
10:45 AM	37	145	0	0	182	20	39	15	0	74	41	144	21	0	206	0	33	25	11	69	531
Total	198	579	0	0	777	76	152	77	0	305	181	566	82	2	831	0	163	88	30	281	2194
11:00 AM	35	135	0	0	170	18	25	19	0	62	39	151	25	0	215	0	40	23	7	70	517
11:15 AM	39	146	0	0	185	15	28	24	0	67	42	165	22	0	229	0	48	25	5	78	559
11:30 AM	41	154	0	0	195	18	34	28	1	81	54	178	21	0	253	1	52	28	3	84	613
11:45 AM	45	163	0	0	208	23	52	25	0	100	48	197	25	3	273	0	59	30	13	102	683
Total	160	598	0	0	758	74	139	96	1	310	183	691	93	3	970	1	199	106	28	334	2372
12:00 PM	53	199	0	0	252	23	59	28	0	110	60	189	24	1	274	0	66	39	8	113	749
12:15 PM	59	213	0	0	272	31	62	36	0	129	69	201	26	0	296	0	75	43	0	118	815
12:30 PM	64	209	0	0	273	20	55	24	0	99	53	183	23	0	259	0	82	48	7	137	768
12:45 PM	56	214	0	4	274	27	45	27	4	103	44	173	29	0	246	0	72	51	13	136	759
Total	232	835	0	4	1071	101	221	115	4	441	226	746	102	1	1075	0	295	181	28	504	3091
01:00 PM	38	168	0	0	206	29	62	31	0	122	35	173	32	0	240	0	50	34	10	94	662
01:15 PM	26	163	0	0	189	22	48	26	0	96	43	158	19	0	220	0	51	30	9	90	595
01:30 PM	25	154	0	0	179	25	40	25	0	90	39	136	15	0	190	0	46	34	7	87	546
01:45 PM	21	146	0	0	167	19	43	21	6	89	31	146	20	0	197	0	44	32	12	88	541
Total	110	631	0	0	741	95	193	103	6	397	148	613	86	0	847	0	191	130	38	359	2344
02:00 PM	27	138	1	0	166	17	38	23	0	78	29	134	17	0	180	0	40	36	11	87	511
02:15 PM	20	130	0	0	150	20	31	20	0	71	25	140	22	0	187	0	36	33	13	82	490
02:30 PM	22	144	0	2	168	23	47	13	3	86	31	136	19	0	186	0	31	35	9	75	515
02:45 PM	25	152	0	0	177	22	49	29	0	100	33	149	15	0	197	0	34	34	7	75	549
Total	94	564	1	2	661	82	165	85	3	335	118	559	73	0	750	0	141	138	40	319	2065
03:00 PM	28	163	0	0	191	20	45	42	0	107	35	165	17	0	217	0	36	41	5	82	597
03:15 PM	32	185	0	0	217	24	43	53	0	120	34	176	21	0	231	0	34	43	3	80	648
03:30 PM	34	206	0	0	240	23	40	60	5	128	38	195	15	1	249	0	39	46	2	87	704
03:45 PM	57	171	0	0	228	33	47	74	8	162	48	199	26	0	273	0	33	64	3	100	763
Total	151	725	0	0	876	100	175	229	13	517	155	735	79	1	970	0	142	194	13	349	2712

04:00 PM	54	174	0	0	228	29	50	69	7	155	46	192	27	2	267	0	43	56	4	103	753
04:15 PM	69	189	0	0	258	40	47	81	5	173	43	248	25	0	316	1	43	71	4	119	866
04:30 PM	87	197	0	0	284	44	48	75	5	172	49	262	28	0	339	0	50	78	10	138	933
04:45 PM	58	188	0	2	248	20	64	90	14	188	54	321	54	2	431	0	28	68	0	96	963
Total	268	748	0	2	1018	133	209	315	31	688	192	1023	134	4	1353	1	164	273	18	456	3515
05:00 PM	61	180	0	4	245	26	69	76	6	177	49	349	64	1	463	0	32	65	5	102	987
05:15 PM	46	332	0	0	378	54	60	91	26	231	44	330	42	0	416	0	58	67	0	125	1150
05:30 PM	44	246	0	0	290	49	68	84	11	212	41	358	40	0	439	0	53	63	4	120	1061
05:45 PM	70	278	0	2	350	52	63	103	13	231	66	376	54	0	496	0	44	49	2	95	1172
Total	221	1036	0	6	1263	181	260	354	56	851	200	1413	200	1	1814	0	187	244	11	442	4370
06:00 PM	65	257	0	0	322	57	59	91	8	215	53	352	58	2	465	0	42	50	5	97	1099
06:15 PM	58	240	0	2	300	59	54	99	0	212	55	362	53	4	474	0	40	52	5	97	1083
06:30 PM	47	221	0	0	268	51	51	90	8	200	52	336	50	3	441	0	39	53	4	96	1005
06:45 PM	41	198	0	1	240	50	48	84	4	186	52	286	51	0	389	0	31	46	3	80	895
Total	211	916	0	3	1130	217	212	364	20	813	212	1336	212	9	1769	0	152	201	17	370	4082
Grand Total	263	1003	1	20	1274	140	237	208	140	5997	238	10504	144	27	1436	7	237	220	305	4890	37993
Apprch %	20.7	79.2	0.0	0.2		23.4	39.6	34.7	2.3		16.6	73.1	10.1	0.2		0.1	48.5	45.1	6.2		
Total %	6.9	26.6	0.0	0.1	33.5	3.7	6.2	5.5	0.4	15.8	6.3	27.6	3.8	0.1	37.8	0.0	6.2	5.8	0.8	12.9	



Sabra, Wang & Associates, Inc.  
 1504 Joh Avenue, Suite 160  
 Baltimore, Maryland 21227  
 TEL. (410) 737-6564

Weather: SUNNY  
 Counted By: AK, CK  
 Town: SILVER SPRING  
 County: MONTGOMERY

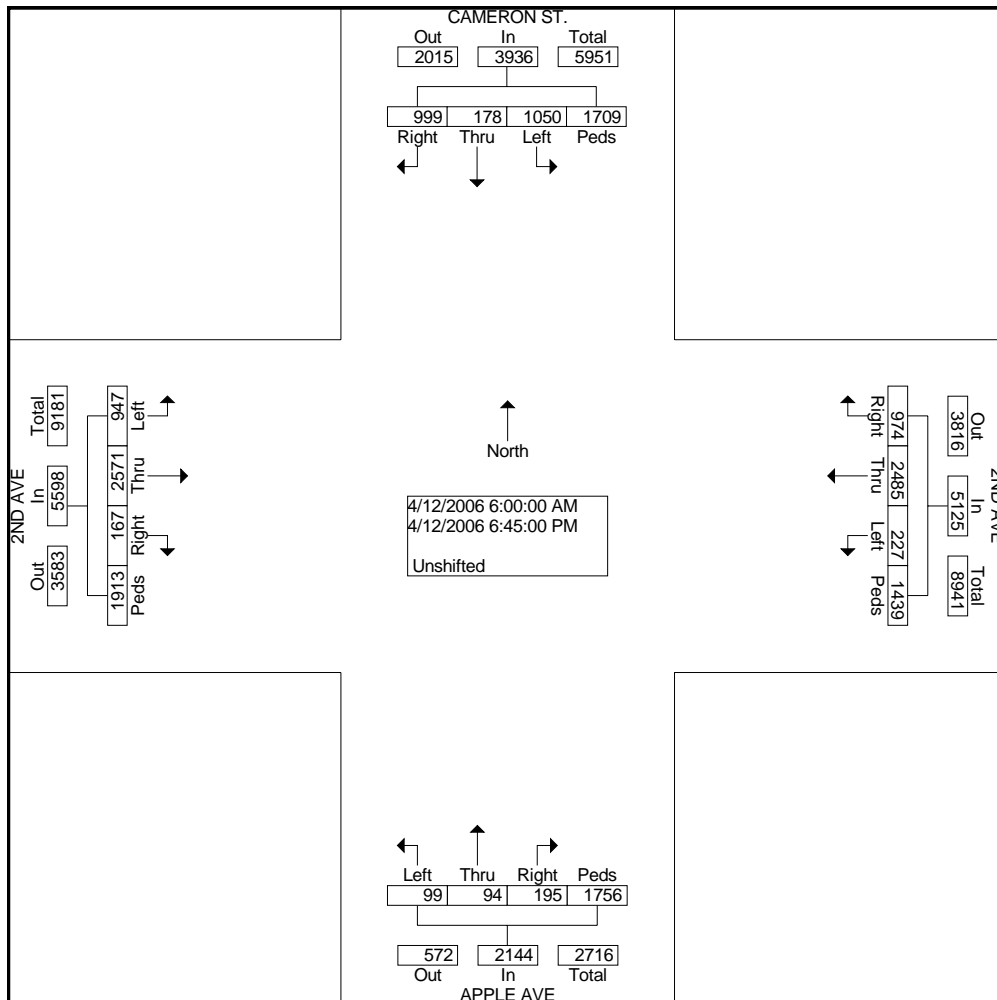
File Name : 2NDAVE~1  
 Site Code : 00000000  
 Start Date : 4/12/2006  
 Page No : 1

Groups Printed- Unshifted

Start Time	CAMERON ST. From North					2ND AVE From East					APPLE AVE From South					2ND AVE From West					Int. Total
	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	
Factor	1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		
06:00 AM	1	0	1	4	6	0	10	3	0	13	0	0	0	2	2	0	11	1	0	12	33
06:15 AM	8	0	2	4	14	2	15	9	9	35	0	1	5	2	8	2	12	0	10	24	81
06:30 AM	8	5	6	9	28	0	14	6	3	23	0	0	1	2	3	5	19	1	13	38	92
06:45 AM	7	0	4	15	26	4	23	7	2	36	0	2	10	3	15	6	14	6	13	39	116
Total	24	5	13	32	74	6	62	25	14	107	0	3	16	9	28	13	56	8	36	113	322
07:00 AM	9	1	6	16	32	5	26	8	7	46	1	1	8	3	13	8	20	4	14	46	137
07:15 AM	10	0	6	17	33	5	25	10	6	46	3	0	11	8	22	10	27	7	14	58	159
07:30 AM	11	2	5	11	29	4	25	16	6	51	5	0	9	7	21	9	36	5	13	63	164
07:45 AM	20	2	8	64	94	1	21	21	7	50	1	3	2	13	19	13	42	3	83	141	304
Total	50	5	25	108	188	15	97	55	26	193	10	4	30	31	75	40	125	19	124	308	764
08:00 AM	22	1	9	75	107	2	26	20	13	61	1	1	3	10	15	15	46	2	89	152	335
08:15 AM	23	4	13	98	138	6	38	33	12	89	2	6	8	12	28	13	55	2	99	169	424
08:30 AM	21	2	11	88	122	4	34	24	11	73	1	2	2	8	13	16	51	2	93	162	370
08:45 AM	17	0	18	77	112	1	34	24	17	76	0	1	3	17	21	18	43	1	64	126	335
Total	83	7	51	338	479	13	132	101	53	299	4	10	16	47	77	62	195	7	345	609	1464
09:00 AM	29	6	20	40	95	2	24	18	11	55	1	3	4	21	29	9	70	2	27	108	287
09:15 AM	15	2	35	45	97	4	43	11	24	82	4	2	6	34	46	26	62	2	26	116	341
09:30 AM	18	3	26	37	84	3	39	14	23	79	1	2	4	29	36	19	64	3	42	128	327
09:45 AM	20	4	22	32	78	2	37	11	18	68	2	1	7	26	36	22	55	4	40	121	303
Total	82	15	103	154	354	11	143	54	76	284	8	8	21	110	147	76	251	11	135	473	1258
10:00 AM	18	4	18	22	62	3	38	17	14	72	1	3	3	17	24	18	51	2	28	99	257
10:15 AM	22	2	21	28	73	5	42	17	13	77	3	4	4	13	24	13	58	1	26	98	272
10:30 AM	19	3	29	30	81	4	45	20	10	79	1	1	4	19	25	20	53	1	26	100	285
10:45 AM	16	4	22	23	65	3	43	18	11	75	1	4	3	28	36	17	50	2	22	91	267
Total	75	13	90	103	281	15	168	72	48	303	6	12	14	77	109	68	212	6	102	388	1081
11:00 AM	18	3	23	23	67	2	41	20	10	73	1	3	4	34	42	18	55	2	21	96	278
11:15 AM	21	4	25	25	75	4	40	22	12	78	3	2	5	36	46	20	52	1	26	99	298
11:30 AM	23	5	25	26	79	4	40	24	18	86	2	3	4	38	47	22	59	2	45	128	340
11:45 AM	27	6	19	26	78	2	54	30	28	114	3	1	7	57	68	26	58	1	48	133	393
Total	89	18	92	100	299	12	175	96	68	351	9	9	20	165	203	86	224	6	140	456	1309
12:00 PM	33	3	21	28	85	5	61	26	42	134	2	4	6	58	70	29	72	3	80	184	473
12:15 PM	31	3	30	33	97	5	56	24	32	117	3	3	3	67	76	25	76	5	78	184	474
12:30 PM	28	5	25	51	109	1	59	29	33	122	2	0	5	57	64	28	68	4	66	166	461
12:45 PM	30	7	27	45	109	4	58	26	38	126	2	3	2	63	70	31	55	1	73	160	465
Total	122	18	103	157	400	15	234	105	145	499	9	10	16	245	280	113	271	13	297	694	1873
01:00 PM	23	2	22	62	109	9	67	21	36	133	1	2	3	44	50	24	52	3	57	136	428
01:15 PM	27	3	19	66	115	4	54	18	45	121	2	0	4	29	35	20	53	4	49	126	397
01:30 PM	22	2	17	52	93	2	49	20	41	112	3	1	3	21	28	23	47	2	53	125	358
01:45 PM	20	4	27	39	90	4	51	17	27	99	3	0	3	30	36	23	51	4	40	118	343
Total	92	11	85	219	407	19	221	76	149	465	9	3	13	124	149	90	203	13	199	505	1526
02:00 PM	23	1	20	30	74	5	53	16	20	94	1	2	1	22	26	20	50	3	36	109	303
02:15 PM	15	3	23	23	64	3	57	22	25	107	3	2	5	25	35	16	51	1	31	99	305
02:30 PM	18	1	23	23	65	3	58	20	24	105	0	1	2	26	29	14	50	1	25	90	289
02:45 PM	19	2	25	24	70	4	52	22	28	106	1	2	4	24	31	18	48	2	28	96	303
Total	75	7	91	100	273	15	220	80	97	412	5	7	12	97	121	68	199	7	120	394	1200
03:00 PM	21	3	26	29	79	5	54	18	29	106	1	1	2	28	32	15	47	3	26	91	308
03:15 PM	22	4	27	30	83	7	56	19	34	116	2	1	1	34	38	16	45	4	24	89	326
03:30 PM	23	5	26	30	84	5	59	17	39	120	2	2	2	44	50	19	46	2	29	96	350
03:45 PM	27	3	18	25	73	5	61	16	42	124	3	2	1	48	54	23	49	4	24	100	351
Total	93	15	97	114	319	22	230	70	144	466	8	6	6	154	174	73	187	13	103	376	1335

Groups Printed- Unshifted

Start Time	CAMERON ST. From North					2ND AVE From East					APPLE AVE From South					2ND AVE From West					Int. Total
	Left	Thru	Rig ht	Ped s	App. Total	Left	Thru	Rig ht	Ped s	App. Total	Left	Thru	Rig ht	Ped s	App. Total	Left	Thru	Rig ht	Ped s	App. Total	
Factor	1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		
04:00 PM	23	5	23	31	82	4	59	21	38	122	1	3	0	55	59	28	49	4	26	107	370
04:15 PM	27	4	22	29	82	4	66	18	41	129	0	1	2	56	59	22	64	6	29	121	391
04:30 PM	21	5	18	28	72	6	68	19	54	147	1	1	2	48	52	22	53	4	27	106	377
04:45 PM	24	3	17	22	66	8	69	26	48	151	0	2	2	54	58	28	61	6	24	119	394
Total	95	17	80	110	302	22	262	84	181	549	2	7	6	213	228	100	227	20	106	453	1532
05:00 PM	27	6	23	29	85	10	69	20	51	150	10	5	2	58	75	22	64	3	27	116	426
05:15 PM	16	8	25	21	70	7	72	18	57	154	3	1	3	71	78	27	58	5	24	114	416
05:30 PM	22	5	23	20	70	8	69	17	67	161	2	1	4	79	86	22	53	7	35	117	434
05:45 PM	26	6	15	26	73	6	73	20	60	159	4	1	3	71	79	20	57	4	33	114	425
Total	91	25	86	96	298	31	283	75	235	624	19	8	12	279	318	91	232	19	119	461	1701
06:00 PM	22	5	19	21	67	8	67	24	55	154	1	2	3	62	68	14	58	5	21	98	387
06:15 PM	21	7	26	17	71	10	71	26	52	159	5	1	3	47	56	22	51	6	30	109	395
06:30 PM	19	4	18	20	61	9	64	17	51	141	1	2	2	55	60	17	42	6	25	90	352
06:45 PM	17	6	20	20	63	4	56	14	45	119	3	2	5	41	51	14	38	8	11	71	304
Total	79	22	83	78	262	31	258	81	203	573	10	7	13	205	235	67	189	25	87	368	1438
Grand Total	1050	178	999	1709	3936	227	2485	974	1439	5125	99	94	195	1756	2144	947	2571	167	1913	5598	16803
Apprch %	26.7	4.5	25.4	43.4		4.4	48.5	19.0	28.1		4.6	4.4	9.1	81.9		16.9	45.9	3.0	34.2		
Total %	6.2	1.1	5.9	10.2	23.4	1.4	14.8	5.8	8.6	30.5	0.6	0.6	1.2	10.5	12.8	5.6	15.3	1.0	11.4	33.3	



Groups Printed- Unshifted

Start Time	Presidential Drive From North				Campus Drive From East				- From South				Campus Drive From West				Int. Total
	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	
Factor	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
06:00 AM	1	0	0	0	0	23	0	0	0	0	0	0	0	9	0	0	33
06:15 AM	0	0	0	3	0	20	0	0	0	0	0	0	0	31	0	3	57
06:30 AM	0	0	0	0	0	31	0	0	0	0	0	0	2	21	0	0	54
06:45 AM	0	0	0	1	0	56	0	1	0	0	0	0	1	42	0	0	101
Total	1	0	0	4	0	130	0	1	0	0	0	0	3	103	0	3	245
07:00 AM	0	0	1	1	0	51	0	0	0	0	0	0	3	47	0	0	103
07:15 AM	0	0	1	4	0	63	1	0	0	0	0	0	5	81	0	1	156
07:30 AM	0	0	2	2	0	90	2	0	0	0	0	0	5	80	0	1	182
07:45 AM	0	0	2	1	0	82	5	2	0	0	0	0	11	157	0	1	261
Total	0	0	6	8	0	286	8	2	0	0	0	0	24	365	0	3	702
08:00 AM	1	0	4	3	0	91	6	1	0	0	0	0	19	135	0	2	262
08:15 AM	0	0	2	3	0	76	16	1	0	0	0	0	29	114	0	1	242
08:30 AM	4	0	6	8	0	63	6	2	0	0	0	0	38	204	0	3	334
08:45 AM	0	0	2	7	0	63	6	1	0	0	0	0	27	251	0	3	360
Total	5	0	14	21	0	293	34	5	0	0	0	0	113	704	0	9	1198
09:00 AM	0	0	4	5	0	93	3	3	0	0	0	0	25	191	0	2	326
09:15 AM	0	0	3	3	0	52	1	0	0	0	0	0	14	186	0	1	260
09:30 AM	0	0	1	1	0	53	1	0	0	0	0	0	12	176	0	2	246
09:45 AM	1	0	4	2	0	65	1	1	0	0	0	0	17	200	0	2	293
Total	1	0	12	11	0	263	6	4	0	0	0	0	68	753	0	7	1125
10:00 AM	0	0	2	0	0	41	1	0	0	0	0	0	13	125	0	2	184
10:15 AM	1	0	2	3	0	45	3	2	0	0	0	0	9	108	0	1	174
10:30 AM	0	0	7	4	0	59	1	0	0	0	0	0	17	137	0	1	226
10:45 AM	1	0	4	9	0	78	2	0	0	0	0	0	17	123	0	0	234
Total	2	0	15	16	0	223	7	2	0	0	0	0	56	493	0	4	818
11:00 AM	1	0	6	16	0	88	3	0	0	0	0	0	6	51	0	11	182
11:15 AM	0	0	6	10	0	60	1	0	0	0	0	0	7	63	0	0	147
11:30 AM	1	0	2	8	0	64	0	0	0	0	0	0	6	105	0	1	187
11:45 AM	1	0	9	8	0	71	5	0	0	0	0	0	6	104	0	2	206
Total	3	0	23	42	0	283	9	0	0	0	0	0	25	323	0	14	722
12:00 PM	2	0	13	4	0	100	3	1	0	0	0	0	7	99	0	0	229
12:15 PM	1	0	4	5	0	122	0	1	0	0	0	0	5	115	0	0	253
12:30 PM	1	0	9	10	0	98	2	0	0	0	0	0	8	96	0	0	224
12:45 PM	3	0	9	8	0	92	3	1	0	0	0	0	10	119	0	0	245
Total	7	0	35	27	0	412	8	3	0	0	0	0	30	429	0	0	951
01:00 PM	2	0	13	7	0	102	2	1	0	0	0	0	3	61	0	2	193
01:15 PM	3	0	8	3	0	84	1	1	0	0	0	0	6	75	0	2	183
01:30 PM	3	0	9	4	0	57	2	1	0	0	0	0	15	84	0	1	176
01:45 PM	0	0	19	0	0	88	3	0	0	0	0	0	14	110	0	0	234
Total	8	0	49	14	0	331	8	3	0	0	0	0	38	330	0	5	786
02:00 PM	2	0	10	3	0	136	1	0	0	0	0	0	4	75	0	2	233
02:15 PM	2	0	5	6	0	123	3	2	0	0	0	0	3	53	0	2	199
02:30 PM	1	0	10	2	0	101	2	0	0	0	0	0	5	57	0	1	179
02:45 PM	1	0	14	10	0	94	2	0	0	0	0	0	6	60	0	3	190
Total	6	0	39	21	0	454	8	2	0	0	0	0	18	245	0	8	801
03:00 PM	2	0	17	6	0	164	1	1	0	0	0	0	5	78	0	5	279
03:15 PM	0	0	34	7	0	180	1	2	0	0	0	0	7	60	0	2	293
03:30 PM	0	0	15	3	0	130	1	2	0	0	0	0	8	90	0	1	250
03:45 PM	3	0	13	4	0	122	0	0	0	0	0	0	5	111	0	0	258
Total	5	0	79	20	0	596	3	5	0	0	0	0	25	339	0	8	1080

Groups Printed- Unshifted

Start Time	Presidential Drive From North				Campus Drive From East				- From South				Campus Drive From West				Int. Total
	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	
Factor	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	
04:00 PM	2	0	11	4	0	162	4	2	0	0	0	0	8	114	0	0	307
04:15 PM	2	0	19	4	0	133	1	1	0	0	0	0	8	104	0	1	273
04:30 PM	5	0	20	6	0	136	2	1	0	0	0	0	12	114	0	0	296
04:45 PM	5	0	13	3	0	157	2	0	0	0	0	0	2	125	0	1	308
Total	14	0	63	17	0	588	9	4	0	0	0	0	30	457	0	2	1184
05:00 PM	10	0	53	4	0	207	1	0	0	0	0	0	12	128	0	4	419
05:15 PM	6	0	33	10	0	163	4	1	0	0	0	0	13	117	0	3	350
05:30 PM	1	0	16	10	0	160	4	2	0	0	0	0	12	121	0	2	328
05:45 PM	4	0	12	9	0	162	3	1	0	0	0	0	15	136	0	0	342
Total	21	0	114	33	0	692	12	4	0	0	0	0	52	502	0	9	1439
06:00 PM	4	0	17	12	0	152	5	0	0	0	0	0	15	126	0	2	333
06:15 PM	4	0	15	15	0	170	3	1	0	0	0	0	17	137	0	1	363
06:30 PM	1	0	10	2	0	140	5	1	0	0	0	0	21	166	0	0	346
06:45 PM	2	0	14	7	0	153	2	0	0	0	0	0	30	175	0	0	383
Total	11	0	56	36	0	615	15	2	0	0	0	0	83	604	0	3	1425
Grand Total	84	0	505	270	0	5166	127	37	0	0	0	0	565	5647	0	75	12476
Apprch %	9.8	0.0	58.8	31.4	0.0	96.9	2.4	0.7	0.0	0.0	0.0	0.0	9.0	89.8	0.0	1.2	
Total %	0.7	0.0	4.0	2.2	0.0	41.4	1.0	0.3	0.0	0.0	0.0	0.0	4.5	45.3	0.0	0.6	

Location: Campus Dr. & Presidential Dr.  
 County: Montgomery  
 Weather: Scattered Drizzle  
 Counters: SK, AS

Sabra, Wang & Associates Inc  
 1504 Joh Avenue  
 Suite 160  
 Baltimore, MD 21227

Weather: Cloudy  
 Counted By: Casen  
 Town: College Park  
 County: Prince George

File Name : CAMPUS~1  
 Site Code : 00000000  
 Start Date : 10/12/2005  
 Page No : 1

Groups Printed- Unshifted

Start Time	CAMPUS DR From North					UNION LN From East					CAMPUS DR From South					UNION LN From West					Int. Total
	Left	Thru	Rght	Peds	App. Total	Left	Thru	Rght	Peds	App. Total	Left	Thru	Rght	Peds	App. Total	Left	Thru	Rght	Peds	App. Total	
Factor	1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		
06:00 AM	0	15	6	0	21	0	0	0	0	0	1	7	0	0	8	11	0	3	0	14	43
06:15 AM	0	14	5	0	19	0	0	0	0	0	1	9	0	0	10	13	0	2	0	15	44
06:30 AM	0	19	10	0	29	0	0	0	0	0	2	18	0	0	20	9	0	4	0	13	62
06:45 AM	0	32	13	0	45	0	0	0	0	0	3	23	0	0	26	4	0	4	0	8	79
Total	0	80	34	0	114	0	0	0	0	0	7	57	0	0	64	37	0	13	0	50	228
07:00 AM	0	29	7	0	36	0	0	0	0	0	2	9	0	0	11	5	0	6	0	11	58
07:15 AM	0	41	11	0	52	0	0	0	0	0	1	30	0	0	31	4	0	5	0	9	92
07:30 AM	0	43	13	0	56	0	0	0	0	0	4	24	0	0	28	3	0	6	0	9	93
07:45 AM	0	39	49	0	88	0	0	0	0	0	7	39	0	0	46	11	0	5	0	16	150
Total	0	152	80	0	232	0	0	0	0	0	14	102	0	0	116	23	0	22	0	45	393
08:00 AM	0	48	42	0	90	0	0	0	0	0	9	36	0	0	45	16	0	19	0	35	170
08:15 AM	0	40	45	0	85	0	0	0	0	0	8	43	0	0	51	13	0	12	0	25	161
08:30 AM	0	37	42	0	79	0	0	0	0	0	15	32	0	0	47	9	0	6	0	15	141
08:45 AM	0	28	32	0	60	0	0	0	0	0	8	53	0	0	61	19	0	10	0	29	150
Total	0	153	161	0	314	0	0	0	0	0	40	164	0	0	204	57	0	47	0	104	622
09:00 AM	0	25	40	0	65	0	0	0	0	0	6	49	0	0	55	16	0	10	0	26	146
09:15 AM	0	30	36	0	66	0	0	0	0	0	8	41	0	0	49	10	0	17	0	27	142
09:30 AM	0	30	30	0	60	0	0	0	0	0	4	46	0	0	50	23	0	8	0	31	141
09:45 AM	0	16	34	0	50	0	0	0	0	0	16	36	0	0	52	25	0	14	0	39	141
Total	0	101	140	0	241	0	0	0	0	0	34	172	0	0	206	74	0	49	0	123	570
10:00 AM	0	23	43	0	66	0	0	0	0	0	10	29	0	0	39	21	0	21	0	42	147
10:15 AM	0	20	35	0	55	0	0	0	0	0	12	30	0	0	42	19	0	17	0	36	133
10:30 AM	0	25	32	0	57	0	0	0	0	0	9	33	0	0	42	20	0	14	0	34	133
10:45 AM	0	29	30	0	59	0	0	0	0	0	6	40	0	0	46	16	0	13	0	29	134
Total	0	97	140	0	237	0	0	0	0	0	37	132	0	0	169	76	0	65	0	141	547
11:00 AM	0	18	26	0	44	0	0	0	0	0	20	41	0	0	61	32	0	16	0	48	153
11:15 AM	0	29	25	0	54	0	0	0	0	0	15	45	0	0	60	20	0	13	0	33	147
11:30 AM	0	11	24	0	35	0	0	0	0	0	11	46	0	0	57	16	0	17	0	33	125
11:45 AM	0	18	30	0	48	0	0	0	0	0	9	31	0	0	40	26	0	10	0	36	124
Total	0	76	105	0	181	0	0	0	0	0	55	163	0	0	218	94	0	56	0	150	549
12:00 PM	0	22	30	0	52	0	0	0	0	0	12	33	0	0	45	21	0	18	0	39	136
12:15 PM	0	28	32	0	60	0	0	0	0	0	2	33	0	0	35	25	0	12	0	37	132
12:30 PM	0	18	27	0	45	0	0	0	0	0	10	34	0	0	44	20	0	9	0	29	118
12:45 PM	0	22	14	0	36	0	0	0	0	0	8	25	0	0	33	16	0	13	0	29	98
Total	0	90	103	0	193	0	0	0	0	0	32	125	0	0	157	82	0	52	0	134	484
01:00 PM	0	14	38	0	52	0	0	0	0	0	13	35	0	0	48	19	0	11	0	30	130
01:15 PM	0	15	27	0	42	0	0	0	0	0	3	33	0	0	36	26	0	15	0	41	119
01:30 PM	0	27	26	0	53	0	0	0	0	0	5	30	0	0	35	16	0	3	0	19	107
01:45 PM	0	19	22	0	41	0	0	0	0	0	18	36	0	0	54	30	0	21	0	51	146
Total	0	75	113	0	188	0	0	0	0	0	39	134	0	0	173	91	0	50	0	141	502
02:00 PM	0	17	25	0	42	0	0	0	0	0	17	31	0	0	48	20	0	26	0	46	136
02:15 PM	0	41	24	0	65	0	0	0	0	0	14	42	0	0	56	31	0	11	0	42	163
02:30 PM	0	30	27	0	57	0	0	0	0	0	18	38	0	0	56	35	0	8	0	43	156
02:45 PM	0	33	30	0	63	0	0	0	0	0	15	40	0	0	55	33	0	13	0	46	164
Total	0	121	106	0	227	0	0	0	0	0	64	151	0	0	215	119	0	58	0	177	619
03:00 PM	0	27	29	0	56	0	0	0	0	0	20	44	0	0	64	34	0	10	0	44	164
03:15 PM	0	29	37	0	66	0	0	0	0	0	19	46	0	0	65	37	0	18	0	55	186
03:30 PM	0	32	35	0	67	0	0	0	0	0	16	35	0	0	51	16	0	9	0	25	143
03:45 PM	0	37	36	0	73	0	0	0	0	0	13	40	0	0	53	25	0	11	0	36	162
Total	0	125	137	0	262	0	0	0	0	0	68	165	0	0	233	112	0	48	0	160	655

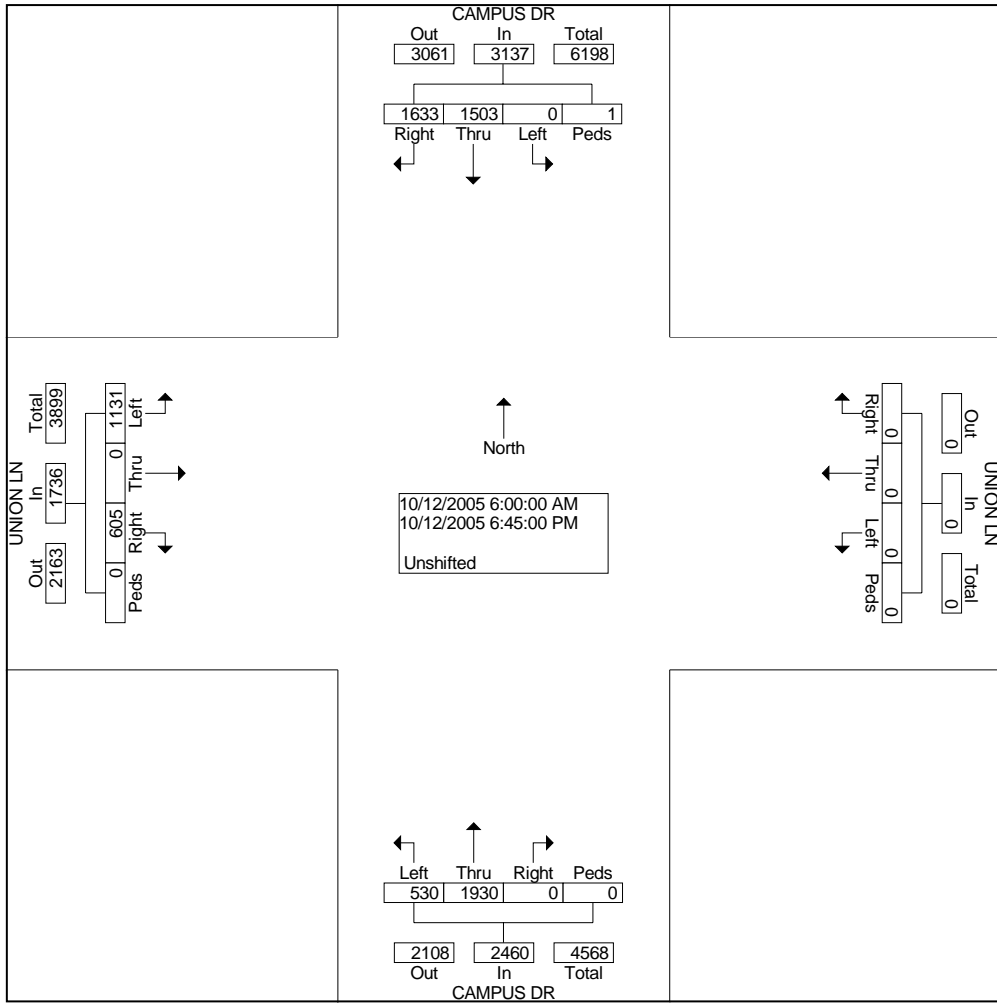
Sabra, Wang & Associates Inc  
 1504 Joh Avenue  
 Suite 160  
 Baltimore, MD 21227

Weather: Cloudy  
 Counted By: Casen  
 Town: College Park  
 County: Prince George

File Name : CAMPUS~1  
 Site Code : 00000000  
 Start Date : 10/12/2005  
 Page No : 2

Groups Printed- Unshifted

Start Time	CAMPUS DR From North					UNION LN From East					CAMPUS DR From South					UNION LN From West					Int. Total				
	Left	Thru	Rig ht	Ped s	App. Total	Left	Thru	Rig ht	Ped s	App. Total	Left	Thru	Rig ht	Ped s	App. Total	Left	Thru	Rig ht	Ped s	App. Total					
Factor	1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0	
04:00 PM	0	37	48	0	85	0	0	0	0	0	7	67	0	0	74	15	0	13	0	28					187
04:15 PM	0	34	39	0	73	0	0	0	0	0	9	39	0	0	48	40	0	13	0	53					174
04:30 PM	0	23	29	0	52	0	0	0	0	0	11	43	0	0	54	22	0	11	0	33					139
04:45 PM	0	17	47	0	64	0	0	0	0	0	22	33	0	0	55	23	0	2	0	25					144
Total	0	111	163	0	274	0	0	0	0	0	49	182	0	0	231	100	0	39	0	139					644
05:00 PM	0	48	35	0	83	0	0	0	0	0	10	46	0	0	56	42	0	21	0	63					202
05:15 PM	0	44	40	0	84	0	0	0	0	0	11	54	0	0	65	27	0	8	0	35					184
05:30 PM	0	39	45	0	84	0	0	0	0	0	8	43	0	0	51	17	0	16	0	33					168
05:45 PM	0	41	35	0	76	0	0	0	0	0	8	53	0	0	61	26	0	14	0	40					177
Total	0	172	155	0	327	0	0	0	0	0	37	196	0	0	233	112	0	59	0	171					731
06:00 PM	0	30	39	0	69	0	0	0	0	0	13	56	0	0	69	25	0	14	0	39					177
06:15 PM	0	49	60	0	109	0	0	0	0	0	17	42	0	0	59	45	0	13	0	58					226
06:30 PM	0	34	47	0	81	0	0	0	0	0	14	51	0	0	65	47	0	7	0	54					200
06:45 PM	0	37	50	1	88	0	0	0	0	0	10	38	0	0	48	37	0	13	0	50					186
Total	0	150	196	1	347	0	0	0	0	0	54	187	0	0	241	154	0	47	0	201					789
Grand Total	0	150	163	1	3137	0	0	0	0	0	530	1930	0	0	2460	1131	0	605	0	1736					7333
Apprch %	0.0	47.9	52.1	0.0		0.0	0.0	0.0	0.0		21.5	78.5	0.0	0.0		65.1	0.0	34.9	0.0						
Total %	0.0	20.5	22.3	0.0	42.8	0.0	0.0	0.0	0.0	0.0	7.2	26.3	0.0	0.0	33.5	15.4	0.0	8.3	0.0	23.7					





Groups Printed- 1 - Unshifted

Start Time	FENTON ST From North				SLIGO AVE From East				FENTON ST From South				SLIGO AVE From West				Int. Total
	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	
06:00 AM	4	25	0	0	2	19	4	0	3	23	3	0	0	4	3	0	90
06:15 AM	2	25	7	0	12	35	7	0	7	33	6	0	0	6	2	0	142
06:30 AM	6	30	6	0	16	54	13	0	6	36	2	0	2	5	3	0	179
06:45 AM	7	51	11	0	15	50	14	0	7	49	2	0	2	12	14	0	234
Total	19	131	24	0	45	158	38	0	23	141	13	0	4	27	22	0	645
07:00 AM	5	62	11	0	12	58	19	0	3	62	5	0	2	5	9	0	253
07:15 AM	8	82	6	0	28	49	16	0	10	54	5	0	3	11	14	0	286
07:30 AM	3	84	12	0	26	56	13	0	16	77	5	0	1	22	10	0	325
07:45 AM	10	87	12	0	31	51	16	0	8	78	8	0	2	10	17	0	330
Total	26	315	41	0	97	214	64	0	37	271	23	0	8	48	50	0	1194
08:00 AM	10	99	8	0	30	60	15	0	12	101	10	0	4	12	12	0	373
08:15 AM	8	99	16	0	23	68	17	0	9	116	8	0	1	8	10	0	383
08:30 AM	6	92	12	0	25	82	23	0	9	86	10	0	5	10	9	0	369
08:45 AM	11	99	11	0	25	68	22	0	10	110	7	0	3	11	12	0	389
Total	35	389	47	0	103	278	77	0	40	413	35	0	13	41	43	0	1514
09:00 AM	9	83	21	0	22	47	20	0	12	81	12	0	3	22	19	0	351
09:15 AM	11	64	8	0	13	50	13	0	12	92	10	0	7	12	17	0	309
09:30 AM	10	72	7	0	8	32	25	0	11	84	10	0	2	7	18	0	286
09:45 AM	10	62	9	0	15	35	14	0	9	80	14	0	4	11	15	0	278
Total	40	281	45	0	58	164	72	0	44	337	46	0	16	52	69	0	1224
10:00 AM	18	41	12	0	7	36	13	0	13	59	9	0	7	12	16	0	243
10:15 AM	12	53	15	0	12	26	16	0	7	74	8	0	6	15	15	0	259
10:30 AM	8	75	10	0	11	35	15	0	8	67	11	0	3	13	17	0	273
10:45 AM	12	57	14	0	8	35	9	0	10	74	14	0	4	7	11	0	255
Total	50	226	51	0	38	132	53	0	38	274	42	0	20	47	59	0	1030
11:00 AM	10	63	11	0	11	14	16	0	4	91	13	0	3	11	6	0	253
11:15 AM	15	62	8	0	10	25	14	0	8	87	7	0	9	12	12	0	269
11:30 AM	18	72	11	0	9	31	10	0	7	70	11	0	8	13	17	0	277
11:45 AM	16	81	7	0	10	25	20	0	8	89	12	0	10	13	8	0	299
Total	59	278	37	0	40	95	60	0	27	337	43	0	30	49	43	0	1098
12:00 PM	21	74	8	0	6	21	16	0	1	89	15	0	1	16	13	0	281
12:15 PM	17	79	7	0	7	21	19	0	5	76	14	0	7	12	11	0	275
12:30 PM	9	88	5	0	7	23	12	0	8	84	13	0	4	18	18	0	289
12:45 PM	22	78	5	0	10	27	19	0	7	73	10	0	5	17	13	0	286
Total	69	319	25	0	30	92	66	0	21	322	52	0	17	63	55	0	1131
01:00 PM	13	76	11	0	8	23	13	0	4	84	10	0	9	19	27	0	297
01:15 PM	12	71	10	0	10	20	10	0	8	69	4	0	11	23	16	0	264
01:30 PM	11	84	12	13	8	24	13	7	11	64	5	0	8	11	24	2	297
01:45 PM	15	84	13	2	3	14	12	11	7	84	10	0	9	14	12	3	293
Total	51	315	46	15	29	81	48	18	30	301	29	0	37	67	79	5	1151
02:00 PM	12	75	4	1	7	23	14	6	11	90	14	1	7	12	20	0	297
02:15 PM	16	100	13	3	5	21	11	2	10	92	20	3	9	17	15	1	338
02:30 PM	14	86	23	5	6	21	21	2	13	84	15	0	11	9	22	3	335
02:45 PM	22	80	7	5	11	25	14	1	12	101	13	1	10	24	22	1	349
Total	64	341	47	14	29	90	60	11	46	367	62	5	37	62	79	5	1319
03:00 PM	22	115	11	2	5	17	20	9	3	106	18	4	14	25	28	7	406
03:15 PM	34	83	8	4	10	31	8	5	5	84	30	0	7	31	26	2	368
03:30 PM	21	94	14	5	6	20	17	3	11	97	22	4	6	27	18	0	365
03:45 PM	17	97	10	1	5	25	19	1	13	113	24	0	9	23	18	0	375
Total	94	389	43	12	26	93	64	18	32	400	94	8	36	106	90	9	1514
04:00 PM	25	102	8	2	9	22	10	3	17	116	31	3	9	32	20	5	414
04:15 PM	21	93	13	13	5	19	22	9	12	98	27	5	8	37	22	3	407
04:30 PM	24	106	18	3	10	28	26	3	12	113	30	0	8	27	19	2	429
04:45 PM	15	97	16	11	11	22	12	12	12	118	26	6	12	28	23	9	430
Total	85	398	55	29	35	91	70	27	53	445	114	14	37	124	84	19	1680

05:00 PM	22	115	17	5	13	35	18	10	8	133	26	4	11	38	18	6	479
05:15 PM	32	98	7	5	7	29	8	6	14	118	30	4	13	33	21	3	428
05:30 PM	21	124	7	2	11	33	26	4	14	118	32	4	16	35	21	2	470
05:45 PM	19	100	17	8	7	19	16	6	9	117	28	0	9	35	26	3	419
Total	94	437	48	20	38	116	68	26	45	486	116	12	49	141	86	14	1796
06:00 PM	28	111	10	6	4	14	17	7	11	127	31	4	13	37	11	2	433
06:15 PM	23	86	21	8	13	23	17	3	4	106	19	3	6	30	21	4	387
06:30 PM	18	89	13	3	11	19	16	6	10	138	33	3	10	33	16	7	425
06:45 PM	26	90	9	7	8	27	16	4	6	117	29	1	6	27	18	3	394
Total	95	376	53	24	36	83	66	20	31	488	112	11	35	127	66	16	1639
Grand Total	781	4195	562	114	604	1687	806	120	467	4582	781	50	339	954	825	68	16935
Apprch %	13.8	74.2	9.9	2.0	18.8	52.4	25.1	3.7	7.9	77.9	13.3	0.9	15.5	43.6	37.7	3.1	
Total %	4.6	24.8	3.3	0.7	3.6	10.0	4.8	0.7	2.8	27.1	4.6	0.3	2.0	5.6	4.9	0.4	

Location: Fenton Street @ Sligo Ave.

County: Montgomery

Weather: Clear

Counters: SK

Sabra, Wang & Associates, Inc.

1504 Joh Avenue, Suite 160

Baltimore, Maryland 21277 Name : FENTON ST. @ THAYER AVE

Weather: Sunny  
 Counted By: AK , CK  
 Town: Silver Spring  
 County : Montgomery

TEL. (410) 737-6564 Site Code : 00000000

Start Date : 5/24/2005

Page No : 1

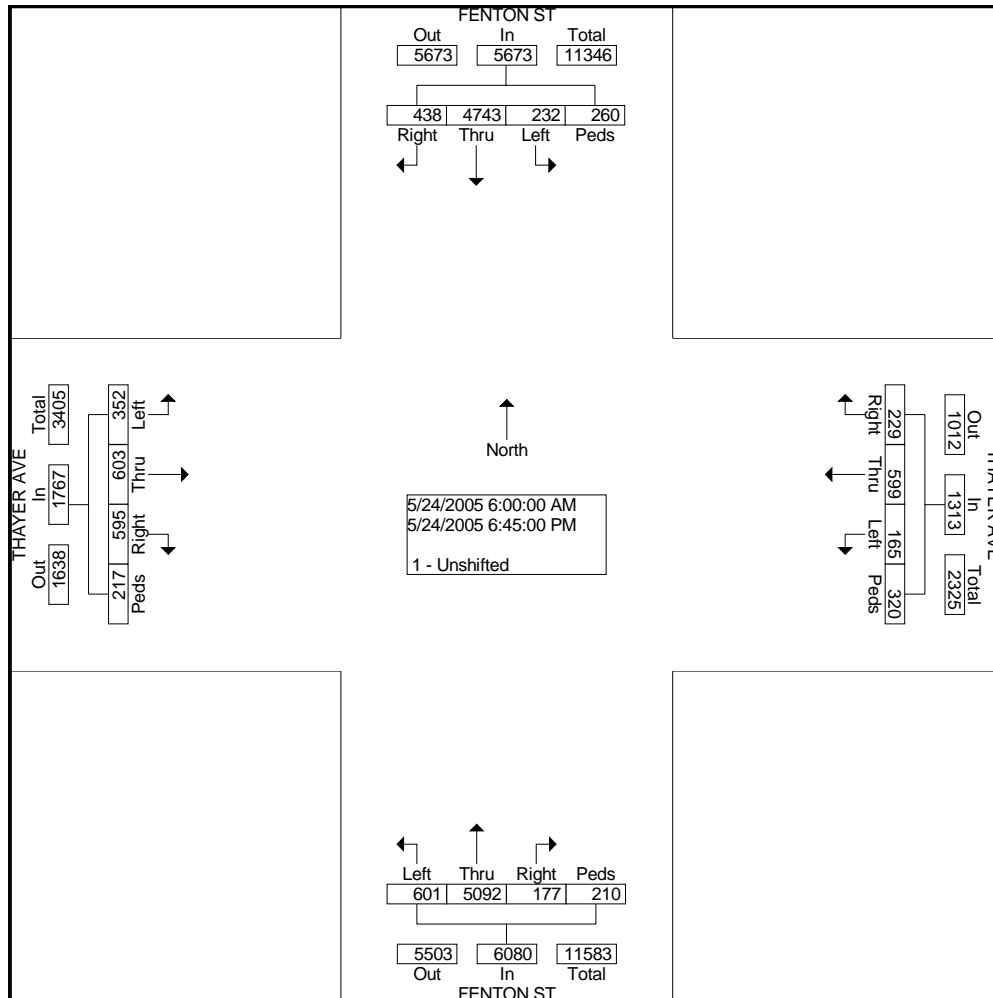
Groups Printed- 1 - Unshifted

Start Time	FENTON ST From North					THAYER AVE From East					FENTON ST From South					THAYER AVE From West					Int. Total
	Left	Thru	Rig ht	Ped s	App. Total	Left	Thru	Rig ht	Ped s	App. Total	Left	Thru	Rig ht	Ped s	App. Total	Left	Thru	Rig ht	Ped s	App. Total	
Factor	1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		
06:00 AM	0	15	1	0	16	0	4	2	3	9	3	13	0	2	18	0	2	1	1	4	47
06:15 AM	1	27	4	0	32	1	5	3	5	14	1	24	0	2	27	0	2	3	0	5	78
06:30 AM	3	44	0	1	48	1	8	2	3	14	6	39	1	0	46	0	4	0	1	5	113
06:45 AM	1	40	7	2	50	3	10	7	6	26	8	44	0	3	55	0	3	5	0	8	139
Total	5	126	12	3	146	5	27	14	17	63	18	120	1	7	146	0	11	9	2	22	377
07:00 AM	1	66	3	2	72	3	9	5	6	23	8	54	0	1	63	5	3	5	3	16	174
07:15 AM	5	80	3	4	92	5	17	4	13	39	18	65	2	3	88	1	4	5	2	12	231
07:30 AM	0	98	9	3	110	4	16	6	8	34	20	56	0	2	78	2	4	4	1	11	233
07:45 AM	5	92	8	4	109	6	14	4	8	32	16	74	0	4	94	2	7	6	1	16	251
Total	11	336	23	13	383	18	56	19	35	128	62	249	2	10	323	10	18	20	7	55	889
08:00 AM	1	114	6	1	122	2	17	5	12	36	21	84	2	3	110	4	4	13	1	22	290
08:15 AM	5	88	6	0	99	6	21	2	12	41	12	95	1	2	110	2	7	3	2	14	264
08:30 AM	1	117	8	8	134	7	17	5	14	43	15	88	3	6	112	6	5	5	0	16	305
08:45 AM	2	90	1	5	98	4	6	8	9	27	11	106	2	4	123	5	7	5	3	20	268
Total	9	409	21	14	453	19	61	20	47	147	59	373	8	15	455	17	23	26	6	72	1127
09:00 AM	2	89	12	5	108	4	16	5	12	37	16	100	1	4	121	3	6	10	6	25	291
09:15 AM	5	80	13	3	101	4	15	8	14	41	12	77	4	11	104	4	8	12	0	24	270
09:30 AM	4	81	4	5	94	0	11	6	9	26	11	94	4	6	115	1	6	9	4	20	255
09:45 AM	5	64	2	3	74	1	12	5	3	21	6	86	2	1	95	5	4	9	2	20	210
Total	16	314	31	16	377	9	54	24	38	125	45	357	11	22	435	13	24	40	12	89	1026
10:00 AM	4	79	4	3	90	3	17	1	1	22	11	97	1	3	112	5	7	7	2	21	245
10:15 AM	9	72	15	3	99	9	9	1	3	22	9	69	3	1	82	0	10	9	0	19	222
10:30 AM	5	76	13	3	97	3	20	8	6	37	2	91	3	3	99	2	14	11	4	31	264
10:45 AM	4	70	8	3	85	4	15	4	5	28	15	75	5	1	96	3	12	9	1	25	234
Total	22	297	40	12	371	19	61	14	15	109	37	332	12	8	389	10	43	36	7	96	965
11:00 AM	4	82	8	9	103	4	13	2	3	22	11	75	1	5	92	7	11	12	8	38	255
11:15 AM	5	85	6	6	102	3	11	5	6	25	6	75	0	5	86	3	11	13	6	33	246
11:30 AM	6	119	9	6	140	3	21	9	6	39	6	83	0	6	95	3	16	33	6	58	332
11:45 AM	4	99	6	3	112	4	12	3	9	28	9	111	2	3	125	6	6	15	1	28	293
Total	19	385	29	24	457	14	57	19	24	114	32	344	3	19	398	19	44	73	21	157	1126
12:00 PM	5	97	10	10	122	2	8	4	9	23	7	93	4	5	109	10	7	16	4	37	291
12:15 PM	4	90	10	10	114	1	7	8	5	21	9	97	5	9	120	12	6	11	8	37	292
12:30 PM	2	85	9	9	105	4	8	5	4	21	11	94	7	0	112	9	9	11	1	30	268
12:45 PM	6	106	12	6	130	0	7	4	3	14	13	117	2	8	140	10	14	11	2	37	321
Total	17	378	41	35	471	7	30	21	21	79	40	401	18	22	481	41	36	49	15	141	1172
01:00 PM	8	99	12	7	126	1	10	3	7	21	20	103	2	10	135	14	10	23	3	50	332
01:15 PM	4	74	8	3	89	1	13	3	8	25	11	102	2	3	118	8	12	18	8	46	278
01:30 PM	6	124	9	1	140	4	17	5	3	29	19	92	2	2	115	12	6	9	0	27	311
01:45 PM	7	98	18	3	126	0	6	2	2	10	8	93	4	6	111	13	8	16	2	39	286
Total	25	395	47	14	481	6	46	13	20	85	58	390	10	21	479	47	36	66	13	162	1207
02:00 PM	6	87	8	4	105	2	5	3	7	17	15	92	3	3	113	8	14	8	2	32	267
02:15 PM	3	109	13	5	130	3	14	5	3	25	14	108	3	2	127	7	10	12	4	33	315
02:30 PM	10	96	10	3	119	4	14	5	4	27	12	93	6	5	116	7	14	10	3	34	296
02:45 PM	4	104	8	6	122	2	10	5	5	22	12	89	2	4	107	5	10	8	2	25	276
Total	23	396	39	18	476	11	43	18	19	91	53	382	14	14	463	27	48	38	11	124	1154
03:00 PM	5	87	6	4	102	4	6	2	8	20	11	105	5	3	124	8	19	13	7	47	293
03:15 PM	3	121	18	4	146	4	15	6	3	28	6	121	0	1	128	3	12	21	3	39	341
03:30 PM	0	117	9	15	141	6	12	3	6	27	6	111	6	3	126	12	18	9	12	51	345
03:45 PM	5	97	4	2	108	1	10	3	4	18	12	110	6	1	129	5	18	14	5	42	297
Total	13	422	37	25	497	15	43	14	21	93	35	447	17	8	507	28	67	57	27	179	1276

Weather: Sunny  
 Counted By: AK , CK  
 Town: Silver Spring  
 County : Montgomery

Groups Printed- 1 - Unshifted

Start Time	FENTON ST From North					THAYER AVE From East					FENTON ST From South					THAYER AVE From West					Int. Total
	Left	Thru	Rig ht	Ped s	App. Total	Left	Thru	Rig ht	Ped s	App. Total	Left	Thru	Rig ht	Ped s	App. Total	Left	Thru	Rig ht	Ped s	App. Total	
Factor	1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		
04:00 PM	5	97	4	5	111	3	7	6	7	23	12	123	8	4	147	11	26	21	9	67	348
04:15 PM	8	93	11	3	115	3	12	3	5	23	9	156	7	5	177	8	11	10	4	33	348
04:30 PM	5	109	10	10	134	7	9	10	1	27	19	128	5	7	159	13	22	12	2	49	369
04:45 PM	12	103	13	8	136	1	10	5	5	21	10	138	4	4	156	11	17	19	5	52	365
Total	30	402	38	26	496	14	38	24	18	94	50	545	24	20	639	43	76	62	20	201	1430
05:00 PM	6	97	11	5	119	1	9	2	4	16	14	129	7	8	158	13	20	23	8	64	357
05:15 PM	5	140	17	5	167	4	20	5	6	35	14	160	8	2	184	10	21	20	9	60	446
05:30 PM	10	109	7	5	131	1	10	4	4	19	17	171	9	5	202	10	22	18	7	57	409
05:45 PM	6	115	12	6	139	5	9	6	6	26	22	138	10	5	175	8	23	11	10	52	392
Total	27	461	47	21	556	11	48	17	20	96	67	598	34	20	719	41	86	72	34	233	1604
06:00 PM	5	119	10	12	146	5	12	2	7	26	18	149	7	8	182	19	29	15	15	78	432
06:15 PM	3	115	9	10	137	5	10	3	5	23	11	145	5	7	168	17	26	12	10	65	393
06:30 PM	1	97	8	8	114	3	8	2	6	19	10	139	6	5	160	10	21	9	10	50	343
06:45 PM	6	91	6	9	112	4	5	5	7	21	6	121	5	4	136	10	15	11	7	43	312
Total	15	422	33	39	509	17	35	12	25	89	45	554	23	24	646	56	91	47	42	236	1480
Grand Total	232	474	438	260	5673	165	599	229	320	1313	601	509	177	210	6080	352	603	595	217	1767	1483
Apprch %	4.1	83.6	7.7	4.6		12.6	45.6	17.4	24.4		9.9	83.8	2.9	3.5		19.9	34.1	33.7	12.3		3
Total %	1.6	32.0	3.0	1.8	38.2	1.1	4.0	1.5	2.2	8.9	4.1	34.3	1.2	1.4	41.0	2.4	4.1	4.0	1.5	11.9	



Sabra, Wang & Associates, Inc.  
 1504 Joh Avenue, Suite 160  
 Baltimore, Maryland 21227  
 TEL. (410) 737-6564

Weather: SUNNY  
 Counted By: AK, CK  
 Town: SILVER SPRING  
 County: MONTGOMERY

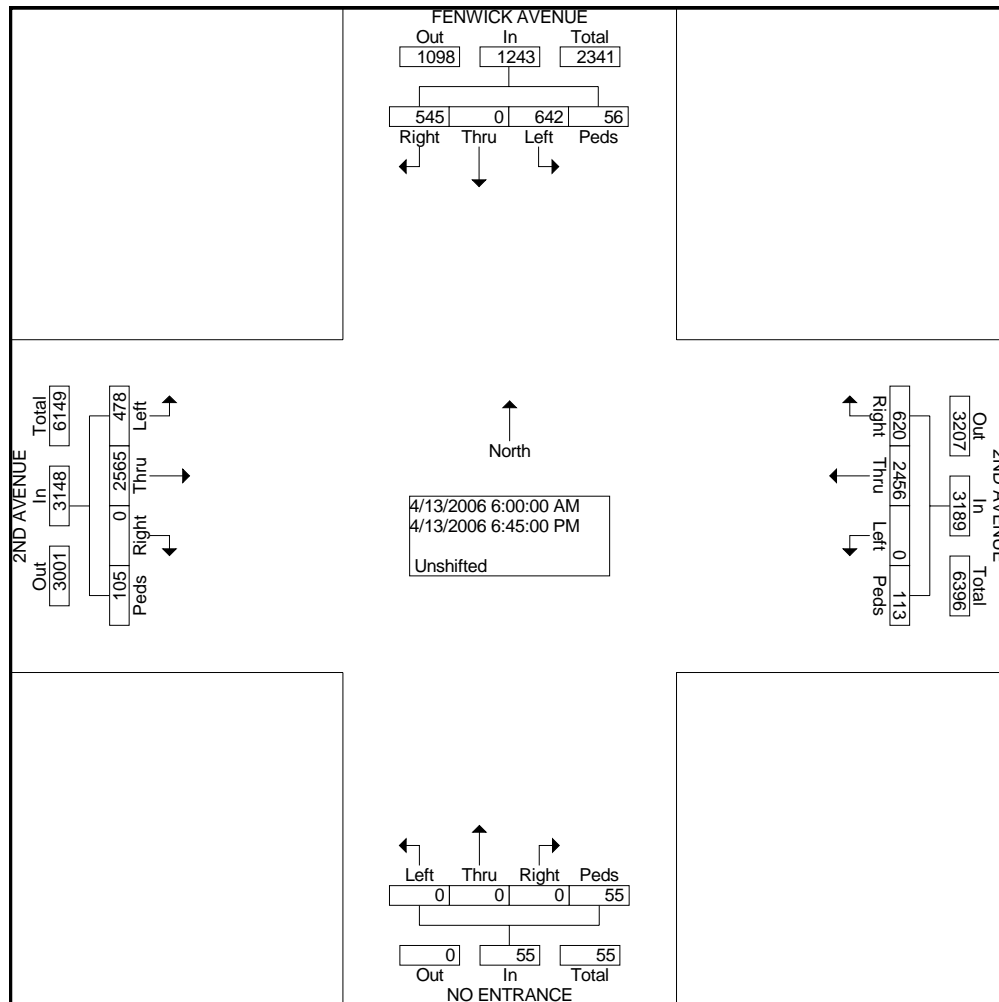
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 Start Date : 4/13/2006  
 Page No : 1

Groups Printed- Unshifted

Start Time	FENWICK AVENUE From North					2ND AVENUE From East					NO ENTRANCE From South					2ND AVENUE From West					Int. Total
	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	
Factor	1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		
06:00 AM	4	0	1	0	5	0	8	2	0	10	0	0	0	0	0	1	7	0	0	8	23
06:15 AM	5	0	1	0	6	0	7	5	0	12	0	0	0	0	0	2	7	0	3	12	30
06:30 AM	4	0	2	1	7	0	10	4	0	14	0	0	0	0	0	3	17	0	0	20	41
06:45 AM	6	0	7	0	13	0	27	7	0	34	0	0	0	1	1	9	29	0	1	39	87
Total	19	0	11	1	31	0	52	18	0	70	0	0	0	1	1	15	60	0	4	79	181
07:00 AM	7	0	5	0	12	0	23	5	0	28	0	0	0	0	0	7	27	0	0	34	74
07:15 AM	9	0	8	1	18	0	28	6	0	34	0	0	0	0	0	6	32	0	3	41	93
07:30 AM	11	0	7	1	19	0	26	7	0	33	0	0	0	1	1	9	28	0	6	43	96
07:45 AM	10	0	4	2	16	0	20	8	1	29	0	0	0	1	1	5	43	0	1	49	95
Total	37	0	24	4	65	0	97	26	1	124	0	0	0	2	2	27	130	0	10	167	358
08:00 AM	11	0	10	1	22	0	31	11	0	42	0	0	0	0	0	7	52	0	1	60	124
08:15 AM	10	0	13	3	26	0	35	8	1	44	0	0	0	0	0	10	59	0	0	69	139
08:30 AM	21	0	2	0	23	0	48	9	0	57	0	0	0	2	2	11	47	0	3	61	143
08:45 AM	12	0	15	0	27	0	34	12	4	50	0	0	0	0	0	14	49	0	4	67	144
Total	54	0	40	4	98	0	148	40	5	193	0	0	0	2	2	42	207	0	8	257	550
09:00 AM	9	0	4	2	15	0	28	12	1	41	0	0	0	0	0	11	61	0	0	72	128
09:15 AM	11	0	5	1	17	0	42	18	5	65	0	0	0	0	0	6	55	0	3	64	146
09:30 AM	8	0	4	2	14	0	45	15	0	60	0	0	0	2	2	5	48	0	0	53	129
09:45 AM	6	0	6	0	12	0	50	12	0	62	0	0	0	0	0	6	46	0	2	54	128
Total	34	0	19	5	58	0	165	57	6	228	0	0	0	2	2	28	210	0	5	243	531
10:00 AM	9	0	4	0	13	0	39	16	1	56	0	0	0	0	0	8	41	0	3	52	121
10:15 AM	7	0	5	0	12	0	41	12	0	53	0	0	0	1	1	6	38	0	2	46	112
10:30 AM	8	0	6	3	17	0	44	15	0	59	0	0	0	1	1	5	47	0	2	54	131
10:45 AM	9	0	4	1	14	0	40	12	3	55	0	0	0	0	0	6	39	0	2	47	116
Total	33	0	19	4	56	0	164	55	4	223	0	0	0	2	2	25	165	0	9	199	480
11:00 AM	10	0	5	1	16	0	41	10	0	51	0	0	0	0	0	7	41	0	0	48	115
11:15 AM	10	0	5	2	17	0	44	11	2	57	0	0	0	0	0	7	48	0	0	55	129
11:30 AM	12	0	8	4	24	0	42	11	0	53	0	0	0	0	0	11	55	0	6	72	149
11:45 AM	12	0	9	2	23	0	50	9	0	59	0	0	0	1	1	9	58	0	8	75	158
Total	44	0	27	9	80	0	177	41	2	220	0	0	0	1	1	34	202	0	14	250	551
12:00 PM	15	0	11	1	27	0	62	11	2	75	0	0	0	0	0	12	80	0	9	101	203
12:15 PM	15	0	9	2	26	0	58	12	0	70	0	0	0	1	1	9	64	0	10	83	180
12:30 PM	13	0	12	2	27	0	56	10	3	69	0	0	0	0	0	12	59	0	2	73	169
12:45 PM	15	0	9	3	27	0	53	11	4	68	0	0	0	0	0	10	65	0	1	76	171
Total	58	0	41	8	107	0	229	44	9	282	0	0	0	1	1	43	268	0	22	333	723
01:00 PM	14	0	11	1	26	0	63	13	5	81	0	0	0	1	1	11	56	0	1	68	176
01:15 PM	10	0	8	1	19	0	56	18	2	76	0	0	0	1	1	9	49	0	0	58	154
01:30 PM	14	0	10	1	25	0	52	15	4	71	0	0	0	0	0	8	61	0	1	70	166
01:45 PM	12	0	7	3	22	0	63	16	0	79	0	0	0	0	0	6	58	0	6	70	171
Total	50	0	36	6	92	0	234	62	11	307	0	0	0	2	2	34	224	0	8	266	667
02:00 PM	9	0	10	0	19	0	48	12	4	64	0	0	0	3	3	6	50	0	1	57	143
02:15 PM	12	0	9	0	21	0	58	14	3	75	0	0	0	4	4	9	52	0	0	61	161
02:30 PM	11	0	10	0	21	0	58	12	3	73	0	0	0	3	3	9	50	0	0	59	156
02:45 PM	14	0	12	1	27	0	62	10	4	76	0	0	0	2	2	10	51	0	0	61	166
Total	46	0	41	1	88	0	226	48	14	288	0	0	0	12	12	34	203	0	1	238	626
03:00 PM	12	0	14	0	26	0	60	12	5	77	0	0	0	1	1	11	54	0	0	65	169
03:15 PM	10	0	10	0	20	0	57	14	4	75	0	0	0	1	1	12	52	0	0	64	160
03:30 PM	13	0	8	1	22	0	59	14	5	78	0	0	0	1	1	12	51	0	0	63	164
03:45 PM	15	0	13	0	28	0	56	12	3	71	0	0	0	1	1	10	47	0	0	57	157
Total	50	0	45	1	96	0	232	52	17	301	0	0	0	4	4	45	204	0	0	249	650

Groups Printed- Unshifted

Start Time	FENWICK AVENUE From North					2ND AVENUE From East					NO ENTRANCE From South					2ND AVENUE From West					Int. Total
	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	
Factor	1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		
04:00 PM	17	0	15	2	34	0	62	14	0	76	0	0	0	0	0	8	51	0	3	62	172
04:15 PM	21	0	17	0	38	0	56	12	2	70	0	0	0	0	0	11	59	0	3	73	181
04:30 PM	18	0	21	0	39	0	65	16	5	86	0	0	0	2	2	14	66	0	3	83	210
04:45 PM	15	0	20	1	36	0	63	14	2	79	0	0	0	3	3	17	63	0	5	85	203
Total	71	0	73	3	147	0	246	56	9	311	0	0	0	5	5	50	239	0	14	303	766
05:00 PM	19	0	24	0	43	0	58	20	2	80	0	0	0	4	4	16	65	0	1	82	209
05:15 PM	17	0	18	0	35	0	51	17	5	73	0	0	0	2	2	18	58	0	3	79	189
05:30 PM	16	0	20	2	38	0	67	13	1	81	0	0	0	5	5	14	62	0	4	80	204
05:45 PM	19	0	22	0	41	0	67	15	10	92	0	0	0	3	3	12	57	0	2	71	207
Total	71	0	84	2	157	0	243	65	18	326	0	0	0	14	14	60	242	0	10	312	809
06:00 PM	18	0	25	0	43	0	60	15	1	76	0	0	0	3	3	9	54	0	0	63	185
06:15 PM	19	0	23	2	44	0	66	19	9	94	0	0	0	3	3	11	53	0	0	64	205
06:30 PM	22	0	20	0	42	0	61	12	3	76	0	0	0	1	1	8	56	0	0	64	183
06:45 PM	16	0	17	6	39	0	56	10	4	70	0	0	0	0	0	13	48	0	0	61	170
Total	75	0	85	8	168	0	243	56	17	316	0	0	0	7	7	41	211	0	0	252	743
Grand Total	642	0	545	56	1243	0	2456	620	113	3189	0	0	0	55	55	478	2565	0	105	3148	7635
Apprch %	51.6	0.0	43.8	4.5		0.0	77.0	19.4	3.5		0.0	0.0	0.0	100.0		15.2	81.5	0.0	3.3		
Total %	8.4	0.0	7.1	0.7	16.3	0.0	32.2	8.1	1.5	41.8	0.0	0.0	0.0	0.7	0.7	6.3	33.6	0.0	1.4	41.2	



Sabra, Wang & Associates, Inc.

1504 Joh Avenue, Suite 160

Baltimore, Maryland 21202 GEORGIA AVENUE @ WAYNE AVENUE

Site Code: 00000000

Start Date : 6/1/2005

Page No : 1

Weather : Sunny  
 Counted By: AK , CK  
 Town: Silver Spring  
 County: Montgomery

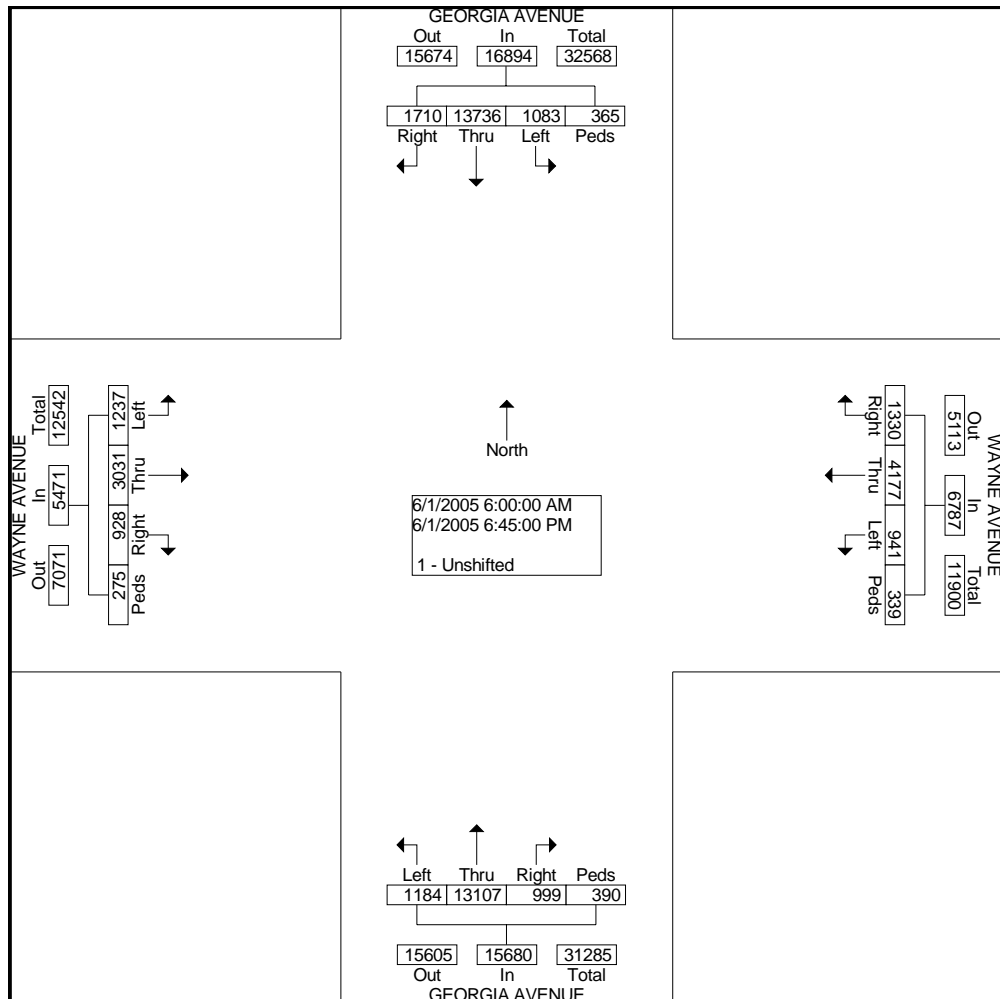
Groups Printed- 1 - Unshifted

Start Time	GEORGIA AVENUE From North					WAYNE AVENUE From East					GEORGIA AVENUE From South					WAYNE AVENUE From West					Int. Total
	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	
Factor	1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		
06:00 AM	7	156	5	5	173	2	31	5	0	38	9	87	4	1	101	2	6	1	0	9	321
06:15 AM	4	362	10	2	378	1	50	9	0	60	14	107	1	1	123	7	16	2	1	26	587
06:30 AM	0	430	30	5	465	9	62	6	1	78	12	119	3	2	136	13	4	5	3	25	704
06:45 AM	10	360	12	1	383	7	83	7	2	99	10	137	4	1	152	6	6	3	1	16	650
Total	21	1308	57	13	1399	19	226	27	3	275	45	450	12	5	512	28	32	11	5	76	2262
07:00 AM	21	474	33	14	542	20	81	8	2	111	7	216	6	5	234	14	12	1	1	28	915
07:15 AM	12	406	33	4	455	19	88	9	1	117	18	226	6	5	255	24	21	8	0	53	880
07:30 AM	13	417	51	9	490	13	115	6	1	135	22	269	13	2	306	5	33	3	0	41	972
07:45 AM	16	380	54	5	455	12	134	13	3	162	21	270	13	5	309	13	40	6	0	59	985
Total	62	1677	171	32	1942	64	418	36	7	525	68	981	38	17	1104	56	106	18	1	181	3752
08:00 AM	17	385	56	5	463	21	154	18	5	198	18	294	15	2	329	17	45	10	7	79	1069
08:15 AM	20	389	58	7	474	23	161	24	5	213	22	291	13	1	327	20	49	12	2	83	1097
08:30 AM	16	419	68	3	506	24	125	15	5	169	29	327	11	6	373	10	31	14	0	55	1103
08:45 AM	31	284	72	7	394	18	127	22	10	177	38	256	22	18	334	11	35	15	5	66	971
Total	84	1477	254	22	1837	86	567	79	25	757	107	1168	61	27	1363	58	160	51	14	283	4240
09:00 AM	32	264	65	8	369	17	123	19	9	168	36	263	19	7	325	10	30	13	5	58	920
09:15 AM	27	311	91	18	447	23	118	16	12	169	24	211	23	10	268	13	42	19	3	77	961
09:30 AM	34	282	83	23	422	13	112	14	6	145	18	202	24	8	252	22	39	20	12	93	912
09:45 AM	30	249	65	7	351	15	98	12	7	132	22	187	19	10	238	18	35	14	10	77	798
Total	123	1106	304	56	1589	68	451	61	34	614	100	863	85	35	1083	63	146	66	30	305	3591
10:00 AM	37	246	37	11	331	9	62	24	4	99	28	226	22	20	296	18	35	31	0	84	810
10:15 AM	31	235	34	9	309	8	67	20	8	103	25	205	26	10	266	21	36	28	7	92	770
10:30 AM	34	244	34	9	321	7	64	18	9	98	24	202	24	11	261	16	32	30	6	84	764
10:45 AM	28	210	35	6	279	6	63	17	7	93	22	220	21	7	270	13	30	21	1	65	707
Total	130	935	140	35	1240	30	256	79	28	393	99	853	93	48	1093	68	133	110	14	325	3051
11:00 AM	26	206	33	7	272	5	65	22	10	102	23	211	22	9	265	11	33	23	9	76	715
11:15 AM	25	201	30	5	261	6	60	16	9	91	21	208	23	6	258	35	35	20	6	96	706
11:30 AM	22	177	24	4	227	10	82	23	7	122	18	197	20	3	238	19	42	17	2	80	667
11:45 AM	19	196	28	7	250	9	69	19	7	104	26	183	18	9	236	15	37	19	4	75	665
Total	92	780	115	23	1010	30	276	80	33	419	88	799	83	27	997	80	147	79	21	327	2753
12:00 PM	23	205	29	7	264	14	62	22	7	105	20	213	28	7	268	14	48	22	9	93	730
12:15 PM	23	188	24	12	247	23	67	24	6	120	25	225	24	7	281	23	51	24	8	106	754
12:30 PM	20	222	28	11	281	21	88	30	10	149	20	241	27	19	307	31	63	19	14	127	864
12:45 PM	28	231	23	17	299	20	79	38	13	150	19	258	22	14	313	39	69	26	12	146	908
Total	94	846	104	47	1091	78	296	114	36	524	84	937	101	47	1169	107	231	91	43	472	3256
01:00 PM	23	253	29	11	316	26	85	45	10	166	23	272	28	22	345	43	80	26	19	168	995
01:15 PM	21	237	25	9	292	23	72	30	11	136	19	259	25	13	316	34	68	24	9	135	879
01:30 PM	26	250	22	6	304	28	76	33	10	147	25	246	24	5	300	29	75	20	8	132	883
01:45 PM	19	226	23	8	276	23	65	29	11	128	18	221	21	7	267	21	55	17	7	100	771
Total	89	966	99	34	1188	100	298	137	42	577	85	998	98	47	1228	127	278	87	43	535	3528
02:00 PM	17	218	19	7	261	22	64	27	5	118	17	219	20	4	260	1	53	16	9	79	718
02:15 PM	14	214	15	4	247	20	66	26	4	116	15	207	18	8	248	18	51	13	8	90	701
02:30 PM	12	215	15	3	245	22	62	25	3	112	12	218	14	8	252	14	55	15	4	88	697
02:45 PM	14	219	16	3	252	26	69	25	2	122	18	222	16	5	261	16	59	18	5	98	733
Total	57	866	65	17	1005	90	261	103	14	468	62	866	68	25	1021	49	218	62	26	355	2849
03:00 PM	15	212	18	5	250	22	65	21	3	111	13	229	17	7	266	12	55	16	3	86	713
03:15 PM	13	209	15	4	241	18	64	25	4	111	13	231	17	6	267	18	54	13	5	90	709
03:30 PM	18	228	14	5	265	21	67	27	6	121	18	239	23	5	285	21	59	15	7	102	773
03:45 PM	24	222	21	5	272	19	63	26	6	114	20	257	19	4	300	24	88	22	8	142	828
Total	70	871	68	19	1028	80	259	99	19	457	64	956	76	22	1118	75	256	66	23	420	3023

Weather : Sunny  
 Counted By: AK , CK  
 Town: Silver Spring  
 County: Montgomery

Groups Printed- 1 - Unshifted

Start Time	GEORGIA AVENUE From North					WAYNE AVENUE From East					GEORGIA AVENUE From South					WAYNE AVENUE From West					Int. Total
	Left	Thru	Rig	Ped	App. Total	Left	Thru	Rig	Ped	App. Total	Left	Thru	Rig	Ped	App. Total	Left	Thru	Rig	Ped	App. Total	
Factor	1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		
04:00 PM	20	213	18	14	265	17	57	31	11	116	23	276	22	6	327	30	94	25	6	155	863
04:15 PM	23	234	20	7	284	24	68	36	4	132	27	301	28	8	364	32	101	18	12	163	943
04:30 PM	20	250	31	8	309	20	64	31	10	125	32	333	21	4	390	37	119	21	8	185	1009
04:45 PM	28	261	25	6	320	26	83	36	14	159	30	354	23	8	415	41	113	24	8	186	1080
Total	91	958	94	35	1178	87	272	134	39	532	112	1264	94	26	1496	140	427	88	34	689	3895
05:00 PM	23	242	33	10	308	24	75	44	10	153	44	339	27	10	420	39	102	20	9	170	1051
05:15 PM	27	262	30	3	322	29	82	40	6	157	37	393	24	9	463	45	124	22	2	193	1135
05:30 PM	20	247	32	8	307	27	77	45	14	163	43	412	25	8	488	50	118	29	5	202	1160
05:45 PM	21	245	30	0	296	31	81	54	5	171	38	376	23	7	444	49	120	28	0	197	1108
Total	91	996	125	21	1233	111	315	183	35	644	162	1520	99	34	1815	183	464	99	16	762	4454
06:00 PM	19	243	31	5	298	26	78	64	7	175	32	393	28	9	462	51	114	28	3	196	1131
06:15 PM	20	242	30	0	292	31	66	55	7	159	23	343	23	9	398	50	116	25	0	191	1040
06:30 PM	21	243	28	0	292	20	77	48	6	151	27	371	21	5	424	53	114	24	0	191	1058
06:45 PM	19	222	25	6	272	21	61	31	4	117	26	345	19	7	397	49	89	23	2	163	949
Total	79	950	114	11	1154	98	282	198	24	602	108	1452	91	30	1681	203	433	100	5	741	4178
Grand Total	108	137	171	365	1689	941	417	133	339	6787	118	1314	999	390	1568	123	303	928	275	5471	4483
Apprch %	6.4	81.3	10.1	2.2		13.9	61.5	19.6	5.0		7.6	83.6	6.4	2.5		22.6	55.4	17.0	5.0		
Total %	2.4	30.6	3.8	0.8	37.7	2.1	9.3	3.0	0.8	15.1	2.6	29.2	2.2	0.9	35.0	2.8	6.8	2.1	0.6	12.2	





Sabra, Wang & Associates Inc  
 1504 Joh Avenue  
 Suite 160  
 Baltimore, MD 21227

Weather: Sunny  
 Counted By: AK , CK  
 Town: LANHAM  
 County: PRINCE GEORGE'S

File Name : HARKIN~3  
 Site Code : 00000000  
 Start Date : 09/29/2005  
 Page No : 1

Groups Printed- 1 - Unshifted

Start Time	HARKINS ROAD From North					85TH AVE. From East					HARKINS ROAD From South					85TH AVE. From West					Int. Total
	Left	Thru	Rig ht	Ped s	App. Total	Left	Thru	Rig ht	Ped s	App. Total	Left	Thru	Rig ht	Ped s	App. Total	Left	Thru	Rig ht	Ped s	App. Total	
Factor	1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		
06:00 AM	2	4	8	1	15	35	39	37	1	112	0	0	0	0	0	83	31	9	0	123	250
06:15 AM	2	14	15	0	31	37	32	29	0	98	0	0	2	0	2	60	33	12	1	106	237
06:30 AM	1	4	15	0	20	67	51	23	0	141	0	0	0	0	0	111	42	16	0	169	330
06:45 AM	4	6	15	0	25	44	45	32	1	122	0	0	0	0	0	123	63	13	4	203	350
Total	9	28	53	1	91	183	167	121	2	473	0	0	2	0	2	377	169	50	5	601	1167
07:00 AM	3	8	27	2	40	40	66	35	6	147	0	0	0	1	1	147	61	17	0	225	413
07:15 AM	8	10	30	5	53	81	66	36	4	187	0	0	0	0	0	142	60	16	2	220	460
07:30 AM	2	10	19	2	33	43	70	26	1	140	0	0	0	0	0	154	58	21	0	233	406
07:45 AM	3	12	22	1	38	39	75	23	0	137	1	0	2	0	3	146	74	10	2	232	410
Total	16	40	98	10	164	203	277	120	11	611	1	0	2	1	4	589	253	64	4	910	1689
08:00 AM	6	4	44	4	58	8	78	30	4	120	1	0	8	1	10	140	61	4	0	205	393
08:15 AM	4	1	36	4	45	5	53	32	7	97	4	1	5	1	11	135	82	2	2	221	374
08:30 AM	6	1	20	3	30	6	64	25	7	102	3	0	3	2	8	136	81	3	0	220	360
08:45 AM	0	1	23	5	29	1	47	20	4	72	2	2	0	0	4	112	52	3	1	168	273
Total	16	7	123	16	162	20	242	107	22	391	10	3	16	4	33	523	276	12	3	814	1400
09:00 AM	6	0	18	2	26	7	36	22	5	70	0	1	0	0	1	94	54	4	3	155	252
09:15 AM	2	0	15	1	18	4	46	16	1	67	1	0	1	1	3	90	60	7	0	157	245
09:30 AM	4	0	21	1	26	0	21	16	1	38	1	0	2	0	3	79	45	2	1	127	194
09:45 AM	3	0	14	0	17	1	35	18	0	54	0	1	2	0	3	45	47	2	0	94	168
Total	15	0	68	4	87	12	138	72	7	229	2	2	5	1	10	308	206	15	4	533	859
10:00 AM	4	0	26	3	33	2	22	4	3	31	0	0	0	0	0	35	44	1	0	80	144
10:15 AM	4	0	16	4	24	4	41	11	2	58	0	1	1	1	3	30	35	1	4	70	155
10:30 AM	6	0	14	0	20	2	27	10	5	44	0	0	1	0	1	20	22	1	2	45	110
10:45 AM	8	2	40	0	50	3	37	4	5	49	2	0	0	0	2	17	24	1	0	42	143
Total	22	2	96	7	127	11	127	29	15	182	2	1	2	1	6	102	125	4	6	237	552
11:00 AM	12	0	25	2	39	3	27	14	2	46	0	0	0	0	0	14	7	1	1	23	108
11:15 AM	20	1	46	1	68	2	33	5	1	41	0	0	0	0	0	15	29	1	2	47	156
11:30 AM	32	1	59	0	92	2	43	4	1	50	0	0	0	0	0	17	19	0	0	36	178
11:45 AM	13	1	44	0	58	0	34	4	0	38	0	0	0	0	0	16	34	1	0	51	147
Total	77	3	174	3	257	7	137	27	4	175	0	0	0	0	0	62	89	3	3	157	589
12:00 PM	39	0	53	2	94	1	34	11	2	48	0	0	1	2	3	25	16	0	0	41	186
12:15 PM	21	0	46	0	67	1	41	12	1	55	0	0	0	0	0	13	23	0	0	36	158
12:30 PM	24	1	49	1	75	6	49	17	3	75	0	0	0	0	0	1	1	0	0	2	152
12:45 PM	27	0	45	3	75	6	54	23	3	86	0	2	0	0	2	17	30	0	0	47	210
Total	111	1	193	6	311	14	178	63	9	264	0	2	1	2	5	56	70	0	0	126	706
01:00 PM	5	0	30	0	35	3	36	20	1	60	1	0	1	0	2	37	21	2	0	60	157
01:15 PM	12	0	34	0	46	2	40	17	4	63	1	0	0	1	2	31	41	0	1	73	184
01:30 PM	9	0	35	2	46	1	23	19	2	45	1	1	1	1	4	39	26	0	2	67	162
01:45 PM	12	0	33	0	45	1	40	18	1	60	1	0	1	0	2	21	28	0	1	50	157
Total	38	0	132	2	172	7	139	74	8	228	4	1	3	2	10	128	116	2	4	250	660
02:00 PM	6	0	25	1	32	0	32	14	1	47	1	1	2	2	6	24	37	4	2	67	152
02:15 PM	8	0	50	2	60	3	32	17	1	53	0	1	2	0	3	29	24	0	0	53	169
02:30 PM	14	0	51	1	66	3	38	7	1	49	0	2	0	0	2	20	34	0	1	55	172
02:45 PM	18	0	54	1	73	0	52	8	1	61	1	0	0	0	1	36	28	0	2	66	201
Total	46	0	180	5	231	6	154	46	4	210	2	4	4	2	12	109	123	4	5	241	694

Sabra, Wang & Associates Inc  
 1504 Joh Avenue  
 Suite 160  
 Baltimore, MD 21227

Weather: Sunny  
 Counted By: AK , CK  
 Town: LANHAM  
 County: PRINCE GEORGE'S

File Name : HARKIN~3  
 Site Code : 00000000  
 Start Date : 09/29/2005  
 Page No : 2

Groups Printed- 1 - Unshifted

Start Time	HARKINS ROAD From North					85TH AVE. From East					HARKINS ROAD From South					85TH AVE. From West					Int. Total
	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	
Factor	1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		
03:00 PM	15	0	59	1	75	0	50	6	0	56	0	1	8	1	10	24	31	0	3	58	199
03:15 PM	15	0	59	1	75	0	40	9	1	50	1	3	4	0	8	13	40	1	1	55	188
03:30 PM	31	0	76	1	108	1	41	4	2	48	1	0	16	1	18	18	42	1	1	62	236
03:45 PM	26	0	110	0	136	0	44	9	0	53	3	6	5	1	15	28	63	0	2	93	297
Total	87	0	304	3	394	1	175	28	3	207	5	10	33	3	51	83	176	2	7	268	920
04:00 PM	34	0	76	0	110	0	43	10	4	57	5	8	10	3	26	39	69	0	1	109	302
04:15 PM	38	0	104	5	147	1	66	7	1	75	7	8	27	1	43	26	66	0	2	94	359
04:30 PM	36	1	102	0	139	1	50	4	2	57	9	10	32	1	52	27	50	1	3	81	329
04:45 PM	45	0	110	2	157	5	70	7	1	83	6	11	34	4	55	42	66	1	1	110	405
Total	153	1	392	7	553	7	229	28	8	272	27	37	103	9	176	134	251	2	7	394	1395
05:00 PM	31	2	123	1	157	3	78	8	0	89	5	7	30	2	44	34	52	4	5	95	385
05:15 PM	26	1	128	0	155	0	96	6	2	104	4	20	39	0	63	14	92	1	1	108	430
05:30 PM	25	1	83	0	109	0	65	1	0	66	12	24	31	3	70	40	68	1	0	109	354
05:45 PM	43	1	130	0	174	1	90	2	0	93	14	35	57	1	107	42	99	0	2	143	517
Total	125	5	464	1	595	4	329	17	2	352	35	86	157	6	284	130	311	6	8	455	1686
06:00 PM	40	0	123	2	165	0	88	4	2	94	12	38	43	2	95	56	106	1	1	164	518
06:15 PM	29	1	116	4	150	1	81	3	2	87	13	24	27	1	65	49	93	0	3	145	447
06:30 PM	16	1	91	2	110	0	66	2	2	70	9	18	22	0	49	43	82	2	0	127	356
06:45 PM	19	1	65	0	85	0	58	1	2	61	8	14	18	2	42	41	69	0	0	110	298
Total	104	3	395	8	510	1	293	10	8	312	42	94	110	5	251	189	350	3	4	546	1619
Grand Total	819	90	2672	73	3654	476	2585	742	103	3906	130	240	438	36	844	2790	2515	167	60	5532	13936
Apprch %	22.4	2.5	73.1	2.0		12.2	66.2	19.0	2.6		15.4	28.4	51.9	4.3		50.4	45.5	3.0	1.1		
Total %	5.9	0.6	19.2	0.5	26.2	3.4	18.5	5.3	0.7	28.0	0.9	1.7	3.1	0.3	6.1	20.0	18.0	1.2	0.4	39.7	

Sabra, Wang & Associates Inc  
 1504 Joh Avenue  
 Suite 160  
 Baltimore, MD 21227

Weather: Cloudy  
 Counted By: Casen  
 Town: Greenbelt  
 County: Prince George

File Name : HARKIN~4  
 Site Code : 00000000  
 Start Date : 10/20/2005  
 Page No : 1

Groups Printed- Unshifted

Start Time	LANHAM DR From North					HARKINS RD From East					LANHAM DR From South					HARKINS RD From West					Int. Total
	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	
Factor	1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		
06:00 AM	15	13	0	0	28	1	6	4	0	11	0	0	2	1	3	0	24	5	0	29	71
06:15 AM	23	29	1	0	53	8	16	6	1	31	0	0	0	1	1	0	29	7	0	36	121
06:30 AM	18	21	0	0	39	7	17	3	2	29	0	1	1	1	3	0	12	5	0	17	88
06:45 AM	37	32	0	0	69	19	20	12	1	52	0	2	1	2	5	0	32	5	0	37	163
Total	93	95	1	0	189	35	59	25	4	123	0	3	4	5	12	0	97	22	0	119	443
07:00 AM	41	42	1	0	84	7	27	12	1	47	0	0	1	1	2	0	30	12	0	42	175
07:15 AM	30	47	1	0	78	20	24	9	2	55	1	1	1	7	10	0	27	11	0	38	181
07:30 AM	50	25	3	0	78	15	21	17	1	54	1	0	1	0	2	1	29	6	0	36	170
07:45 AM	42	32	0	1	75	11	27	9	0	47	1	2	0	1	4	0	30	7	0	37	163
Total	163	146	5	1	315	53	99	47	4	203	3	3	3	9	18	1	116	36	0	153	689
08:00 AM	33	30	0	0	63	20	23	11	0	54	0	0	2	4	6	0	34	6	0	40	163
08:15 AM	24	30	0	0	54	15	26	11	1	53	0	0	3	1	4	0	25	6	0	31	142
08:30 AM	18	29	1	0	48	23	18	11	1	53	0	5	2	3	10	0	21	9	0	30	141
08:45 AM	18	11	0	1	30	15	18	12	0	45	0	1	1	3	5	1	16	5	0	22	102
Total	93	100	1	1	195	73	85	45	2	205	0	6	8	11	25	1	96	26	0	123	548
09:00 AM	19	17	1	1	38	16	15	13	0	44	0	3	2	0	5	1	19	5	0	25	112
09:15 AM	22	11	0	0	33	6	11	11	0	28	0	0	1	1	2	0	19	4	0	23	86
09:30 AM	15	9	1	0	25	1	10	4	0	15	0	4	1	1	6	0	14	1	0	15	61
09:45 AM	11	6	1	0	18	1	9	5	0	15	0	1	0	0	1	0	17	3	0	20	54
Total	67	43	3	1	114	24	45	33	0	102	0	8	4	2	14	1	69	13	0	83	313
10:00 AM	2	4	0	1	7	3	16	1	1	21	2	3	4	2	11	1	15	5	0	21	60
10:15 AM	9	4	0	0	13	2	15	4	0	21	2	1	2	0	5	0	15	0	0	15	54
10:30 AM	7	1	0	1	9	5	10	7	0	22	0	5	3	7	15	0	11	2	0	13	59
10:45 AM	10	3	0	0	13	0	7	6	0	13	1	8	3	2	14	0	12	0	0	12	52
Total	28	12	0	2	42	10	48	18	1	77	5	17	12	11	45	1	53	7	0	61	225
11:00 AM	3	3	0	1	7	1	13	5	1	20	7	7	4	3	21	1	9	1	0	11	59
11:15 AM	3	4	1	1	9	0	19	11	0	30	1	17	6	2	26	0	17	2	0	19	84
11:30 AM	3	3	1	1	8	1	20	6	3	30	9	13	8	4	34	0	22	2	0	24	96
11:45 AM	10	7	0	1	18	1	16	8	0	25	9	20	2	9	40	1	18	4	0	23	106
Total	19	17	2	4	42	3	68	30	4	105	26	57	20	18	121	2	66	9	0	77	345
12:00 PM	9	5	0	0	14	1	19	5	0	25	10	18	9	9	46	1	23	3	0	27	112
12:15 PM	4	6	1	0	11	2	18	5	2	27	9	6	2	6	23	1	13	5	1	20	81
12:30 PM	10	12	1	6	29	6	19	9	2	36	2	9	5	5	21	1	22	5	2	30	116
12:45 PM	9	10	0	0	19	5	18	6	5	34	0	4	3	4	11	0	31	10	1	42	106
Total	32	33	2	6	73	14	74	25	9	122	21	37	19	24	101	3	89	23	4	119	415
01:00 PM	11	11	2	1	25	4	21	9	3	37	1	7	6	7	21	0	18	4	0	22	105
01:15 PM	9	9	2	1	21	3	11	5	4	23	3	4	3	7	17	1	23	7	0	31	92
01:30 PM	14	7	2	0	23	3	19	3	2	27	4	6	1	2	13	0	19	2	0	21	84
01:45 PM	7	10	0	1	18	1	13	7	0	21	4	7	0	1	12	0	24	4	0	28	79
Total	41	37	6	3	87	11	64	24	9	108	12	24	10	17	63	1	84	17	0	102	360
02:00 PM	10	6	1	0	17	3	12	5	0	20	5	5	4	0	14	1	20	6	1	28	79
02:15 PM	9	4	0	0	13	2	15	8	2	27	3	7	8	1	19	0	17	4	0	21	80
02:30 PM	11	1	0	0	12	0	18	5	0	23	2	17	7	2	28	0	13	1	0	14	77
02:45 PM	12	1	0	1	14	0	27	15	1	43	3	12	7	2	24	0	22	0	0	22	103
Total	42	12	1	1	56	5	72	33	3	113	13	41	26	5	85	1	72	11	1	85	339
03:00 PM	5	2	0	0	7	1	20	9	1	31	10	36	5	3	54	0	13	0	0	13	105
03:15 PM	6	1	1	1	9	1	22	5	1	29	2	20	9	4	35	1	21	2	0	24	97
03:30 PM	6	0	2	0	8	1	25	9	4	39	8	37	11	1	57	0	17	1	1	19	123
03:45 PM	8	0	1	0	9	0	23	8	1	32	1	19	8	2	30	1	26	0	0	27	98
Total	25	3	4	1	33	3	90	31	7	131	21	112	33	10	176	2	77	3	1	83	423

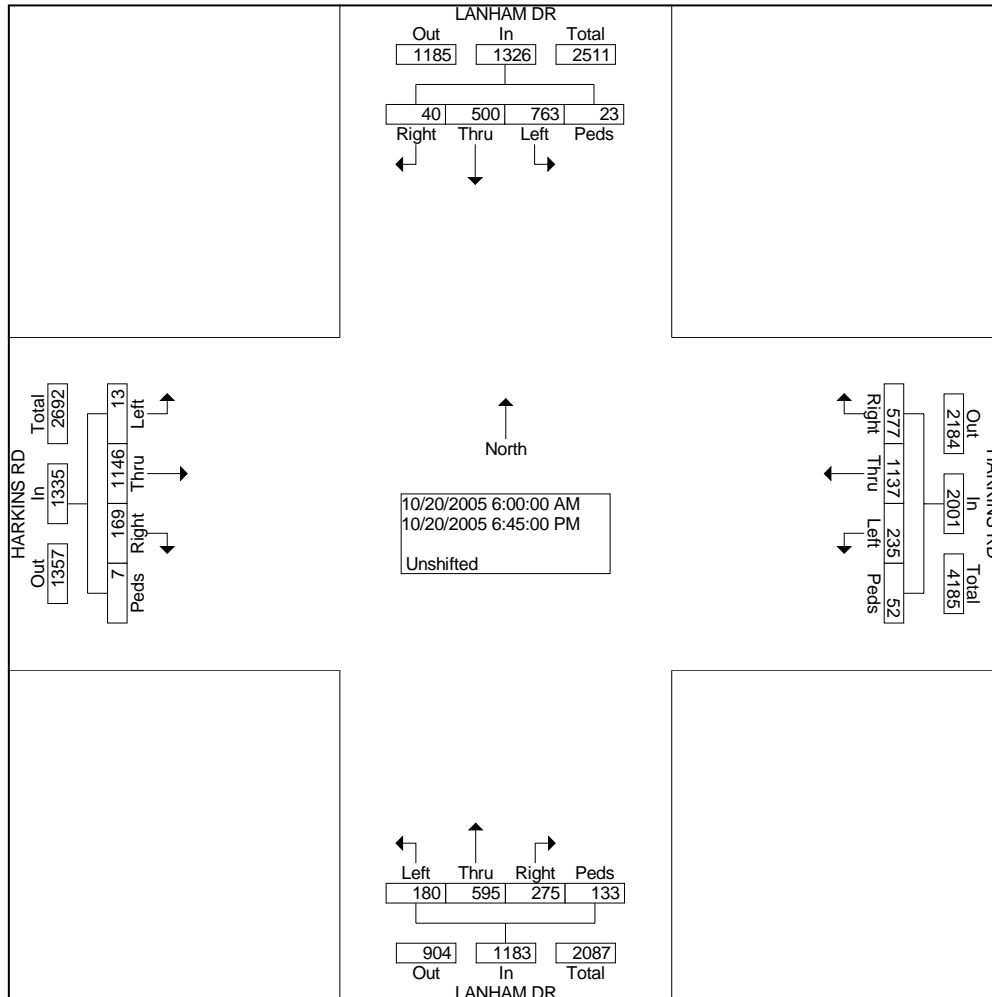
Sabra, Wang & Associates Inc  
 1504 Joh Avenue  
 Suite 160  
 Baltimore, MD 21227

Weather: Cloudy  
 Counted By: Casen  
 Town: Greenbelt  
 County: Prince George

File Name : HARKIN~4  
 Site Code : 00000000  
 Start Date : 10/20/2005  
 Page No : 2

Groups Printed- Unshifted

Start Time	LANHAM DR From North					HARKINS RD From East					LANHAM DR From South					HARKINS RD From West					Int. Total
	Left	Thru	Rght	Peds	App. Total	Left	Thru	Rght	Peds	App. Total	Left	Thru	Rght	Peds	App. Total	Left	Thru	Rght	Peds	App. Total	
Factor	1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		
04:00 PM	10	1	3	0	14	1	25	20	1	47	15	43	17	1	76	0	26	0	1	27	164
04:15 PM	10	1	1	2	14	0	29	30	2	61	6	38	15	0	59	0	21	1	0	22	156
04:30 PM	8	0	0	0	8	3	34	29	0	66	19	43	17	3	82	0	29	0	0	29	185
04:45 PM	22	0	1	0	23	0	41	26	0	67	5	52	19	4	80	0	27	0	0	27	197
Total	50	2	5	2	59	4	129	105	3	241	45	176	68	8	297	0	103	1	1	105	702
05:00 PM	13	0	2	1	16	0	34	19	0	53	10	42	21	0	73	0	33	0	0	33	175
05:15 PM	15	0	1	0	16	0	46	20	1	67	10	34	14	5	63	0	31	1	0	32	178
05:30 PM	18	0	1	0	19	0	43	19	3	65	7	20	21	0	48	0	35	0	0	35	167
05:45 PM	8	0	3	0	11	0	42	23	2	67	7	14	11	2	34	0	33	0	0	33	145
Total	54	0	7	1	62	0	165	81	6	252	34	110	67	7	218	0	132	1	0	133	665
06:00 PM	16	0	0	0	16	0	47	28	0	75	0	1	1	4	6	0	30	0	0	30	127
06:15 PM	22	0	0	0	22	0	37	23	0	60	0	0	0	0	0	0	25	0	0	25	107
06:30 PM	8	0	2	0	10	0	30	17	0	47	0	0	0	2	2	0	19	0	0	19	78
06:45 PM	10	0	1	0	11	0	25	12	0	37	0	0	0	0	0	0	18	0	0	18	66
Total	56	0	3	0	59	0	139	80	0	219	0	1	1	6	8	0	92	0	0	92	378
Grand Total	763	500	40	23	1326	235	1137	577	52	2001	180	595	275	133	1183	13	1146	169	7	1335	5845
Aprrch %	57.5	37.7	3.0	1.7		11.7	56.8	28.8	2.6		15.2	50.3	23.2	11.2		1.0	85.8	12.7	0.5		
Total %	13.1	8.6	0.7	0.4	22.7	4.0	19.5	9.9	0.9	34.2	3.1	10.2	4.7	2.3	20.2	0.2	19.6	2.9	0.1	22.8	



## Groups Printed- Unshifted

Start Time	Glenbrook Pkwy - Naval Medical C From North				Jones Bridge Road From East				Glenbrook Pkwy From South				Jones Bridge Road From West				Int. Total
	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	
06:00 AM	2	0	2	0	1	0	29	0	0	1	1	0	2	0	0	0	38
06:15 AM	6	0	11	0	0	0	45	2	0	0	1	2	5	0	0	0	72
06:30 AM	4	0	10	0	0	0	48	5	0	0	1	1	8	0	0	1	78
06:45 AM	7	0	5	5	2	0	40	7	1	0	0	7	9	0	0	0	83
Total	19	0	28	5	3	0	162	14	1	1	3	10	24	0	0	1	271
07:00 AM	13	0	7	1	2	0	40	16	1	1	0	7	6	0	1	0	95
07:15 AM	6	1	4	5	0	0	26	10	1	0	0	4	13	0	0	4	74
07:30 AM	12	0	14	0	1	0	30	1	3	0	1	1	5	0	1	0	69
07:45 AM	9	0	4	0	4	0	23	1	1	0	1	5	7	0	0	0	55
Total	40	1	29	6	7	0	119	28	6	1	2	17	31	0	2	4	293
08:00 AM	10	0	12	5	3	0	21	0	3	0	3	7	4	0	0	0	68
08:15 AM	10	0	8	0	0	0	17	2	2	0	2	1	5	0	0	3	50
08:30 AM	12	0	11	0	1	0	42	0	2	0	2	0	4	0	0	2	76
08:45 AM	17	0	5	0	1	0	21	1	0	0	2	1	0	0	0	1	49
Total	49	0	36	5	5	0	101	3	7	0	9	9	13	0	0	6	243
09:00 AM	8	0	9	1	3	0	33	1	3	0	0	0	5	0	0	2	65
09:15 AM	6	0	8	0	2	0	41	0	1	0	4	0	7	0	0	2	71
09:30 AM	26	0	10	0	0	0	30	0	1	0	1	1	4	0	0	2	75
09:45 AM	18	0	15	0	0	0	28	0	4	0	0	0	4	0	2	0	71
Total	58	0	42	1	5	0	132	1	9	0	5	1	20	0	2	6	282
10:00 AM	24	0	12	0	0	0	30	0	1	0	0	0	3	0	1	0	71
10:15 AM	22	0	9	0	5	0	39	0	1	0	1	0	9	0	0	0	86
10:30 AM	25	0	15	0	1	0	33	1	1	0	1	0	4	0	0	0	81
10:45 AM	13	0	14	0	2	0	18	0	2	0	2	0	3	0	3	0	57
Total	84	0	50	0	8	0	120	1	5	0	4	0	19	0	4	0	295
11:00 AM	20	0	22	0	1	0	26	1	0	0	0	0	2	0	2	1	75
11:15 AM	30	0	14	0	3	0	21	1	0	0	3	0	6	0	2	0	80
11:30 AM	18	0	18	0	4	0	23	2	2	0	0	2	6	0	0	1	76
11:45 AM	13	0	23	1	1	0	27	1	2	0	1	3	7	0	1	1	81
Total	81	0	77	1	9	0	97	5	4	0	4	5	21	0	5	3	312
12:00 PM	24	0	25	0	1	0	19	0	1	0	1	1	7	0	1	0	80
12:15 PM	21	0	22	2	1	0	15	1	0	0	1	3	8	0	1	0	75
12:30 PM	24	0	17	1	3	0	23	0	1	0	0	0	5	0	0	0	74
12:45 PM	22	0	22	0	0	0	19	0	2	1	0	0	3	0	0	0	69
Total	91	0	86	3	5	0	76	1	4	1	2	4	23	0	2	0	298
01:00 PM	24	0	29	0	3	0	26	1	0	0	2	0	8	0	0	0	93
01:15 PM	17	0	22	0	2	0	15	1	0	0	2	0	11	0	1	0	71
01:30 PM	31	0	22	0	0	0	17	0	0	0	0	0	5	0	1	0	76
01:45 PM	27	0	18	2	0	0	16	0	0	0	1	0	11	0	1	0	76
Total	99	0	91	2	5	0	74	2	0	0	5	0	35	0	3	0	316
02:00 PM	40	1	29	1	1	0	16	1	5	0	1	2	3	0	0	0	100
02:15 PM	37	0	24	0	5	0	23	0	0	0	0	2	8	0	1	1	101
02:30 PM	22	0	29	0	2	0	14	0	1	0	0	0	3	0	0	0	71
02:45 PM	23	0	23	0	1	0	15	1	0	0	3	0	4	0	1	0	71
Total	122	1	105	1	9	0	68	2	6	0	4	4	18	0	2	1	343
03:00 PM	30	0	30	0	2	0	21	0	1	0	1	0	5	0	0	0	90
03:15 PM	31	0	33	2	2	0	9	3	0	0	1	4	2	0	1	0	88
03:30 PM	20	0	53	1	1	0	11	0	1	0	0	0	2	0	0	0	89
03:45 PM	31	1	41	0	1	0	11	2	0	0	0	0	3	0	0	0	90
Total	112	1	157	3	6	0	52	5	2	0	2	4	12	0	1	0	357

File Name : Jones Bridge Rd@Glenbrook Pkwy  
 Site Code : 01031505  
 Start Date : 3/22/2006  
 Page No : 2

Groups Printed- Unshifted

Start Time	Glenbrook Pkwy - Naval Medical C From North				Jones Bridge Road From East				Glenbrook Pkwy From South				Jones Bridge Road From West				Int. Total
	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	
04:00 PM	24	0	53	0	4	0	9	2	0	0	2	2	2	0	2	0	100
04:15 PM	41	0	43	0	0	0	17	1	3	0	1	0	5	0	0	0	111
04:30 PM	42	1	50	3	1	0	14	1	4	1	1	1	3	0	4	0	126
04:45 PM	41	0	46	2	0	0	14	3	0	0	1	4	2	0	0	1	114
Total	148	1	192	5	5	0	54	7	7	1	5	7	12	0	6	1	451
05:00 PM	31	0	34	0	0	0	14	1	0	0	0	3	2	0	1	0	86
05:15 PM	28	0	30	2	1	0	15	0	1	0	1	2	2	0	4	1	87
05:30 PM	25	0	21	2	1	0	17	1	1	0	1	1	2	0	0	2	74
05:45 PM	16	0	19	10	1	0	15	1	2	1	1	16	2	0	0	7	91
Total	100	0	104	14	3	0	61	3	4	1	3	22	8	0	5	10	338
06:00 PM	24	0	25	3	3	0	10	4	4	0	0	7	1	0	2	0	83
06:15 PM	27	0	23	1	2	0	9	1	2	0	1	3	3	0	1	1	74
06:30 PM	12	0	15	0	1	0	8	0	3	0	0	1	1	0	1	0	42
06:45 PM	23	0	7	0	0	0	2	0	4	0	0	2	4	0	0	1	43
Total	86	0	70	4	6	0	29	5	13	0	1	13	9	0	4	2	242
Grand Total	1089	4	1067	50	76	0	1145	77	68	5	49	96	245	0	36	34	4041
Apprch %	49.3	0.2	48.3	2.3	5.9	0.0	88.2	5.9	31.2	2.3	22.5	44.0	77.8	0.0	11.4	10.8	
Total %	26.9	0.1	26.4	1.2	1.9	0.0	28.3	1.9	1.7	0.1	1.2	2.4	6.1	0.0	0.9	0.8	

Location: Jones Bridge Rd & Glenbrook Pk  
 County: Montgomery  
 Weather: Clear  
 Counters: JA



Groups Printed- Unshifted

Start Time	Grier Road From North				Jones Bridge Road From East				- From South				Jones Bridge Road From West				Int. Total	
	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds		
Factor	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	
04:00 PM	54	0	16	0	0	0	0	0	0	0	0	0	0	0	0	0	0	70
04:15 PM	70	0	13	0	0	0	0	0	0	0	0	0	0	0	0	0	0	83
04:30 PM	72	0	24	2	0	0	0	0	0	0	0	0	0	0	0	0	5	103
04:45 PM	33	0	14	0	0	0	0	0	0	0	0	0	0	0	0	0	0	47
Total	229	0	67	2	0	0	0	0	0	0	0	0	0	0	0	0	5	303
05:00 PM	49	0	21	0	0	0	0	0	0	0	0	0	0	0	0	0	0	70
05:15 PM	42	0	5	2	0	0	0	0	0	0	0	0	0	0	0	0	1	50
05:30 PM	13	0	12	0	0	0	0	0	0	0	0	0	0	0	0	0	1	26
05:45 PM	25	0	8	0	0	0	0	0	0	0	0	0	0	0	0	0	10	43
Total	129	0	46	2	0	0	0	0	0	0	0	0	0	0	0	0	12	189
06:00 PM	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1
06:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
06:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
06:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Grand Total	658	0	194	55	0	0	0	0	0	0	0	0	0	0	0	0	20	927
Apprch %	72.5	0.0	21.4	6.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	100.0	
Total %	71.0	0.0	20.9	5.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.2	

Location: Jones Bridge Rd & Grier Rd  
 County: Montgomery  
 Weather: Clear  
 Counters: LM



Groups Printed- 1 - Unshifted

Start Time	- From North				Jones Bridge Road From East				Manor Road From South				Jones Bridge Road From West				Int. Total
	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	
Factor	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
06:00 AM	0	0	0	0	8	73	0	0	1	0	12	0	0	16	0	0	110
06:15 AM	0	0	0	0	12	84	0	0	3	0	21	0	0	16	0	0	136
06:30 AM	0	0	0	0	11	132	0	0	5	0	29	0	0	23	1	0	201
06:45 AM	0	0	0	0	15	142	0	0	11	0	26	1	0	22	1	0	218
Total	0	0	0	0	46	431	0	0	20	0	88	1	0	77	2	0	665
07:00 AM	0	0	0	0	47	140	0	0	11	0	31	0	0	47	3	0	279
07:15 AM	0	0	0	0	37	157	0	0	11	0	43	0	0	34	5	0	287
07:30 AM	0	0	0	0	49	179	0	0	14	0	38	1	0	57	3	0	341
07:45 AM	0	0	0	0	57	168	0	0	18	0	57	0	0	63	7	0	370
Total	0	0	0	0	190	644	0	0	54	0	169	1	0	201	18	0	1277
08:00 AM	0	0	0	0	62	159	0	0	11	0	38	0	0	50	4	0	324
08:15 AM	0	0	0	0	58	178	0	0	11	0	48	3	0	52	2	0	352
08:30 AM	0	0	0	0	72	165	0	0	10	0	44	1	0	51	3	0	346
08:45 AM	0	0	0	0	75	147	0	0	22	0	43	8	0	78	4	2	379
Total	0	0	0	0	267	649	0	0	54	0	173	12	0	231	13	2	1401
09:00 AM	0	0	0	0	49	138	0	0	18	0	58	6	0	52	7	1	329
09:15 AM	0	0	0	0	39	120	0	0	6	0	47	0	0	50	0	0	262
09:30 AM	0	0	0	0	31	109	0	0	12	0	35	0	0	52	2	0	241
09:45 AM	0	0	0	0	15	114	0	0	9	0	40	0	0	31	2	0	211
Total	0	0	0	0	134	481	0	0	45	0	180	6	0	185	11	1	1043
10:00 AM	0	0	0	0	18	87	0	0	9	0	31	0	0	37	1	0	183
10:15 AM	0	0	0	0	19	83	0	0	5	0	45	0	0	34	1	0	187
10:30 AM	0	0	0	0	9	62	0	0	8	0	38	0	0	41	3	0	161
10:45 AM	0	0	0	0	14	75	0	0	6	0	36	0	0	32	2	0	165
Total	0	0	0	0	60	307	0	0	28	0	150	0	0	144	7	0	696
11:00 AM	0	0	0	0	14	72	0	0	6	0	30	0	0	38	3	0	163
11:15 AM	0	0	0	0	21	75	0	0	3	0	34	0	0	40	3	1	177
11:30 AM	0	0	0	0	20	86	0	0	10	0	42	1	0	48	2	0	209
11:45 AM	0	0	0	0	20	71	0	0	6	0	36	0	0	37	1	0	171
Total	0	0	0	0	75	304	0	0	25	0	142	1	0	163	9	1	720
12:00 PM	0	0	0	0	19	71	0	0	5	0	34	1	0	39	2	0	171
12:15 PM	0	0	0	0	15	81	0	0	3	0	55	0	0	32	2	0	188
12:30 PM	0	0	0	0	25	80	0	0	4	0	49	0	0	36	3	0	197
12:45 PM	0	0	0	0	13	81	0	0	9	0	53	1	0	39	4	0	200
Total	0	0	0	0	72	313	0	0	21	0	191	2	0	146	11	0	756
01:00 PM	0	0	0	0	11	84	0	0	6	0	44	0	0	45	1	0	191
01:15 PM	0	0	0	0	16	58	0	0	4	0	51	0	0	44	2	0	175
01:30 PM	0	0	0	0	14	79	0	0	5	0	39	1	0	55	2	0	195
01:45 PM	0	0	0	0	12	71	0	0	10	0	33	1	0	33	2	0	162
Total	0	0	0	0	53	292	0	0	25	0	167	2	0	177	7	0	723
02:00 PM	0	0	0	0	17	79	0	0	4	0	38	1	0	60	0	1	200
02:15 PM	0	0	0	0	16	104	0	0	8	0	39	0	0	51	2	0	220
02:30 PM	0	0	0	0	11	95	0	0	7	0	44	1	0	51	4	0	213
02:45 PM	0	0	0	0	16	121	0	0	1	0	39	0	0	57	1	0	235
Total	0	0	0	0	60	399	0	0	20	0	160	2	0	219	7	1	868
03:00 PM	0	0	0	0	22	127	0	0	14	0	61	0	0	80	4	0	308
03:15 PM	0	0	0	0	15	111	0	0	12	0	57	5	0	99	2	2	303
03:30 PM	0	0	0	0	11	125	0	0	13	0	44	14	0	111	7	11	336
03:45 PM	0	0	0	0	25	113	1	0	6	0	47	0	0	131	6	0	329
Total	0	0	0	0	73	476	1	0	45	0	209	19	0	421	19	13	1276

File Name : Jones Bridge Rd@Manor Rd  
 Site Code : 01031505  
 Start Date : 3/22/2006  
 Page No : 2

Groups Printed- 1 - Unshifted

Start Time	- From North				Jones Bridge Road From East				Manor Road From South				Jones Bridge Road From West				Int. Total
	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	
Factor	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	
04:00 PM	0	0	0	0	19	110	0	0	12	0	47	0	0	137	3	0	328
04:15 PM	0	0	0	0	20	126	0	0	13	0	70	6	0	149	4	0	388
04:30 PM	0	0	0	0	13	101	0	0	14	0	58	0	0	169	13	1	369
04:45 PM	0	0	0	0	21	112	0	0	13	0	54	0	0	206	4	0	410
Total	0	0	0	0	73	449	0	0	52	0	229	6	0	661	24	1	1495
05:00 PM	0	0	0	0	16	114	0	0	10	0	65	0	0	170	3	0	378
05:15 PM	0	0	0	0	27	104	0	0	11	0	41	1	0	185	5	0	374
05:30 PM	0	0	0	0	21	106	0	0	7	0	56	1	0	184	3	0	378
05:45 PM	0	0	0	0	16	126	0	0	12	0	70	0	0	174	6	0	404
Total	0	0	0	0	80	450	0	0	40	0	232	2	0	713	17	0	1534
06:00 PM	0	0	0	0	22	112	0	0	12	0	59	1	0	157	7	0	370
06:15 PM	0	0	0	0	15	121	0	0	6	0	65	0	0	140	5	0	352
06:30 PM	0	0	0	0	22	111	0	0	5	0	46	0	0	114	3	1	302
06:45 PM	0	0	0	0	16	86	0	0	3	0	33	0	0	103	2	0	243
Total	0	0	0	0	75	430	0	0	26	0	203	1	0	514	17	1	1267
Grand Total	0	0	0	0	1258	5625	1	0	455	0	2293	55	0	3852	162	20	13721
Apprch %	0.0	0.0	0.0	0.0	18.3	81.7	0.0	0.0	16.2	0.0	81.8	2.0	0.0	95.5	4.0	0.5	
Total %	0.0	0.0	0.0	0.0	9.2	41.0	0.0	0.0	3.3	0.0	16.7	0.4	0.0	28.1	1.2	0.1	

Location: Jones Bridge Rd & Manor Rd  
 County: Montgomery  
 Weather: Clear  
 Counters: SK, LH

Groups Printed- Unshifted

Start Time	- From North				Jones Bridge Road From East				Platt Ridge Road From South				Jones Bridge Road From West				Int. Total
	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	
06:00 AM	0	0	0	0	6	0	0	0	0	0	0	0	0	0	1	0	7
06:15 AM	0	0	0	0	1	0	0	0	0	0	1	0	0	0	0	0	2
06:30 AM	0	0	0	0	8	0	3	0	0	0	0	1	0	0	3	0	15
06:45 AM	0	0	0	0	15	0	0	0	2	0	0	1	0	0	4	0	22
Total	0	0	0	0	30	0	3	0	2	0	1	2	0	0	8	0	46
07:00 AM	0	0	0	0	5	0	0	1	0	0	1	0	0	0	4	0	11
07:15 AM	0	0	0	0	3	0	0	0	3	0	3	1	0	0	4	0	14
07:30 AM	0	0	0	0	4	0	0	0	2	0	2	1	0	0	5	1	15
07:45 AM	0	0	0	0	10	0	1	0	0	0	0	0	0	0	7	0	18
Total	0	0	0	0	22	0	1	1	5	0	6	2	0	0	20	1	58
08:00 AM	0	0	0	0	10	0	1	0	0	0	0	0	0	0	6	0	17
08:15 AM	0	0	0	0	8	0	3	1	1	0	0	0	0	0	9	0	22
08:30 AM	0	0	0	0	12	0	2	0	0	0	0	0	0	0	8	1	23
08:45 AM	0	0	0	0	11	0	1	1	0	0	0	0	0	0	9	2	24
Total	0	0	0	0	41	0	7	2	1	0	0	0	0	0	32	3	86
09:00 AM	0	0	0	0	12	0	0	0	3	0	1	0	0	0	3	0	19
09:15 AM	0	0	0	0	17	0	0	0	0	0	1	0	0	0	3	0	21
09:30 AM	0	0	0	0	9	0	0	0	0	0	0	0	0	0	1	0	10
09:45 AM	0	0	0	0	4	0	0	0	0	0	1	0	0	0	1	0	6
Total	0	0	0	0	42	0	0	0	3	0	3	0	0	0	8	0	56
10:00 AM	0	0	0	0	4	0	2	0	0	0	0	0	0	0	1	0	7
10:15 AM	0	0	0	0	2	0	0	0	0	0	0	0	0	0	1	0	3
10:30 AM	0	0	0	0	1	0	0	0	4	0	0	1	0	0	0	0	6
10:45 AM	0	0	0	0	2	0	0	0	0	0	0	0	0	0	5	0	7
Total	0	0	0	0	9	0	2	0	4	0	0	1	0	0	7	0	23
11:00 AM	0	0	0	0	0	0	0	0	3	0	0	0	0	0	1	0	4
11:15 AM	0	0	0	0	4	0	0	0	1	0	1	0	0	0	0	0	6
11:30 AM	0	0	0	0	1	0	0	0	0	0	1	0	0	0	3	0	5
11:45 AM	0	0	0	0	2	0	0	0	2	0	4	1	0	0	1	0	10
Total	0	0	0	0	7	0	0	0	6	0	6	1	0	0	5	0	25
12:00 PM	0	0	0	0	3	0	0	0	0	0	1	0	0	0	2	1	7
12:15 PM	0	0	0	0	3	0	0	0	3	0	2	0	0	0	3	0	11
12:30 PM	0	0	0	0	2	0	0	0	5	0	2	0	0	0	5	2	16
12:45 PM	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	2
Total	0	0	0	0	10	0	0	0	8	0	5	0	0	0	10	3	36
01:00 PM	0	0	0	0	2	0	0	0	1	0	3	0	0	0	0	0	6
01:15 PM	0	0	0	0	3	0	0	0	2	0	5	0	0	0	1	0	11
01:30 PM	0	0	0	0	5	0	0	0	0	0	2	0	0	0	3	0	10
01:45 PM	0	0	0	0	3	0	0	0	0	0	2	0	0	0	4	0	9
Total	0	0	0	0	13	0	0	0	3	0	12	0	0	0	8	0	36
02:00 PM	0	0	0	0	4	0	0	0	0	0	6	0	0	0	6	0	16
02:15 PM	0	0	0	0	4	0	0	0	2	0	3	0	0	0	2	0	11
02:30 PM	0	0	0	0	1	0	0	0	3	0	6	0	0	0	1	0	11
02:45 PM	0	0	0	0	0	0	0	0	0	0	2	0	0	0	3	0	5
Total	0	0	0	0	9	0	0	0	5	0	17	0	0	0	12	0	43
03:00 PM	0	0	0	0	1	0	0	0	1	0	0	1	0	0	0	0	3
03:15 PM	0	0	0	0	1	0	0	0	1	0	2	1	0	0	2	0	7
03:30 PM	0	0	0	0	1	0	0	0	1	0	3	0	0	0	0	0	5
03:45 PM	0	0	0	0	1	0	0	0	1	0	1	0	0	0	3	0	6
Total	0	0	0	0	4	0	0	0	4	0	6	2	0	0	5	0	21
04:00 PM	0	0	0	0	1	0	0	0	2	0	2	0	0	0	1	0	6
04:15 PM	0	0	0	0	0	0	0	0	1	0	3	0	0	0	2	0	6
04:30 PM	0	0	0	0	0	0	0	0	1	0	1	1	0	0	0	0	3
04:45 PM	0	0	0	0	2	0	0	0	2	0	3	0	0	0	3	1	11
Total	0	0	0	0	3	0	0	0	6	0	9	1	0	0	6	1	26

05:00 PM	0	0	0	0	0	0	0	0	3	0	8	0	0	0	2	0	13
05:15 PM	0	0	0	0	0	0	0	0	4	0	3	1	0	0	2	0	10
05:30 PM	0	0	0	0	2	0	0	0	1	0	2	2	0	0	0	0	7
05:45 PM	0	0	0	0	3	0	0	0	3	0	1	0	0	0	1	1	9
Total	0	0	0	0	5	0	0	0	11	0	14	3	0	0	5	1	39
06:00 PM	0	0	0	0	1	0	0	0	2	0	4	0	0	0	0	0	7
06:15 PM	0	0	0	0	0	0	0	0	3	0	4	0	0	0	1	0	8
06:30 PM	0	0	0	0	1	0	0	0	0	0	1	0	0	0	0	0	2
06:45 PM	0	0	0	0	2	0	0	0	1	0	5	0	0	0	1	0	9
Total	0	0	0	0	4	0	0	0	6	0	14	0	0	0	2	0	26
Grand Total	0	0	0	0	199	0	13	3	64	0	93	12	0	0	128	9	521
Apprch %	0.0	0.0	0.0	0.0	92.6	0.0	6.0	1.4	37.9	0.0	55.0	7.1	0.0	0.0	93.4	6.6	
Total %	0.0	0.0	0.0	0.0	38.2	0.0	2.5	0.6	12.3	0.0	17.9	2.3	0.0	0.0	24.6	1.7	

Location: Jones Bridge Rd & Platt Ridge

County: Montgomery

Weather: Clear

Counters: JW

Sabra, Wang & Associates Inc  
 1504 Joh Avenue  
 Suite 160  
 Baltimore, MD 21227

Weather: SUNNY  
 Counted By: AK, CK  
 Town: ADELPHI  
 County: P.G.

File Name : MD193@~3  
 Site Code : 00000000  
 Start Date : 09/13/2005  
 Page No : 1

Groups Printed- Unshifted

Start Time	ADELPHI ROAD From North					MD 193 From East					ADELPHI ROAD From South					MD 193 From West					Int. Total
	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	U-turns	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	
Factor	1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		
06:00 AM	10	47	7	0	64	19	57	8	2	86	0	62	11	0	73	14	67	2	0	83	306
06:15 AM	9	72	4	0	85	35	55	3	0	93	36	84	29	0	149	18	95	0	0	113	440
06:30 AM	12	130	15	0	157	57	150	30	0	237	0	74	39	0	113	12	102	0	0	114	621
06:45 AM	20	122	19	0	161	75	268	34	7	384	0	119	47	0	166	16	94	0	0	110	821
Total	51	371	45	0	467	186	530	75	9	800	36	339	126	0	501	60	358	2	0	420	2188
07:00 AM	23	158	10	0	191	85	325	37	6	453	0	133	45	0	178	19	104	0	1	124	946
07:15 AM	34	189	24	0	247	139	275	40	9	463	0	142	72	0	214	14	108	0	0	122	1046
07:30 AM	45	223	12	0	280	105	289	39	0	433	0	134	66	0	200	17	106	0	0	123	1036
07:45 AM	50	221	9	0	280	115	324	31	1	471	0	86	78	1	165	15	200	0	0	215	1131
Total	152	791	55	0	998	444	1213	147	16	1820	0	495	261	1	757	65	518	0	1	584	4159
08:00 AM	49	247	27	0	323	168	300	32	11	511	0	179	102	0	281	34	207	0	0	241	1356
08:15 AM	48	227	16	0	291	128	294	35	14	471	0	163	98	0	261	38	214	0	0	252	1275
08:30 AM	59	197	16	0	272	79	243	29	35	386	0	185	81	0	266	31	191	0	0	222	1146
08:45 AM	71	233	14	0	318	163	224	34	14	435	0	124	108	0	232	14	153	0	0	167	1152
Total	227	904	73	0	1204	538	1061	130	74	1803	0	651	389	0	1040	117	765	0	0	882	4929
09:00 AM	75	270	14	0	359	148	225	55	9	437	0	106	88	0	194	21	210	0	0	231	1221
09:15 AM	75	181	10	0	266	241	235	28	2	506	0	80	106	0	186	14	181	0	0	195	1153
09:30 AM	70	169	8	0	247	218	210	44	0	472	0	122	124	0	246	12	144	0	0	156	1121
09:45 AM	57	149	5	0	211	188	191	22	0	401	0	98	92	0	190	5	122	0	0	127	929
Total	277	769	37	0	1083	795	861	149	11	1816	0	406	410	0	816	52	657	0	0	709	4424
10:00 AM	42	166	10	0	218	69	107	16	0	192	0	100	48	0	148	3	120	0	0	123	681
10:15 AM	23	121	9	0	153	48	102	18	1	169	0	79	40	0	119	9	108	1	1	119	560
10:30 AM	54	143	8	0	205	88	110	19	0	217	0	81	64	0	145	12	163	1	0	176	743
10:45 AM	50	136	10	0	196	82	116	14	0	212	0	75	50	0	125	17	152	0	0	169	702
Total	169	566	37	0	772	287	435	67	1	790	0	335	202	0	537	41	543	2	1	587	2686
11:00 AM	14	117	10	0	141	77	124	24	4	229	0	100	77	0	177	18	121	0	0	139	686
11:15 AM	23	79	13	0	115	53	107	26	3	189	0	109	65	0	174	4	131	0	0	135	613
11:30 AM	29	106	18	0	153	62	110	21	1	194	0	113	72	0	185	12	109	0	1	122	654
11:45 AM	34	129	16	0	179	39	98	22	1	160	0	120	78	0	198	10	127	0	0	137	674
Total	100	431	57	0	588	231	439	93	9	772	0	442	292	0	734	44	488	0	1	533	2627
12:00 PM	36	100	10	0	146	78	150	22	3	253	0	86	86	0	172	14	135	0	0	149	720
12:15 PM	22	114	19	0	155	64	134	32	2	232	0	129	94	0	223	4	113	0	0	117	727
12:30 PM	20	89	14	0	123	78	125	31	2	236	1	141	100	0	242	7	119	0	0	126	727
12:45 PM	25	117	16	0	158	25	130	28	0	183	0	151	93	0	244	11	123	0	0	134	719
Total	103	420	59	0	582	245	539	113	7	904	1	507	373	0	881	36	490	0	0	526	2893
01:00 PM	22	104	13	0	139	28	128	28	3	187	0	158	107	0	265	9	132	0	0	141	732
01:15 PM	8	86	13	0	107	80	96	35	1	212	0	144	101	0	245	14	163	0	0	177	741
01:30 PM	14	88	16	0	118	48	123	36	1	208	0	122	83	0	205	7	145	0	0	152	683
01:45 PM	20	102	14	0	136	81	110	39	7	237	0	114	91	0	205	13	134	0	0	147	725
Total	64	380	56	0	500	237	457	138	12	844	0	538	382	0	920	43	574	0	0	617	2881
02:00 PM	15	92	20	0	127	53	148	27	2	230	0	146	83	0	229	11	132	0	0	143	729
02:15 PM	18	105	18	0	141	54	138	58	3	253	0	142	96	0	238	16	128	0	0	144	776
02:30 PM	13	115	23	0	151	85	128	63	1	277	0	146	100	0	246	11	131	0	0	142	816
02:45 PM	17	117	17	0	151	76	146	60	3	285	0	152	106	0	258	13	153	0	0	166	860
Total	63	429	78	0	570	268	560	208	9	1045	0	586	385	0	971	51	544	0	0	595	3181

Sabra, Wang & Associates Inc  
 1504 Joh Avenue  
 Suite 160  
 Baltimore, MD 21227

Weather: SUNNY  
 Counted By: AK, CK  
 Town: ADELPHI  
 County: P.G.

File Name : MD193@~3  
 Site Code : 00000000  
 Start Date : 09/13/2005  
 Page No : 2

Groups Printed- Unshifted

Start Time	ADELPHI ROAD From North					MD 193 From East					ADELPHI ROAD From South					MD 193 From West					Int. Total
	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	U-turns	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	
Factor	1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		
03:00 PM	25	123	22	0	170	80	120	58	0	258	0	167	120	0	287	15	175	0	0	190	905
03:15 PM	29	146	28	0	203	89	220	56	0	365	0	178	142	0	320	18	186	0	0	204	1092
03:30 PM	38	152	22	0	212	97	226	54	0	377	0	221	155	0	376	20	193	0	1	214	1179
03:45 PM	35	166	31	0	232	99	243	78	0	420	0	297	195	0	492	19	223	0	0	242	1386
Total	127	587	103	0	817	365	809	246	0	1420	0	863	612	0	1475	72	777	0	1	850	4562
04:00 PM	19	146	21	0	186	74	112	53	1	240	0	242	131	0	373	12	170	0	0	182	981
04:15 PM	17	128	20	0	165	71	206	80	3	360	0	243	125	0	368	19	186	0	1	206	1099
04:30 PM	28	153	17	0	198	73	149	61	0	283	0	246	178	0	424	14	180	0	0	194	1099
04:45 PM	21	141	14	0	176	103	176	55	1	335	0	248	167	0	415	18	185	0	1	204	1130
Total	85	568	72	0	725	321	643	249	5	1218	0	979	601	0	1580	63	721	0	2	786	4309
05:00 PM	26	190	32	0	248	95	187	71	1	354	0	239	166	0	405	22	177	0	1	200	1207
05:15 PM	27	182	23	0	232	106	217	73	2	398	0	236	168	0	404	28	261	0	0	289	1323
05:30 PM	25	188	27	0	240	88	161	70	0	319	0	237	133	0	370	24	324	0	0	348	1277
05:45 PM	28	240	28	0	296	85	120	76	0	281	0	227	130	0	357	24	372	0	0	396	1330
Total	106	800	110	0	1016	374	685	290	3	1352	0	939	597	0	1536	98	1134	0	1	1233	5137
06:00 PM	29	155	51	1	236	112	225	49	0	386	0	305	157	0	462	32	257	0	1	290	1374
06:15 PM	33	148	48	0	229	104	216	56	2	378	0	320	143	0	463	29	272	0	1	302	1372
06:30 PM	38	156	53	0	247	92	201	42	3	338	0	282	161	0	443	31	240	0	0	271	1299
06:45 PM	41	132	34	0	207	99	213	39	0	351	0	271	140	0	411	37	231	0	1	269	1238
Total	141	591	186	1	919	407	855	186	5	1453	0	1178	601	0	1779	129	1000	0	3	1132	5283
Grand Total	166	760	968	1	1024	469	908	209	161	1603	37	825	523	1	1352	871	856	4	10	9454	49259
Aprch %	16.3	74.3	9.5	0.0		29.3	56.7	13.0	1.0		0.3	61.0	38.7	0.0		9.2	90.6	0.0	0.1		
Total %	3.4	15.4	2.0	0.0	20.8	9.5	18.4	4.2	0.3	32.6	0.1	16.8	10.6	0.0	27.5	1.8	17.4	0.0	0.0	19.2	

Sabra, Wang & Associates Inc

1504 Joh Avenue

Suite 160

Baltimore, MD 21227

Weather: CLOUDY

Counted By: A. AJAY, SAM

Town: RIVERDALE

County: PRINCE GEORGE'S

File Name : MD201@~4

Site Code : 00000000

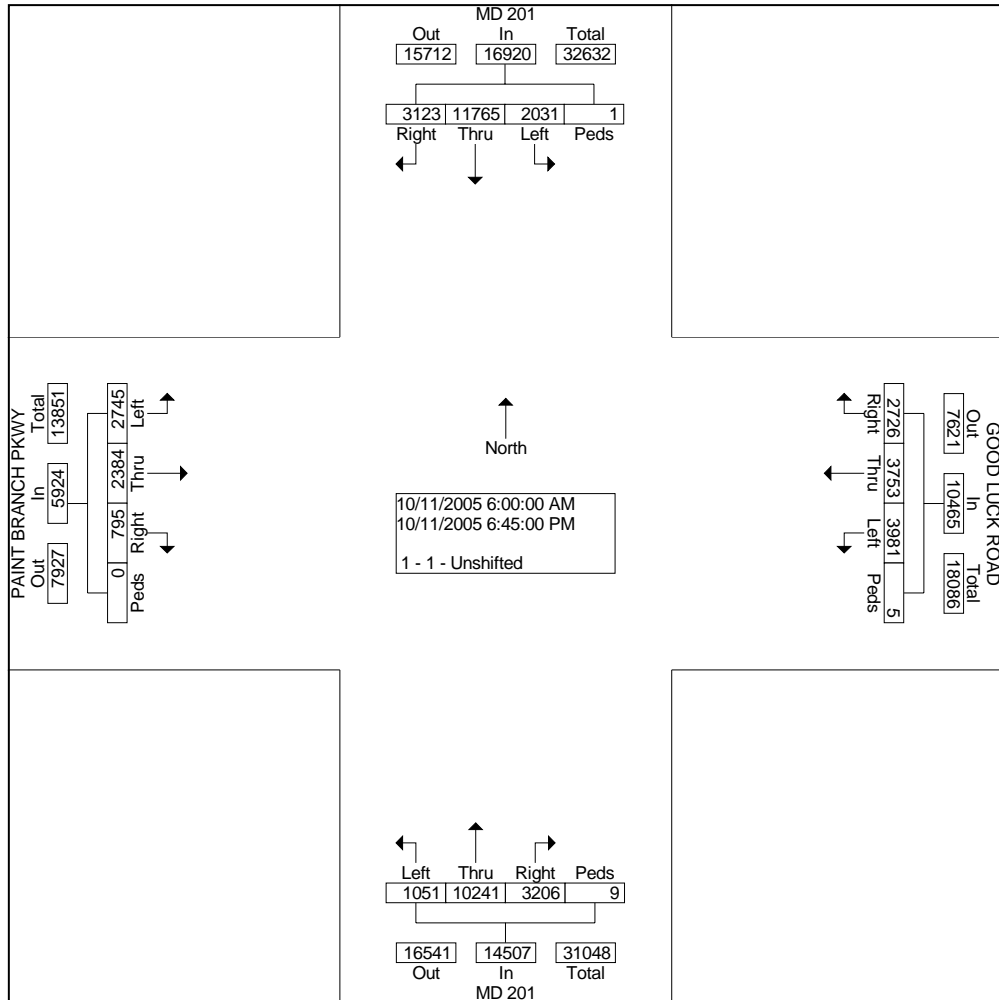
Start Date : 10/11/2005

Page No : 1

Groups Printed- 1 - 1 - Unshifted

Start Time	MD 201 From North					GOOD LUCK ROAD From East					MD 201 From South					PAINT BRANCH PKWY From West					Int. Total
	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	
Factor	1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		
06:00 AM	4	132	21	0	157	51	40	21	0	112	0	72	0	0	72	4	2	0	0	6	347
06:15 AM	6	141	33	0	180	62	46	31	0	139	10	119	15	0	144	8	8	1	0	17	480
06:30 AM	13	249	35	0	297	60	63	40	0	163	10	121	28	0	159	2	10	3	0	15	634
06:45 AM	18	301	48	0	367	81	77	41	0	199	11	157	32	1	201	3	11	2	0	16	783
Total	41	823	137	0	1001	254	226	133	0	613	31	469	75	1	576	17	31	6	0	54	2244
07:00 AM	24	333	78	0	435	112	113	60	0	285	14	188	38	0	240	9	11	4	0	24	984
07:15 AM	29	348	102	0	479	116	101	41	0	258	18	137	77	0	232	3	15	5	0	23	992
07:30 AM	32	364	124	0	520	102	123	41	0	266	10	149	83	0	242	10	16	5	0	31	1059
07:45 AM	27	364	158	0	549	127	194	56	1	378	31	177	80	1	289	19	14	6	0	39	1255
Total	112	1409	462	0	1983	457	531	198	1	1187	73	651	278	1	1003	41	56	20	0	117	4290
08:00 AM	23	314	128	1	466	150	164	46	1	361	26	169	52	1	248	24	23	15	0	62	1137
08:15 AM	22	301	128	0	451	117	136	61	0	314	29	158	60	0	247	23	29	11	0	63	1075
08:30 AM	22	288	116	0	426	116	141	37	0	294	33	152	41	1	227	22	20	10	0	52	999
08:45 AM	25	277	100	0	402	118	141	43	0	302	30	141	56	0	227	19	18	7	0	44	975
Total	92	1180	472	1	1745	501	582	187	1	1271	118	620	209	2	949	88	90	43	0	221	4186
09:00 AM	24	259	92	0	375	101	132	35	0	268	28	138	50	0	216	17	19	6	0	42	901
09:15 AM	29	268	81	0	378	98	130	24	0	252	28	135	47	0	210	15	20	7	0	42	882
09:30 AM	33	247	85	0	365	64	128	20	0	212	24	133	45	0	202	12	22	9	0	43	822
09:45 AM	26	225	80	0	331	58	126	28	0	212	28	146	33	0	207	19	29	12	0	60	810
Total	112	999	338	0	1449	321	516	107	0	944	108	552	175	0	835	63	90	34	0	187	3415
10:00 AM	25	209	71	0	305	53	110	30	0	193	14	156	32	0	202	18	18	14	0	50	750
10:15 AM	23	203	65	0	291	58	98	38	0	194	13	154	40	1	208	15	10	18	0	43	736
10:30 AM	20	201	62	0	283	60	92	34	0	186	11	162	42	0	215	18	9	20	0	47	731
10:45 AM	21	189	55	0	265	60	82	30	0	172	15	159	39	0	213	22	12	21	0	55	705
Total	89	802	253	0	1144	231	382	132	0	745	53	631	153	1	838	73	49	73	0	195	2922
11:00 AM	25	195	49	0	269	62	81	28	0	171	14	175	32	0	221	28	14	20	0	62	723
11:15 AM	26	199	52	0	277	68	75	28	0	171	18	165	34	0	217	29	18	17	0	64	729
11:30 AM	28	211	54	0	293	71	70	29	0	170	20	155	28	0	203	35	20	15	0	70	736
11:45 AM	30	225	53	0	308	72	66	32	0	170	23	149	22	0	194	36	24	20	0	80	752
Total	109	830	208	0	1147	273	292	117	0	682	75	644	116	0	835	128	76	72	0	276	2940
12:00 PM	34	235	60	0	329	68	62	38	0	168	28	159	29	0	216	34	26	24	0	84	797
12:15 PM	36	248	68	0	352	62	57	44	0	163	30	165	34	0	229	30	20	29	0	79	823
12:30 PM	41	222	72	0	335	58	52	48	0	158	32	189	39	0	260	28	17	32	0	77	830
12:45 PM	35	208	64	0	307	54	48	42	0	144	24	207	44	0	275	29	19	25	0	73	799
Total	146	913	264	0	1323	242	219	172	0	633	114	720	146	0	980	121	82	110	0	313	3249
01:00 PM	32	200	60	0	292	52	42	38	0	132	27	189	40	0	256	34	22	22	0	78	758
01:15 PM	28	184	58	0	270	59	35	40	0	134	22	180	40	0	242	34	24	18	0	76	722
01:30 PM	30	187	52	0	269	55	32	35	0	122	18	192	42	0	252	38	26	19	0	83	726
01:45 PM	31	195	54	0	280	51	30	39	0	120	14	198	48	0	260	42	30	22	0	94	754
Total	121	766	224	0	1111	217	139	152	0	508	81	759	170	0	1010	148	102	81	0	331	2960
02:00 PM	31	196	51	0	278	55	34	41	0	130	16	190	59	0	265	45	34	25	0	104	777
02:15 PM	46	198	40	0	284	70	39	54	0	163	17	232	56	0	305	55	41	22	0	118	870
02:30 PM	40	173	45	0	258	72	39	81	0	192	13	267	71	0	351	55	51	17	0	123	924
02:45 PM	43	165	39	0	247	76	56	86	0	218	27	231	54	0	312	48	47	14	0	109	886
Total	160	732	175	0	1067	273	168	262	0	703	73	920	240	0	1233	203	173	78	0	454	3457
03:00 PM	46	199	24	0	269	60	41	56	0	157	22	231	73	0	326	51	64	13	0	128	880
03:15 PM	30	196	46	0	272	64	32	67	0	163	12	256	52	0	320	67	63	11	0	141	896
03:30 PM	41	196	29	0	266	79	39	73	0	191	16	248	77	0	341	89	69	16	0	174	972
03:45 PM	64	201	32	0	297	59	46	80	0	185	32	259	93	3	387	107	56	20	0	183	1052
Total	181	792	131	0	1104	262	158	276	0	696	82	994	295	3	1374	314	252	60	0	626	3800

04:00 PM	41	214	35	0	290	64	38	86	1	189	11	248	88	0	347	110	77	28	0	215	1041
04:15 PM	52	225	31	0	308	84	38	56	0	178	23	235	79	0	337	113	104	20	0	237	1060
04:30 PM	84	217	33	0	334	60	65	74	0	199	29	260	109	0	398	114	108	19	0	241	1172
04:45 PM	66	227	44	0	337	86	54	93	0	233	22	267	120	0	409	165	158	13	0	336	1315
Total	243	883	143	0	1269	294	195	309	1	799	85	1010	396	0	1491	502	447	80	0	1029	4588
05:00 PM	73	239	41	0	353	78	47	94	0	219	17	299	144	1	461	138	136	20	0	294	1327
05:15 PM	86	225	43	0	354	92	47	96	1	236	20	304	122	0	446	141	129	19	0	289	1325
05:30 PM	88	219	45	0	352	90	49	92	0	231	22	300	126	0	448	138	124	22	0	284	1315
05:45 PM	89	201	43	0	333	86	45	90	0	221	24	292	124	0	440	134	121	20	0	275	1269
Total	336	884	172	0	1392	346	188	372	1	907	83	1195	516	1	1795	551	510	81	0	1142	5236
06:00 PM	80	195	40	0	315	82	43	82	0	207	21	288	122	0	431	131	115	18	0	264	1217
06:15 PM	75	190	38	0	303	80	40	80	0	200	20	271	115	0	406	125	110	15	0	250	1159
06:30 PM	71	187	35	0	293	76	38	75	1	190	18	265	108	0	391	121	107	13	0	241	1115
06:45 PM	63	180	31	0	274	72	36	72	0	180	16	252	92	0	360	119	94	11	0	224	1038
Total	289	752	144	0	1185	310	157	309	1	777	75	1076	437	0	1588	496	426	57	0	979	4529
Grand Total	203	117	312	1	1692	398	375	272	5	1046	105	102	320	9	1450	274	238	795	0	5924	47816
Apprch %	12.0	69.5	18.5	0.0		38.0	35.9	26.0	0.0		7.2	70.6	22.1	0.1		46.3	40.2	13.4	0.0		
Total %	4.2	24.6	6.5	0.0	35.4	8.3	7.8	5.7	0.0	21.9	2.2	21.4	6.7	0.0	30.3	5.7	5.0	1.7	0.0	12.4	





Maryland State Highway Administration  
Highway Information Services Division  
Turning Counts Study - Field Sheet

Request No.: 69092  
Job No.: 68082

Location: MD 201 at Rittenhouse Street  
Date (m/d/y): 1/19/2006  
Recorder: ER/AM  
Interval (dd): 15  
(In Minutes)

County: PRINCE GEORGE'S  
Town: RIVERDALE  
Weather: SUNNY

Street Name	MD 201				MD 201				RITTENHOUSE STREET				EXIT/ENTRANCE TO SHOPPING CENTER				TOT
	From North		From South		From East		From West		From East		From West		From West				
Hour Ending	L	T	R	TOT	L	T	R	TOT	L	T	R	TOT	L	T	R	TOT	TOT
00:15				0				0				0				0	0
00:30				0				0				0				0	0
00:45				0				0				0				0	0
01:00				0				0				0				0	0
01:15				0				0				0				0	0
01:30				0				0				0				0	0
01:45				0				0				0				0	0
02:00				0				0				0				0	0
02:15				0				0				0				0	0
02:30				0				0				0				0	0
02:45				0				0				0				0	0
03:00				0				0				0				0	0
03:15				0				0				0				0	0
03:30				0				0				0				0	0
03:45				0				0				0				0	0
04:00				0				0				0				0	0
04:15				0				0				0				0	0
04:30				0				0				0				0	0
04:45				0				0				0				0	0
05:00				0				0				0				0	0
05:15				0				0				0				0	0
05:30				0				0				0				0	0
05:45				0				0				0				0	0
06:00				0				0				0				0	0
06:15	1	166	2	169	4	112	2	118	5	0	16	21	0	0	2	2	310
06:30	1	191	0	192	1	185	2	188	5	0	6	11	0	1	0	1	382
06:45	3	239	0	242	8	172	4	184	4	0	9	13	3	0	0	3	442
07:00	13	250	0	263	4	213	1	218	2	1	7	10	7	0	3	10	501
07:15	2	298	0	300	4	183	4	191	3	0	9	12	5	0	4	9	512
07:30	1	291	0	292	5	266	3	274	6	1	10	17	1	0	3	4	587
07:45	4	400	2	405	4	286	4	294	5	1	10	16	1	0	5	6	722
08:00	1	372	0	375	4	292	3	299	3	2	2	7	2	0	3	5	684
08:15	5	340	0	345	6	274	1	281	3	0	9	12	3	2	2	7	645
08:30	2	354	2	358	5	269	1	275	1	0	9	10	2	0	2	4	647
08:45	0	285	7	293	7	285	3	295	2	1	3	6	2	1	5	8	602
09:00	4	243	1	248	7	264	1	272	1	1	3	5	6	0	9	14	639
09:15	3	238	1	242	22	262	4	278	1	0	1	2	6	0	3	9	631
09:30	2	253	5	260	27	198	1	226	3	1	7	11	7	1	9	17	614
09:45	2	287	2	271	12	241	0	253	0	0	2	2	6	0	4	10	636
10:00	1	253	1	255	9	203	2	214	2	0	0	2	3	0	7	10	481
10:15	1	187	2	190	20	218	0	238	2	0	2	4	8	0	7	15	447
10:30	1	218	4	223	9	176	2	187	0	0	0	0	6	0	12	18	428
10:45	3	161	1	165	14	207	2	223	0	0	3	3	3	0	6	8	400
11:00	0	209	2	211	5	220	5	230	0	0	6	6	7	0	10	17	484
11:15	3	198	2	203	12	184	2	198	3	2	5	10	6	2	8	16	427
11:30	3	184	0	187	5	203	1	209	2	0	1	3	9	0	8	17	416
11:45	2	157	4	163	9	227	1	237	0	0	3	3	3	0	6	9	412
12:00	3	231	3	237	19	192	3	214	1	0	2	3	7	0	11	18	472
12:15	1	222	1	224	11	210	4	225	0	0	1	1	10	1	9	20	470
12:30	6	208	2	216	7	198	5	210	1	1	5	7	11	0	16	27	480
12:45	2	183	0	185	11	193	3	207	6	1	2	9	11	0	6	17	418
13:00	2	223	3	228	12	201	5	218	1	0	0	1	8	1	5	14	461
13:15	5	183	1	189	13	240	4	257	4	2	5	11	1	0	3	4	461
13:30	7	194	1	202	8	208	2	219	3	0	5	8	8	1	19	28	457
13:45	8	229	3	240	12	222	2	236	0	0	2	2	5	1	9	15	493
14:00	4	210	2	216	7	220	1	228	0	0	2	2	11	2	9	22	488
14:15	1	148	1	150	22	226	5	253	1	0	5	6	8	4	11	23	432
14:30	6	235	3	244	9	223	1	233	2	2	4	8	10	1	4	15	500
14:45	4	230	1	235	11	260	5	276	0	1	1	2	9	1	7	17	530
15:00	5	250	3	258	5	256	5	266	2	2	2	6	6	0	7	13	643
15:15	6	205	1	212	9	294	6	309	0	1	6	7	13	1	2	16	544
15:30	5	224	1	230	12	302	9	323	1	1	5	7	6	0	5	11	671
15:45	12	216	2	230	15	297	3	316	1	2	2	5	9	0	14	23	674
16:00	13	249	0	262	6	349	3	358	5	0	10	15	6	2	10	18	653
16:15	15	244	2	261	7	291	6	304	0	0	0	0	15	1	6	22	587
16:30	14	340	0	354	12	386	4	402	4	0	2	6	9	0	6	15	777
16:45	26	265	0	291	20	341	10	371	2	1	11	14	11	4	8	23	698
17:00	22	314	2	338	22	395	4	421	0	3	5	11	10	2	12	24	794
17:15	21	263	0	284	15	422	7	444	3	2	7	12	9	1	7	17	757
17:30	21	275	3	299	12	437	4	453	3	1	6	10	9	1	7	17	779
17:45	14	250	0	264	14	405	6	429	5	0	11	16	8	0	3	11	720
18:00	18	299	1	318	15	375	7	397	2	2	14	18	7	1	6	13	746
18:15	11	260	1	272	34	362	9	405	1	2	10	13	3	2	5	10	700
18:30	33	273	1	307	21	433	7	461	3	1	17	21	8	0	3	11	800
18:45	14	243	2	255	17	391	11	419	6	0	18	24	9	0	6	15	717
19:00	12	211	2	225	9	376	3	389	6	0	9	15	3	1	4	8	636
19:15				0				0				0				0	0
19:30				0				0				0				0	0
19:45				0				0				0				0	0
20:00				0				0				0				0	0
20:15				0				0				0				0	0
20:30				0				0				0				0	0
20:45				0				0				0				0	0
21:00				0				0				0				0	0
21:15				0				0				0				0	0
21:30				0				0				0				0	0
21:45				0				0				0				0	0
22:00				0				0				0				0	0
22:15				0				0				0				0	0
22:30				0				0				0				0	0
22:45				0				0				0				0	0
23:00				0				0				0				0	0
23:15				0				0				0				0	0
23:30				0				0				0				0	0
23:45				0				0				0				0	0
00:00				0				0				0				0	0
<b>TOTAL</b>	369	12632	80	13081	592	13638	193	14624	116	35	285	446	334	35	338	707	28858

PEDESTRIAN SCHOOL CHILDREN & U-TURN BREAKDOWN

Hour Ending	NORTH LEG			SOUTH LEG			EAST LEG			WEST LEG		
	S.C.	PED.	U.T.	S.C.	PED.	U.T.	S.C.	PED.	U.T.	S.C.	PED.	U.T.
0:15												
0:30												
0:45												
1:00												
1:15												
1:30												
1:45												
2:00												
2:15												
2:30												
2:45												
3:00												
3:15												
3:30												
3:45												
4:00												
4:15												
4:30												
4:45												
5:00												
5:15												
5:30												
5:45												
6:00												
6:15	0	0	0	0	0	0	0	0	0	0	0	0
6:30	0	0	1	0	0	0	0	0	0	0	0	0
6:45	0	0	1	0	0	1	0	0	0	0	0	0
7:00	0	0	0	0	0	0	0	0	0	0	0	0
7:15	0	0	0	0	0	0	0	0	0	0	0	0
7:30	0	0	0	0	0	0	0	0	0	0	0	0
7:45	0	0	1	0	0	0	0	0	0	0	0	0
8:00	0	0	0	0	0	0	0	0	0	0	0	0
8:15	0	0	0	0	0	0	0	0	0	0	0	0
8:30	0	0	0	0	0	0	0	0	0	0	0	0
8:45	0	0	0	0	0	0	0	0	0	0	0	0
9:00	0	0	0	0	0	0	0	0	0	0	0	0
9:15	0	0	0	0	0	0	0	0	0	0	0	0
9:30	0	0	0	0	0	0	0	0	0	0	0	0
9:45	0	0	0	0	0	0	0	0	0	0	0	0
10:00	0	0	0	0	0	0	0	0	0	0	0	0
10:15	0	0	1	0	0	0	0	0	0	0	0	0
10:30	0	0	0	0	0	0	0	0	0	0	0	0
10:45	0	0	1	0	0	0	0	0	0	0	0	0
11:00	0	0	1	0	0	0	0	0	0	0	0	0
11:15	0	0	1	0	0	0	0	0	0	0	0	0
11:30	0	0	1	0	0	0	0	0	0	0	0	0
11:45	0	0	0	0	0	0	0	0	0	0	0	0
12:00	0	0	0	0	0	0	0	0	0	0	0	0
12:15	0	0	2	0	0	0	0	0	0	0	0	0
12:30	0	0	2	0	0	0	0	0	0	0	0	0
12:45	0	0	3	0	0	0	0	0	0	0	0	0
13:00	0	0	1	0	0	0	0	0	0	0	0	0
13:15	0	0	0	0	0	0	0	0	0	0	0	0
13:30	0	0	0	0	0	0	0	0	0	0	0	0
13:45	0	0	0	0	0	0	0	0	0	0	0	0
14:00	0	0	0	0	0	1	0	0	0	0	0	0
14:15	0	0	0	0	0	0	0	0	0	0	0	0
14:30	0	0	1	0	0	0	0	0	0	0	0	0
14:45	0	0	2	0	0	0	0	0	0	0	0	0
15:00	0	0	0	0	0	0	0	0	0	0	0	0
15:15	0	0	2	0	0	0	0	0	0	0	0	0
15:30	0	0	2	0	0	0	0	0	0	0	0	0
15:45	0	0	0	0	0	1	0	0	0	0	0	0
16:00	0	0	1	0	0	0	0	0	0	0	0	0
16:15	0	0	2	0	0	0	0	0	0	0	0	0
16:30	0	0	1	0	0	0	0	0	0	0	0	0
16:45	0	0	0	0	0	0	0	0	0	0	0	0
17:00	0	0	0	0	0	0	0	0	0	0	0	0
17:15	0	0	1	0	0	1	0	0	0	0	0	0
17:30	0	0	0	0	0	0	0	0	0	0	0	0
17:45	0	0	0	0	0	0	0	0	0	0	0	0
18:00	0	0	1	0	0	0	0	0	0	0	0	0
18:15	0	0	2	0	0	0	0	0	0	0	0	0
18:30	0	0	2	0	0	0	0	0	0	0	0	0
18:45	0	0	5	0	0	0	0	0	0	0	0	0
19:00	0	0	4	0	0	0	0	0	0	0	0	0
19:15												
19:30												
19:45												
20:00												
20:15												
20:30												
20:45												
21:00												
21:15												
21:30												
21:45												
22:00												
22:15												
22:30												
22:45												
23:00												
23:15												
23:30												
23:45												
0:00												
TOTAL	0	0	42	0	0	4	0	0	0	0	0	0

Sabra, Wang & Associates Inc  
 1504 Joh Avenue  
 Suite 160  
 Baltimore, MD 21227

Weather: CLOUDY  
 Counted By: AP, SAM  
 Town: RIVERDALE  
 County: P.G.

File Name : md201@~2  
 Site Code : 00000000  
 Start Date : 10/12/2005  
 Page No : 1

Groups Printed- 1 - Unshifted

Start Time	MD 201 From North					Tuckerman Street From East					MD 201 From South					RIVER RD From West					Int. Total
	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	
Factor	1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		
06:00 AM	0	123	24	0	147	0	0	0	0	0	22	89	0	0	111	7	0	7	0	14	272
06:15 AM	0	171	29	0	200	0	0	0	0	0	29	125	0	0	154	9	0	7	0	16	370
06:30 AM	0	259	41	0	300	0	0	0	0	0	45	158	0	0	203	10	0	14	0	24	527
06:45 AM	0	299	55	0	354	0	0	0	0	0	51	171	0	0	222	12	0	18	0	30	606
Total	0	852	149	0	1001	0	0	0	0	0	147	543	0	0	690	38	0	46	0	84	1775
07:00 AM	0	328	68	0	396	0	0	0	0	0	64	189	0	0	253	15	1	19	0	35	684
07:15 AM	0	318	72	0	390	2	0	1	0	3	84	196	0	0	280	11	0	20	0	31	704
07:30 AM	0	358	112	0	470	0	0	1	0	1	78	194	0	0	272	10	0	21	0	31	774
07:45 AM	0	367	105	1	473	0	0	0	1	1	92	191	0	0	283	25	1	28	0	54	811
Total	0	1371	357	1	1729	2	0	2	1	5	318	770	0	0	1088	61	2	88	0	151	2973
08:00 AM	0	329	70	0	399	0	0	0	0	0	87	183	0	0	270	24	0	29	0	53	722
08:15 AM	0	300	74	0	374	0	0	0	0	0	81	180	0	0	261	21	0	30	0	51	686
08:30 AM	0	327	78	0	405	0	0	0	0	0	69	173	0	0	242	11	0	22	1	34	681
08:45 AM	0	262	52	0	314	1	0	0	0	1	75	164	0	0	239	15	0	11	0	26	580
Total	0	1218	274	0	1492	1	0	0	0	1	312	700	0	0	1012	71	0	92	1	164	2669
09:00 AM	0	282	53	0	335	0	0	0	0	0	59	160	0	0	219	12	0	11	0	23	577
09:15 AM	0	255	37	0	292	0	0	0	0	0	61	178	0	0	239	6	0	21	0	27	558
09:30 AM	0	263	34	0	297	0	0	0	0	0	57	172	0	0	229	10	0	18	0	28	554
09:45 AM	0	222	32	0	254	0	0	0	0	0	51	171	0	0	222	13	0	17	0	30	506
Total	0	1022	156	0	1178	0	0	0	0	0	228	681	0	0	909	41	0	67	0	108	2195
10:00 AM	1	199	30	0	230	0	0	0	0	0	44	174	0	0	218	17	0	16	1	34	482
10:15 AM	0	194	27	0	221	0	0	0	0	0	55	174	0	0	229	10	0	14	0	24	474
10:30 AM	3	211	20	3	237	1	0	2	0	3	30	168	0	0	198	8	0	21	0	29	467
10:45 AM	1	199	21	0	221	0	0	1	0	1	31	156	0	0	187	12	0	18	0	30	439
Total	5	803	98	3	909	1	0	3	0	4	160	672	0	0	832	47	0	69	1	117	1862
11:00 AM	0	191	20	0	211	0	0	0	0	0	28	155	0	0	183	10	0	16	0	26	420
11:15 AM	1	188	18	0	207	0	0	0	0	0	24	149	0	0	173	8	0	18	0	26	406
11:30 AM	1	182	14	0	197	0	0	0	0	0	22	144	0	0	166	9	1	15	0	25	388
11:45 AM	1	190	19	0	210	0	0	0	0	0	20	132	0	0	152	10	0	14	0	24	386
Total	3	751	71	0	825	0	0	0	0	0	94	580	0	0	674	37	1	63	0	101	1600
12:00 PM	0	195	21	0	216	0	0	0	0	0	29	148	0	0	177	11	0	17	0	28	421
12:15 PM	0	204	25	0	229	0	0	0	0	0	32	153	0	0	185	14	0	20	0	34	448
12:30 PM	1	200	29	0	230	0	0	0	0	0	35	177	0	0	212	18	0	22	0	40	482
12:45 PM	1	199	32	0	232	0	0	0	0	0	38	222	0	0	260	22	1	24	0	47	539
Total	2	798	107	0	907	0	0	0	0	0	134	700	0	0	834	65	1	83	0	149	1890
01:00 PM	0	184	28	0	212	0	0	0	0	0	32	205	0	0	237	20	0	22	0	42	491
01:15 PM	1	188	27	0	216	0	0	0	0	0	28	184	0	0	212	18	0	18	0	36	464
01:30 PM	1	191	24	0	216	0	0	0	0	0	25	187	0	0	212	14	0	25	0	39	467
01:45 PM	1	187	20	0	208	0	0	0	0	0	24	195	0	0	219	15	0	28	0	43	470
Total	3	750	99	0	852	0	0	0	0	0	109	771	0	0	880	67	0	93	0	160	1892
02:00 PM	1	194	20	0	215	0	0	0	2	2	22	190	0	0	212	14	1	35	0	50	479
02:15 PM	2	193	12	0	207	0	0	0	0	0	26	224	0	0	250	23	0	30	0	53	510
02:30 PM	1	199	12	0	212	2	0	0	0	2	18	199	0	0	217	15	0	34	0	49	480
02:45 PM	1	189	8	0	198	0	0	2	0	2	30	216	0	0	246	13	0	25	0	38	484
Total	5	775	52	0	832	2	0	2	2	6	96	829	0	0	925	65	1	124	0	190	1953

Sabra, Wang & Associates Inc  
 1504 Joh Avenue  
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Weather: CLOUDY  
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File Name : md201@~2  
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 Start Date : 10/12/2005  
 Page No : 2

Groups Printed- 1 - Unshifted

Start Time	MD 201 From North					Tuckerman Street From East					MD 201 From South					RIVER RD From West					Int. Total
	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	
Factor	1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		
03:00 PM	0	218	4	0	222	0	0	0	0	0	15	233	0	0	248	30	0	43	0	73	543
03:15 PM	1	179	14	0	194	0	0	0	0	0	13	194	0	0	207	19	0	28	0	47	448
03:30 PM	0	199	15	0	214	0	0	0	0	0	17	210	0	0	227	25	0	32	0	57	498
03:45 PM	0	226	18	1	245	0	0	0	1	1	18	237	0	1	256	37	0	48	0	85	587
Total	1	822	51	1	875	0	0	0	1	1	63	874	0	1	938	111	0	151	0	262	2076
04:00 PM	7	228	12	0	247	0	0	0	0	0	23	243	0	0	266	38	0	33	0	71	584
04:15 PM	4	231	12	0	247	1	0	0	0	1	17	255	1	1	274	53	0	50	0	103	625
04:30 PM	0	256	8	0	264	1	0	0	0	1	19	278	0	0	297	34	0	49	0	83	645
04:45 PM	0	279	11	0	290	1	0	1	0	2	25	290	0	0	315	72	0	70	0	142	749
Total	11	994	43	0	1048	3	0	1	0	4	84	1066	1	1	1152	197	0	202	0	399	2603
05:00 PM	0	282	14	0	296	0	1	0	0	1	26	293	1	0	320	56	0	79	1	136	753
05:15 PM	1	290	15	0	306	0	0	2	1	3	25	321	0	0	346	83	0	79	0	162	817
05:30 PM	0	279	11	0	290	0	0	0	0	0	24	329	0	0	353	50	0	60	0	110	753
05:45 PM	0	266	12	0	278	0	0	1	0	1	22	305	0	0	327	50	0	58	0	108	714
Total	1	1117	52	0	1170	0	1	3	1	5	97	1248	1	0	1346	239	0	276	1	516	3037
06:00 PM	0	221	14	0	235	1	0	0	0	1	20	281	0	0	301	48	0	54	0	102	639
06:15 PM	0	195	12	0	207	0	0	1	0	1	18	268	0	0	286	44	0	52	0	96	590
06:30 PM	0	194	10	0	204	0	1	0	0	1	18	248	0	0	266	32	0	48	0	80	551
06:45 PM	0	188	10	0	198	0	0	0	0	0	14	232	0	0	246	30	0	44	0	74	518
Total	0	798	46	0	844	1	1	1	0	3	70	1029	0	0	1099	154	0	198	0	352	2298
Grand Total	31	12071	1555	5	13662	10	2	12	5	29	1912	10463	2	2	12379	1193	5	1552	3	2753	28823
Apprch %	0.2	88.4	11.4	0.0		34.5	6.9	41.4	17.2		15.4	84.5	0.0	0.0		43.3	0.2	56.4	0.1		
Total %	0.1	41.9	5.4	0.0	47.4	0.0	0.0	0.0	0.0	0.1	6.6	36.3	0.0	0.0	42.9	4.1	0.0	5.4	0.0	9.6	

Maryland State Highway Administration  
Highway Information Services Division  
Turning Counts Study - Field Sheet

Request No.: 88091  
Job No.: 88091

Location: MD 201 at Savris Avenue  
Date (m/d/y): 1/19/2006  
Recorder: MPAHM  
Interval (dd): 15  
(In Minutes)

County: PRINCE GEORGE'S  
Town: RIVERDALE  
Weather: SUNNY

Street Name→ Hour Ending	MD 201 From North				MD 201 From South				SAVRIS AVENUE From East				N/A From West				TOT
	L	T	R	TOT	L	T	R	TOT	L	T	R	TOT	L	T	R	TOT	
	00:15				0				0				0				
00:30				0				0				0				0	0
00:45				0				0				0				0	0
01:00				0				0				0				0	0
01:15				0				0				0				0	0
01:30				0				0				0				0	0
01:45				0				0				0				0	0
02:00				0				0				0				0	0
02:15				0				0				0				0	0
02:30				0				0				0				0	0
02:45				0				0				0				0	0
03:00				0				0				0				0	0
03:15				0				0				0				0	0
03:30				0				0				0				0	0
03:45				0				0				0				0	0
04:00				0				0				0				0	0
04:15				0				0				0				0	0
04:30				0				0				0				0	0
04:45				0				0				0				0	0
05:00				0				0				0				0	0
06:15				0				0				0				0	0
06:30				0				0				0				0	0
06:45				0				0				0				0	0
07:00				0				0				0				0	0
07:15	2	165	0	167	0	125	1	127	4	0	1	5	0	0	0	0	289
07:30	7	217	0	224	0	162	1	163	4	0	3	7	0	0	0	0	394
07:45	3	253	0	256	0	150	1	151	1	0	4	5	0	0	0	0	422
08:00	4	300	0	304	0	157	2	159	2	0	2	4	0	0	0	0	467
08:15	7	330	0	337	0	148	1	149	0	0	5	5	0	0	0	0	491
08:30	8	336	0	344	0	217	2	219	1	0	4	5	0	0	0	0	568
08:45	5	361	0	366	0	235	7	242	1	0	1	2	0	0	0	0	610
09:00	7	403	0	410	0	265	1	266	3	0	3	6	0	0	0	0	682
09:15	15	306	0	321	0	186	12	198	4	0	4	8	0	0	0	0	527
09:30	17	318	0	335	0	205	8	213	1	0	11	12	0	0	0	0	558
09:45	18	332	0	350	0	141	3	144	1	0	4	5	0	0	0	0	498
09:00	23	295	0	318	0	187	20	207	3	0	10	13	0	0	0	0	538
09:15	26	331	0	357	0	192	13	205	5	0	3	8	0	0	0	0	570
09:30	24	276	0	300	0	196	7	203	0	0	18	18	0	0	0	0	491
09:45	18	273	0	291	0	205	5	210	5	0	7	12	0	0	0	0	513
10:00	13	252	0	265	0	172	10	182	7	0	6	13	0	0	0	0	460
10:15	13	224	0	237	0	171	11	182	6	0	9	15	0	0	0	0	434
10:30	11	231	0	242	0	158	11	169	4	0	7	11	0	0	0	0	422
10:45	5	178	0	183	0	184	5	189	7	0	4	11	0	0	0	0	383
11:00	12	238	0	251	0	168	9	177	8	0	7	15	0	0	0	0	443
11:15	14	198	0	212	0	166	4	170	12	0	5	17	0	0	0	0	396
11:30	10	193	0	203	0	199	6	204	8	0	6	14	0	0	0	0	421
11:45	11	122	0	133	0	189	11	200	13	0	6	19	0	0	0	0	352
12:00	22	148	0	170	0	189	7	196	8	0	8	16	0	0	0	0	382
12:15	6	151	0	157	0	221	7	228	7	0	13	20	0	0	0	0	404
12:30	6	168	0	174	0	213	9	222	4	0	9	13	0	0	0	0	408
12:45	18	207	0	225	0	195	8	203	14	0	9	23	0	0	0	0	451
13:00	18	212	0	230	0	214	7	221	14	0	10	24	0	0	0	0	475
13:15	19	237	0	256	0	208	9	217	7	0	7	14	0	0	0	0	487
13:30	14	219	0	233	0	192	12	204	3	0	8	11	0	0	0	0	448
13:45	14	238	0	252	0	207	5	212	5	0	9	14	0	0	0	0	478
14:00	12	239	0	251	0	213	10	223	12	0	11	23	0	0	0	0	497
14:15	9	197	0	206	0	227	14	241	7	0	6	13	0	0	0	0	460
14:30	10	177	0	187	0	253	10	263	3	0	5	8	0	0	0	0	458
14:45	16	129	0	145	0	233	10	243	10	0	5	15	0	0	0	0	403
15:00	13	205	0	218	0	251	10	261	7	0	9	16	0	0	0	0	485
15:15	14	193	0	207	0	304	16	320	7	0	11	18	0	0	0	0	545
15:30	15	171	0	186	0	331	9	340	11	0	8	19	0	0	0	0	545
15:45	3	182	0	185	0	320	7	327	13	0	13	26	0	0	0	0	539
16:00	8	255	0	264	0	365	11	376	13	0	6	19	0	0	0	0	659
16:15	9	235	0	244	0	340	6	346	9	0	14	23	0	0	0	0	613
16:30	3	277	0	280	0	423	6	429	11	0	11	22	0	0	0	0	731
16:45	7	247	0	254	0	409	7	416	19	0	17	36	0	0	0	0	706
17:00	3	260	0	263	0	472	7	479	6	0	14	20	0	0	0	0	762
17:15	4	237	0	241	0	442	2	444	14	0	27	41	0	0	0	0	726
17:30	11	287	0	298	0	524	4	528	11	0	20	31	0	0	0	0	857
17:45	9	259	0	268	0	471	5	476	10	0	18	28	0	0	0	0	772
18:00	5	264	0	269	0	431	3	434	9	0	11	20	0	0	0	0	723
18:15	8	221	0	229	0	400	5	405	6	0	14	20	0	0	0	0	654
18:30	3	257	0	270	0	493	2	495	3	0	7	10	0	0	0	0	775
18:45	7	211	0	218	0	423	3	426	4	0	11	15	0	0	0	0	689
19:00	5	201	0	206	0	362	3	365	4	0	4	8	0	0	0	0	598
19:15				0				0				0				0	0
19:30				0				0				0				0	0
19:45				0				0				0				0	0
20:00				0				0				0				0	0
20:15				0				0				0				0	0
20:30				0				0				0				0	0
20:45				0				0				0				0	0
21:00				0				0				0				0	0
21:15				0				0				0				0	0
21:30				0				0				0				0	0
21:45				0				0				0				0	0
22:00				0				0				0				0	0
22:15				0				0				0				0	0
22:30				0				0				0				0	0
22:45				0				0				0				0	0
23:00				0				0				0				0	0
23:15				0				0				0				0	0
23:30				0				0				0				0	0
23:45				0				0				0				0	0
00:00				0				0				0				0	0
<b>TOTAL</b>	<b>563</b>	<b>12437</b>	<b>0</b>	<b>13000</b>	<b>0</b>	<b>13494</b>	<b>365</b>	<b>13859</b>	<b>351</b>	<b>0</b>	<b>445</b>	<b>796</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>27655</b>

PEDESTRIAN SCHOOL CHILDREN & U-TURN BREAKDOWN

Hour Ending	NORTH LEG			SOUTH LEG			EAST LEG			WEST LEG		
	S.C.	PED.	U.T.	S.C.	PED.	U.T.	S.C.	PED.	U.T.	S.C.	PED.	U.T.
0:15												
0:30												
0:45												
1:00												
1:15												
1:30												
1:45												
2:00												
2:15												
2:30												
2:45												
3:00												
3:15												
3:30												
3:45												
4:00												
4:15												
4:30												
4:45												
5:00												
5:15												
5:30												
5:45												
6:00												
6:15	0	0	0	0	0	0	0	0	0	0	0	0
6:30	0	0	0	0	0	0	0	0	0	0	0	0
6:45	0	0	1	0	0	0	0	0	0	0	0	0
7:00	0	0	1	0	0	0	0	0	0	0	1	0
7:15	0	0	5	0	0	0	0	0	0	0	0	0
7:30	0	2	5	0	0	1	0	1	0	0	0	0
7:45	0	0	4	0	0	0	0	0	0	0	0	0
8:00	0	1	2	0	0	0	0	0	0	0	0	0
8:15	0	0	1	0	0	0	0	0	0	0	0	0
8:30	0	0	1	0	0	0	0	0	0	0	0	0
8:45	0	1	1	0	0	0	0	0	0	0	0	0
9:00	0	0	2	0	0	3	0	1	0	0	0	0
9:15	0	0	2	0	0	0	0	0	0	0	0	0
9:30	0	0	1	0	0	1	0	0	0	0	0	0
9:45	0	0	4	0	0	2	0	0	0	0	0	0
10:00	0	0	1	0	0	0	0	0	0	0	0	0
10:15	0	0	2	0	0	0	0	0	0	0	0	0
10:30	0	0	0	0	0	1	0	0	0	0	0	0
10:45	0	0	2	0	0	1	0	0	0	0	0	0
11:00	0	0	3	0	0	2	0	0	0	0	0	0
11:15	0	1	3	0	0	0	0	1	0	0	0	0
11:30	0	0	2	0	0	0	0	0	0	0	0	0
11:45	0	0	2	0	0	0	0	2	0	0	1	0
12:00	0	0	0	0	0	1	0	0	0	0	0	0
12:15	0	0	2	0	0	0	0	0	0	0	0	0
12:30	0	0	0	0	0	0	0	0	0	0	0	0
12:45	0	0	2	0	0	0	0	0	0	0	0	0
13:00	0	0	2	0	0	0	0	0	0	0	0	0
13:15	0	0	3	0	0	0	0	0	0	0	0	0
13:30	0	0	3	0	0	0	0	0	0	0	0	0
13:45	0	0	3	0	0	0	0	0	0	0	0	0
14:00	0	0	2	0	0	0	0	0	0	0	0	0
14:15	0	0	6	0	0	1	0	0	0	0	0	0
14:30	0	0	4	0	0	0	0	0	0	0	0	0
14:45	0	0	3	0	0	0	0	0	0	0	0	0
15:00	0	0	6	0	0	1	0	0	0	0	0	0
15:15	0	0	3	0	0	3	0	0	0	0	0	0
15:30	0	0	3	0	0	0	0	0	0	0	0	0
15:45	0	0	0	0	0	1	0	0	0	0	0	0
16:00	0	0	1	0	0	0	0	0	0	0	0	0
16:15	0	1	3	0	0	0	0	1	0	0	0	0
16:30	0	2	6	0	1	0	0	0	0	0	0	0
16:45	0	0	2	0	0	0	0	0	0	0	0	0
17:00	0	0	8	0	0	1	0	0	0	0	0	0
17:15	0	0	5	0	0	0	0	0	0	0	0	0
17:30	0	0	4	0	0	0	0	0	0	0	0	0
17:45	0	0	2	0	0	0	0	3	0	0	0	0
18:00	0	0	2	0	0	1	0	0	0	0	0	0
18:15	0	0	3	0	0	1	0	0	0	0	0	0
18:30	0	0	1	0	0	1	0	0	0	0	0	0
18:45	0	0	4	0	0	1	0	0	0	0	0	0
19:00	0	0	3	0	0	0	0	0	0	0	0	0
19:15												
19:30												
19:45												
20:00												
20:15												
20:30												
20:45												
21:00												
21:15												
21:30												
21:45												
22:00												
22:15												
22:30												
22:45												
23:00												
23:15												
23:30												
23:45												
0:00												
TOTAL	0	8	129	0	1	23	0	9	0	0	2	0

Weather: Sunny  
 Counted By: AK , CK  
 Town: Adelphi  
 County: PRINCE GEORGE'S

File Name : MD 193@ MD 212  
 Site Code : 00000000  
 Start Date : 5/26/2005  
 Page No : 1

Groups Printed- U-TURNS

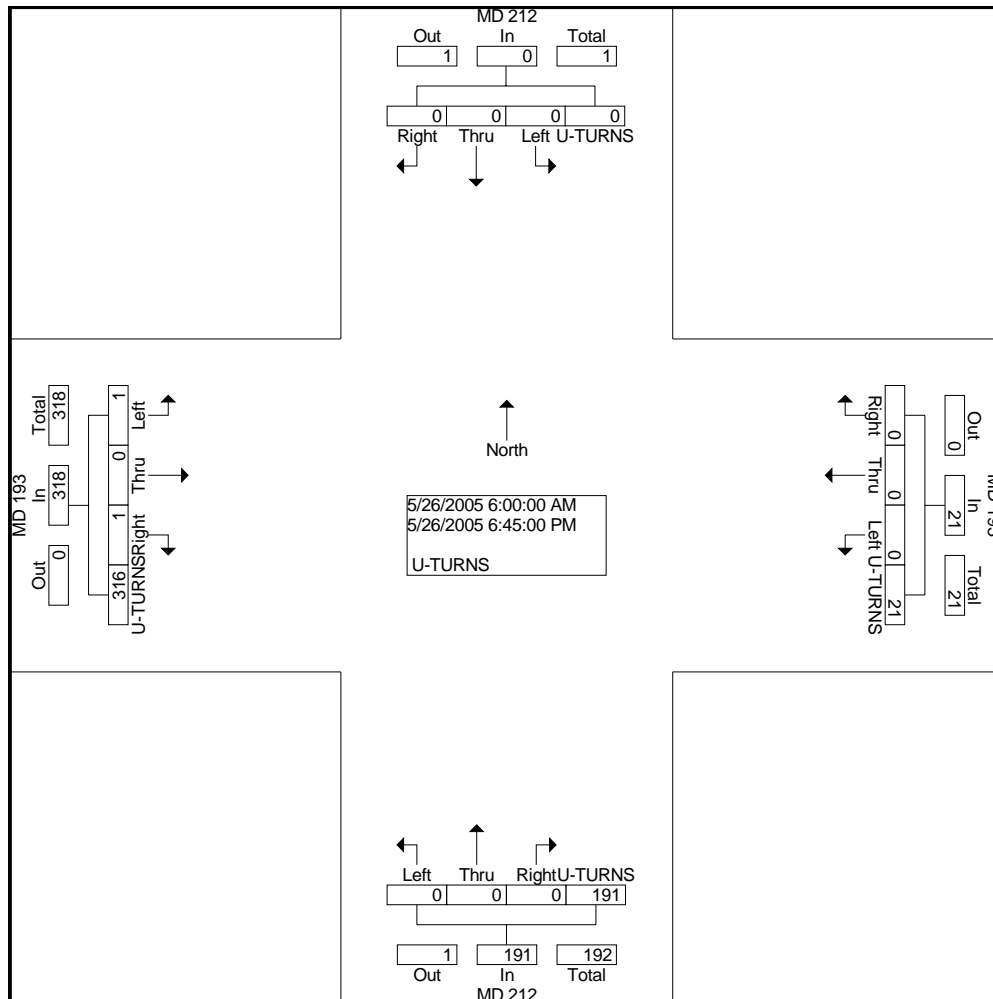
Start Time	MD 212 From North					MD 193 From East					MD 212 From South					MD 193 From West					Int. Total
	Left	Thru	Rig ht	U-TU RN S	App. Total	Left	Thru	Rig ht	U-TU RN S	App. Total	Left	Thru	Rig ht	U-TU RN S	App. Total	Left	Thru	Rig ht	U-TU RN S	App. Total	
Factor	1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		
06:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	2	2
06:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	1
06:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	3	3
06:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	2	2	0	0	0	1	1	3
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	3	3	0	0	0	6	6	9
07:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	1	1	2
07:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	1
07:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	7	7	0	0	0	1	1	8
07:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	8	8	0	0	0	2	2	10
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	17	17	0	0	0	4	4	21
08:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	5	5	0	0	0	2	2	7
08:15 AM	0	0	0	0	0	0	0	0	2	2	0	0	0	10	10	0	0	0	5	5	17
08:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	5	5	0	0	0	3	3	8
08:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	10	10	0	0	0	3	3	13
Total	0	0	0	0	0	0	0	0	2	2	0	0	0	30	30	0	0	0	13	13	45
09:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	8	8	0	0	0	12	12	20
09:15 AM	0	0	0	0	0	0	0	0	2	2	0	0	0	5	5	0	0	0	15	15	22
09:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	5	5	0	0	0	12	12	17
09:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	6	6	0	0	0	25	25	31
Total	0	0	0	0	0	0	0	0	2	2	0	0	0	24	24	0	0	0	64	64	90
10:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	5	5	0	0	0	14	14	19
10:15 AM	0	0	0	0	0	0	0	0	1	1	0	0	0	2	2	0	0	0	9	9	12
10:30 AM	0	0	0	0	0	0	0	0	2	2	0	0	0	2	2	0	0	0	7	7	11
10:45 AM	0	0	0	0	0	0	0	0	2	2	0	0	0	5	5	1	0	1	23	25	32
Total	0	0	0	0	0	0	0	0	5	5	0	0	0	14	14	1	0	1	53	55	74
11:00 AM	0	0	0	0	0	0	0	0	2	2	0	0	0	11	11	0	0	0	12	12	25
11:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	8	8	0	0	0	13	13	21
11:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	4	4	0	0	0	9	9	13
11:45 AM	0	0	0	0	0	0	0	0	1	1	0	0	0	7	7	0	0	0	17	17	25
Total	0	0	0	0	0	0	0	0	3	3	0	0	0	30	30	0	0	0	51	51	84
12:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	10	10	0	0	0	9	9	19
12:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	5	5	0	0	0	8	8	13
12:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	12	12	12
12:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	15	15	0	0	0	29	29	44
01:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
01:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	3	3	0	0	0	7	7	10
01:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
01:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	3	3	0	0	0	7	7	10
02:00 PM	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	1
02:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	2	2	0	0	0	2	2	4
02:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
02:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	1	1	0	0	0	2	2	0	0	0	2	2	5
03:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
03:15 PM	0	0	0	0	0	0	0	0	3	3	0	0	0	0	0	0	0	0	0	0	3
03:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	7	7	0	0	0	5	5	12
03:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	2	2	0	0	0	6	6	8
Total	0	0	0	0	0	0	0	0	3	3	0	0	0	9	9	0	0	0	11	11	23

Weather: Sunny  
 Counted By: AK, CK  
 Town: Adelphi  
 County: PRINCE GEORGE'S

File Name : MD 193@ MD 212  
 Site Code : 00000000  
 Start Date : 5/26/2005  
 Page No : 2

Groups Printed- U-TURNS

Start Time	MD 212 From North					MD 193 From East					MD 212 From South					MD 193 From West					Int. Total
	Left	Thru	Rig ht	U-TU RN S	App. Total	Left	Thru	Rig ht	U-TU RN S	App. Total	Left	Thru	Rig ht	U-TU RN S	App. Total	Left	Thru	Rig ht	U-TU RN S	App. Total	
Factor	1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		
04:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	4	4	0	0	0	9	9	13
04:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	9	9	0	0	0	4	4	13
04:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	6	6	0	0	0	15	15	21
04:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	5	5	6
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	20	20	0	0	0	33	33	53
05:00 PM	0	0	0	0	0	0	0	0	2	2	0	0	0	6	6	0	0	0	7	7	15
05:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	2	2	0	0	0	7	7	9
05:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	2	2	0	0	0	5	5	7
Total	0	0	0	0	0	0	0	0	2	2	0	0	0	10	10	0	0	0	19	19	31
06:00 PM	0	0	0	0	0	0	0	0	1	1	0	0	0	2	2	0	0	0	4	4	7
06:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	5	5	0	0	0	9	9	14
06:30 PM	0	0	0	0	0	0	0	0	2	2	0	0	0	5	5	0	0	0	4	4	11
06:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	2	2	0	0	0	7	7	9
Total	0	0	0	0	0	0	0	0	3	3	0	0	0	14	14	0	0	0	24	24	41
Grand Total	0	0	0	0	0	0	0	0	21	21	0	0	0	191	191	1	0	1	316	318	530
Apprch %	0.0	0.0	0.0	0.0		0.0	0.0	0.0	100.0		0.0	0.0	0.0	100.0		0.3	0.0	0.3	99.4		
Total %	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4.0	4.0	0.0	0.0	0.0	36.0	36.0	0.2	0.0	0.2	59.6	60.0	





Weather: Sunny  
 Counted By: AK , CK  
 Town: Adelphi  
 County: PRINCE GEORGE'S

Groups Printed- 1 - Unshifted

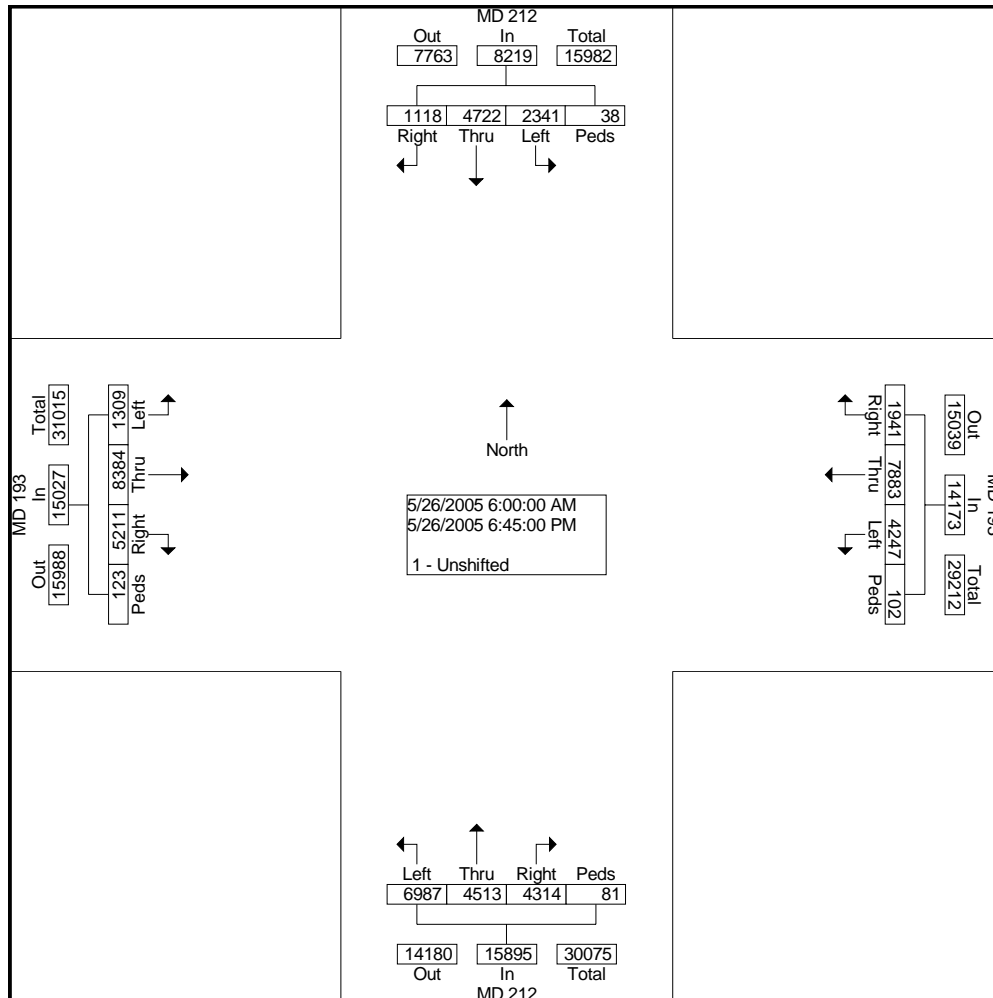
Start Time	MD 212 From North					MD 193 From East					MD 212 From South					MD 193 From West					Int. Total
	Left	Thru	Rig	Ped	App. Total	Left	Thru	Rig	Ped	App. Total	Left	Thru	Rig	Ped	App. Total	Left	Thru	Rig	Ped	App. Total	
Factor	1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		
06:00 AM	11	103	25	0	139	33	90	4	1	128	125	1	32	3	161	12	83	44	0	139	567
06:15 AM	38	150	32	0	220	116	168	23	4	311	175	69	51	1	296	19	100	93	1	213	1040
06:30 AM	59	174	55	1	289	68	184	39	4	295	208	64	58	0	330	21	92	102	1	216	1130
06:45 AM	40	94	21	2	157	104	213	13	0	330	219	71	64	3	357	26	109	118	1	254	1098
Total	148	521	133	3	805	321	655	79	9	1064	727	205	205	7	1144	78	384	357	3	822	3835
07:00 AM	28	88	11	0	127	107	199	10	2	318	155	84	69	0	308	14	151	104	3	272	1025
07:15 AM	30	88	13	0	131	116	207	17	7	347	119	51	50	7	227	14	159	150	7	330	1035
07:30 AM	35	93	22	0	150	118	216	21	4	359	180	90	75	1	346	18	135	126	4	283	1138
07:45 AM	33	97	19	1	150	127	228	19	4	378	177	97	69	5	348	20	143	133	0	296	1172
Total	126	366	65	1	558	468	850	67	17	1402	631	322	263	13	1229	66	588	513	14	1181	4370
08:00 AM	26	94	19	0	139	100	233	22	5	360	164	96	62	4	326	14	180	128	4	326	1151
08:15 AM	29	97	18	2	146	116	241	26	4	387	165	96	91	0	352	13	166	122	1	302	1187
08:30 AM	31	99	20	3	153	121	261	31	2	415	156	128	82	5	371	18	133	112	2	265	1204
08:45 AM	20	92	21	1	134	64	138	11	3	216	167	100	93	1	361	17	125	105	8	255	966
Total	106	382	78	6	572	401	873	90	14	1378	652	420	328	10	1410	62	604	467	15	1148	4508
09:00 AM	19	92	21	4	136	73	126	8	1	208	115	72	81	3	271	16	150	108	5	279	894
09:15 AM	30	85	16	1	132	62	149	16	1	228	80	61	66	1	208	29	138	99	3	269	837
09:30 AM	29	82	12	0	123	57	156	13	3	229	77	65	63	3	208	21	126	93	1	241	801
09:45 AM	23	81	9	0	113	54	153	11	0	218	96	56	61	3	216	23	129	73	6	231	778
Total	101	340	58	5	504	246	584	48	5	883	368	254	271	10	903	89	543	373	15	1020	3310
10:00 AM	26	86	11	0	123	57	149	16	0	222	87	62	51	1	201	19	116	78	3	216	762
10:15 AM	27	77	16	1	121	44	145	10	3	202	89	56	46	2	193	12	110	74	0	196	712
10:30 AM	30	63	5	0	98	48	103	10	0	161	86	61	54	0	201	19	121	71	0	211	671
10:45 AM	33	81	16	3	133	54	124	32	8	218	136	67	59	0	262	26	165	82	1	274	887
Total	116	307	48	4	475	203	521	68	11	803	398	246	210	3	857	76	512	305	4	897	3032
11:00 AM	35	84	18	0	137	56	128	35	5	224	121	71	54	0	246	29	146	93	8	276	883
11:15 AM	42	95	23	0	160	60	133	40	2	235	129	84	65	1	279	25	166	100	4	295	969
11:30 AM	55	109	26	0	190	76	150	58	0	284	131	89	59	0	279	19	153	90	3	265	1018
11:45 AM	71	125	35	0	231	91	175	71	6	343	118	91	63	3	275	21	159	87	0	267	1116
Total	203	413	102	0	718	283	586	204	13	1086	499	335	241	4	1079	94	624	370	15	1103	3986
12:00 PM	77	102	33	0	212	83	191	76	2	352	138	100	64	1	303	31	179	108	1	319	1186
12:15 PM	85	106	37	0	228	87	196	79	0	362	130	86	81	0	297	27	172	95	4	298	1185
12:30 PM	87	110	40	0	237	94	201	85	0	380	141	98	90	10	339	35	169	100	14	318	1274
12:45 PM	95	114	54	0	263	90	207	94	0	391	151	94	95	0	340	45	171	105	0	321	1315
Total	344	432	164	0	940	354	795	334	2	1485	560	378	330	11	1279	138	691	408	19	1256	4960
01:00 PM	73	86	43	0	202	82	185	69	4	340	154	101	97	0	352	50	180	107	0	337	1231
01:15 PM	60	77	27	0	164	60	130	53	0	243	143	91	83	0	317	35	152	87	4	278	1002
01:30 PM	53	70	22	0	145	39	96	63	0	198	111	93	85	0	289	28	120	70	0	218	850
01:45 PM	50	67	8	0	125	36	85	57	0	178	96	85	73	0	254	24	115	64	0	203	760
Total	236	300	100	0	636	217	496	242	4	959	504	370	338	0	1212	137	567	328	4	1036	3843
02:00 PM	46	59	11	0	116	41	68	53	4	166	90	71	65	0	226	20	100	60	0	180	688
02:15 PM	48	62	14	0	124	41	77	50	0	168	97	80	71	2	250	22	126	77	0	225	767
02:30 PM	50	69	15	0	134	43	84	48	1	176	99	77	70	0	246	20	129	80	0	229	785
02:45 PM	55	65	17	0	137	47	92	42	2	183	105	82	68	0	255	24	135	75	1	235	810
Total	199	255	57	0	511	172	321	193	7	693	391	310	274	2	977	86	490	292	1	869	3050
03:00 PM	49	70	16	0	135	55	108	45	1	209	111	74	66	1	252	30	139	82	0	251	847
03:15 PM	57	79	17	5	158	51	121	46	1	219	118	75	75	0	268	38	141	88	0	267	912
03:30 PM	46	101	23	0	170	65	132	38	0	235	122	78	68	2	270	41	147	88	2	278	953
03:45 PM	41	90	17	1	149	71	139	29	0	239	146	90	92	0	328	34	156	103	0	293	1009
Total	193	340	73	6	612	242	500	158	2	902	497	317	301	3	1118	143	583	361	2	1089	3721

Weather: Sunny  
 Counted By: AK, CK  
 Town: Adelphi  
 County: PRINCE GEORGE'S

File Name : MD 193@ MD 212  
 Site Code : 00000000  
 Start Date : 5/26/2005  
 Page No : 2

Groups Printed- 1 - Unshifted

Start Time	MD 212 From North					MD 193 From East					MD 212 From South					MD 193 From West					Int. Total				
	Left	Thru	Rig ht	Ped s	App. Total	Left	Thru	Rig ht	Ped s	App. Total	Left	Thru	Rig ht	Ped s	App. Total	Left	Thru	Rig ht	Ped s	App. Total					
Factor	1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0	
04:00 PM	39	94	30	1	164	62	126	39	2	229	132	87	119	0	338	29	163	118	0	310	1041				
04:15 PM	49	86	28	0	163	74	131	55	2	262	124	105	138	2	369	26	182	97	2	307	1101				
04:30 PM	38	90	25	0	153	93	160	40	0	293	139	103	124	0	366	28	220	108	3	359	1171				
04:45 PM	51	86	22	2	161	104	148	34	5	291	148	118	136	2	404	33	234	106	5	378	1234				
Total	177	356	105	3	641	333	565	168	9	1075	543	413	517	4	1477	116	799	429	10	1354	4547				
05:00 PM	53	94	17	4	168	130	155	36	7	328	156	108	123	4	391	24	240	119	1	384	1271				
05:15 PM	56	100	16	0	172	139	161	32	0	332	161	122	132	0	415	26	273	130	1	430	1349				
05:30 PM	51	95	14	1	161	135	158	35	0	328	165	124	135	0	424	29	277	138	0	444	1357				
05:45 PM	56	94	16	0	166	130	155	36	0	321	156	153	147	0	456	34	292	145	4	475	1418				
Total	216	383	63	5	667	534	629	139	7	1309	638	507	537	4	1686	113	1082	532	6	1733	5395				
06:00 PM	49	86	22	3	160	139	131	52	0	322	153	123	131	4	411	28	269	129	6	432	1325				
06:15 PM	43	85	17	1	146	125	121	46	1	293	150	111	125	1	387	21	264	127	7	419	1245				
06:30 PM	44	81	18	1	144	108	131	28	0	267	149	105	124	3	381	31	158	102	1	292	1084				
06:45 PM	40	75	15	0	130	101	125	25	1	252	127	97	119	2	345	31	226	118	1	376	1103				
Total	176	327	72	5	580	473	508	151	2	1134	579	436	499	10	1524	111	917	476	15	1519	4757				
Grand Total	234	472	111	38	8219	424	788	194	102	1417	698	451	431	81	1589	130	838	521	123	1502	5331				
Apprch %	28.5	57.5	13.6	0.5		30.0	55.6	13.7	0.7		44.0	28.4	27.1	0.5		8.7	55.8	34.7	0.8						
Total %	4.4	8.9	2.1	0.1	15.4	8.0	14.8	3.6	0.2	26.6	13.1	8.5	8.1	0.2	29.8	2.5	15.7	9.8	0.2	28.2					



Sabra, Wang & Associates Inc  
 1504 Joh Avenue  
 Suite 160  
 Baltimore, MD 21227

Weather : Sunny  
 Counted By: AK , CK  
 Town: TAKOMA PARK  
 County: Prince George's

File Name : MD320@~3  
 Site Code : 00000000  
 Start Date : 09/20/2005  
 Page No : 1

Groups Printed- 1 - Unshifted

Start Time	ARLISS ST From North					MD 320 From East					ARLISS ST From South					MD 320 From West					Int. Total
	Left	Thru	Rig	Ped	App. Total	Left	Thru	Rig	Ped	App. Total	Left	Thru	Rig	Ped	App. Total	Left	Thru	Rig	Ped	App. Total	
Factor	1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		
06:00 AM	15	0	3	0	18	2	132	17	0	151	0	0	0	0	0	1	63	1	1	66	235
06:15 AM	23	0	5	2	30	3	241	44	4	292	2	0	2	3	7	2	36	1	2	41	370
06:30 AM	20	1	6	2	29	0	219	42	1	262	0	0	1	3	4	1	56	0	1	58	353
06:45 AM	20	0	3	0	23	0	240	58	2	300	0	1	1	3	5	4	61	0	0	65	393
Total	78	1	17	4	100	5	832	161	7	1005	2	1	4	9	16	8	216	2	4	230	1351
07:00 AM	28	0	5	1	34	0	198	62	5	265	0	0	2	10	12	0	81	1	4	86	397
07:15 AM	27	0	1	2	30	0	187	64	0	251	0	0	2	9	11	3	71	0	0	74	366
07:30 AM	38	0	2	1	41	1	270	84	2	357	0	0	0	8	8	4	90	0	1	95	501
07:45 AM	36	2	9	0	47	3	212	97	1	313	0	1	5	7	13	3	119	0	2	124	497
Total	129	2	17	4	152	4	867	307	8	1186	0	1	9	34	44	10	361	1	7	379	1761
08:00 AM	34	0	2	0	36	0	199	70	0	269	0	0	1	8	9	4	111	0	0	115	429
08:15 AM	36	0	5	4	45	2	226	97	0	325	0	0	3	6	9	1	121	0	2	124	503
08:30 AM	39	1	5	4	49	4	262	111	2	379	0	1	2	0	3	2	108	0	1	111	542
08:45 AM	37	1	8	2	48	3	266	108	3	380	2	0	2	3	7	3	104	1	1	109	544
Total	146	2	20	10	178	9	953	386	5	1353	2	1	8	17	28	10	444	1	4	459	2018
09:00 AM	41	2	3	4	50	2	282	53	5	342	0	1	3	9	13	3	116	0	2	121	526
09:15 AM	48	3	5	2	58	5	257	60	6	328	0	0	2	0	2	1	120	4	1	126	514
09:30 AM	28	1	3	3	35	5	195	59	5	264	1	0	4	5	10	4	113	0	5	122	431
09:45 AM	28	0	5	1	34	5	156	30	2	193	1	1	5	2	9	0	104	3	2	109	345
Total	145	6	16	10	177	17	890	202	18	1127	2	2	14	16	34	8	453	7	10	478	1816
10:00 AM	31	2	6	8	47	10	166	40	9	225	1	0	4	9	14	4	96	2	4	106	392
10:15 AM	28	1	4	1	34	10	116	45	1	172	2	0	8	2	12	4	111	5	3	123	341
10:30 AM	27	2	4	2	35	2	143	36	3	184	2	2	7	3	14	3	103	2	2	110	343
10:45 AM	37	1	4	7	49	2	107	37	1	147	0	1	6	0	7	4	110	2	1	117	320
Total	123	6	18	18	165	24	532	158	14	728	5	3	25	14	47	15	420	11	10	456	1396
11:00 AM	46	2	8	6	62	4	119	24	3	150	0	1	0	0	1	5	112	5	0	122	335
11:15 AM	22	0	9	3	34	2	108	28	3	141	1	0	5	2	8	6	116	7	1	130	313
11:30 AM	24	1	3	2	30	4	126	34	4	168	1	1	3	6	11	6	126	7	2	141	350
11:45 AM	37	2	6	10	55	4	126	28	1	159	2	0	5	3	10	3	114	0	5	122	346
Total	129	5	26	21	181	14	479	114	11	618	4	2	13	11	30	20	468	19	8	515	1344
12:00 PM	40	0	4	7	51	4	109	40	6	159	1	2	8	2	13	4	97	6	5	112	335
12:15 PM	31	0	5	8	44	4	131	32	7	174	2	1	4	3	10	6	109	5	5	125	353
12:30 PM	36	2	8	0	46	5	120	31	1	157	1	2	8	2	13	5	99	6	5	115	331
12:45 PM	41	3	11	10	65	4	136	25	0	165	3	1	7	3	14	3	123	5	8	139	383
Total	148	5	28	25	206	17	496	128	14	655	7	6	27	10	50	18	428	22	23	491	1402
01:00 PM	37	0	5	3	45	2	147	32	5	186	1	0	10	4	15	10	130	7	1	148	394
01:15 PM	28	4	11	5	48	3	101	28	8	140	5	5	8	3	21	7	145	8	3	163	372
01:30 PM	39	3	5	15	62	2	126	27	5	160	2	1	3	1	7	7	119	3	9	138	367
01:45 PM	49	6	5	1	61	2	123	32	3	160	3	3	10	3	19	9	138	4	4	155	395
Total	153	13	26	24	216	9	497	119	21	646	11	9	31	11	62	33	532	22	17	604	1528
02:00 PM	43	1	8	12	64	3	87	26	3	119	4	2	8	4	18	8	128	7	4	147	348
02:15 PM	49	5	10	1	65	4	126	17	2	149	2	4	6	2	14	2	137	5	4	148	376
02:30 PM	45	10	20	3	78	6	152	10	1	169	2	9	9	5	25	4	155	2	5	166	438
02:45 PM	39	6	25	5	75	5	142	12	4	163	1	8	8	2	19	2	161	1	0	164	421
Total	176	22	63	21	282	18	507	65	10	600	9	23	31	13	76	16	581	15	13	625	1583

Sabra, Wang & Associates Inc  
 1504 Joh Avenue  
 Suite 160  
 Baltimore, MD 21227

Weather : Sunny  
 Counted By: AK , CK  
 Town:TAKOMA PARK  
 County: Prince George's

File Name : MD320@~3  
 Site Code : 00000000  
 Start Date : 09/20/2005  
 Page No : 2

Groups Printed- 1 - Unshifted

Start Time	ARLISS ST From North					MD 320 From East					ARLISS ST From South					MD 320 From West					Int. Total
	Left	Thru	Rig ht	Ped s	App. Total	Left	Thru	Rig ht	Ped s	App. Total	Left	Thru	Rig ht	Ped s	App. Total	Left	Thru	Rig ht	Ped s	App. Total	
Factor	1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		
03:00 PM	37	7	18	6	68	7	145	11	8	171	2	5	7	5	19	4	169	2	0	175	433
03:15 PM	78	0	13	5	96	3	117	54	4	178	1	5	5	1	12	4	185	3	0	192	478
03:30 PM	67	0	14	8	89	5	146	40	4	195	1	2	2	1	6	3	210	3	4	220	510
03:45 PM	85	2	11	9	107	2	139	31	1	173	2	1	7	3	13	4	218	4	1	227	520
Total	267	9	56	28	360	17	547	136	17	717	6	13	21	10	50	15	782	12	5	814	1941
04:00 PM	67	3	7	10	87	5	135	50	0	190	0	4	5	5	14	8	260	4	2	274	565
04:15 PM	73	6	6	14	99	6	109	25	2	142	2	3	8	5	18	10	268	3	0	281	540
04:30 PM	98	1	6	10	115	5	151	58	5	219	0	1	4	10	15	8	232	0	5	245	594
04:45 PM	82	1	9	15	107	4	147	43	7	201	5	2	6	7	20	10	245	2	4	261	589
Total	320	11	28	49	408	20	542	176	14	752	7	10	23	27	67	36	1005	9	11	1061	2288
05:00 PM	66	1	11	6	84	2	159	37	1	199	1	1	3	7	12	10	262	2	2	276	571
05:15 PM	91	6	11	10	118	4	172	43	4	223	1	1	6	6	14	11	230	5	3	249	604
05:30 PM	91	6	12	14	123	5	155	50	3	213	1	1	4	9	15	12	243	2	3	260	611
05:45 PM	98	5	6	10	119	8	200	50	4	262	1	2	13	2	18	7	262	2	2	273	672
Total	346	18	40	40	444	19	686	180	12	897	4	5	26	24	59	40	997	11	10	1058	2458
06:00 PM	100	6	8	13	127	9	191	48	6	254	0	2	4	7	13	14	237	5	4	260	654
06:15 PM	83	4	5	9	101	6	179	41	4	230	2	2	5	5	14	8	208	4	4	224	569
06:30 PM	69	6	5	5	85	2	161	27	6	196	0	2	5	4	11	11	181	7	5	204	496
06:45 PM	45	2	4	5	56	4	169	28	7	208	2	2	3	4	11	9	201	5	3	218	493
Total	297	18	22	32	369	21	700	144	23	888	4	8	17	20	49	42	827	21	16	906	2212
Grand Total	2457	118	377	286	3238	1948	8528	2276	1746	11172	6384	84249	216612	612271	7514	153138	1388076	23098			
Apprch %	75.9	3.6	11.6	8.8		1.7	76.3	20.4	1.6		10.3	13.7	40.7	35.3		3.4	93.0	1.9	1.7		
Total %	10.6	0.5	1.6	1.2	14.0	0.8	36.9	9.9	0.8	48.4	0.3	0.4	1.1	0.9	2.6	1.2	32.5	0.7	0.6	35.0	

Groups Printed- Unshifted

Start Time	Driveway to Business From North				MD 320 From East				Barron Street From South				MD 320 From West				Int. Total
	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	
06:00 AM	0	0	0	18	1	186	0	9	7	0	11	9	0	92	4	4	341
06:15 AM	0	0	1	12	1	244	1	6	16	0	8	9	0	75	2	0	375
06:30 AM	0	0	0	11	1	276	1	6	16	0	10	3	0	79	2	2	407
06:45 AM	0	0	0	8	5	264	2	6	28	0	11	16	0	107	2	3	452
Total	0	0	1	49	8	970	4	27	67	0	40	37	0	353	10	9	1575
07:00 AM	0	0	0	9	4	291	0	8	38	0	12	9	1	129	4	2	507
07:15 AM	1	0	0	12	3	288	1	6	40	0	12	11	0	159	11	0	544
07:30 AM	1	0	0	7	2	272	0	2	40	0	17	7	0	132	10	2	492
07:45 AM	0	0	0	4	0	241	0	2	22	0	8	2	0	120	5	0	404
Total	2	0	0	32	9	1092	1	18	140	0	49	29	1	540	30	4	1947
08:00 AM	2	0	0	6	2	282	0	4	44	0	9	10	0	135	13	1	508
08:15 AM	2	0	0	8	2	314	0	5	43	1	10	5	0	148	17	2	557
08:30 AM	2	1	2	2	4	311	1	1	42	0	10	5	0	180	46	3	610
08:45 AM	1	0	0	8	4	314	0	1	47	0	11	9	0	162	18	1	576
Total	7	1	2	24	12	1221	1	11	176	1	40	29	0	625	94	7	2251
09:00 AM	0	0	0	2	3	291	4	5	38	0	9	10	0	146	3	0	511
09:15 AM	2	0	0	3	1	208	0	0	15	0	4	8	0	146	6	0	393
09:30 AM	1	0	0	3	4	215	0	4	8	0	0	5	0	162	3	0	405
09:45 AM	1	0	0	2	3	215	1	1	14	0	8	6	0	123	3	2	379
Total	4	0	0	10	11	929	5	10	75	0	21	29	0	577	15	2	1688
10:00 AM	0	0	0	5	2	224	3	1	6	0	5	3	0	136	3	0	388
10:15 AM	1	0	1	2	2	219	0	0	4	0	2	9	1	115	4	2	362
10:30 AM	1	0	2	7	3	212	0	7	8	0	1	6	2	161	4	3	417
10:45 AM	2	0	2	3	1	173	1	0	10	0	2	1	1	141	4	2	343
Total	4	0	5	17	8	828	4	8	28	0	10	19	4	553	15	7	1510
11:00 AM	1	0	1	3	1	137	2	4	6	0	2	6	1	129	5	1	299
11:15 AM	3	0	1	10	3	148	3	3	11	0	2	6	1	155	6	1	353
11:30 AM	2	0	0	13	3	164	1	4	4	0	3	5	0	161	10	2	372
11:45 AM	4	0	2	8	2	168	7	0	15	0	8	2	2	138	4	0	360
Total	10	0	4	34	9	617	13	11	36	0	15	19	4	583	25	4	1384
12:00 PM	4	0	0	6	1	161	3	1	6	0	5	0	5	156	8	2	358
12:15 PM	4	0	0	2	3	144	5	3	11	1	5	1	0	193	6	1	379
12:30 PM	5	0	3	9	1	177	1	2	15	0	4	2	1	210	8	0	438
12:45 PM	7	0	3	9	5	162	2	1	18	0	5	6	3	181	12	1	415
Total	20	0	6	26	10	644	11	7	50	1	19	9	9	740	34	4	1590
01:00 PM	4	0	3	12	6	154	4	2	7	0	5	8	0	171	6	4	386
01:15 PM	3	0	2	10	2	157	3	4	10	0	3	7	2	171	9	3	386
01:30 PM	3	0	1	9	2	153	0	3	7	0	11	5	0	185	11	1	391
01:45 PM	4	0	2	4	1	159	4	1	8	1	6	5	2	170	8	0	375
Total	14	0	8	35	11	623	11	10	32	1	25	25	4	697	34	8	1538
02:00 PM	2	0	4	1	2	170	2	4	13	0	2	4	2	205	10	4	425
02:15 PM	8	0	1	12	3	121	2	4	17	1	7	7	1	186	12	7	389
02:30 PM	1	0	2	8	4	188	2	4	9	0	3	3	1	238	13	6	482
02:45 PM	5	0	3	3	7	184	0	6	11	1	8	12	1	240	39	2	522
Total	16	0	10	24	16	663	6	18	50	2	20	26	5	869	74	19	1818
03:00 PM	4	1	1	18	8	200	0	3	20	0	19	2	3	255	19	1	554
03:15 PM	2	0	0	8	5	223	1	5	35	0	22	5	0	241	28	3	578
03:30 PM	3	0	3	17	4	197	2	2	9	0	6	4	0	305	14	1	567
03:45 PM	5	0	3	10	3	183	0	0	17	0	12	1	2	311	22	1	570
Total	14	1	7	53	20	803	3	10	81	0	59	12	5	1112	83	6	2269

Groups Printed- Unshifted

Start Time	Driveway to Business From North				MD 320 From East				Barron Street From South				MD 320 From West				Int. Total
	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	
04:00 PM	3	0	4	13	2	199	2	3	17	1	13	1	3	294	21	7	583
04:15 PM	2	0	2	2	2	209	0	2	13	0	7	7	0	282	8	5	541
04:30 PM	2	0	1	13	9	189	1	2	12	0	7	2	1	310	25	1	575
04:45 PM	9	0	0	9	2	208	3	5	25	1	15	7	0	293	18	2	597
Total	16	0	7	37	15	805	6	12	67	2	42	17	4	1179	72	15	2296
05:00 PM	2	0	0	5	3	196	4	4	21	1	9	7	0	323	35	3	613
05:15 PM	3	0	0	6	0	225	3	2	37	0	10	1	2	309	29	1	628
05:30 PM	4	0	1	8	1	241	0	5	22	0	8	1	0	293	36	1	621
05:45 PM	3	0	2	21	3	208	2	6	32	0	12	4	0	312	21	2	628
Total	12	0	3	40	7	870	9	17	112	1	39	13	2	1237	121	7	2490
06:00 PM	1	0	0	15	7	220	5	8	16	0	9	6	1	287	22	5	602
06:15 PM	3	0	0	10	5	209	3	6	22	0	6	2	1	282	20	2	571
06:30 PM	1	0	0	13	6	226	1	3	22	0	11	5	1	305	21	5	620
06:45 PM	1	1	2	28	3	193	0	3	15	0	4	5	1	254	32	1	543
Total	6	1	2	66	21	848	9	20	75	0	30	18	4	1128	95	13	2336
Grand Total	125	3	55	447	157	1091 3	83	179	989	8	409	282	42	1019 3	702	105	24692
Apprch %	19.8	0.5	8.7	71.0	1.4	96.3	0.7	1.6	58.6	0.5	24.2	16.7	0.4	92.3	6.4	1.0	
Total %	0.5	0.0	0.2	1.8	0.6	44.2	0.3	0.7	4.0	0.0	1.7	1.1	0.2	41.3	2.8	0.4	

Location: MD 320 & Barron St.  
 County: Montgomery  
 Weather: Rain  
 Counters: TK, MF

Sabra, Wang & Associates Inc  
 1504 Joh Avenue  
 Suite 160  
 Baltimore, MD 21227

Weather: SUNNY  
 Counted By: AK, CK  
 Town: TAKOMA PARK  
 County: MONTGOMERY

File Name : PINEYB-3  
 Site Code : 00000000  
 Start Date : 09/15/2005  
 Page No : 1

Groups Printed- Unshifted

Start Time	MD 787 From North					MD 320 From East					MD 787 From South					MD 320 From West					Int. Total
	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	
Factor	1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		
06:00 AM	2	11	7	0	20	2	145	12	0	159	1	10	5	0	16	13	38	1	0	52	247
06:15 AM	4	13	9	0	26	3	155	14	0	172	2	12	7	1	22	18	41	2	0	61	281
06:30 AM	6	23	7	0	36	4	214	18	0	236	7	22	4	6	39	15	47	1	0	63	374
06:45 AM	3	17	11	2	33	7	199	20	0	226	10	41	6	7	64	16	52	2	0	70	393
Total	15	64	34	2	115	16	713	64	0	793	20	85	22	14	141	62	178	6	0	246	1295
07:00 AM	5	24	10	0	39	3	205	21	1	230	8	59	4	3	74	25	62	1	2	90	433
07:15 AM	11	35	19	4	69	14	220	20	0	254	7	65	5	3	80	24	67	2	1	94	497
07:30 AM	2	36	16	3	57	8	194	24	2	228	8	71	6	6	91	30	73	2	1	106	482
07:45 AM	9	39	12	2	62	8	167	27	2	204	8	64	10	2	84	24	107	8	0	139	489
Total	27	134	57	9	227	33	786	92	5	916	31	259	25	14	329	103	309	13	4	429	1901
08:00 AM	9	37	14	5	65	5	170	26	0	201	11	44	8	1	64	24	84	6	0	114	444
08:15 AM	5	24	7	0	36	10	171	32	0	213	8	46	14	3	71	19	84	11	0	114	434
08:30 AM	7	24	8	3	42	8	197	18	0	223	9	40	10	4	63	17	70	8	0	95	423
08:45 AM	6	30	4	1	41	3	175	29	0	207	7	46	10	2	65	15	77	7	1	100	413
Total	27	115	33	9	184	26	713	105	0	844	35	176	42	10	263	75	315	32	1	423	1714
09:00 AM	7	38	9	2	56	13	218	33	0	264	15	38	6	8	67	23	92	4	0	119	506
09:15 AM	14	27	25	2	68	20	191	24	2	237	10	39	12	11	72	20	80	5	0	105	482
09:30 AM	6	26	18	4	54	15	150	19	2	186	15	41	8	5	69	20	76	11	0	107	416
09:45 AM	11	36	9	6	62	3	126	24	0	153	8	43	10	4	65	15	57	7	0	79	359
Total	38	127	61	14	240	51	685	100	4	840	48	161	36	28	273	78	305	27	0	410	1763
10:00 AM	16	27	11	9	63	15	160	19	0	194	5	22	11	11	49	18	53	3	0	74	380
10:15 AM	10	25	17	6	58	7	93	18	1	119	10	27	8	11	56	12	77	6	0	95	328
10:30 AM	17	45	18	5	85	14	94	21	2	131	7	23	8	23	61	13	76	4	0	93	370
10:45 AM	11	24	10	4	49	13	68	13	0	94	13	29	12	4	58	16	83	11	0	110	311
Total	54	121	56	24	255	49	415	71	3	538	35	101	39	49	224	59	289	24	0	372	1389
11:00 AM	12	21	14	8	55	14	99	24	1	138	8	24	9	8	49	18	116	6	2	142	384
11:15 AM	21	31	13	7	72	7	91	22	8	128	7	38	9	13	67	14	92	3	2	111	378
11:30 AM	16	30	12	15	73	14	96	28	5	143	7	30	18	9	64	22	100	11	10	143	423
11:45 AM	11	25	24	9	69	9	102	20	2	133	5	40	11	12	68	17	71	9	7	104	374
Total	60	107	63	39	269	44	388	94	16	542	27	132	47	42	248	71	379	29	21	500	1559
12:00 PM	23	44	9	13	89	16	90	17	6	129	10	44	10	8	72	23	78	15	2	118	408
12:15 PM	17	31	13	8	69	14	76	8	5	103	5	30	11	7	53	18	93	7	0	118	343
12:30 PM	11	17	16	13	57	13	85	7	0	105	3	29	4	2	38	21	78	4	0	103	303
12:45 PM	33	99	53	12	197	33	189	51	5	278	3	47	15	6	71	20	103	14	1	138	684
Total	84	191	91	46	412	76	440	83	16	615	21	150	40	23	234	82	352	40	3	477	1738
01:00 PM	23	95	31	8	157	24	195	34	8	261	4	52	12	7	75	17	121	15	1	154	647
01:15 PM	30	43	27	8	108	18	129	11	17	175	12	41	20	23	96	20	79	8	1	108	487
01:30 PM	12	36	14	8	70	8	88	25	12	133	27	56	22	10	115	24	147	9	0	180	498
01:45 PM	17	31	8	10	66	17	90	29	0	136	8	29	11	8	56	19	109	12	0	140	398
Total	82	205	80	34	401	67	502	99	37	705	51	178	65	48	342	80	456	44	2	582	2030
02:00 PM	21	27	14	8	70	16	89	21	14	140	5	48	9	9	71	16	84	8	4	112	393
02:15 PM	23	28	17	17	85	15	82	16	2	115	8	45	8	9	70	15	80	9	1	105	375
02:30 PM	17	42	21	6	86	14	99	21	9	143	5	48	8	5	66	14	92	12	1	119	414
02:45 PM	14	38	14	10	76	17	92	20	0	129	7	43	10	8	68	16	94	10	1	121	394
Total	75	135	66	41	317	62	362	78	25	527	25	184	35	31	275	61	350	39	7	457	1576
03:00 PM	27	42	18	3	90	33	147	27	1	208	10	46	12	10	78	18	96	15	1	130	506
03:15 PM	30	51	16	4	101	29	141	29	7	206	12	52	16	12	92	20	99	17	0	136	535
03:30 PM	24	43	18	10	95	14	88	30	0	132	18	58	20	12	108	23	103	19	2	147	482
03:45 PM	17	33	11	0	61	12	86	8	0	106	11	50	23	15	99	38	151	12	1	202	468
Total	98	169	63	17	347	88	462	94	8	652	51	206	71	49	377	99	449	63	4	615	1991

Sabra, Wang & Associates Inc  
1504 Joh Avenue

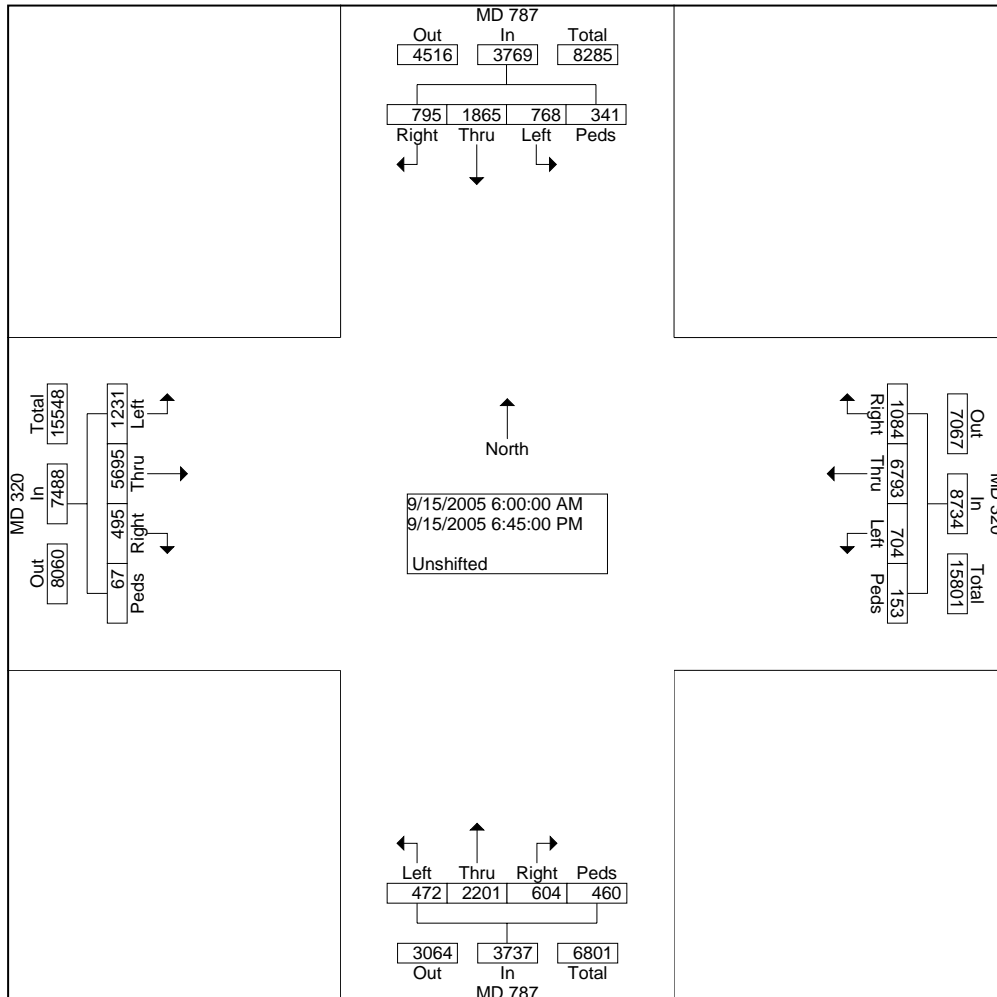
Weather: SUNNY  
Counted By: AK, CK  
Town: TAKOMA PARK  
County: MONTGOMERY

Suite 160  
Baltimore, MD 21227

File Name : PINEYB~3  
Site Code : 00000000  
Start Date : 09/15/2005  
Page No : 2

Groups Printed- Unshifted

Start Time	MD 787 From North					MD 320 From East					MD 787 From South					MD 320 From West					Int. Total
	Left	Thru	Rig	Ped	App. Total	Left	Thru	Rig	Ped	App. Total	Left	Thru	Rig	Ped	App. Total	Left	Thru	Rig	Ped	App. Total	
Factor	1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		
04:00 PM	24	39	19	8	90	20	82	25	3	130	10	49	12	15	86	43	192	14	1	250	556
04:15 PM	14	44	13	6	77	17	80	20	0	117	14	38	16	27	95	44	191	15	1	251	540
04:30 PM	2	34	11	5	52	17	100	16	0	133	6	39	14	19	78	47	203	12	0	262	525
04:45 PM	16	38	11	2	67	10	84	12	0	106	8	43	17	12	80	52	215	11	2	280	533
Total	56	155	54	21	286	64	346	73	3	486	38	169	59	73	339	186	801	52	4	1043	2154
05:00 PM	15	33	13	15	76	13	72	11	4	100	15	53	15	2	85	40	189	10	2	241	502
05:15 PM	17	54	14	9	94	12	98	12	0	122	9	71	8	11	99	37	192	20	1	250	565
05:30 PM	16	41	18	11	86	21	91	17	0	129	11	61	4	14	90	32	193	25	3	253	558
05:45 PM	15	43	18	12	88	22	109	22	6	159	8	38	17	16	79	31	197	12	4	244	570
Total	63	171	63	47	344	68	370	62	10	510	43	223	44	43	353	140	771	67	10	988	2195
06:00 PM	30	48	24	15	117	20	174	18	6	218	11	41	20	10	82	35	204	10	4	253	670
06:15 PM	26	51	21	11	109	18	151	18	7	194	15	44	18	7	84	31	197	17	1	246	633
06:30 PM	18	39	17	7	81	12	148	20	9	189	11	41	21	11	84	31	177	12	4	224	578
06:45 PM	15	33	12	5	65	10	138	13	4	165	10	51	20	8	89	38	163	20	2	223	542
Total	89	171	74	38	372	60	611	69	26	766	47	177	79	36	339	135	741	59	11	946	2423
Grand Total	768	186	795	341	3769	704	679	108	153	8734	472	220	604	460	3737	123	569	495	67	7488	23728
Apprch %	20.4	49.5	21.1	9.0		8.1	77.8	12.4	1.8		12.6	58.9	16.2	12.3		16.4	76.1	6.6	0.9		
Total %	3.2	7.9	3.4	1.4	15.9	3.0	28.6	4.6	0.6	36.8	2.0	9.3	2.5	1.9	15.7	5.2	24.0	2.1	0.3	31.6	





Groups Printed- 1 - Unshifted

Start Time	MD 355 From North				JONES BR From East				MD 355 From South				JONES BR From West				Int. Total
	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	
06:00 AM	18	129	13	1	29	28	68	0	2	74	12	0	6	3	2	0	385
06:15 AM	15	200	17	1	46	62	71	0	2	79	27	0	1	3	1	0	525
06:30 AM	28	245	22	2	50	76	55	0	4	90	19	0	2	2	0	0	595
06:45 AM	31	341	30	1	65	109	60	0	5	135	31	0	3	5	1	0	817
Total	92	915	82	5	190	275	254	0	13	378	89	0	12	13	4	0	2322
07:00 AM	26	379	20	1	78	68	57	0	13	140	37	0	3	9	2	0	833
07:15 AM	35	473	18	1	120	75	34	0	5	190	55	1	2	8	1	0	1018
07:30 AM	47	540	24	2	128	63	41	0	15	241	72	2	7	4	3	0	1189
07:45 AM	55	567	18	0	164	77	53	1	16	286	71	2	2	7	5	0	1324
Total	163	1959	80	4	490	283	185	1	49	857	235	5	14	28	11	0	4364
08:00 AM	54	487	38	0	150	79	45	0	18	238	67	0	3	1	4	0	1184
08:15 AM	51	476	43	1	174	68	40	0	30	250	64	1	8	10	11	0	1227
08:30 AM	46	515	24	0	193	62	59	0	20	242	71	4	10	4	3	0	1253
08:45 AM	27	487	26	1	199	66	70	1	25	260	72	2	6	4	3	0	1249
Total	178	1965	131	2	716	275	214	1	93	990	274	7	27	19	21	0	4913
09:00 AM	25	483	28	1	189	70	54	0	13	259	64	0	14	3	1	0	1204
09:15 AM	39	481	50	1	182	54	81	0	15	245	68	3	5	6	3	0	1233
09:30 AM	33	440	30	0	178	50	69	0	8	240	55	2	10	9	1	0	1125
09:45 AM	45	400	21	0	120	41	35	0	14	238	49	0	11	12	2	0	988
Total	142	1804	129	2	669	215	239	0	50	982	236	5	40	30	7	0	4550
10:00 AM	54	352	39	1	93	27	60	0	4	210	62	2	13	2	3	0	922
10:15 AM	43	356	21	0	81	17	47	0	4	252	46	6	8	9	6	0	896
10:30 AM	44	322	13	1	70	14	50	0	5	275	53	1	14	4	8	0	874
10:45 AM	46	314	11	0	110	13	41	2	8	229	51	5	11	6	3	0	850
Total	187	1344	84	2	354	71	198	2	21	966	212	14	46	21	20	0	3542
11:00 AM	42	311	2	2	66	7	46	0	2	304	54	5	14	7	7	0	869
11:15 AM	47	345	5	0	60	8	50	0	8	312	77	4	19	5	12	0	952
11:30 AM	64	322	8	0	68	4	39	0	1	310	66	1	30	6	10	0	929
11:45 AM	39	328	3	2	76	7	45	0	5	269	53	5	20	12	8	0	872
Total	192	1306	18	4	270	26	180	0	16	1195	250	15	83	30	37	0	3622
12:00 PM	49	314	6	1	70	6	54	0	11	322	70	0	16	15	14	0	948
12:15 PM	58	282	11	1	44	7	48	0	5	379	68	3	15	12	7	0	940
12:30 PM	42	259	14	1	60	7	60	0	6	318	89	2	16	5	12	0	891
12:45 PM	42	266	4	1	72	8	56	0	17	320	77	2	17	15	9	0	906
Total	191	1121	35	4	246	28	218	0	39	1339	304	7	64	47	42	0	3685
01:00 PM	56	299	11	2	51	5	42	2	13	325	53	1	15	10	4	0	889
01:15 PM	51	294	10	5	56	16	54	0	12	333	71	1	21	18	4	0	946
01:30 PM	63	328	21	1	50	7	75	0	9	389	61	3	9	24	6	0	1046
01:45 PM	73	294	11	0	59	11	63	0	5	337	94	2	12	17	3	0	981
Total	243	1215	53	8	216	39	234	2	39	1384	279	7	57	69	17	0	3862
02:00 PM	81	313	5	0	59	7	65	0	5	362	71	2	15	38	11	0	1034
02:15 PM	74	306	8	1	67	8	73	0	6	321	79	1	24	22	3	0	993
02:30 PM	50	299	5	1	51	9	90	0	6	367	63	1	29	39	4	0	1014
02:45 PM	89	302	6	3	71	9	91	0	7	315	74	2	33	29	12	0	1043
Total	294	1220	24	5	248	33	319	0	24	1365	287	6	101	128	30	0	4084
03:00 PM	75	288	4	1	59	3	75	0	3	395	103	1	25	68	4	0	1104
03:15 PM	95	305	7	2	68	4	70	0	11	352	96	0	22	45	6	0	1083
03:30 PM	97	298	4	1	79	4	85	2	3	390	79	0	46	113	4	0	1205
03:45 PM	132	341	3	0	74	6	97	0	3	368	114	1	30	98	16	0	1283
Total	399	1232	18	4	280	17	327	2	20	1505	392	2	123	324	30	0	4675
04:00 PM	102	334	4	0	87	3	109	0	2	378	131	2	50	98	11	0	1311
04:15 PM	127	382	4	0	82	6	103	0	1	350	121	11	39	78	17	0	1321
04:30 PM	117	374	3	0	94	11	105	0	3	395	133	4	30	83	21	0	1373
04:45 PM	125	373	5	0	91	5	75	0	5	378	113	22	42	95	15	0	1344
Total	471	1463	16	0	354	25	392	0	11	1501	498	39	161	354	64	0	5349

05:00 PM	117	335	4	0	85	4	80	0	3	418	155	0	63	91	18	0	1373
05:15 PM	127	386	5	0	84	6	51	0	1	427	176	0	58	94	19	0	1434
05:30 PM	125	437	4	1	87	4	69	0	4	425	147	2	53	81	25	0	1464
05:45 PM	128	408	12	0	94	1	69	0	0	431	140	4	60	65	12	0	1424
Total	497	1566	25	1	350	15	269	0	8	1701	618	6	234	331	74	0	5695
06:00 PM	122	435	3	0	62	3	42	0	2	473	164	0	48	67	11	0	1432
06:15 PM	124	364	2	1	87	4	53	0	2	469	141	0	29	47	8	0	1331
06:30 PM	100	350	3	0	75	4	45	0	1	425	129	2	34	30	13	0	1211
06:45 PM	92	295	1	1	79	1	24	0	0	339	103	2	24	46	7	0	1014
Total	438	1444	9	2	303	12	164	0	5	1706	537	4	135	190	39	0	4988
Grand Total	3487	1855 4	704	43	4686	1314	3193	8	388	1586 9	4211	117	1097	1584	396	0	55651
Apprch %	15.3	81.4	3.1	0.2	50.9	14.3	34.7	0.1	1.9	77.1	20.5	0.6	35.7	51.5	12.9	0.0	
Total %	6.3	33.3	1.3	0.1	8.4	2.4	5.7	0.0	0.7	28.5	7.6	0.2	2.0	2.8	0.7	0.0	

Location: MD 355 @ Jones Bridge Rd

County: Montgomery

Weather: Clear

Groups Printed- Unshifted

Start Time	Wisconsin Avenue From North				Glenbrook Parkway From East				Wisconsin Avenue From South				Woodmont From West				Int. Total	
	Left	Thru	Right	U-turn	Left	Thru	Right	U-turn	Left	Thru	Right	U-turn	Left	Thru	Right	U-turn		
06:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
06:15 AM	0	198	56	0	0	0	0	0	0	118	2	0	12	0	0	0	0	386
06:30 AM	0	237	69	0	0	0	1	0	0	151	0	0	12	0	1	0	0	471
06:45 AM	0	280	150	1	0	0	5	0	0	172	2	0	21	0	2	0	0	633
Total	0	715	275	1	0	0	6	0	0	441	4	0	45	0	3	0	0	1490
07:00 AM	0	307	143	0	0	0	0	0	0	186	0	0	34	0	3	0	0	673
07:15 AM	0	400	219	0	0	0	5	0	0	226	0	0	42	0	0	0	0	892
07:30 AM	0	424	238	1	0	0	8	0	0	275	0	0	53	0	0	0	0	999
07:45 AM	0	456	277	0	0	0	4	0	0	289	0	0	53	0	1	0	0	1080
Total	0	1587	877	1	0	0	17	0	0	976	0	0	182	0	4	0	0	3644
08:00 AM	0	437	237	2	0	0	8	0	0	264	0	0	79	0	1	0	0	1028
08:15 AM	0	384	288	0	0	0	6	0	0	273	1	0	56	0	0	0	0	1008
08:30 AM	0	435	317	0	0	0	3	0	0	251	2	0	64	0	0	0	0	1072
08:45 AM	0	408	336	0	0	0	6	0	0	290	2	0	84	0	1	0	0	1127
Total	0	1664	1178	2	0	0	23	0	0	1078	5	0	283	0	2	0	0	4235
09:00 AM	0	410	281	0	0	0	6	0	0	300	1	0	77	0	0	0	0	1075
09:15 AM	0	405	271	0	0	0	0	0	0	245	0	0	67	0	1	0	0	989
09:30 AM	0	386	197	0	0	0	4	0	0	254	1	0	69	0	1	0	0	912
09:45 AM	0	273	193	0	0	0	7	0	0	222	1	0	54	0	1	0	0	751
Total	0	1474	942	0	0	0	17	0	0	1021	3	0	267	0	3	0	0	3727
10:00 AM	0	291	166	0	0	0	0	0	0	208	1	0	58	0	2	0	0	726
10:15 AM	0	314	154	0	0	0	4	0	0	252	0	0	65	0	1	0	0	790
10:30 AM	0	273	126	0	0	0	4	0	0	267	0	0	82	0	0	0	0	752
10:45 AM	0	273	175	0	0	0	2	0	0	230	0	0	63	0	0	0	0	743
Total	0	1151	621	0	0	0	10	0	0	957	1	0	268	0	3	0	0	3011
11:00 AM	0	244	119	0	0	0	0	0	0	285	2	0	70	0	1	0	0	721
11:15 AM	0	307	137	0	0	0	1	0	0	323	0	0	82	0	0	0	0	850
11:30 AM	0	261	127	0	0	2	1	0	0	304	0	0	80	0	1	0	0	776
11:45 AM	0	259	178	0	0	0	1	0	0	285	2	0	92	0	1	0	0	818
Total	0	1071	561	0	0	2	3	0	0	1197	4	0	324	0	3	0	0	3165
12:00 PM	0	266	157	0	0	0	0	0	0	320	1	0	83	0	0	0	0	827
12:15 PM	0	219	114	0	0	0	2	0	0	325	1	0	86	1	0	0	0	748
12:30 PM	0	246	127	0	0	0	1	0	0	308	1	0	119	0	3	0	0	805
12:45 PM	0	241	134	0	0	0	2	0	0	340	2	0	102	0	0	0	0	821
Total	0	972	532	0	0	0	5	0	0	1293	5	0	390	1	3	0	0	3201
01:00 PM	0	237	126	0	0	0	0	0	0	302	0	0	114	0	3	0	0	782
01:15 PM	0	248	149	0	0	0	0	0	0	343	1	0	99	0	2	0	0	842
01:30 PM	0	236	105	0	0	1	4	0	0	328	0	0	136	0	0	0	0	810
01:45 PM	0	233	153	0	0	0	1	0	0	338	0	0	105	0	0	0	0	830
Total	0	954	533	0	0	1	5	0	0	1311	1	0	454	0	5	0	0	3264
02:00 PM	0	260	128	0	0	0	3	0	0	356	0	0	131	0	1	0	0	879
02:15 PM	0	221	125	0	0	0	1	0	0	331	0	0	88	0	1	0	0	767
02:30 PM	0	231	131	0	0	0	3	0	0	356	1	0	110	0	2	0	0	834
02:45 PM	0	244	144	0	0	0	1	0	0	372	0	0	88	0	3	0	0	852
Total	0	956	528	0	0	0	8	0	0	1415	1	0	417	0	7	0	0	3332
03:00 PM	0	229	130	1	0	0	1	0	0	405	1	1	130	1	0	0	0	899
03:15 PM	0	241	154	0	0	0	2	0	0	393	2	0	109	0	2	0	0	903
03:30 PM	0	219	159	0	0	0	1	0	0	415	0	0	105	0	1	0	0	900
03:45 PM	0	265	166	4	0	0	1	0	0	401	0	0	100	0	1	0	0	938
Total	0	954	609	5	0	0	5	0	0	1614	3	1	444	1	4	0	0	3640
04:00 PM	0	273	188	1	0	0	0	0	0	431	2	0	113	0	3	0	0	1011
04:15 PM	0	294	193	0	0	0	2	0	0	399	3	0	123	0	3	0	0	1017
04:30 PM	0	282	186	0	0	0	5	0	0	453	2	0	96	0	2	0	0	1026
04:45 PM	0	316	209	0	0	0	4	0	0	475	1	1	117	0	3	0	0	1126
Total	0	1165	776	1	0	0	11	0	0	1758	8	1	449	0	11	0	0	4180

05:00 PM	0	272	188	0	0	0	3	0	0	473	2	0	150	0	2	0	1090
05:15 PM	0	313	197	0	0	0	1	0	0	521	1	0	168	0	0	0	1201
05:30 PM	0	324	273	0	0	0	6	0	0	495	0	0	133	0	3	0	1234
05:45 PM	0	301	257	0	0	0	2	0	0	486	1	0	163	0	0	0	1210
Total	0	1210	915	0	0	0	12	0	0	1975	4	0	614	0	5	0	4735
06:00 PM	0	318	207	1	0	0	2	0	0	521	1	0	168	0	0	0	1218
06:15 PM	0	273	217	0	0	0	3	0	0	529	1	0	129	0	3	0	1155
06:30 PM	0	249	178	0	0	0	4	0	0	447	1	0	122	0	0	0	1001
06:45 PM	0	222	175	0	0	0	1	0	0	376	0	0	113	0	1	0	888
Total	0	1062	777	1	0	0	10	0	0	1873	3	0	532	0	4	0	4262
Grand Total	0	1493	9124	11	0	3	132	0	0	1690	42	2	4669	2	57	0	45886
		5								9							
Apprch %	0.0	62.0	37.9	0.0	0.0	2.2	97.8	0.0	0.0	99.7	0.2	0.0	98.8	0.0	1.2	0.0	
Total %	0.0	32.5	19.9	0.0	0.0	0.0	0.3	0.0	0.0	36.9	0.1	0.0	10.2	0.0	0.1	0.0	

Location: MD 355 & Woodmont/Glenbrook Pk

County: Montgomery

Weather: Clear

Counters: DN, AR, LH, MS

Sabra, Wang & Associates Inc  
 1504 Joh Avenue  
 Suite 160  
 Baltimore, MD 21227

Weather: Sunny  
 Counted By: AK, CK  
 Town: NEW CARROLL TON  
 County: PRINCE GEORGE'S

File Name : MDC2D9~1  
 Site Code : 00000000  
 Start Date : 10/19/2005  
 Page No : 1

Groups Printed- 1 - Unshifted

Start Time	MD 410 From North					MD 450 From East					MD 410 From South					MD 450 From West					Int. Total
	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	
Factor	1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		
06:00 AM	5	84	23	0	112	30	96	16	0	142	12	73	14	0	99	9	57	36	3	105	458
06:15 AM	27	118	24	0	169	51	189	14	0	254	17	51	17	0	85	18	90	64	1	173	681
06:30 AM	29	157	9	0	195	50	161	16	1	228	74	120	15	0	209	10	84	63	1	158	790
06:45 AM	33	165	11	0	209	79	183	22	1	285	94	153	19	0	266	14	89	57	0	160	920
Total	94	524	67	0	685	210	629	68	2	909	197	397	65	0	659	51	320	220	5	596	2849
07:00 AM	16	123	22	0	161	53	314	13	0	380	153	198	37	0	388	22	112	78	1	213	1142
07:15 AM	19	97	30	0	146	35	356	20	0	411	156	208	44	0	408	36	108	95	3	242	1207
07:30 AM	28	159	38	0	225	82	491	8	0	581	168	208	82	0	458	45	122	84	0	251	1515
07:45 AM	32	168	46	0	246	88	507	15	0	610	171	216	87	0	474	53	132	92	0	277	1607
Total	95	547	136	0	778	258	1668	56	0	1982	648	830	250	0	1728	156	474	349	4	983	5471
08:00 AM	37	174	53	0	264	94	514	19	0	627	177	210	96	0	483	56	130	88	1	275	1649
08:15 AM	45	186	59	0	290	107	508	23	0	638	189	206	81	0	476	67	144	96	0	307	1711
08:30 AM	11	116	30	0	157	76	394	20	3	493	159	190	50	0	399	33	179	97	0	309	1358
08:45 AM	28	94	22	2	146	30	350	23	1	404	80	145	50	0	275	22	163	89	1	275	1100
Total	121	570	164	2	857	307	1766	85	4	2162	605	751	277	0	1633	178	616	370	2	1166	5818
09:00 AM	18	121	28	0	167	48	247	30	2	327	97	165	46	0	308	35	150	84	0	269	1071
09:15 AM	13	96	18	0	127	36	262	28	0	326	114	163	42	0	319	26	108	55	2	191	963
09:30 AM	13	80	19	1	113	32	223	16	2	273	82	114	40	0	236	25	147	73	4	249	871
09:45 AM	18	87	23	0	128	29	233	18	1	281	77	101	30	0	208	27	149	76	1	253	870
Total	62	384	88	1	535	145	965	92	5	1207	370	543	158	0	1071	113	554	288	7	962	3775
10:00 AM	15	85	23	0	123	36	231	20	0	287	74	143	33	0	250	21	152	18	1	192	852
10:15 AM	17	82	25	0	124	30	217	17	1	265	66	129	44	0	239	24	158	19	1	202	830
10:30 AM	19	84	29	0	132	28	213	19	0	260	64	134	37	0	235	20	161	17	0	198	825
10:45 AM	24	90	32	0	146	34	224	17	0	275	69	117	40	0	226	23	166	23	2	214	861
Total	75	341	109	0	525	128	885	73	1	1087	273	523	154	0	950	88	637	77	4	806	3368
11:00 AM	23	90	30	0	143	36	222	18	0	276	69	118	41	0	228	25	159	21	0	205	852
11:15 AM	23	91	29	0	143	38	225	15	0	278	74	121	41	0	236	24	166	22	0	212	869
11:30 AM	22	94	35	0	151	39	228	20	0	287	75	121	44	0	240	28	170	26	3	227	905
11:45 AM	31	87	40	1	159	34	245	24	1	304	83	132	37	0	252	24	188	20	1	233	948
Total	99	362	134	1	596	147	920	77	1	1145	301	492	163	0	956	101	683	89	4	877	3574
12:00 PM	35	92	45	0	172	27	237	21	0	285	77	114	35	0	226	32	191	24	0	247	930
12:15 PM	38	88	53	0	179	32	267	16	0	315	84	112	49	1	246	34	221	22	1	278	1018
12:30 PM	43	98	50	0	191	39	272	23	0	334	88	123	51	0	262	31	258	27	0	316	1103
12:45 PM	41	95	48	0	184	47	261	19	0	327	106	126	63	0	295	34	244	26	0	304	1110
Total	157	373	196	0	726	145	1037	79	0	1261	355	475	198	1	1029	131	914	99	1	1145	4161
01:00 PM	39	86	48	0	173	44	266	22	0	332	110	120	59	0	289	28	250	30	0	308	1102
01:15 PM	42	102	45	0	189	48	273	24	0	345	117	127	67	0	311	35	253	36	1	325	1170
01:30 PM	37	94	36	0	167	40	246	18	0	304	91	121	62	0	274	33	226	41	0	300	1045
01:45 PM	30	95	25	0	150	41	229	13	1	284	79	132	33	1	245	27	214	34	0	275	954
Total	148	377	154	0	679	173	1014	77	1	1265	397	500	221	1	1119	123	943	141	1	1208	4271
02:00 PM	23	80	18	0	121	32	252	19	2	305	74	117	48	1	240	23	210	29	3	265	931
02:15 PM	13	73	27	0	113	53	221	19	0	293	91	102	52	1	246	28	193	83	0	304	956
02:30 PM	24	116	28	0	168	56	239	23	0	318	85	116	49	0	250	24	213	86	2	325	1061
02:45 PM	20	119	31	0	170	63	244	21	0	328	79	124	41	0	244	26	215	86	2	329	1071
Total	80	388	104	0	572	204	956	82	2	1244	329	459	190	2	980	101	831	284	7	1223	4019

Sabra, Wang & Associates Inc  
 1504 Joh Avenue  
 Suite 160  
 Baltimore, MD 21227

Weather: Sunny  
 Counted By: AK , CK  
 Town: NEW CARROLL TON  
 County: PRINCE GEORGE'S

File Name : MDC2D9~1  
 Site Code : 00000000  
 Start Date : 10/19/2005  
 Page No : 2

Groups Printed- 1 - Unshifted

Start Time	MD 410 From North					MD 450 From East					MD 410 From South					MD 450 From West					Int. Total
	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	
Factor	1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		
03:00 PM	21	125	30	0	176	62	240	24	0	326	82	139	51	0	272	22	226	88	0	336	1110
03:15 PM	25	135	25	0	185	68	238	25	0	331	99	145	62	0	306	29	248	92	0	369	1191
03:30 PM	25	147	22	0	194	65	242	25	0	332	108	157	69	0	334	18	255	99	0	372	1232
03:45 PM	27	157	19	0	203	65	238	28	3	334	122	163	81	0	366	19	272	101	0	392	1295
Total	98	564	96	0	758	260	958	102	3	1323	411	604	263	0	1278	88	1001	380	0	1469	4828
04:00 PM	27	163	23	0	213	69	274	39	0	382	127	151	76	0	354	23	286	104	1	414	1363
04:15 PM	25	164	45	0	234	59	295	26	0	380	102	126	85	0	313	22	303	124	3	452	1379
04:30 PM	29	170	48	0	247	62	305	34	0	401	110	120	78	0	308	28	311	132	2	473	1429
04:45 PM	33	175	53	0	261	72	291	29	0	392	105	132	63	0	300	33	314	138	1	486	1439
Total	114	672	169	0	955	262	1165	128	0	1555	444	529	302	0	1275	106	1214	498	7	1825	5610
05:00 PM	26	186	58	0	270	80	247	20	1	348	124	151	74	0	349	52	325	154	8	539	1506
05:15 PM	37	184	56	0	277	73	302	32	0	407	97	142	71	0	310	36	300	119	1	456	1450
05:30 PM	43	219	50	0	312	86	267	36	1	390	106	157	79	1	343	30	345	124	1	500	1545
05:45 PM	47	223	54	0	324	80	254	40	0	374	110	164	65	0	339	33	320	128	2	483	1520
Total	153	812	218	0	1183	319	1070	128	2	1519	437	614	289	1	1341	151	1290	525	12	1978	6021
06:00 PM	44	218	57	0	319	66	249	32	1	348	107	141	68	0	316	41	307	133	1	482	1465
06:15 PM	47	210	56	0	313	63	228	24	0	315	88	140	60	0	288	37	293	118	0	448	1364
06:30 PM	30	171	44	0	245	68	218	26	0	312	73	121	52	0	246	25	190	71	0	286	1089
06:45 PM	20	140	38	0	198	57	207	26	0	290	76	111	78	0	265	28	144	79	0	251	1004
Total	141	739	195	0	1075	254	902	108	1	1265	344	513	258	0	1115	131	934	401	1	1467	4922
Grand Total	143	665	183	4	9924	281	139	115	22	1792	511	723	278	5	1513	151	104	372	55	1570	5868
Apprch %	7	3	0			2	35	5		4	1	0	8		4	8	11	1		5	7
	14.	67.	18.	0.0		15.	77.	6.4	0.1		33.	47.	18.	0.0		9.7	66.	23.	0.4		
	5	0	4			7	7				8	8	4			3	3	7			
Total %	2.4	11.3	3.1	0.0	16.9	4.8	23.7	2.0	0.0	30.5	8.7	12.3	4.8	0.0	25.8	2.6	17.7	6.3	0.1	26.8	

Sabra, Wang & Associates Inc

1504 Joh Avenue

Suite 160

File Name : MD 410 @ RAMP 295 SB

Weather: Cloudy

Counted By: AK , CK

Baltimore, MD 21227

Site Code : 00000000

Town: Riverdale

Start Date : 10/11/2005

County: Prince George's

Page No : 1

Groups Printed- Unshifted

Start Time	RAMP 295 From North					MD 410 From East					NO ENTRANCE From South					MD 410 From West					Int. Total
	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	
Factor	1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		
06:00 AM	15	0	23	0	38	58	180	0	0	238	0	0	0	0	0	0	164	35	0	199	475
06:15 AM	14	0	55	0	69	53	278	0	0	331	0	0	0	0	0	0	222	32	0	254	654
06:30 AM	10	2	49	0	61	54	299	0	0	353	0	0	0	0	0	0	278	42	0	320	734
06:45 AM	18	0	35	0	53	59	353	0	0	412	0	0	0	0	0	0	248	38	0	286	751
Total	57	2	162	0	221	224	1110	0	0	1334	0	0	0	0	0	0	912	147	0	1059	2614
07:00 AM	11	0	54	0	65	35	368	0	0	403	0	0	0	0	0	0	245	35	0	280	748
07:15 AM	16	1	60	0	77	27	386	0	0	413	0	0	0	0	0	0	242	43	0	285	775
07:30 AM	19	0	56	0	75	55	358	0	0	413	0	0	0	0	0	0	273	39	0	312	800
07:45 AM	8	0	59	0	67	66	482	0	0	548	0	0	0	0	0	0	272	37	0	309	924
Total	54	1	229	0	284	183	1594	0	0	1777	0	0	0	0	0	0	1032	154	0	1186	3247
08:00 AM	23	1	64	0	88	73	434	0	0	507	0	0	0	0	0	0	289	51	0	340	935
08:15 AM	26	0	66	2	94	60	380	0	0	440	0	0	0	0	0	0	247	23	0	270	804
08:30 AM	25	3	62	3	93	54	366	0	0	420	0	0	0	0	0	0	260	40	1	301	814
08:45 AM	29	5	62	2	98	74	406	0	5	485	0	0	0	0	0	0	229	43	2	274	857
Total	103	9	254	7	373	261	1586	0	5	1852	0	0	0	0	0	0	1025	157	3	1185	3410
09:00 AM	21	0	52	0	73	71	396	0	1	468	0	0	0	0	0	0	216	55	3	274	815
09:15 AM	18	0	46	0	64	74	324	0	1	399	0	0	0	0	0	0	220	41	0	261	724
09:30 AM	17	0	31	0	48	59	307	0	0	366	0	0	0	0	0	0	225	45	0	270	684
09:45 AM	21	0	42	0	63	42	280	0	0	322	0	0	0	0	0	0	197	35	0	232	617
Total	77	0	171	0	248	246	1307	0	2	1555	0	0	0	0	0	0	858	176	3	1037	2840
10:00 AM	28	0	28	0	56	47	249	0	0	296	0	0	0	0	0	0	195	44	0	239	591
10:15 AM	23	0	35	0	58	48	214	0	5	267	0	0	0	0	0	0	178	38	0	216	541
10:30 AM	21	0	42	0	63	30	247	0	0	277	0	0	0	0	0	0	185	41	0	226	566
10:45 AM	14	0	48	0	62	32	233	0	0	265	0	0	0	0	0	0	133	27	0	160	487
Total	86	0	153	0	239	157	943	0	5	1105	0	0	0	0	0	0	691	150	0	841	2185
11:00 AM	13	0	53	0	66	34	225	0	0	259	0	0	0	0	0	0	214	37	0	251	576
11:15 AM	15	0	49	0	64	54	245	0	3	302	0	0	0	3	3	0	211	32	0	243	612
11:30 AM	17	0	38	0	55	21	207	0	0	228	0	0	0	0	0	0	247	39	0	286	569
11:45 AM	26	0	38	1	65	30	207	0	0	237	0	0	0	0	0	0	221	30	0	251	553
Total	71	0	178	1	250	139	884	0	3	1026	0	0	0	3	3	0	893	138	0	1031	2310
12:00 PM	13	1	39	0	53	28	195	0	2	225	0	0	0	0	0	0	159	34	1	194	472
12:15 PM	30	0	34	0	64	30	229	0	0	259	0	0	0	0	0	0	237	43	0	280	603
12:30 PM	15	0	50	0	65	26	216	0	1	243	0	0	0	0	0	0	222	47	1	270	578
12:45 PM	36	1	58	0	95	51	258	0	0	309	0	0	0	0	0	0	220	42	0	262	666
Total	94	2	181	0	277	135	898	0	3	1036	0	0	0	0	0	0	838	166	2	1006	2319
01:00 PM	36	0	77	1	114	27	265	0	0	292	0	0	0	0	0	0	218	29	0	247	653
01:15 PM	36	0	76	0	112	26	277	0	0	303	0	0	0	0	0	0	312	47	4	363	778
01:30 PM	43	1	68	0	112	28	243	0	2	273	0	0	0	0	0	0	261	61	0	322	707
01:45 PM	28	2	44	0	74	33	282	0	1	316	0	0	0	0	0	0	264	45	2	311	701
Total	143	3	265	1	412	114	1067	0	3	1184	0	0	0	0	0	0	1055	182	6	1243	2839
02:00 PM	30	2	29	0	61	26	247	0	5	278	0	0	0	0	0	0	267	60	0	327	666
02:15 PM	28	2	77	0	107	38	217	0	0	255	0	0	0	0	0	0	252	54	1	307	669
02:30 PM	44	1	80	0	125	37	241	0	2	280	0	0	0	0	0	0	285	64	1	350	755
02:45 PM	38	2	77	0	117	42	225	0	0	267	0	0	0	0	0	0	318	68	0	386	770
Total	140	7	263	0	410	143	930	0	7	1080	0	0	0	0	0	0	1122	246	2	1370	2860

Sabra, Wang & Associates Inc  
1504 Joh Avenue

Weather: Cloudy  
Counted By: AK , CK  
Town: Riverdale  
County: Prince George's

Suite 160 File Name : MD 410 @ RAMP 295 SB  
Baltimore, MD 21227 Site Code : 00000000  
Start Date : 10/11/2005  
Page No : 2

Groups Printed- Unshifted

Start Time	RAMP 295 From North					MD 410 From East					NO ENTRANCE From South					MD 410 From West					Int. Total
	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	
Factor	1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		
03:00 PM	27	0	73	0	100	59	197	0	1	257	0	0	0	1	1	0	273	54	5	332	690
03:15 PM	20	0	60	0	80	66	319	0	6	391	0	0	0	0	0	0	257	41	0	298	769
03:30 PM	51	0	59	0	110	68	337	0	3	408	0	0	0	0	0	0	283	58	3	344	862
03:45 PM	46	3	90	1	140	55	353	0	1	409	0	0	0	1	1	0	302	78	4	384	934
Total	144	3	282	1	430	248	1206	0	11	1465	0	0	0	2	2	0	1115	231	12	1358	3255
04:00 PM	43	3	69	0	115	31	331	0	8	370	0	0	0	0	0	0	318	71	3	392	877
04:15 PM	31	1	90	0	122	61	309	0	1	371	0	0	0	0	0	0	309	59	3	371	864
04:30 PM	33	1	84	0	118	64	340	0	0	404	0	0	0	0	0	0	310	73	1	384	906
04:45 PM	60	0	75	0	135	51	358	0	0	409	0	0	0	0	0	0	313	67	0	380	924
Total	167	5	318	0	490	207	1338	0	9	1554	0	0	0	0	0	0	1250	270	7	1527	3571
05:00 PM	37	0	66	0	103	30	345	0	0	375	0	0	0	0	0	0	325	73	1	399	877
05:15 PM	43	1	58	0	102	34	356	0	1	391	0	0	0	0	0	0	287	67	0	354	847
05:30 PM	42	1	80	0	123	68	380	0	0	448	0	0	0	0	0	0	291	63	2	356	927
05:45 PM	42	0	73	0	115	78	383	0	0	461	0	0	0	0	0	0	420	75	1	496	1072
Total	164	2	277	0	443	210	1464	0	1	1675	0	0	0	0	0	0	1323	278	4	1605	3723
06:00 PM	54	1	78	0	133	56	367	0	0	423	0	0	0	0	0	0	399	89	0	488	1044
06:15 PM	49	0	82	1	132	67	387	0	1	455	0	0	0	0	0	0	375	75	0	450	1037
06:30 PM	35	1	79	0	115	71	353	0	3	427	0	0	0	0	0	0	321	68	3	392	934
06:45 PM	29	0	75	0	104	63	347	0	0	410	0	0	0	0	0	0	279	51	0	330	844
Total	167	2	314	1	484	257	1454	0	4	1715	0	0	0	0	0	0	1374	283	3	1660	3859
Grand Total	1467	36	3047	11	4561	2524	15781	0	53	18358	0	0	0	5	5	0	13488	2578	42	16108	39032
Apprch %	32.2	0.8	66.8	0.2		13.7	86.0	0.0	0.3		0.0	0.0	0.0	100.0		0.0	83.7	16.0	0.3		
Total %	3.8	0.1	7.8	0.0	11.7	6.5	40.4	0.0	0.1	47.0	0.0	0.0	0.0	0.0	0.0	0.0	34.6	6.6	0.1	41.3	



Sabra, Wang & Associates Inc  
 1504 Joh Avenue  
 Suite 160  
 Baltimore, MD 21227

Weather: Cloudy  
 Counted By: AK , CK  
 Town: Riverdale  
 County: Prince George's

File Name : MDD73A~1  
 Site Code : 00000000  
 Start Date : 10/12/2005  
 Page No : 1

Groups Printed- 1 - Unshifted

Start Time	NO ENTRANCE From North					MD 410 From East					RAMP 295 NB From South					MD 410 From West					Int. Total
	Left	Thru	Rig	Ped	App. Total	Left	Thru	Rig	Ped	App. Total	Left	Thru	Rig	Ped	App. Total	Left	Thru	Rig	Ped	App. Total	
06:00 AM	0	0	0	0	0	0	282	25	1	308	27	0	6	0	33	67	143	0	0	210	551
06:15 AM	0	0	0	0	0	0	302	45	0	347	32	3	8	1	44	70	193	0	0	263	654
06:30 AM	0	0	0	0	0	0	315	52	0	367	38	0	10	0	48	88	180	0	0	268	683
06:45 AM	0	0	0	0	0	0	322	73	0	395	48	0	10	0	58	78	211	0	0	289	742
Total	0	0	0	0	0	0	1221	195	1	1417	145	3	34	1	183	303	727	0	0	1030	2630
07:00 AM	0	0	0	0	0	0	384	60	0	444	44	0	12	0	56	63	178	0	0	241	741
07:15 AM	0	0	0	0	0	0	394	53	0	447	63	1	13	0	77	68	225	0	0	293	817
07:30 AM	0	0	0	0	0	0	402	61	0	463	67	0	12	0	79	72	192	0	0	264	806
07:45 AM	0	0	0	0	0	0	413	62	0	475	88	0	14	0	102	34	131	0	0	165	742
Total	0	0	0	0	0	0	1593	236	0	1829	262	1	51	0	314	237	726	0	0	963	3106
08:00 AM	0	0	0	0	0	0	464	72	0	536	75	1	15	0	91	71	215	0	1	287	914
08:15 AM	0	0	0	0	0	0	396	59	3	458	68	1	12	0	81	68	205	0	0	273	812
08:30 AM	0	0	0	0	0	0	377	65	0	442	70	0	11	0	81	62	198	0	0	260	783
08:45 AM	0	0	0	0	0	0	376	32	0	408	54	0	7	0	61	43	155	0	0	198	667
Total	0	0	0	0	0	0	1613	228	3	1844	267	2	45	0	314	244	773	0	1	1018	3176
09:00 AM	0	0	0	0	0	0	375	57	1	433	46	0	8	0	54	44	182	0	0	226	713
09:15 AM	0	0	0	0	0	0	401	73	0	474	51	0	10	0	61	29	172	0	0	201	736
09:30 AM	0	0	0	0	0	0	331	40	0	371	65	0	10	0	75	39	154	0	0	193	639
09:45 AM	0	0	0	0	0	0	302	52	0	354	67	1	10	0	78	40	192	0	1	233	665
Total	0	0	0	0	0	0	1409	222	1	1632	229	1	38	0	268	152	700	0	1	853	2753
10:00 AM	0	0	0	0	0	0	246	36	1	283	48	0	10	0	58	41	163	0	2	206	547
10:15 AM	0	0	0	0	0	0	198	23	0	221	33	0	9	0	42	45	153	0	4	202	465
10:30 AM	0	0	0	0	0	0	187	36	0	223	50	1	15	0	66	28	180	0	0	208	497
10:45 AM	0	0	0	1	1	0	162	39	0	201	52	0	15	0	67	39	159	0	0	198	467
Total	0	0	0	1	1	0	793	134	1	928	183	1	49	0	233	153	655	0	6	814	1976
11:00 AM	0	0	0	0	0	0	184	35	0	219	0	1	15	0	16	33	189	0	1	223	458
11:15 AM	0	0	0	0	0	0	201	30	0	231	13	1	16	0	30	35	191	0	2	228	489
11:30 AM	0	0	0	0	0	0	208	25	0	233	33	0	13	0	46	28	178	0	0	206	485
11:45 AM	0	0	0	0	0	0	208	42	1	251	36	0	19	0	55	36	209	0	1	246	552
Total	0	0	0	0	0	0	801	132	1	934	82	2	63	0	147	132	767	0	4	903	1984
12:00 PM	0	0	0	0	0	0	210	44	0	254	35	0	11	0	46	29	195	0	0	224	524
12:15 PM	0	0	0	0	0	0	269	24	0	293	42	0	16	0	58	31	200	0	0	231	582
12:30 PM	0	0	0	0	0	0	192	27	0	219	54	0	12	0	66	43	225	0	1	269	554
12:45 PM	0	0	0	0	0	0	180	38	0	218	52	1	15	0	68	37	217	0	1	255	541
Total	0	0	0	0	0	0	851	133	0	984	183	1	54	0	238	140	837	0	2	979	2201
01:00 PM	0	0	0	2	2	0	209	27	2	238	50	0	10	0	60	17	216	0	7	240	540
01:15 PM	0	0	0	2	2	0	239	25	0	264	53	0	9	3	65	42	210	0	0	252	583
01:30 PM	0	0	0	0	0	0	242	28	3	273	56	0	11	2	69	36	192	0	1	229	571
01:45 PM	0	0	0	0	0	0	238	35	0	273	57	0	16	0	73	42	214	0	0	256	602
Total	0	0	0	4	4	0	928	115	5	1048	216	0	46	5	267	137	832	0	8	977	2296
02:00 PM	0	0	0	0	0	0	247	34	0	281	63	4	25	0	92	41	211	0	1	253	626
02:15 PM	0	0	0	0	0	0	264	32	1	297	67	0	31	1	99	37	272	0	2	311	707
02:30 PM	0	0	0	1	1	0	258	33	0	291	58	0	29	0	87	61	289	0	1	351	730
02:45 PM	0	0	0	3	3	0	244	32	0	276	0	1	53	0	54	46	223	0	7	276	609
Total	0	0	0	4	4	0	1013	131	1	1145	188	5	138	1	332	185	995	0	11	1191	2672

Sabra, Wang & Associates Inc  
 1504 Joh Avenue  
 Suite 160  
 Baltimore, MD 21227

Weather: Cloudy  
 Counted By: AK , CK  
 Town: Riverdale  
 County: Prince George's

File Name : MDD73A~1  
 Site Code : 00000000  
 Start Date : 10/12/2005  
 Page No : 2

Groups Printed- 1 - Unshifted

Start Time	NO ENTRANCE From North					MD 410 From East					RAMP 295 NB From South					MD 410 From West					Int. Total
	Left	Thru	Rght	Peds	App. Total	Left	Thru	Rght	Peds	App. Total	Left	Thru	Rght	Peds	App. Total	Left	Thru	Rght	Peds	App. Total	
Factor	1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		
03:00 PM	0	0	0	2	2	0	238	30	1	269	77	0	40	0	117	52	273	0	0	325	713
03:15 PM	0	0	0	0	0	0	276	36	2	314	59	1	37	0	97	57	328	0	0	385	796
03:30 PM	0	0	0	0	0	0	299	31	2	332	68	0	39	0	107	48	321	0	8	377	816
03:45 PM	0	0	0	2	2	0	274	28	0	302	0	0	59	0	59	40	352	0	6	398	761
Total	0	0	0	4	4	0	1087	125	5	1217	204	1	175	0	380	197	1274	0	14	1485	3086
04:00 PM	0	0	0	0	0	0	260	26	2	288	88	0	34	0	122	26	277	0	0	303	713
04:15 PM	0	0	0	0	0	0	289	23	0	312	59	1	49	0	109	46	355	0	8	409	830
04:30 PM	0	0	0	2	2	0	286	19	1	306	84	2	42	0	128	31	357	0	3	391	827
04:45 PM	0	0	0	0	0	0	298	24	0	322	77	2	42	0	121	36	361	0	1	398	841
Total	0	0	0	2	2	0	1133	92	3	1228	308	5	167	0	480	139	1350	0	12	1501	3211
05:00 PM	0	0	0	0	0	0	309	28	0	337	82	2	38	0	122	38	349	0	0	387	846
05:15 PM	0	0	0	0	0	1	297	28	1	327	74	0	20	0	94	29	378	0	0	407	828
05:30 PM	0	0	0	0	0	0	361	32	3	396	70	0	37	0	107	28	362	0	0	390	893
05:45 PM	0	0	0	0	0	0	325	29	2	356	76	0	63	0	139	46	403	0	0	449	944
Total	0	0	0	0	0	1	1292	117	6	1416	302	2	158	0	462	141	1492	0	0	1633	3511
06:00 PM	0	0	0	2	2	0	336	38	0	374	78	1	64	0	143	44	391	0	2	437	956
06:15 PM	0	0	0	0	0	0	342	32	0	374	79	2	52	0	133	39	366	0	3	408	915
06:30 PM	0	0	0	0	0	0	335	37	0	372	71	0	41	0	112	29	340	0	2	371	855
06:45 PM	0	0	0	2	2	0	331	37	0	368	64	0	29	0	93	23	301	0	0	324	787
Total	0	0	0	4	4	0	1344	144	0	1488	292	3	186	0	481	135	1398	0	7	1540	3513
Grand Total	0	0	0	19	19	1	15078	2004	27	17110	2861	27	1204	7	4099	2295	12526	0	66	14887	36115
Apprch %	0.0	0.0	0.0	100.0		0.0	88.1	11.7	0.2		69.8	0.7	29.4	0.2		15.4	84.1	0.0	0.4		
Total %	0.0	0.0	0.0	0.1	0.1	0.0	41.7	5.5	0.1	47.4	7.9	0.1	3.3	0.0	11.3	6.4	34.7	0.0	0.2	41.2	

Sabra, Wang & Associates Inc

1504 Joh Avenue

Weather: Sunny

Suite 160 File Name : MD 410 @ RIVERDALE ROAD

Counted By: AK , CK

Baltimore, MD 21207 Code : 00000000

Town : New Carrollton

Start Date : 10/18/2005

County: Prince George's

Page No : 1

Groups Printed- Unshifted

Start Time	NO ENTRANCE From North					RIVERDALE ROAD From East					MD 410 From South					RIVERDALE ROAD From West					Int. Total
	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	
Factor	1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		
06:00 AM	0	0	0	0	0	20	140	0	0	160	132	0	2	0	134	0	72	151	0	223	517
06:15 AM	0	0	0	0	0	25	143	0	0	168	136	0	4	0	140	0	75	154	0	229	537
06:30 AM	0	0	0	0	0	30	149	0	0	179	167	0	5	0	172	0	104	169	0	273	624
06:45 AM	0	0	0	0	0	43	230	0	0	273	157	0	27	0	184	0	82	188	0	270	727
Total	0	0	0	0	0	118	662	0	0	780	592	0	38	0	630	0	333	662	0	995	2405
07:00 AM	0	0	0	0	0	14	164	0	0	178	225	0	13	0	238	0	64	153	0	217	633
07:15 AM	0	0	0	0	0	36	202	0	1	239	195	0	47	1	243	0	81	121	1	203	685
07:30 AM	0	0	0	0	0	40	206	0	0	246	224	0	48	0	272	0	88	136	0	224	742
07:45 AM	0	0	0	0	0	37	302	0	0	339	214	0	81	0	295	0	129	142	0	271	905
Total	0	0	0	0	0	127	874	0	1	1002	858	0	189	1	1048	0	362	552	1	915	2965
08:00 AM	0	0	0	0	0	27	251	0	0	278	223	0	55	0	278	0	134	130	0	264	820
08:15 AM	0	0	0	0	0	34	189	0	0	223	218	0	13	0	231	0	137	160	0	297	751
08:30 AM	0	0	0	0	0	33	184	0	0	217	204	0	20	0	224	0	123	145	0	268	709
08:45 AM	0	0	0	0	0	41	206	0	2	249	222	0	53	0	275	0	107	159	1	267	791
Total	0	0	0	0	0	135	830	0	2	967	867	0	141	0	1008	0	501	594	1	1096	3071
09:00 AM	0	0	0	0	0	26	147	0	0	173	186	0	15	1	202	0	108	119	2	229	604
09:15 AM	0	0	0	0	0	30	156	0	0	186	195	0	18	0	213	0	99	103	0	202	601
09:30 AM	0	0	0	0	0	19	126	0	0	145	132	0	26	1	159	0	133	84	1	218	522
09:45 AM	0	0	0	0	0	23	131	0	0	154	121	0	30	0	151	0	139	92	0	231	536
Total	0	0	0	0	0	98	560	0	0	658	634	0	89	2	725	0	479	398	3	880	2263
10:00 AM	0	0	0	0	0	30	139	0	0	169	115	0	25	1	141	0	117	79	0	196	506
10:15 AM	0	0	0	0	0	20	125	0	0	145	103	0	36	0	139	0	107	70	0	177	461
10:30 AM	0	0	0	0	0	27	135	0	0	162	111	0	26	1	138	0	100	74	0	174	474
10:45 AM	0	0	0	0	0	23	126	0	0	149	98	0	34	1	133	0	92	73	0	165	447
Total	0	0	0	0	0	100	525	0	0	625	427	0	121	3	551	0	416	296	0	712	1888
11:00 AM	0	0	0	0	0	20	121	0	0	141	104	0	26	1	131	0	97	77	1	175	447
11:15 AM	0	0	0	0	0	25	125	0	0	150	114	0	25	1	140	0	102	80	0	182	472
11:30 AM	0	0	0	0	0	28	130	0	0	158	117	0	30	0	147	0	109	80	0	189	494
11:45 AM	0	0	0	0	0	32	135	0	0	167	117	0	23	2	142	0	112	85	3	200	509
Total	0	0	0	0	0	105	511	0	0	616	452	0	104	4	560	0	420	322	4	746	1922
12:00 PM	0	0	0	0	0	29	148	0	0	177	135	0	25	0	160	0	104	80	1	185	522
12:15 PM	0	0	0	0	0	45	130	0	0	175	106	0	31	0	137	0	122	98	0	220	532
12:30 PM	0	0	0	0	0	57	136	0	0	193	87	0	42	1	130	0	125	122	0	247	570
12:45 PM	0	0	0	0	0	50	146	0	0	196	109	0	47	0	156	0	114	126	1	241	593
Total	0	0	0	0	0	181	560	0	0	741	437	0	145	1	583	0	465	426	2	893	2217
01:00 PM	0	0	0	0	0	65	138	0	0	203	104	0	43	2	149	0	103	114	2	219	571
01:15 PM	0	0	0	0	0	68	147	0	1	216	90	0	48	2	140	0	127	105	0	232	588
01:30 PM	0	0	0	0	0	64	154	0	0	218	97	0	52	2	151	0	116	86	2	204	573
01:45 PM	0	0	0	1	1	58	140	0	0	198	102	0	48	3	153	0	129	98	0	227	579
Total	0	0	0	1	1	255	579	0	1	835	393	0	191	9	593	0	475	403	4	882	2311
02:00 PM	0	0	0	0	0	26	127	0	0	153	92	0	20	2	114	0	90	105	0	195	462
02:15 PM	0	0	0	0	0	24	121	0	0	145	109	0	26	1	136	0	84	85	0	169	450
02:30 PM	0	0	0	0	0	29	129	0	0	158	102	0	24	2	128	0	88	88	0	176	462
02:45 PM	0	0	0	0	0	20	134	0	0	154	91	0	19	0	110	0	97	80	0	177	441
Total	0	0	0	0	0	99	511	0	0	610	394	0	89	5	488	0	359	358	0	717	1815
03:00 PM	0	0	0	0	0	25	158	0	0	183	126	0	29	0	155	0	111	125	0	236	574
03:15 PM	0	0	0	0	0	30	173	0	0	203	163	0	34	0	197	0	152	162	0	314	714
03:30 PM	0	0	0	0	0	42	199	0	0	241	185	0	44	0	229	0	178	178	0	356	826
03:45 PM	0	0	0	0	0	51	206	0	0	257	228	0	42	0	270	0	183	188	1	372	899
Total	0	0	0	0	0	148	736	0	0	884	702	0	149	0	851	0	624	653	1	1278	3013

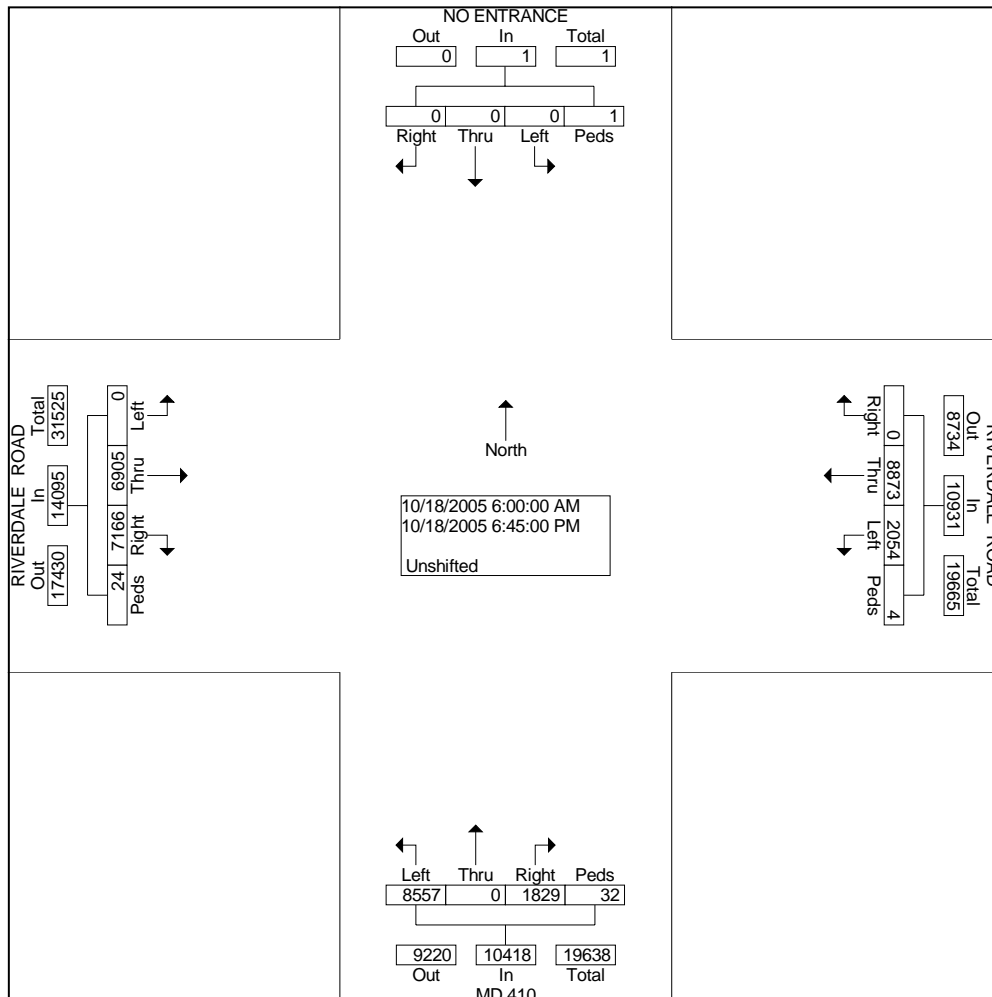
Sabra, Wang & Associates Inc  
1504 Joh Avenue

Weather: Sunny  
Counted By: AK , CK  
Town : New Carrollton  
County: Prince George's

Suite 160 File Name : MD 410 @ RIVERDALE ROAD  
Baltimore, MD 21277 Code : 00000000  
Start Date : 10/18/2005  
Page No : 2

Groups Printed- Unshifted

Start Time	NO ENTRANCE From North					RIVERDALE ROAD From East					MD 410 From South					RIVERDALE ROAD From West					Int. Total
	Left	Thru	Rig ht	Ped s	App. Total	Left	Thru	Rig ht	Ped s	App. Total	Left	Thru	Rig ht	Ped s	App. Total	Left	Thru	Rig ht	Ped s	App. Total	
Factor	1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		
04:00 PM	0	0	0	0	0	62	209	0	0	271	258	0	41	0	299	0	181	185	6	372	942
04:15 PM	0	0	0	0	0	65	212	0	0	277	262	0	43	0	305	0	190	201	0	391	973
04:30 PM	0	0	0	0	0	69	214	0	0	283	268	0	48	0	316	0	187	196	0	383	982
04:45 PM	0	0	0	0	0	28	233	0	0	261	242	0	56	0	298	0	228	214	0	442	1001
Total	0	0	0	0	0	224	868	0	0	1092	1030	0	188	0	1218	0	786	796	6	1588	3898
05:00 PM	0	0	0	0	0	71	220	0	0	291	238	0	53	2	293	0	215	223	0	438	1022
05:15 PM	0	0	0	0	0	66	216	0	0	282	231	0	56	1	288	0	201	222	0	423	993
05:30 PM	0	0	0	0	0	65	234	0	0	299	253	0	61	1	315	0	206	213	0	419	1033
05:45 PM	0	0	0	0	0	63	220	0	0	283	217	0	55	1	273	0	198	217	0	415	971
Total	0	0	0	0	0	265	890	0	0	1155	939	0	225	5	1169	0	820	875	0	1695	4019
06:00 PM	0	0	0	0	0	50	211	0	0	261	223	0	44	0	267	0	210	198	1	409	937
06:15 PM	0	0	0	0	0	47	206	0	0	253	211	0	42	0	253	0	223	232	0	455	961
06:30 PM	0	0	0	0	0	54	178	0	0	232	224	0	39	1	264	0	221	218	1	440	936
06:45 PM	0	0	0	0	0	48	172	0	0	220	174	0	35	1	210	0	211	183	0	394	824
Total	0	0	0	0	0	199	767	0	0	966	832	0	160	2	994	0	865	831	2	1698	3658
Grand Total	0	0	0	1	1	205	887	0	4	1093	855	0	182	32	1041	0	690	716	24	1409	3544
Apprch %	0.0	0.0	0.0	100.0		18.8	81.2	0.0	0.0		82.1	0.0	17.6	0.3		0.0	49.0	50.8	0.2		
Total %	0.0	0.0	0.0	0.0	0.0	5.8	25.0	0.0	0.0	30.8	24.1	0.0	5.2	0.1	29.4	0.0	19.5	20.2	0.1	39.8	



Sabra, Wang & Associates, Inc.

1504 Joh Avenue, Suite 160

Baltimore MD, 21277 Site Name : PAINT BR. PKWY @ RIVER RD.

Weather: SUNNY

Counted By: Casen

Town: College Park

County: Prince George's

Ph: (410)-737-6564 Fax: (410)-737-6574 12345678

Start Date : 10/18/2005

Page No : 1

Groups Printed- Unshifted

Start Time	NO ENTRANCE From North					PAINT BRANCH PARKWAY From East					RIVER ROAD From South					PAINT BRANCH PARKWAY From West					Int. Total
	Rig ht	Thr u	Left	Ped s	App. Total	Rig ht	Thr u	Left	Ped s	App. Total	Rig ht	Thr u	Left	Ped s	App. Total	Rig ht	Thr u	Left	Ped s	App. Total	
Factor	1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		
06:00	0	0	0	0	0	0	79	18	0	97	7	0	39	0	46	46	16	0	0	62	205
06:15	0	0	0	0	0	0	88	12	0	100	4	0	27	2	33	35	14	0	0	49	182
06:30	0	0	0	0	0	0	96	27	0	123	7	0	41	0	48	42	28	0	0	70	241
06:45	0	0	0	0	0	0	167	27	3	197	6	0	52	0	58	43	26	0	0	69	324
Total	0	0	0	0	0	0	430	84	3	517	24	0	159	2	185	166	84	0	0	250	952
07:00	0	0	0	0	0	0	148	44	1	193	7	0	62	1	70	40	37	0	2	79	342
07:15	0	0	0	0	0	0	182	46	1	229	3	0	57	3	63	39	48	0	1	88	380
07:30	0	0	0	0	0	0	263	40	2	305	7	0	69	7	83	49	45	0	1	95	483
07:45	0	0	0	0	0	0	314	50	3	367	8	0	71	5	84	49	39	0	0	88	539
Total	0	0	0	0	0	0	907	180	7	1094	25	0	259	16	300	177	169	0	4	350	1744
08:00	0	0	0	0	0	0	364	48	3	415	14	0	89	2	105	38	65	0	0	103	623
08:15	0	0	0	0	0	0	299	38	2	339	7	0	71	6	84	50	66	0	2	118	541
08:30	0	0	0	0	0	0	285	40	0	325	9	0	69	10	88	44	69	0	0	113	526
08:45	0	0	0	0	0	0	277	30	2	309	10	0	60	3	73	44	43	0	0	87	469
Total	0	0	0	0	0	0	1225	156	7	1388	40	0	289	21	350	176	243	0	2	421	2159
09:00	0	0	0	0	0	0	198	31	4	233	5	0	44	6	55	40	50	0	0	90	378
09:15	0	0	0	0	0	0	151	17	4	172	8	0	57	6	71	33	54	0	0	87	330
09:30	0	0	0	0	0	0	163	19	2	184	10	0	39	3	52	46	53	0	1	100	336
09:45	0	0	0	0	0	0	114	10	1	125	8	0	47	0	55	34	43	0	0	77	257
Total	0	0	0	0	0	0	626	77	11	714	31	0	187	15	233	153	200	0	1	354	1301
10:00	0	0	0	0	0	0	89	13	1	103	3	0	29	1	33	28	60	0	0	88	224
10:15	0	0	0	0	0	0	107	8	1	116	4	0	26	1	31	27	49	0	0	76	223
10:30	0	0	0	0	0	0	108	8	4	120	6	0	31	2	39	28	47	0	0	75	234
10:45	0	0	0	0	0	0	87	6	2	95	7	0	25	0	32	26	47	0	0	73	200
Total	0	0	0	0	0	0	391	35	8	434	20	0	111	4	135	109	203	0	0	312	881
11:00	0	0	0	0	0	0	66	6	0	72	6	0	24	0	30	25	55	0	0	80	182
11:15	0	0	0	0	0	0	72	8	2	82	5	0	34	1	40	26	63	0	1	90	212
11:30	0	0	0	0	0	0	66	7	0	73	11	0	36	0	47	34	57	0	0	91	211
11:45	0	0	0	0	0	0	93	12	1	106	8	0	40	2	50	28	77	0	0	105	261
Total	0	0	0	0	0	0	297	33	3	333	30	0	134	3	167	113	252	0	1	366	866
12:00	0	0	0	0	0	0	93	7	1	101	19	0	49	1	69	45	85	0	0	130	300
12:15	0	0	0	0	0	0	86	12	1	99	15	0	53	4	72	31	80	0	1	112	283
12:30	0	0	0	0	0	0	80	14	0	94	5	0	47	0	52	39	95	0	0	134	280
12:45	0	0	0	0	0	0	74	8	2	84	12	0	32	2	46	46	77	0	0	123	253
Total	0	0	0	0	0	0	333	41	4	378	51	0	181	7	239	161	337	0	1	499	1116
13:00	0	0	0	0	0	0	64	10	1	75	8	0	40	3	51	39	83	0	1	123	249
13:15	0	0	0	0	0	0	72	5	4	81	7	0	28	3	38	37	77	0	0	114	233
13:30	0	0	0	0	0	0	89	13	2	104	9	0	28	4	41	33	60	0	0	93	238
13:45	0	0	0	0	0	0	85	9	0	94	8	0	29	2	39	32	88	0	0	120	253
Total	0	0	0	0	0	0	310	37	7	354	32	0	125	12	169	141	308	0	1	450	973
14:00	0	0	0	0	0	0	74	7	3	84	10	0	41	3	54	44	144	0	1	189	327
14:15	0	0	0	0	0	0	78	11	1	90	8	0	37	1	46	66	116	0	0	182	318
14:30	0	0	0	0	0	0	93	7	3	103	14	0	45	4	63	62	120	0	0	182	348
14:45	0	0	0	0	0	0	106	10	2	118	11	0	47	4	62	43	112	0	0	155	335
Total	0	0	0	0	0	0	351	35	9	395	43	0	170	12	225	215	492	0	1	708	1328
15:00	0	0	0	0	0	0	96	13	5	114	25	0	62	7	94	51	136	0	0	187	395
15:15	0	0	0	0	0	0	103	15	4	122	22	0	48	3	73	45	157	0	1	203	398
15:30	0	0	0	0	0	0	98	8	1	107	15	0	51	3	69	52	189	0	1	242	418
15:45	0	0	0	0	0	0	101	18	3	122	27	0	59	3	89	55	147	0	0	202	413
Total	0	0	0	0	0	0	398	54	13	465	89	0	220	16	325	203	629	0	2	834	1624

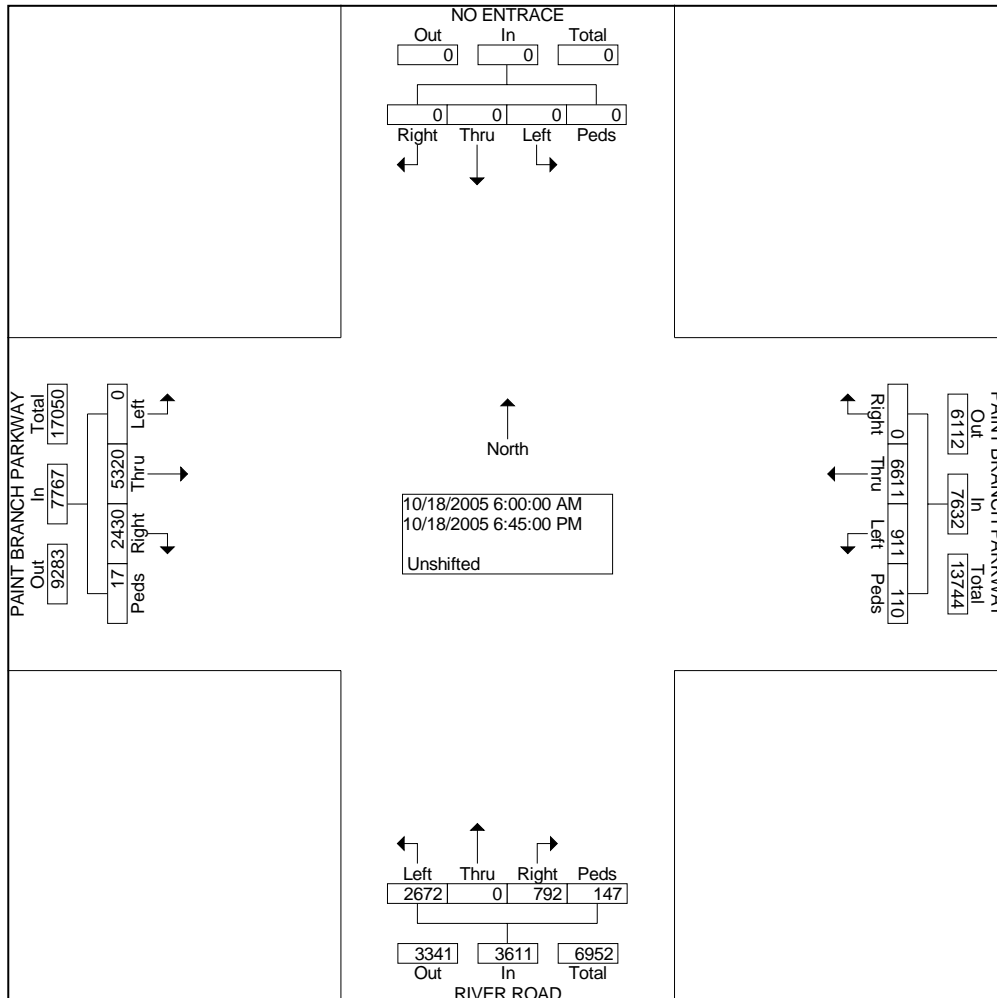
Sabra, Wang & Associates, Inc.  
1504 Joh Avenue, Suite 160

Weather: SUNNY  
Counted By: Casen  
Town: College Park  
County: Prince George's

Baltimore MD, 21277 Site Name : PAINT BR. PKWY @ RIVER RD.  
Ph: (410)-737-6564 Fax: (410)-737-1774 12345678  
Start Date : 10/18/2005  
Page No : 2

Groups Printed- Unshifted

Start Time	NO ENTRANCE From North					PAINT BRANCH PARKWAY From East					RIVER ROAD From South					PAINT BRANCH PARKWAY From West					Int. Total
	Rig ht	Thr u	Left	Ped s	App. Total	Rig ht	Thr u	Left	Ped s	App. Total	Rig ht	Thr u	Left	Ped s	App. Total	Rig ht	Thr u	Left	Ped s	App. Total	
Factor	1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		
16:00	0	0	0	0	0	0	104	13	6	123	36	0	59	4	99	70	174	0	1	245	467
16:15	0	0	0	0	0	0	84	13	2	99	29	0	70	3	102	81	187	0	0	268	469
16:30	0	0	0	0	0	0	106	21	2	129	47	0	65	3	115	74	219	0	1	294	538
16:45	0	0	0	0	0	0	117	11	2	130	38	0	68	2	108	75	195	0	0	270	508
Total	0	0	0	0	0	0	411	58	12	481	150	0	262	12	424	300	775	0	2	1077	1982
17:00	0	0	0	0	0	0	104	16	3	123	43	0	71	8	122	68	254	0	0	322	567
17:15	0	0	0	0	0	0	111	17	4	132	39	0	71	0	110	67	254	0	1	322	564
17:30	0	0	0	0	0	0	102	25	3	130	46	0	71	2	119	69	240	0	0	309	558
17:45	0	0	0	0	0	0	98	13	2	113	31	0	81	3	115	67	193	0	0	260	488
Total	0	0	0	0	0	0	415	71	12	498	159	0	294	13	466	271	941	0	1	1213	2177
18:00	0	0	0	0	0	0	114	13	10	137	41	0	75	5	121	63	212	0	0	275	533
18:15	0	0	0	0	0	0	117	14	2	133	26	0	65	4	95	61	143	0	0	204	432
18:30	0	0	0	0	0	0	134	11	0	145	17	0	67	3	87	65	154	0	1	220	452
18:45	0	0	0	0	0	0	152	12	2	166	14	0	74	2	90	56	178	0	0	234	490
Total	0	0	0	0	0	0	517	50	14	581	98	0	281	14	393	245	687	0	1	933	1907
Grand Total	0	0	0	0	0	0	661	911	110	7632	792	0	267	147	3611	243	532	0	17	7767	19010
Apprch %	0.0	0.0	0.0	0.0		0.0	86.6	11.9	1.4		21.9	0.0	74.0	4.1		31.3	68.5	0.0	0.2		
Total %	0.0	0.0	0.0	0.0	0.0	0.0	34.8	4.8	0.6	40.1	4.2	0.0	14.1	0.8	19.0	12.8	28.0	0.0	0.1	40.9	



Groups Printed- Unshifted

Start Time	UMD Fire & Rescue Academy From North				Paint Branch Parkway From East				Terrapin Trader Storage Facility From South				Paint Branch Parkway From West				Int. Total
	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	
06:00 AM	0	0	0	0	0	72	1	0	2	0	0	0	0	34	0	0	109
06:15 AM	2	0	0	0	0	86	0	0	0	0	0	0	2	57	0	0	147
06:30 AM	0	0	0	0	1	112	3	0	0	0	0	1	2	63	1	0	183
06:45 AM	0	0	0	0	0	162	4	0	0	0	1	2	1	94	1	0	265
Total	2	0	0	0	1	432	8	0	2	0	1	3	5	248	2	0	704
07:00 AM	0	0	1	0	0	145	12	0	0	0	0	0	5	119	1	0	283
07:15 AM	0	0	1	0	2	225	9	1	0	0	0	3	7	123	3	0	374
07:30 AM	0	0	1	0	1	254	12	0	0	0	1	0	12	106	0	0	387
07:45 AM	0	0	0	0	1	255	8	0	0	0	1	3	22	106	0	0	396
Total	0	0	3	0	4	879	41	1	0	0	2	6	46	454	4	0	1440
08:00 AM	2	0	0	0	1	283	16	0	0	0	0	4	18	130	5	0	459
08:15 AM	0	0	0	0	2	320	11	0	1	0	1	4	11	122	0	0	472
08:30 AM	3	0	2	0	0	362	3	0	2	0	0	0	3	121	0	0	496
08:45 AM	0	0	1	0	1	311	1	0	1	0	0	3	3	119	1	0	441
Total	5	0	3	0	4	1276	31	0	4	0	1	11	35	492	6	0	1868
09:00 AM	1	0	0	0	1	227	2	0	1	0	0	4	1	91	0	0	328
09:15 AM	1	0	1	0	0	175	1	0	1	1	2	0	1	107	3	0	293
09:30 AM	0	0	2	0	0	204	2	0	1	0	3	3	2	96	4	0	317
09:45 AM	1	0	3	0	2	153	1	0	0	0	0	1	1	83	2	0	247
Total	3	0	6	0	3	759	6	0	3	1	5	8	5	377	9	0	1185
10:00 AM	1	0	1	0	1	123	2	0	4	0	1	1	2	110	3	0	249
10:15 AM	0	0	3	0	2	115	0	0	3	0	3	3	4	112	3	0	248
10:30 AM	1	0	2	0	0	121	0	0	3	0	0	0	3	80	1	0	211
10:45 AM	0	0	0	1	1	108	1	0	1	0	1	2	1	73	4	0	193
Total	2	0	6	1	4	467	3	0	11	0	5	6	10	375	11	0	901
11:00 AM	0	0	13	0	2	103	1	0	1	0	0	2	1	96	1	0	220
11:15 AM	0	0	3	1	1	89	0	0	1	0	2	1	4	106	1	0	209
11:30 AM	12	1	31	1	0	110	0	0	1	0	1	0	4	78	3	0	242
11:45 AM	3	0	2	0	1	119	2	0	4	1	1	5	3	102	4	0	247
Total	15	1	49	2	4	421	3	0	7	1	4	8	12	382	9	0	918
12:00 PM	4	3	5	0	2	115	4	0	2	0	1	2	14	103	2	0	257
12:15 PM	2	0	4	0	1	122	7	0	4	0	3	3	10	130	3	0	289
12:30 PM	1	0	4	0	2	115	9	0	3	0	4	4	7	114	12	0	275
12:45 PM	1	0	2	0	0	114	3	0	2	1	1	1	7	116	2	0	250
Total	8	3	15	0	5	466	23	0	11	1	9	10	38	463	19	0	1071
01:00 PM	0	0	1	0	1	102	0	1	0	0	2	1	4	109	4	0	225
01:15 PM	3	0	0	0	0	121	0	0	8	0	1	4	1	123	2	0	263
01:30 PM	0	0	1	0	0	117	1	0	1	0	1	1	0	94	2	0	218
01:45 PM	1	0	2	0	0	110	2	0	1	0	1	2	2	103	2	0	226
Total	4	0	4	0	1	450	3	1	10	0	5	8	7	429	10	0	932
02:00 PM	0	0	3	0	3	89	1	0	2	0	2	1	3	128	6	0	238
02:15 PM	1	0	3	0	1	106	0	0	1	0	2	1	1	143	3	0	262
02:30 PM	0	0	0	1	0	108	3	0	1	0	3	2	1	106	4	0	229
02:45 PM	2	0	0	0	0	116	0	0	4	0	0	0	1	129	5	0	257
Total	3	0	6	1	4	419	4	0	8	0	7	4	6	506	18	0	986
03:00 PM	9	1	14	0	4	119	2	0	6	1	5	0	1	162	0	0	324
03:15 PM	6	0	1	0	0	109	0	0	0	0	0	5	2	168	0	0	291
03:30 PM	23	1	10	0	0	135	0	0	3	0	1	3	1	205	4	0	386
03:45 PM	25	0	30	0	0	132	1	0	2	0	2	0	1	144	1	0	338
Total	63	2	55	0	4	495	3	0	11	1	8	8	5	679	5	0	1339

Groups Printed- Unshifted

Start Time	UMD Fire & Rescue Academy From North				Paint Branch Parkway From East				Terrapin Trader Storage Facility From South				Paint Branch Parkway From West				Int. Total
	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	
04:00 PM	5	0	20	0	0	117	4	0	2	0	1	2	5	199	0	0	355
04:15 PM	1	0	3	0	1	154	0	0	3	0	2	2	1	192	2	0	361
04:30 PM	0	0	3	0	0	168	0	0	3	0	1	1	0	236	0	0	412
04:45 PM	5	0	3	0	0	160	0	0	1	0	1	1	0	215	1	0	387
Total	11	0	29	0	1	599	4	0	9	0	5	6	6	842	3	0	1515
05:00 PM	2	0	1	0	0	186	1	0	0	0	0	4	0	221	0	0	415
05:15 PM	3	0	2	0	0	170	0	0	0	0	0	1	1	281	1	0	459
05:30 PM	1	0	2	0	0	205	2	4	1	0	0	1	1	234	0	0	451
05:45 PM	0	0	2	0	0	229	0	0	0	0	0	0	0	215	0	0	446
Total	6	0	7	0	0	790	3	4	1	0	0	6	2	951	1	0	1771
06:00 PM	2	0	0	0	0	192	2	0	0	0	0	3	2	230	0	0	431
06:15 PM	1	0	0	0	2	230	2	0	0	0	1	2	4	201	0	0	443
06:30 PM	1	0	0	0	0	270	5	0	0	0	0	0	4	173	0	0	453
06:45 PM	0	0	2	0	1	216	4	0	0	0	0	1	6	132	1	0	363
Total	4	0	2	0	3	908	13	0	0	0	1	6	16	736	1	0	1690
Grand Total	126	6	185	4	38	8361	145	6	77	4	53	90	193	6934	98	0	16320
Approch %	39.3	1.9	57.6	1.2	0.4	97.8	1.7	0.1	34.4	1.8	23.7	40.2	2.7	96.0	1.4	0.0	
Total %	0.8	0.0	1.1	0.0	0.2	51.2	0.9	0.0	0.5	0.0	0.3	0.6	1.2	42.5	0.6	0.0	

Location: Paint Branch Pkwy & Fire Academy  
 County: Montgomery  
 Weather: Scattered Drizzle  
 Counters: RMF, LM



Sabra, Wang & Associates Inc  
 1504 Joh Avenue  
 Suite 160  
 Baltimore, MD 21227

Weather: Sunny  
 Counted By: AK, CK  
 Town: NEW CARROLLTON  
 County: PRINCE GEORGE'S

File Name: RI159F~1  
 Site Code: 00000000  
 Start Date: 09/28/2005  
 Page No: 1

Groups Printed- 1 - Unshifted

Start Time	RIVERDALE RD From North					AUBURN AVE From East					RIVERDALE RD From South					AUBURN AVE From West					Int. Total
	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	
Factor	1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		
06:00 AM	20	31	3	1	55	8	0	41	0	49	0	82	6	1	89	3	3	3	0	9	202
06:15 AM	24	71	1	1	97	2	1	53	0	56	0	106	9	0	115	8	4	1	0	13	281
06:30 AM	34	54	4	0	92	4	0	48	0	52	1	109	17	2	129	2	1	1	2	6	279
06:45 AM	33	58	1	3	95	12	2	56	0	70	0	133	19	1	153	10	5	4	1	20	338
Total	111	214	9	5	339	26	3	198	0	227	1	430	51	4	486	23	13	9	3	48	1100
07:00 AM	56	68	1	2	127	7	1	60	0	68	2	150	28	3	183	15	4	4	0	23	401
07:15 AM	67	61	5	27	160	13	1	80	3	97	1	138	31	1	171	8	2	1	14	25	453
07:30 AM	82	58	3	11	154	22	1	87	2	112	2	117	31	1	151	10	4	7	8	29	446
07:45 AM	79	66	6	6	157	18	4	86	1	109	3	113	33	8	157	13	6	6	1	26	449
Total	284	253	15	46	598	60	7	313	6	386	8	518	123	13	662	46	16	18	23	103	1749
08:00 AM	64	78	4	3	149	11	3	61	0	75	1	137	38	0	176	7	5	3	7	22	422
08:15 AM	48	64	2	5	119	10	0	77	1	88	2	113	18	3	136	8	2	4	4	18	361
08:30 AM	61	73	5	8	147	15	1	57	1	74	2	143	24	1	170	14	2	3	2	21	412
08:45 AM	58	88	3	2	151	19	0	62	7	88	1	128	13	1	143	12	1	1	2	16	398
Total	231	303	14	18	566	55	4	257	9	325	6	521	93	5	625	41	10	11	15	77	1593
09:00 AM	50	89	5	2	146	15	0	58	2	75	1	123	15	2	141	6	1	4	2	13	375
09:15 AM	46	79	3	0	128	10	3	50	0	63	4	93	19	0	116	5	7	1	2	15	322
09:30 AM	57	87	0	5	149	12	0	24	2	38	3	111	21	2	137	14	1	1	0	16	340
09:45 AM	54	91	0	3	148	9	1	21	1	32	2	116	18	1	137	15	0	1	2	18	335
Total	207	346	8	10	571	46	4	153	5	208	10	443	73	5	531	40	9	7	6	62	1372
10:00 AM	38	70	3	3	114	12	2	55	0	69	0	87	11	0	98	5	4	2	1	12	293
10:15 AM	30	68	2	0	100	11	0	45	0	56	2	80	12	1	95	6	2	3	3	14	265
10:30 AM	28	61	4	3	96	15	2	30	2	49	1	69	10	1	81	1	1	0	0	2	228
10:45 AM	40	71	4	3	118	14	0	25	3	42	0	87	16	1	104	6	1	2	5	14	278
Total	136	270	13	9	428	52	4	155	5	216	3	323	49	3	378	18	8	7	9	42	1064
11:00 AM	37	88	4	0	129	21	2	41	0	64	1	103	23	2	129	4	2	2	3	11	333
11:15 AM	37	83	3	2	125	7	1	36	3	47	0	64	7	0	71	2	0	1	1	4	247
11:30 AM	35	88	2	1	126	11	2	26	0	39	2	99	14	3	118	5	1	0	2	8	291
11:45 AM	31	83	4	0	118	9	0	31	0	40	1	95	21	2	119	4	1	1	0	6	283
Total	140	342	13	3	498	48	5	134	3	190	4	361	65	7	437	15	4	4	6	29	1154
12:00 PM	35	80	3	1	119	11	1	32	0	44	1	78	9	1	89	5	0	0	0	5	257
12:15 PM	38	103	8	0	149	12	0	30	1	43	2	78	13	2	95	8	1	2	1	12	299
12:30 PM	32	88	10	0	130	22	0	54	1	77	2	90	12	0	104	3	1	1	2	7	318
12:45 PM	28	92	8	0	128	25	2	56	0	83	1	96	14	0	111	1	2	2	0	5	327
Total	133	363	29	1	526	70	3	172	2	247	6	342	48	3	399	17	4	5	3	29	1201
01:00 PM	29	87	7	0	123	21	1	47	0	69	3	94	12	0	109	2	1	1	0	4	305
01:15 PM	36	79	14	0	129	18	3	46	2	69	3	104	17	0	124	1	1	2	0	4	326
01:30 PM	27	79	12	0	118	20	2	42	0	64	1	104	18	0	123	9	0	3	3	15	320
01:45 PM	32	86	13	0	131	24	1	41	2	68	4	112	23	0	139	5	1	3	2	11	349
Total	124	331	46	0	501	83	7	176	4	270	11	414	70	0	495	17	3	9	5	34	1300
02:00 PM	52	121	6	6	185	18	2	39	4	63	2	120	23	0	145	7	0	2	0	9	402
02:15 PM	40	142	8	1	191	20	1	33	5	59	1	134	35	37	207	5	1	3	14	23	480
02:30 PM	69	114	4	0	187	20	0	55	4	79	2	108	27	0	137	2	2	4	3	11	414
02:45 PM	93	128	9	1	231	33	1	74	4	112	5	125	27	1	158	4	2	2	2	10	511
Total	254	505	27	8	794	91	4	201	17	313	10	487	112	38	647	18	5	11	19	53	1807

Sabra, Wang & Associates Inc  
 1504 Joh Avenue  
 Suite 160  
 Baltimore, MD 21227

Weather: Sunny  
 Counted By: AK , CK  
 Town: NEW CARROLLTON  
 County : PRINCE GEORGE'S

File Name : RI159F~1  
 Site Code : 00000000  
 Start Date : 09/28/2005  
 Page No : 2

Groups Printed- 1 - Unshifted

Start Time	RIVERDALE RD From North					AUBURN AVE From East					RIVERDALE RD From South					AUBURN AVE From West					Int. Total
	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	
Factor	1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		
03:00 PM	92	128	8	1	229	32	0	70	5	107	5	124	22	1	152	8	2	1	0	11	499
03:15 PM	89	132	7	0	228	29	1	65	3	98	2	129	18	0	149	7	0	1	0	8	483
03:30 PM	84	130	8	1	223	31	0	59	4	94	1	126	14	1	142	6	1	3	0	10	469
03:45 PM	80	128	8	0	216	30	0	50	3	83	2	122	10	2	136	8	2	2	1	13	448
Total	345	518	31	2	896	122	1	244	15	382	10	501	64	4	579	29	5	7	1	42	1899
04:00 PM	86	135	10	0	231	28	3	53	6	90	4	140	14	2	160	7	0	12	1	20	501
04:15 PM	66	148	20	11	245	37	5	55	4	101	2	124	28	21	175	8	0	8	6	22	543
04:30 PM	72	136	15	4	227	32	2	52	3	89	4	129	31	1	165	6	2	6	2	16	497
04:45 PM	95	208	6	13	322	24	6	79	1	110	2	133	20	4	159	6	1	4	3	14	605
Total	319	627	51	28	1025	121	16	239	14	390	12	526	93	28	659	27	3	30	12	72	2146
05:00 PM	82	165	8	4	259	34	4	80	0	118	2	126	24	2	154	2	2	2	12	18	549
05:15 PM	74	181	10	2	267	31	1	76	3	111	4	135	29	2	170	2	2	4	2	10	558
05:30 PM	76	181	11	1	269	52	8	69	3	132	4	142	18	5	169	4	2	2	2	10	580
05:45 PM	72	178	9	0	259	42	3	65	0	110	6	149	24	0	179	4	1	5	0	10	558
Total	304	705	38	7	1054	159	16	290	6	471	16	552	95	9	672	12	7	13	16	48	2245
06:00 PM	60	209	14	0	283	38	3	71	7	119	3	134	20	5	162	8	3	3	0	14	578
06:15 PM	67	174	10	0	251	36	4	71	5	116	4	135	28	1	168	2	1	3	5	11	546
06:30 PM	69	152	5	0	226	28	5	54	2	89	5	128	28	6	167	0	3	9	12	24	506
06:45 PM	53	157	19	3	232	29	4	60	5	98	7	114	20	2	143	1	5	4	2	12	485
Total	249	692	48	3	992	131	16	256	19	422	19	511	96	14	640	11	12	19	19	61	2115
Grand Total	283	546	342	140	8788	106	90	278	105	4047	116	592	103	133	7210	314	99	150	137	700	2074
Apprch %	32.3	62.2	3.9	1.6		26.3	2.2	68.9	2.6		1.6	82.2	14.3	1.8		44.9	14.1	21.4	19.6		5
Total %	13.7	26.4	1.6	0.7	42.4	5.1	0.4	13.4	0.5	19.5	0.6	28.6	5.0	0.6	34.8	1.5	0.5	0.7	0.7	3.4	

Sabra, Wang & Associates Inc  
 1504 Joh Avenue  
 Suite 160  
 Baltimore, MD 21227

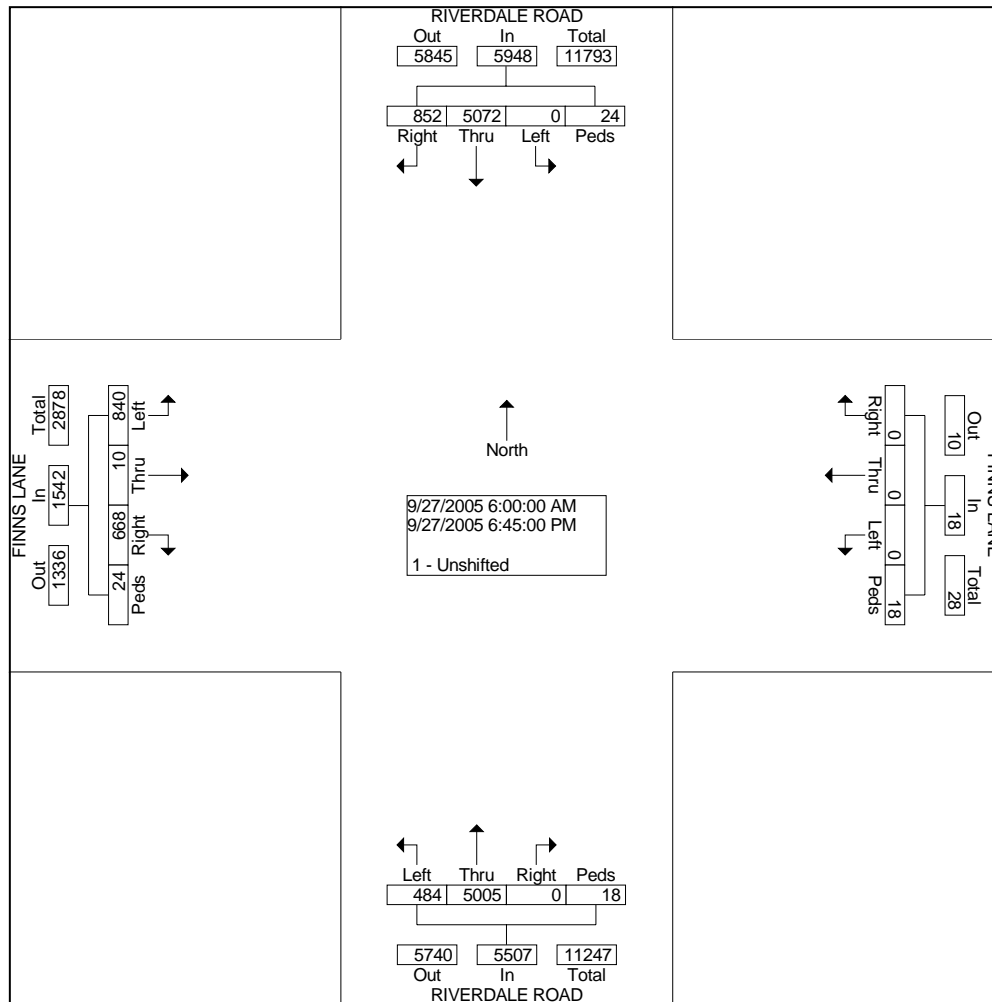
Weather: Sunny  
 Counted By: AK, CK  
 Town: NEW CARROLLTON  
 County: Prince George's

File Name : RI2B74~1  
 Site Code : 00000000  
 Start Date : 09/27/2005  
 Page No : 1

Groups Printed- 1 - Unshifted

Start Time	RIVERDALE ROAD From North					FINNS LANE From East					RIVERDALE ROAD From South					FINNS LANE From West					Int. Total
	Left	Thru	Rig ht	Ped s	App. Total	Left	Thru	Rig ht	Ped s	App. Total	Left	Thru	Rig ht	Ped s	App. Total	Left	Thru	Rig ht	Ped s	App. Total	
Factor	1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		
06:00 AM	0	35	11	0	46	0	0	0	0	0	6	92	0	0	98	11	0	6	0	17	161
06:15 AM	0	60	11	0	71	0	0	0	0	0	9	110	0	0	119	13	0	5	0	18	208
06:30 AM	0	43	10	0	53	0	0	0	1	1	7	84	0	1	92	20	0	4	2	26	172
06:45 AM	0	55	11	0	66	0	0	0	0	0	10	133	0	0	143	18	0	8	0	26	235
Total	0	193	43	0	236	0	0	0	1	1	32	419	0	1	452	62	0	23	2	87	776
07:00 AM	0	63	14	2	79	0	0	0	0	0	14	151	0	0	165	26	0	13	3	42	286
07:15 AM	0	44	8	0	52	0	0	0	1	1	12	128	0	0	140	24	0	4	0	28	221
07:30 AM	0	78	17	1	96	0	0	0	0	0	10	133	0	2	145	29	0	16	0	45	286
07:45 AM	0	81	19	0	100	0	0	0	0	0	10	141	0	0	151	26	0	16	1	43	294
Total	0	266	58	3	327	0	0	0	1	1	46	553	0	2	601	105	0	49	4	158	1087
08:00 AM	0	72	10	0	82	0	0	0	1	1	12	124	0	1	137	37	0	16	1	54	274
08:15 AM	0	64	14	0	78	0	0	0	0	0	6	88	0	0	94	12	0	18	0	30	202
08:30 AM	0	84	11	0	95	0	0	0	0	0	8	103	0	0	111	27	0	17	0	44	250
08:45 AM	0	84	15	0	99	0	0	0	0	0	7	125	0	0	132	10	0	17	0	27	258
Total	0	304	50	0	354	0	0	0	1	1	33	440	0	1	474	86	0	68	1	155	984
09:00 AM	0	79	10	0	89	0	0	0	0	0	10	117	0	0	127	12	0	14	0	26	242
09:15 AM	0	54	6	0	60	0	0	0	0	0	12	77	0	0	89	8	0	14	0	22	171
09:30 AM	0	74	6	0	80	0	0	0	0	0	2	94	0	0	96	10	0	6	0	16	192
09:45 AM	0	71	9	1	81	0	0	0	0	0	4	86	0	0	90	8	0	7	0	15	186
Total	0	278	31	1	310	0	0	0	0	0	28	374	0	0	402	38	0	41	0	79	791
10:00 AM	0	86	7	0	93	0	0	0	0	0	6	79	0	0	85	7	0	6	0	13	191
10:15 AM	0	78	12	1	91	0	0	0	1	1	8	77	0	0	85	12	0	9	0	21	198
10:30 AM	0	70	16	0	86	0	0	0	0	0	12	71	0	0	83	15	0	13	0	28	197
10:45 AM	0	98	10	0	108	0	0	0	0	0	6	84	0	0	90	17	0	10	0	27	225
Total	0	332	45	1	378	0	0	0	1	1	32	311	0	0	343	51	0	38	0	89	811
11:00 AM	0	106	12	0	118	0	0	0	0	0	7	79	0	0	86	14	0	8	1	23	227
11:15 AM	0	80	20	0	100	0	0	0	0	0	9	94	0	0	103	12	0	11	0	23	226
11:30 AM	0	81	9	1	91	0	0	0	1	1	10	76	0	0	86	15	0	5	0	20	198
11:45 AM	0	86	11	0	97	0	0	0	0	0	16	82	0	2	100	13	0	8	0	21	218
Total	0	353	52	1	406	0	0	0	1	1	42	331	0	2	375	54	0	32	1	87	869
12:00 PM	0	68	6	0	74	0	0	0	0	0	7	50	0	0	57	9	1	10	4	24	155
12:15 PM	0	79	14	1	94	0	0	0	0	0	5	73	0	0	78	6	0	9	0	15	187
12:30 PM	0	62	9	0	71	0	0	0	0	0	3	62	0	1	66	12	0	5	1	18	155
12:45 PM	0	84	9	0	93	0	0	0	1	1	6	74	0	0	80	9	0	11	0	20	194
Total	0	293	38	1	332	0	0	0	1	1	21	259	0	1	281	36	1	35	5	77	691
01:00 PM	0	66	5	0	71	0	0	0	0	0	7	84	0	0	91	6	0	11	0	17	179
01:15 PM	0	83	9	0	92	0	0	0	0	0	5	82	0	0	87	9	2	10	2	23	202
01:30 PM	0	78	11	1	90	0	0	0	0	0	4	76	0	0	80	5	0	10	0	15	185
01:45 PM	0	67	18	1	86	0	0	0	0	0	10	72	0	0	82	8	0	9	0	17	185
Total	0	294	43	2	339	0	0	0	0	0	26	314	0	0	340	28	2	40	2	72	751
02:00 PM	0	93	17	1	111	0	0	0	0	0	7	80	0	2	89	9	0	9	1	19	219
02:15 PM	0	57	11	0	68	0	0	0	0	0	9	96	0	0	105	11	0	9	0	20	193
02:30 PM	0	77	23	2	102	0	0	0	0	0	8	80	0	2	90	17	0	9	0	26	218
02:45 PM	0	109	17	0	126	0	0	0	1	1	16	101	0	0	117	19	1	19	0	39	283
Total	0	336	68	3	407	0	0	0	1	1	40	357	0	4	401	56	1	46	1	104	913
03:00 PM	0	104	13	0	117	0	0	0	0	0	13	92	0	2	107	13	0	9	0	22	246
03:15 PM	0	112	18	2	132	0	0	0	0	0	11	96	0	0	107	14	0	12	0	26	265
03:30 PM	0	118	26	0	144	0	0	0	0	0	8	112	0	0	120	14	4	22	0	40	304
03:45 PM	0	139	24	2	165	0	0	0	2	2	7	93	0	0	100	21	0	22	0	43	310
Total	0	473	81	4	558	0	0	0	2	2	39	393	0	2	434	62	4	65	0	131	1125

04:00 PM	0	155	30	1	186	0	0	0	0	0	11	100	0	0	111	23	0	13	0	36	333
04:15 PM	0	126	26	0	152	0	0	0	0	0	10	94	0	0	104	31	2	16	1	50	306
04:30 PM	0	162	25	0	187	0	0	0	0	0	10	90	0	0	100	16	0	24	0	40	327
04:45 PM	0	180	30	0	210	0	0	0	2	2	14	112	0	0	126	31	0	12	1	44	382
Total	0	623	111	1	735	0	0	0	2	2	45	396	0	0	441	101	2	65	2	170	1348
05:00 PM	0	174	34	1	209	0	0	0	0	0	14	108	0	0	122	17	0	16	0	33	364
05:15 PM	0	165	26	1	192	0	0	0	1	1	9	129	0	1	139	18	0	17	0	35	367
05:30 PM	0	159	33	1	193	0	0	0	2	2	14	115	0	1	130	28	0	20	1	49	374
05:45 PM	0	162	30	1	193	0	0	0	0	0	17	121	0	0	138	18	0	26	1	45	376
Total	0	660	123	4	787	0	0	0	3	3	54	473	0	2	529	81	0	79	2	162	1481
06:00 PM	0	177	29	1	207	0	0	0	1	1	12	104	0	0	116	24	0	29	0	53	377
06:15 PM	0	171	32	2	205	0	0	0	0	0	14	106	0	0	120	21	0	25	2	48	373
06:30 PM	0	164	27	0	191	0	0	0	0	0	10	96	0	2	108	19	0	21	2	42	341
06:45 PM	0	155	21	0	176	0	0	0	3	3	10	79	0	1	90	16	0	12	0	28	297
Total	0	667	109	3	779	0	0	0	4	4	46	385	0	3	434	80	0	87	4	171	1388
Grand Total	0	507	852	24	5948	0	0	0	18	18	484	500	0	18	5507	840	10	668	24	1542	13015
Apprch %	0.0	85.3	14.3	0.4		0.0	0.0	0.0	100.0		8.8	90.9	0.0	0.3		54.5	0.6	43.3	1.6		
Total %	0.0	39.0	6.5	0.2	45.7	0.0	0.0	0.0	0.1	0.1	3.7	38.5	0.0	0.1	42.3	6.5	0.1	5.1	0.2	11.8	



Sabra, Wang & Associates Inc  
 1504 Joh Avenue  
 Suite 160  
 Baltimore, MD 21227

Weather: SUNNY  
 Counted By: AK, CK  
 Town: NEW CARROLLTON  
 County: PRINCE GEORGE'S

File Name : RIA867~1  
 Site Code : 00000000  
 Start Date : 09/22/2005  
 Page No : 1

Groups Printed- 1 - Unshifted

Start Time	RIVERDALE ROAD From North					LAMONT DRIVE From East					RIVERDALE ROAD From South					NO ENTRANCE From West					Int. Total
	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	
Factor	1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		
06:00 AM	8	47	0	1	56	11	0	30	0	41	0	43	5	1	49	0	0	0	0	0	146
06:15 AM	14	49	0	2	65	12	0	34	0	46	0	63	4	0	67	0	0	0	0	0	178
06:30 AM	14	55	0	0	69	8	0	32	0	40	0	80	7	0	87	0	0	0	0	0	196
06:45 AM	2	48	0	0	50	18	0	42	0	60	0	120	8	1	129	0	0	0	0	0	239
Total	38	199	0	3	240	49	0	138	0	187	0	306	24	2	332	0	0	0	0	0	759
07:00 AM	10	51	0	0	61	23	0	40	0	63	0	126	7	1	134	0	0	0	0	0	258
07:15 AM	11	63	0	0	74	30	0	49	1	80	0	129	9	0	138	0	0	0	0	0	292
07:30 AM	26	67	0	2	95	18	0	61	1	80	0	102	15	0	117	0	0	0	2	2	294
07:45 AM	26	75	0	0	101	26	0	74	1	101	0	125	22	0	147	0	0	0	0	0	349
Total	73	256	0	2	331	97	0	224	3	324	0	482	53	1	536	0	0	0	2	2	1193
08:00 AM	13	75	0	2	90	30	0	38	0	68	0	92	28	2	122	0	0	0	4	4	284
08:15 AM	17	78	0	0	95	34	0	46	0	80	0	89	25	0	114	0	0	0	4	4	293
08:30 AM	32	84	0	2	118	28	0	16	1	45	0	122	20	3	145	0	0	0	11	11	319
08:45 AM	31	85	0	3	119	30	0	27	0	57	0	103	25	0	128	0	0	0	10	10	314
Total	93	322	0	7	422	122	0	127	1	250	0	406	98	5	509	0	0	0	29	29	1210
09:00 AM	24	75	0	0	99	30	0	54	1	85	0	111	18	0	129	0	0	0	0	0	313
09:15 AM	26	59	0	0	85	34	0	57	0	91	0	97	21	0	118	0	0	0	1	1	295
09:30 AM	31	73	0	0	104	32	0	28	1	61	0	82	26	0	108	0	0	0	1	1	274
09:45 AM	14	73	0	0	87	22	0	21	0	43	0	94	21	0	115	0	0	0	0	0	245
Total	95	280	0	0	375	118	0	160	2	280	0	384	86	0	470	0	0	0	2	2	1127
10:00 AM	12	58	0	0	70	24	0	16	0	40	0	74	16	3	93	0	0	0	1	1	204
10:15 AM	14	63	0	0	77	22	0	18	7	47	0	77	14	0	91	0	0	0	0	0	215
10:30 AM	15	60	0	0	75	18	0	22	0	40	0	70	15	0	85	0	0	0	0	0	200
10:45 AM	16	60	0	0	76	15	0	24	0	39	0	65	15	0	80	0	0	0	0	0	195
Total	57	241	0	0	298	79	0	80	7	166	0	286	60	3	349	0	0	0	1	1	814
11:00 AM	19	59	0	0	78	13	0	27	0	40	0	56	17	0	73	0	0	0	0	0	191
11:15 AM	22	61	0	0	83	18	0	23	0	41	0	62	14	1	77	0	0	0	1	1	202
11:30 AM	18	84	0	2	104	19	0	13	0	32	0	64	11	0	75	0	0	0	0	0	211
11:45 AM	9	118	0	0	127	22	0	22	0	44	0	99	23	2	124	0	0	0	0	0	295
Total	68	322	0	2	392	72	0	85	0	157	0	281	65	3	349	0	0	0	1	1	899
12:00 PM	13	71	0	2	86	13	0	17	0	30	0	61	14	4	79	0	0	0	0	0	195
12:15 PM	7	72	0	1	80	34	0	11	0	45	0	69	13	0	82	0	0	0	0	0	207
12:30 PM	21	95	0	2	118	17	0	13	0	30	0	84	20	1	105	0	0	0	0	0	253
12:45 PM	13	68	0	0	81	16	0	12	0	28	0	58	10	0	68	0	0	0	3	3	180
Total	54	306	0	5	365	80	0	53	0	133	0	272	57	5	334	0	0	0	3	3	835
01:00 PM	19	79	0	0	98	15	0	20	1	36	0	53	18	2	73	0	0	0	0	0	207
01:15 PM	16	79	0	1	96	7	0	9	0	16	0	58	19	0	77	0	0	0	0	0	189
01:30 PM	19	56	0	4	79	13	0	11	1	25	0	48	11	0	59	0	0	0	0	0	163
01:45 PM	23	66	0	2	91	11	0	26	0	37	0	60	19	1	80	0	0	0	0	0	208
Total	77	280	0	7	364	46	0	66	2	114	0	219	67	3	289	0	0	0	0	0	767
02:00 PM	29	76	0	1	106	29	0	28	0	57	0	72	18	2	92	0	0	0	4	4	259
02:15 PM	23	71	0	2	96	30	0	32	0	62	0	92	18	2	112	0	0	0	0	0	270
02:30 PM	18	85	0	0	103	19	0	22	0	41	0	70	24	0	94	0	0	0	2	2	240
02:45 PM	32	110	0	2	144	25	0	14	1	40	0	53	10	3	66	0	0	0	0	0	250
Total	102	342	0	5	449	103	0	96	1	200	0	287	70	7	364	0	0	0	6	6	1019

Sabra, Wang & Associates Inc  
 1504 Joh Avenue  
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 Baltimore, MD 21227

Weather: SUNNY  
 Counted By: AK , CK  
 Town: NEW CARROLLTON  
 County: PRINCE GEORGE'S

File Name : RIA867~1  
 Site Code : 00000000  
 Start Date : 09/22/2005  
 Page No : 2

Groups Printed- 1 - Unshifted

Start Time	RIVERDALE ROAD From North					LAMONT DRIVE From East					RIVERDALE ROAD From South					NO ENTRANCE From West					Int. Total
	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	
Factor	1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		
03:00 PM	36	82	0	2	120	19	0	21	0	40	0	74	31	0	105	0	0	0	0	0	265
03:15 PM	38	83	0	1	122	18	0	20	0	38	0	73	32	3	108	0	0	0	3	3	271
03:30 PM	42	98	0	8	148	35	0	36	1	72	0	76	22	0	98	0	0	0	1	1	319
03:45 PM	39	95	0	7	141	36	0	38	4	78	0	81	27	0	108	0	0	0	2	2	329
Total	155	358	0	18	531	108	0	115	5	228	0	304	112	3	419	0	0	0	6	6	1184
04:00 PM	37	97	0	5	139	29	0	34	30	93	0	74	24	2	100	0	0	0	5	5	337
04:15 PM	25	85	0	0	110	33	0	29	7	69	0	49	8	2	59	0	0	0	4	4	242
04:30 PM	39	129	0	0	168	29	0	29	2	60	0	67	22	1	90	0	0	0	1	1	319
04:45 PM	31	110	0	1	142	21	0	21	2	44	0	67	18	0	85	0	0	0	4	4	275
Total	132	421	0	6	559	112	0	113	41	266	0	257	72	5	334	0	0	0	14	14	1173
05:00 PM	43	166	0	0	209	29	0	28	3	60	0	101	31	1	133	0	0	0	0	0	402
05:15 PM	51	154	0	4	209	28	0	37	3	68	0	100	27	2	129	0	0	0	3	3	409
05:30 PM	34	129	0	0	163	38	0	27	8	73	0	87	30	0	117	0	0	0	0	0	353
05:45 PM	54	169	0	0	223	25	0	39	3	67	0	103	17	0	120	0	0	0	3	3	413
Total	182	618	0	4	804	120	0	131	17	268	0	391	105	3	499	0	0	0	6	6	1577
06:00 PM	57	137	0	5	199	21	0	28	5	54	0	79	18	1	98	0	0	0	0	0	351
06:15 PM	50	131	0	2	183	28	0	23	2	53	0	81	19	0	100	0	0	0	1	1	337
06:30 PM	44	135	0	0	179	22	0	24	3	49	0	84	21	1	106	0	0	0	3	3	337
06:45 PM	29	132	0	2	163	17	0	19	1	37	0	76	16	0	92	0	0	0	0	0	292
Total	180	535	0	9	724	88	0	94	11	193	0	320	74	2	396	0	0	0	4	4	1317
Grand Total	1306	4480	0	68	5854	1194	0	1482	90	2766	0	4195	943	42	5180	0	0	0	74	74	13874
Apprch %	22.3	76.5	0.0	1.2		43.2	0.0	53.6	3.3		0.0	81.0	18.2	0.8		0.0	0.0	0.0	100.0		
Total %	9.4	32.3	0.0	0.5	42.2	8.6	0.0	10.7	0.6	19.9	0.0	30.2	6.8	0.3	37.3	0.0	0.0	0.0	0.5	0.5	

Sabra, Wang & Associates Inc  
 1504 Joh Avenue  
 Suite 160  
 Baltimore, MD 21227

File Name : RI5A6B~1  
 Site Code : 00000000  
 Start Date : 09/21/2005  
 Page No : 1

Counter:  
 Counted By:  
 Weather:  
 Other:

Groups Printed- 1 - Unshifted

Start Time	RIVERDALE ROAD From North					MD 450 From East					NO ENTRANCE From South					MD 450 From West					Int. Total
	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	
Factor	1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		
06:00 AM	64	0	28	0	92	0	108	27	1	136	0	0	0	1	1	10	80	0	0	90	319
06:15 AM	74	0	35	0	109	0	141	40	0	181	0	0	0	0	0	15	88	0	0	103	393
06:30 AM	69	0	53	0	122	0	236	48	0	284	0	0	0	0	0	14	83	0	2	99	505
06:45 AM	56	0	55	0	111	0	255	72	0	327	0	0	0	0	0	21	101	0	0	122	560
Total	263	0	171	0	434	0	740	187	1	928	0	0	0	1	1	60	352	0	2	414	1777
07:00 AM	60	0	58	0	118	0	261	77	0	338	0	0	0	0	0	20	112	0	1	133	589
07:15 AM	65	0	55	0	120	0	268	71	0	339	0	0	0	0	0	25	119	0	0	144	603
07:30 AM	77	0	84	0	161	0	371	68	6	445	0	0	0	0	0	15	93	0	0	108	714
07:45 AM	112	0	81	0	193	0	436	56	2	494	0	0	0	0	0	32	155	0	1	188	875
Total	314	0	278	0	592	0	1336	272	8	1616	0	0	0	0	0	92	479	0	2	573	2781
08:00 AM	65	0	84	0	149	0	362	71	2	435	0	0	0	0	0	30	146	0	0	176	760
08:15 AM	69	0	55	0	124	0	379	90	6	475	0	0	0	0	0	42	150	0	1	193	792
08:30 AM	72	0	49	0	121	0	383	95	3	481	0	0	0	0	0	38	167	0	0	205	807
08:45 AM	86	0	53	0	139	0	320	73	9	402	0	0	0	0	0	44	155	0	0	199	740
Total	292	0	241	0	533	0	1444	329	20	1793	0	0	0	0	0	154	618	0	1	773	3099
09:00 AM	69	0	51	0	120	0	258	73	2	333	0	0	0	0	0	36	138	0	0	174	627
09:15 AM	62	0	48	0	110	0	260	67	0	327	0	0	0	0	0	39	144	0	1	184	621
09:30 AM	68	0	49	0	117	0	190	61	4	255	0	0	0	0	0	42	124	0	0	166	538
09:45 AM	64	0	54	0	118	0	191	55	0	246	0	0	0	0	0	39	120	0	0	159	523
Total	263	0	202	0	465	0	899	256	6	1161	0	0	0	0	0	156	526	0	1	683	2309
10:00 AM	67	0	58	0	125	0	195	58	3	256	0	0	0	0	0	42	132	0	1	175	556
10:15 AM	77	0	53	0	130	0	189	62	6	257	0	0	0	0	0	40	135	0	0	175	562
10:30 AM	65	0	46	0	111	0	169	66	0	235	0	0	0	0	0	51	124	0	1	176	522
10:45 AM	62	0	48	0	110	0	171	66	2	239	0	0	0	0	0	48	128	0	0	176	525
Total	271	0	205	0	476	0	724	252	11	987	0	0	0	0	0	181	519	0	2	702	2165
11:00 AM	60	0	50	0	110	0	172	68	3	243	0	0	0	0	0	42	129	0	0	171	524
11:15 AM	60	0	52	0	112	0	177	68	4	249	0	0	0	0	0	44	138	0	0	182	543
11:30 AM	64	0	51	0	115	0	185	79	2	266	0	0	0	0	0	62	131	0	0	193	574
11:45 AM	73	0	49	0	122	0	182	82	1	265	0	0	0	0	0	71	138	0	0	209	596
Total	257	0	202	0	459	0	716	297	10	1023	0	0	0	0	0	219	536	0	0	755	2237

Sabra, Wang & Associates Inc  
 1504 Joh Avenue  
 Suite 160  
 Baltimore, MD 21227

File Name : RI5A6B~1  
 Site Code : 00000000  
 Start Date : 09/21/2005  
 Page No : 2

Counter:  
 Counted By:  
 Weather:  
 Other:

Groups Printed- 1 - Unshifted

Start Time	RIVERDALE ROAD From North					MD 450 From East					NO ENTRANCE From South					MD 450 From West					Int. Total
	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	
Factor	1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		
12:00 PM	69	0	59	0	128	0	192	90	0	282	0	0	0	0	0	82	152	0	0	234	644
12:15 PM	73	0	77	0	150	0	198	95	4	297	0	0	0	0	0	73	168	0	0	241	688
12:30 PM	77	0	74	0	151	0	194	81	3	278	0	0	0	0	0	83	152	0	0	235	664
12:45 PM	74	0	68	0	142	0	197	86	4	287	0	0	0	0	0	79	179	0	0	258	687
Total	293	0	278	0	571	0	781	352	11	1144	0	0	0	0	0	317	651	0	0	968	2683
01:00 PM	65	0	76	0	141	0	175	73	2	250	0	0	0	0	0	76	158	0	1	235	626
01:15 PM	70	0	64	0	134	0	188	87	5	280	0	0	0	0	0	64	172	0	0	236	650
01:30 PM	65	0	77	0	142	0	178	80	3	261	0	0	0	0	0	56	191	0	0	247	650
01:45 PM	71	0	68	0	139	0	187	77	0	264	0	0	0	0	0	71	179	0	0	250	653
Total	271	0	285	0	556	0	728	317	10	1055	0	0	0	0	0	267	700	0	1	968	2579
02:00 PM	58	0	81	0	139	0	164	62	5	231	0	0	0	0	0	48	174	0	3	225	595
02:15 PM	71	0	70	0	141	0	174	58	5	237	0	0	0	0	0	59	189	0	0	248	626
02:30 PM	62	0	56	0	118	0	188	50	2	240	0	0	0	0	0	52	205	0	2	259	617
02:45 PM	85	0	78	0	163	0	173	74	9	256	0	0	0	0	0	61	241	0	2	304	723
Total	276	0	285	0	561	0	699	244	21	964	0	0	0	0	0	220	809	0	7	1036	2561
03:00 PM	88	0	85	0	173	0	183	62	4	249	0	0	0	0	0	65	271	0	0	336	758
03:15 PM	82	0	89	0	171	0	189	62	2	253	0	0	0	0	0	62	283	0	0	345	769
03:30 PM	84	0	112	0	196	0	192	64	1	257	0	0	0	0	0	64	301	0	0	365	818
03:45 PM	85	0	118	0	203	0	199	62	1	262	0	0	0	0	0	62	325	0	0	387	852
Total	339	0	404	0	743	0	763	250	8	1021	0	0	0	0	0	253	1180	0	0	1433	3197
04:00 PM	82	0	120	0	202	0	206	61	1	268	0	0	0	0	0	63	347	0	0	410	880
04:15 PM	86	0	108	0	194	0	210	58	0	268	0	0	0	0	0	60	369	0	2	431	893
04:30 PM	85	0	97	0	182	0	220	63	0	283	0	0	0	0	0	75	359	0	2	436	901
04:45 PM	87	0	104	0	191	0	225	67	6	298	0	0	0	0	0	65	388	0	4	457	946
Total	340	0	429	0	769	0	861	249	7	1117	0	0	0	0	0	263	1463	0	8	1734	3620
05:00 PM	91	0	89	0	180	0	237	70	0	307	0	0	0	0	0	79	364	0	0	443	930
05:15 PM	88	0	88	0	176	0	245	66	4	315	0	0	0	0	0	86	340	0	0	426	917
05:30 PM	78	0	118	0	196	0	229	79	4	312	0	0	0	0	0	76	393	0	1	470	978
05:45 PM	78	0	101	0	179	0	231	78	4	313	0	0	0	0	0	69	422	0	3	494	986
Total	335	0	396	0	731	0	942	293	12	1247	0	0	0	0	0	310	1519	0	4	1833	3811



Sabra, Wang & Associates Inc  
 1504 Joh Avenue  
 Suite 160  
 Baltimore, MD 21227

File Name : RI5A6B~1  
 Site Code : 00000000  
 Start Date : 09/21/2005  
 Page No : 3

Counter:  
 Counted By:  
 Weather:  
 Other:

Groups Printed- 1 - Unshifted

Start Time	RIVERDALE ROAD From North					MD 450 From East					NO ENTRANCE From South					MD 450 From West					Int. Total
	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	
Factor	1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		
06:00 PM	72	0	85	0	157	0	236	78	0	314	0	0	0	0	0	81	397	0	0	478	949
06:15 PM	75	0	99	0	174	0	244	83	10	337	0	0	0	0	0	84	364	0	0	448	959
06:30 PM	80	0	103	0	183	0	257	89	3	349	0	0	0	0	0	93	313	0	0	406	938
06:45 PM	68	0	76	0	144	0	234	65	1	300	0	0	0	1	1	241	85	0	2	328	773
Total	295	0	363	0	658	0	971	315	14	1300	0	0	0	1	1	499	1159	0	2	1660	3619
Grand Total	3809	0	3739	0	7548	0	11604	3613	139	15356	0	0	0	2	2	2991	10511	0	30	13532	36438
Apprch %	50.5	0.0	49.5	0.0		0.0	75.6	23.5	0.9		0.0	0.0	0.0	100.0		22.1	77.7	0.0	0.2		
Total %	10.5	0.0	10.3	0.0	20.7	0.0	31.8	9.9	0.4	42.1	0.0	0.0	0.0	0.0	0.0	8.2	28.8	0.0	0.1	37.1	

Sabra, Wang & Associates Inc

1504 Joh Avenue

Site No: 160 RIVERDALE ROAD @ SHOPPING CENTER

File Name: BALTIMORE MD 212070000

Start Date : 10/20/2005

Page No : 1

Weather: Sunny

Counted By: AK , CK

Town: NEW CARROLLTON

County: PRINCE GEORGE'S

Groups Printed- Unshifted

Start Time	RIVERDALE RD From North					SHOPPING CENTER From East					RIVERDALE RD From South					NO ENTRANCE From West					Int. Total
	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	
06:00 AM	3	90	0	2	95	0	0	0	0	0	0	62	2	0	64	0	0	0	0	0	159
06:15 AM	3	115	0	1	119	2	0	2	2	6	0	46	2	4	52	0	0	0	1	1	178
06:30 AM	7	108	0	0	115	13	0	7	0	20	0	75	5	0	80	0	0	0	0	0	215
06:45 AM	4	112	0	3	119	12	0	6	0	18	0	73	8	0	81	0	0	0	0	0	218
Total	17	425	0	6	448	27	0	15	2	44	0	256	17	4	277	0	0	0	1	1	770
07:00 AM	13	113	0	2	128	18	0	11	0	29	0	84	10	1	95	0	0	0	2	2	254
07:15 AM	15	152	0	5	172	17	0	16	4	37	0	84	14	6	104	0	0	0	5	5	318
07:30 AM	7	161	0	2	170	19	0	17	0	36	0	100	10	0	110	0	0	0	1	1	317
07:45 AM	9	147	0	2	158	26	0	10	0	36	0	98	12	0	110	0	0	0	4	4	308
Total	44	573	0	11	628	80	0	54	4	138	0	366	46	7	419	0	0	0	12	12	1197
08:00 AM	16	159	0	1	176	21	0	15	2	38	0	101	10	1	112	0	0	0	1	1	327
08:15 AM	11	132	0	1	144	19	0	16	0	35	0	103	19	6	128	0	0	0	0	0	307
08:30 AM	12	124	0	3	139	27	0	15	0	42	0	98	17	3	118	0	0	0	0	0	299
08:45 AM	11	111	0	2	124	20	0	22	2	44	0	91	24	0	115	0	0	0	2	2	285
Total	50	526	0	7	583	87	0	68	4	159	0	393	70	10	473	0	0	0	3	3	1218
09:00 AM	13	117	0	2	132	24	0	18	0	42	0	96	21	1	118	0	0	0	0	0	292
09:15 AM	16	108	0	0	124	27	0	23	0	50	0	90	26	1	117	0	0	0	1	1	292
09:30 AM	9	123	0	0	132	31	0	29	0	60	0	79	22	0	101	0	0	0	3	3	296
09:45 AM	12	111	0	3	126	35	0	24	0	59	0	72	25	1	98	0	0	0	1	1	284
Total	50	459	0	5	514	117	0	94	0	211	0	337	94	3	434	0	0	0	5	5	1164
10:00 AM	15	126	0	2	143	38	0	31	0	69	0	81	21	3	105	0	0	0	0	0	317
10:15 AM	24	97	0	2	123	37	0	19	2	58	0	73	24	0	97	0	0	0	0	0	278
10:30 AM	17	117	0	0	134	41	0	17	0	58	0	67	26	4	97	0	0	0	0	0	289
10:45 AM	22	110	0	2	134	40	0	15	0	55	0	60	32	2	94	0	0	0	1	1	284
Total	78	450	0	6	534	156	0	82	2	240	0	281	103	9	393	0	0	0	1	1	1168
11:00 AM	25	99	0	1	125	40	0	16	0	56	0	54	39	1	94	0	0	0	0	0	275
11:15 AM	26	81	0	1	108	39	0	18	1	58	0	51	45	1	97	0	0	0	0	0	263
11:30 AM	15	83	0	1	99	49	0	19	1	69	0	77	48	1	126	0	0	0	0	0	294
11:45 AM	16	86	0	2	104	51	0	22	0	73	0	69	54	2	125	0	0	0	3	3	305
Total	82	349	0	5	436	179	0	75	2	256	0	251	186	5	442	0	0	0	3	3	1137
12:00 PM	11	83	0	2	96	54	0	15	0	69	0	57	37	1	95	0	0	0	0	0	260
12:15 PM	23	90	0	2	115	60	0	25	0	85	0	79	51	0	130	0	0	0	0	0	330
12:30 PM	17	66	1	0	84	50	0	16	0	66	0	57	40	4	101	0	0	0	0	0	251
12:45 PM	20	90	0	0	110	55	0	15	0	70	0	77	31	2	110	0	0	0	4	4	294
Total	71	329	1	4	405	219	0	71	0	290	0	270	159	7	436	0	0	0	4	4	1135
01:00 PM	16	73	0	0	89	48	0	17	0	65	0	64	32	2	98	0	0	0	0	0	252
01:15 PM	15	81	0	1	97	44	0	26	2	72	0	76	35	2	113	0	0	0	0	0	282
01:30 PM	21	89	0	1	111	51	0	30	0	81	0	82	45	1	128	0	0	0	1	1	321
01:45 PM	22	83	0	2	107	56	0	20	0	76	0	88	47	2	137	0	0	0	0	0	320
Total	74	326	0	4	404	199	0	93	2	294	0	310	159	7	476	0	0	0	1	1	1175
02:00 PM	12	79	0	5	96	50	0	23	3	76	0	78	33	4	115	0	0	0	3	3	290
02:15 PM	15	96	0	1	112	47	0	26	1	74	0	87	36	1	124	0	0	0	0	0	310
02:30 PM	16	84	0	5	105	45	0	27	0	72	0	69	43	3	115	0	0	0	4	4	296
02:45 PM	18	107	0	3	128	47	0	31	3	81	0	100	44	4	148	0	0	0	11	11	368
Total	61	366	0	14	441	189	0	107	7	303	0	334	156	12	502	0	0	0	18	18	1264
03:00 PM	18	109	0	4	131	42	0	20	0	62	0	98	40	1	139	0	0	0	2	2	334
03:15 PM	18	88	0	1	107	51	0	17	1	69	0	103	28	7	138	0	0	0	2	2	316
03:30 PM	21	115	0	5	141	44	0	19	10	73	0	108	36	2	146	0	0	0	0	0	360
03:45 PM	20	102	0	5	127	59	0	18	0	77	0	122	27	4	153	0	0	0	3	3	360
Total	77	414	0	15	506	196	0	74	11	281	0	431	131	14	576	0	0	0	7	7	1370

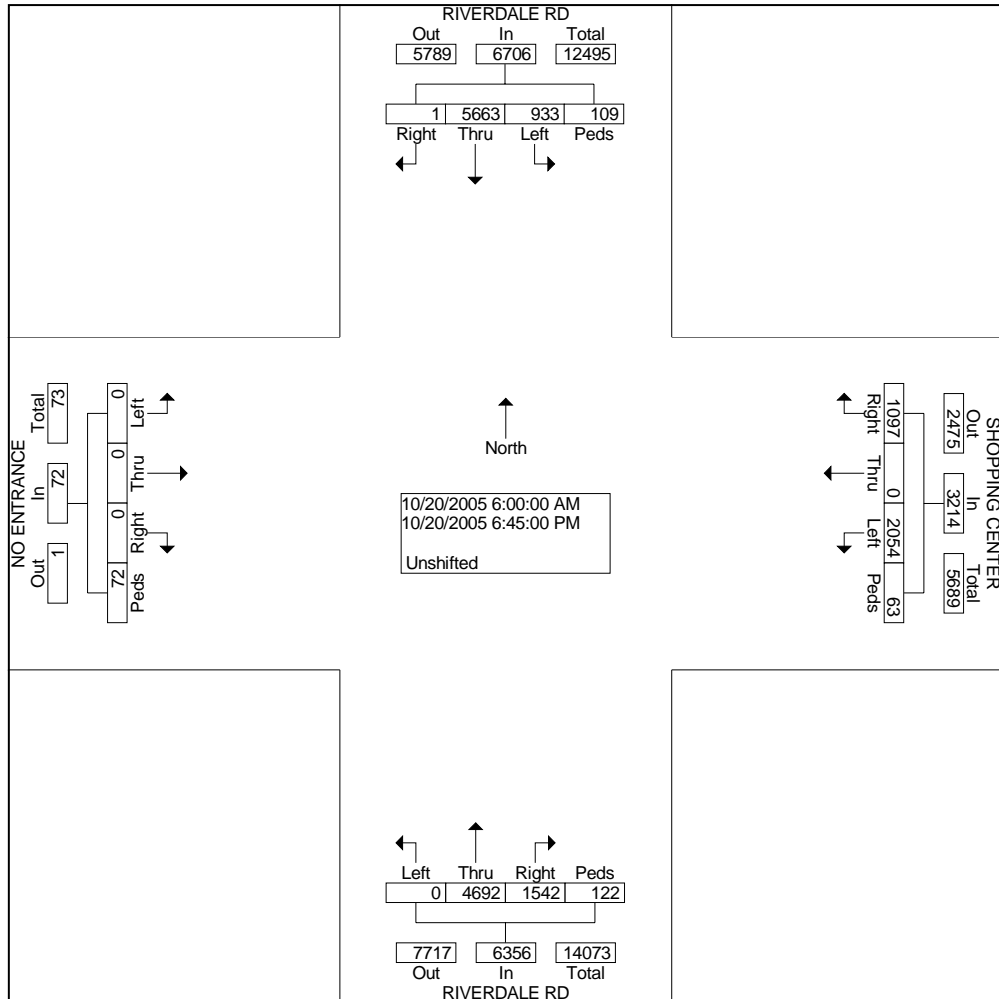
Sabra, Wang & Associates Inc  
1504 Joh Avenue

Weather: Sunny  
Counted By: AK, CK  
Town: NEW CARROLLTON  
County: PRINCE GEORGE'S

File Name: 160 RIVERDALE ROAD @ SHOPPING CENTER  
Balance: MD 212270000  
Start Date: 10/20/2005  
Page No: 2

Groups Printed- Unshifted

Start Time	RIVERDALE RD From North					SHOPPING CENTER From East					RIVERDALE RD From South					NO ENTRANCE From West					Int. Total
	Left	Thru	Rig ht	Ped s	App. Total	Left	Thru	Rig ht	Ped s	App. Total	Left	Thru	Rig ht	Ped s	App. Total	Left	Thru	Rig ht	Ped s	App. Total	
Factor	1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		
04:00 PM	24	105	0	3	132	57	0	20	1	78	0	128	31	5	164	0	0	0	1	1	375
04:15 PM	28	110	0	2	140	62	0	19	2	83	0	126	34	1	161	0	0	0	0	0	384
04:30 PM	27	129	0	6	162	61	0	19	2	82	0	103	32	4	139	0	0	0	1	1	384
04:45 PM	28	127	0	4	159	48	0	42	4	94	0	101	50	4	155	0	0	0	1	1	409
Total	107	471	0	15	593	228	0	100	9	337	0	458	147	14	619	0	0	0	3	3	1552
05:00 PM	32	142	0	2	176	66	0	53	4	123	0	135	42	6	183	0	0	0	4	4	486
05:15 PM	30	145	0	6	181	56	0	48	1	105	0	110	36	6	152	0	0	0	1	1	439
05:30 PM	23	162	0	0	185	55	0	35	2	92	0	140	27	4	171	0	0	0	6	6	454
05:45 PM	30	114	0	4	148	43	0	25	0	68	0	130	36	4	170	0	0	0	0	0	386
Total	115	563	0	12	690	220	0	161	7	388	0	515	141	20	676	0	0	0	11	11	1765
06:00 PM	28	111	0	0	139	43	0	25	3	71	0	127	32	1	160	0	0	0	0	0	370
06:15 PM	25	109	0	2	136	40	0	27	3	70	0	129	33	4	166	0	0	0	3	3	375
06:30 PM	29	101	0	3	133	43	0	29	5	77	0	119	37	4	160	0	0	0	0	0	370
06:45 PM	25	91	0	0	116	31	0	22	2	55	0	115	31	1	147	0	0	0	0	0	318
Total	107	412	0	5	524	157	0	103	13	273	0	490	133	10	633	0	0	0	3	3	1433
Grand Total	933	566	1	109	6706	205	0	109	63	3214	0	469	154	122	6356	0	0	0	72	72	16348
Apprch %	13.9	84.4	0.0	1.6		63.9	0.0	34.1	2.0		0.0	73.8	24.3	1.9		0.0	0.0	0.0	100.0		
Total %	5.7	34.6	0.0	0.7	41.0	12.6	0.0	6.7	0.4	19.7	0.0	28.7	9.4	0.7	38.9	0.0	0.0	0.0	0.4	0.4	



Sabra, Wang & Associates, Inc.

1504 Joh Avenue, Suite 160

Baltimore, Maryland 21270 SLIGO CREEK PKWY @ WAYNE AVENUE

Counter:  
Counted By:  
Weather:  
Other:

TEL. (410) 371-5640

Start Date : 6/8/2005

Page No : 1

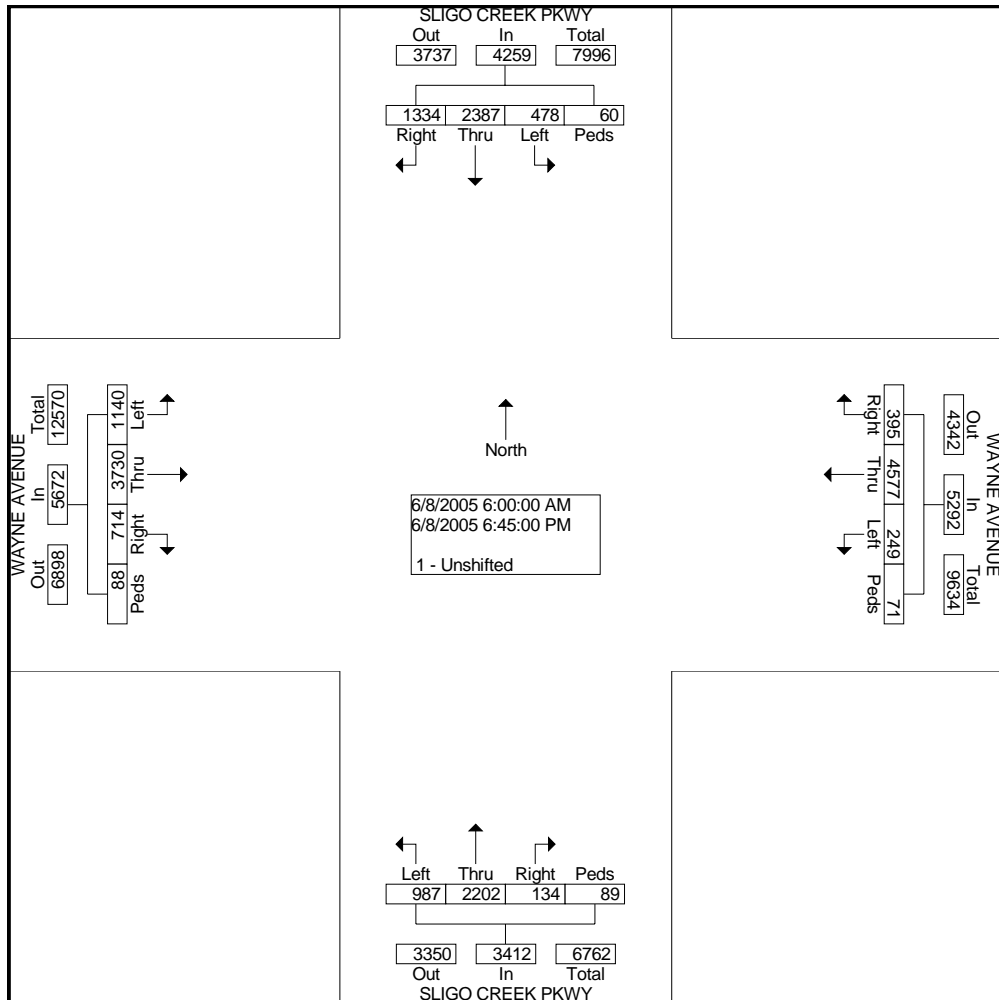
Groups Printed- 1 - Unshifted

Start Time	SLIGO CREEK PKWY From North					WAYNE AVENUE From East					SLIGO CREEK PKWY From South					WAYNE AVENUE From West					Int. Total
	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	
Factor	1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		
06:00 AM	1	24	8	1	34	3	63	4	1	71	5	5	1	1	12	0	8	2	0	10	127
06:15 AM	2	15	4	0	21	4	74	7	0	85	8	20	0	0	28	1	18	1	0	20	154
06:30 AM	4	24	11	1	40	9	82	9	0	100	15	23	0	5	43	2	15	2	2	21	204
06:45 AM	7	41	21	0	69	5	121	17	4	147	22	33	0	6	61	6	19	5	0	30	307
Total	14	104	44	2	164	21	340	37	5	403	50	81	1	12	144	9	60	10	2	81	792
07:00 AM	10	46	19	0	75	8	135	13	5	161	22	52	1	5	80	4	19	6	2	31	347
07:15 AM	7	52	19	1	79	15	205	7	4	231	27	66	3	3	99	7	25	5	0	37	446
07:30 AM	13	51	24	0	88	10	154	11	0	175	12	87	8	6	113	7	27	8	0	42	418
07:45 AM	10	72	55	1	138	1	226	12	2	241	30	95	7	6	138	7	26	10	3	46	563
Total	40	221	117	2	380	34	720	43	11	808	91	300	19	20	430	25	97	29	5	156	1774
08:00 AM	6	76	35	0	117	12	203	12	3	230	27	70	5	2	104	16	56	11	1	84	535
08:15 AM	19	68	24	1	112	0	185	6	2	193	36	62	2	1	101	10	77	16	0	103	509
08:30 AM	11	56	24	0	91	4	173	6	7	190	40	58	0	2	100	5	62	0	2	69	450
08:45 AM	13	77	64	1	155	2	205	17	3	227	47	55	4	2	108	19	41	6	1	67	557
Total	49	277	147	2	475	18	766	41	15	840	150	245	11	7	413	50	236	33	4	323	2051
09:00 AM	9	51	37	1	98	8	122	1	1	132	28	57	6	2	93	41	28	10	5	84	407
09:15 AM	10	41	32	0	83	12	147	16	0	175	50	40	4	0	94	16	46	9	1	72	424
09:30 AM	9	36	30	8	83	10	124	13	3	150	26	14	2	3	45	8	39	8	2	57	335
09:45 AM	4	40	41	1	86	3	108	8	0	119	23	17	3	0	43	5	34	7	0	46	294
Total	32	168	140	10	350	33	501	38	4	576	127	128	15	5	275	70	147	34	8	259	1460
10:00 AM	5	24	30	2	61	6	81	7	0	94	20	27	0	3	50	7	41	9	0	57	262
10:15 AM	1	35	25	3	64	1	72	2	1	76	16	41	1	0	58	11	55	11	0	77	275
10:30 AM	3	36	31	2	72	1	75	3	0	79	9	30	5	3	47	11	25	10	2	48	246
10:45 AM	5	32	38	1	76	1	81	5	0	87	10	29	2	1	42	9	32	12	0	53	258
Total	14	127	124	8	273	9	309	17	1	336	55	127	8	7	197	38	153	42	2	235	1041
11:00 AM	7	40	43	3	93	2	78	6	2	88	12	25	1	2	40	6	45	14	0	65	286
11:15 AM	12	27	15	1	55	8	62	15	0	85	14	26	2	1	43	6	50	17	0	73	256
11:30 AM	4	38	18	0	60	2	55	7	0	64	15	21	3	2	41	7	43	14	1	65	230
11:45 AM	12	29	12	4	57	2	48	8	0	58	13	43	5	0	61	12	66	12	0	90	266
Total	35	134	88	8	265	14	243	36	2	295	54	115	11	5	185	31	204	57	1	293	1038
12:00 PM	9	34	11	1	55	2	45	4	0	51	12	46	3	0	61	12	39	8	1	60	227
12:15 PM	6	25	21	0	52	6	42	3	0	51	12	18	1	1	32	11	36	6	1	54	189
12:30 PM	8	33	27	0	68	10	53	4	0	67	8	45	0	1	54	18	45	6	0	69	258
12:45 PM	11	35	28	5	79	6	49	5	3	63	32	30	4	0	66	14	64	22	0	100	308
Total	34	127	87	6	254	24	189	16	3	232	64	139	8	2	213	55	184	42	2	283	982
01:00 PM	4	57	46	2	109	4	65	12	1	82	11	30	3	1	45	13	48	18	1	80	316
01:15 PM	3	60	43	0	106	5	59	9	0	73	18	33	1	0	52	10	68	16	4	98	329
01:30 PM	5	24	21	0	50	3	56	6	0	65	16	30	0	0	46	7	66	18	1	92	253
01:45 PM	6	27	12	1	46	3	65	7	2	77	14	21	1	0	36	20	44	12	0	76	235
Total	18	168	122	3	311	15	245	34	3	297	59	114	5	1	179	50	226	64	6	346	1133
02:00 PM	7	37	23	0	67	6	39	8	0	53	11	18	3	1	33	29	63	15	1	108	261
02:15 PM	6	42	21	0	69	1	76	7	0	84	8	29	3	0	40	26	73	13	0	112	305
02:30 PM	9	32	19	0	60	3	65	10	2	80	18	28	1	0	47	18	63	18	1	100	287
02:45 PM	3	38	17	2	60	3	47	12	1	63	13	39	0	1	53	35	91	16	10	152	328
Total	25	149	80	2	256	13	227	37	3	280	50	114	7	2	173	108	290	62	12	472	1181
03:00 PM	12	39	18	0	69	2	52	9	0	63	15	40	1	0	56	20	61	12	12	105	293
03:15 PM	11	40	15	0	66	2	71	6	2	81	10	56	3	0	69	30	95	15	0	140	356
03:30 PM	13	39	16	0	68	4	54	5	1	64	15	29	4	1	49	30	88	15	4	137	318
03:45 PM	6	88	30	0	124	6	51	1	0	58	18	46	1	0	65	37	137	14	6	194	441
Total	42	206	79	0	327	14	228	21	3	266	58	171	9	1	239	117	381	56	22	576	1408

Counter:  
 Counted By:  
 Weather:  
 Other:

Groups Printed- 1 - Unshifted

Start Time	SLIGO CREEK PKWY From North					WAYNE AVENUE From East					SLIGO CREEK PKWY From South					WAYNE AVENUE From West					Int. Total				
	Left	Thru	Rght	Peds	App. Total	Left	Thru	Rght	Peds	App. Total	Left	Thru	Rght	Peds	App. Total	Left	Thru	Rght	Peds	App. Total					
Factor	1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0	
04:00 PM	12	44	10	2	68	4	64	12	0	80	9	41	1	1	52	45	87	15	0	147	347				
04:15 PM	9	51	18	0	78	4	69	7	3	83	12	48	2	1	63	61	130	30	5	226	450				
04:30 PM	14	59	14	2	89	3	75	5	1	84	14	58	1	3	76	37	140	21	1	199	448				
04:45 PM	17	57	21	2	97	4	61	9	5	79	9	49	6	2	66	53	146	22	1	222	464				
Total	52	211	63	6	332	15	269	33	9	326	44	196	10	7	257	196	503	88	7	794	1709				
05:00 PM	18	68	23	1	110	4	68	8	1	81	18	51	6	3	78	53	153	16	2	224	493				
05:15 PM	10	69	35	4	118	2	56	13	5	76	6	61	4	0	71	73	161	33	1	268	533				
05:30 PM	17	63	33	0	113	6	95	8	3	112	22	76	8	4	110	49	182	26	6	263	598				
05:45 PM	24	75	39	2	140	9	78	3	1	91	16	58	9	3	86	73	173	30	2	278	595				
Total	69	275	130	7	481	21	297	32	10	360	62	246	27	10	345	248	669	105	11	1033	2219				
06:00 PM	19	69	35	1	124	8	76	4	1	89	36	63	1	4	104	48	161	27	3	239	556				
06:15 PM	15	58	31	0	104	5	61	3	1	70	34	59	0	1	94	41	158	29	1	229	497				
06:30 PM	11	48	25	2	86	3	55	2	0	60	32	55	1	2	90	32	142	21	0	195	431				
06:45 PM	9	45	22	1	77	2	51	1	0	54	21	49	1	3	74	22	119	15	2	158	363				
Total	54	220	113	4	391	18	243	10	2	273	123	226	3	10	362	143	580	92	6	821	1847				
Grand Total	478	238	133	60	4259	249	457	395	71	5292	987	220	134	89	3412	114	373	714	88	5672	1863				
Apprch %	11.2	56.0	31.3	1.4		4.7	86.5	7.5	1.3		28.9	64.5	3.9	2.6		20.1	65.8	12.6	1.6						
Total %	2.6	12.8	7.2	0.3	22.9	1.3	24.6	2.1	0.4	28.4	5.3	11.8	0.7	0.5	18.3	6.1	20.0	3.8	0.5	30.4	5				



Sabra, Wang & Associates, Inc.

1504 Joh Avenue Suite 160

Baltimore, MD 21227

410-737-6564

File Name : wayne ave @ dale dr.

Site Code : 00000111

Start Date : 04/19/2006

Page No : 1

Weather: SUNNY  
 Counted By: ROB, JANET  
 Town: SILVER SPRING  
 County: MONTGOMERY

Groups Printed- Unshifted

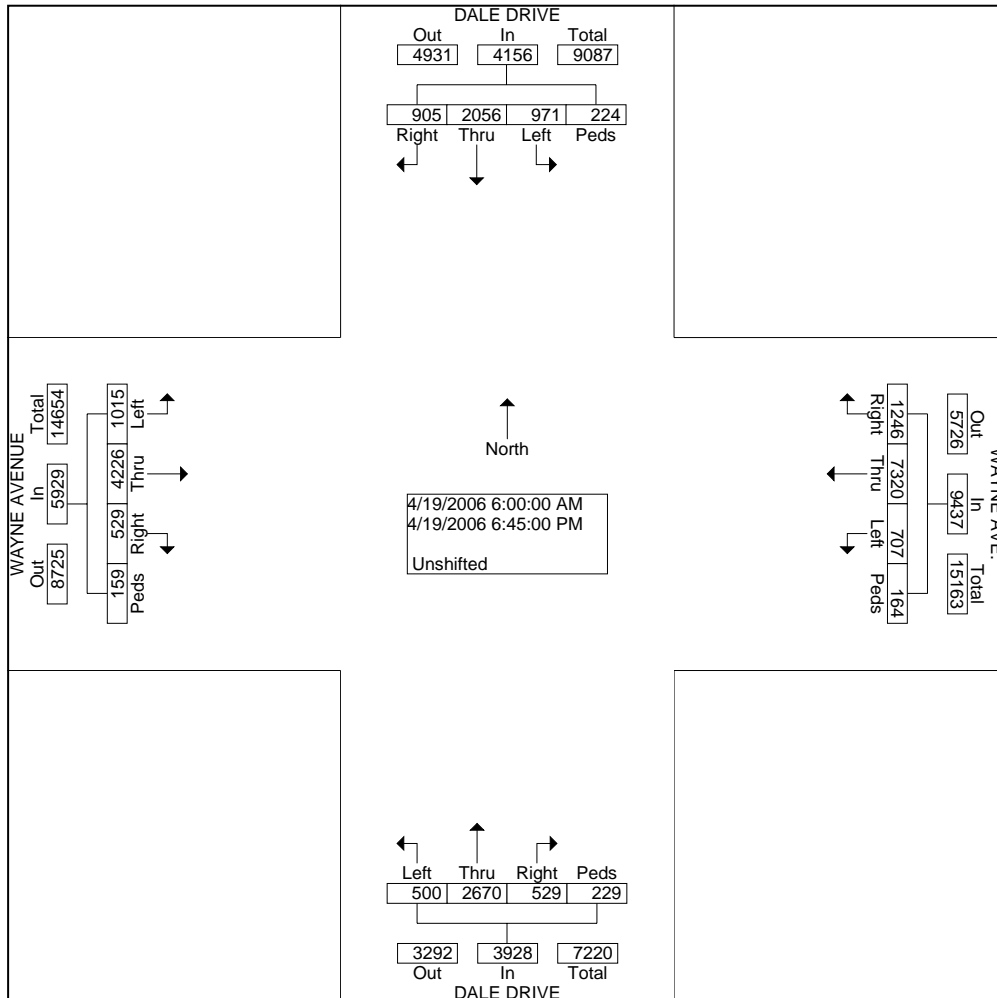
Start Time	DALE DRIVE From North					WAYNE AVE. From East					DALE DRIVE From South					WAYNE AVENUE From West					Int. Total
	Rig ht	Thr u	Left	Ped s	App. Total	Rig ht	Thr u	Left	Ped s	App. Total	Rig ht	Thr u	Left	Ped s	App. Total	Rig ht	Thr u	Left	Ped s	App. Total	
Factor	1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		
06:00 AM	3	11	8	0	22	7	34	5	0	46	2	13	2	0	17	1	7	0	0	8	93
06:15 AM	2	14	5	2	23	15	74	3	4	96	5	20	1	0	26	1	3	0	0	4	149
06:30 AM	9	19	7	0	35	28	98	2	0	128	4	24	1	8	37	2	13	2	1	18	218
06:45 AM	12	25	10	10	57	32	100	2	6	140	2	54	5	4	65	3	21	2	5	31	293
Total	26	69	30	12	137	82	306	12	10	410	13	111	9	12	145	7	44	4	6	61	753
07:00 AM	24	38	11	4	77	27	117	8	0	152	3	53	7	2	65	3	32	4	0	39	333
07:15 AM	28	44	13	0	85	30	169	14	0	213	5	56	4	8	73	6	33	6	2	47	418
07:30 AM	22	42	19	17	100	32	199	20	10	261	6	60	12	4	82	1	54	2	1	58	501
07:45 AM	24	45	27	0	96	25	189	13	6	233	10	73	10	6	99	6	69	15	6	96	524
Total	98	169	70	21	358	114	674	55	16	859	24	242	33	20	319	16	188	27	9	240	1776
08:00 AM	26	37	21	0	84	19	224	14	4	261	8	71	11	4	94	2	51	18	0	71	510
08:15 AM	31	34	19	2	86	15	182	18	0	215	6	69	8	0	83	5	56	16	0	77	461
08:30 AM	30	45	16	2	93	21	215	15	0	251	9	77	9	0	95	6	66	12	2	86	525
08:45 AM	32	60	17	16	125	22	265	13	9	309	10	68	7	7	92	7	67	10	10	94	620
Total	119	176	73	20	388	77	886	60	13	1036	33	285	35	11	364	20	240	56	12	328	2116
09:00 AM	34	67	20	15	136	20	219	21	21	281	13	81	9	13	116	9	71	24	28	132	665
09:15 AM	44	53	25	8	130	22	166	23	0	211	10	56	6	5	77	5	52	15	12	84	502
09:30 AM	22	33	12	1	68	22	164	18	0	204	9	51	6	1	67	3	35	10	3	51	390
09:45 AM	23	47	10	3	83	14	247	15	1	277	8	43	9	0	60	3	39	11	0	53	473
Total	123	200	67	27	417	78	796	77	22	973	40	231	30	19	320	20	197	60	43	320	2030
10:00 AM	20	38	9	1	68	10	177	10	1	198	6	40	5	3	54	6	53	13	0	72	392
10:15 AM	18	34	7	0	59	8	124	12	0	144	5	38	4	0	47	6	71	11	0	88	338
10:30 AM	13	37	5	2	57	5	91	10	0	106	7	42	7	0	56	8	65	10	3	86	305
10:45 AM	15	39	19	1	74	7	93	16	0	116	9	46	15	1	71	10	42	14	2	68	329
Total	66	148	40	4	258	30	485	48	1	564	27	166	31	4	228	30	231	48	5	314	1364
11:00 AM	11	25	10	3	49	7	98	13	0	118	5	38	9	0	52	6	50	12	0	68	287
11:15 AM	14	31	8	0	53	14	98	10	1	123	5	31	9	1	46	3	48	15	0	66	288
11:30 AM	12	22	7	0	41	17	94	9	0	120	6	26	4	0	36	4	64	16	0	84	281
11:45 AM	15	19	6	2	42	10	108	11	0	129	5	29	6	2	42	12	64	14	0	90	303
Total	52	97	31	5	185	48	398	43	1	490	21	124	28	3	176	25	226	57	0	308	1159
12:00 PM	12	20	9	1	42	12	122	13	0	147	3	31	8	2	44	4	78	17	0	99	332
12:15 PM	10	22	8	1	41	10	135	9	1	155	5	28	8	2	43	6	72	16	1	95	334
12:30 PM	15	26	3	3	47	8	146	8	0	162	4	36	4	2	46	4	93	19	1	117	372
12:45 PM	11	21	7	3	42	6	135	10	0	151	2	44	11	3	60	5	90	17	3	115	368
Total	48	89	27	8	172	36	538	40	1	615	14	139	31	9	193	19	333	69	5	426	1406
01:00 PM	14	24	10	1	49	15	126	9	0	150	5	38	14	1	58	8	92	19	1	120	377
01:15 PM	18	29	18	2	67	10	124	7	1	142	10	40	16	0	66	10	96	16	0	122	397
01:30 PM	27	35	26	0	88	24	121	5	0	150	12	45	20	0	77	22	100	14	2	138	453
01:45 PM	22	30	21	0	73	32	131	8	0	171	15	38	19	0	72	11	89	16	0	116	432
Total	81	118	75	3	277	81	502	29	1	613	42	161	69	1	273	51	377	65	3	496	1659
02:00 PM	20	31	18	2	71	38	121	6	0	165	10	40	12	0	62	5	73	18	0	96	394
02:15 PM	16	32	15	0	63	46	124	8	1	179	11	44	10	5	70	5	57	14	2	78	390
02:30 PM	13	28	14	9	64	34	154	6	3	197	9	41	9	5	64	6	58	16	3	83	408
02:45 PM	10	29	19	30	88	40	189	34	43	306	13	36	5	34	88	4	65	19	22	110	592
Total	59	120	66	41	286	158	588	54	47	847	43	161	36	44	284	20	253	67	27	367	1784
03:00 PM	13	32	25	3	73	28	154	24	12	218	10	39	4	11	64	4	78	24	1	107	462
03:15 PM	10	27	29	8	74	31	129	26	8	194	11	56	7	20	94	11	73	22	4	110	472
03:30 PM	14	47	32	47	140	46	110	25	5	186	10	72	4	21	107	18	79	23	25	145	578
03:45 PM	11	29	24	7	71	38	141	10	14	203	9	75	12	8	104	21	106	25	8	160	538
Total	48	135	110	65	358	143	534	85	39	801	40	242	27	60	369	54	336	94	38	522	2050

Sabra, Wang & Associates, Inc.  
 1504 Joh Avenue Suite 160  
 Baltimore, MD 21227  
 410-737-6564

File Name : wayne ave @ dale dr.  
 Site Code : 00000111  
 Start Date : 04/19/2006  
 Page No : 2

Groups Printed- Unshifted

Start Time	DALE DRIVE From North					WAYNE AVE. From East					DALE DRIVE From South					WAYNE AVENUE From West					Int. Total
	Rig ht	Thr u	Left	Ped s	App. Total	Rig ht	Thr u	Left	Ped s	App. Total	Rig ht	Thr u	Left	Ped s	App. Total	Rig ht	Thr u	Left	Ped s	App. Total	
Factor	1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		
04:00 PM	10	34	21	4	69	37	134	11	5	187	8	67	11	9	95	14	110	28	4	156	507
04:15 PM	13	30	18	5	66	32	141	9	0	182	7	69	5	11	92	11	132	38	5	186	526
04:30 PM	15	28	21	2	66	25	156	6	0	187	10	75	7	6	98	10	139	42	2	193	544
04:45 PM	11	23	24	0	58	29	132	8	0	169	13	78	12	5	108	15	140	47	0	202	537
Total	49	115	84	11	259	123	563	34	5	725	38	289	35	31	393	50	521	155	11	737	2114
05:00 PM	14	53	41	4	112	36	137	11	1	185	16	77	21	1	115	18	167	44	0	229	641
05:15 PM	18	78	42	1	139	33	147	21	7	208	13	71	26	0	110	14	156	42	0	212	669
05:30 PM	14	83	36	0	133	35	139	23	0	197	24	68	16	0	108	26	167	52	0	245	683
05:45 PM	19	80	43	2	144	37	133	23	0	193	26	71	17	2	116	23	155	36	0	214	667
Total	65	294	162	7	528	141	556	78	8	783	79	287	80	3	449	81	645	174	0	900	2660
06:00 PM	21	84	53	0	158	33	121	33	0	187	38	69	18	0	125	52	173	34	0	259	729
06:15 PM	14	84	31	0	129	41	136	24	0	201	31	63	12	4	110	27	162	43	0	232	672
06:30 PM	17	81	29	0	127	35	124	21	0	180	25	58	15	4	102	26	143	32	0	201	610
06:45 PM	19	77	23	0	119	26	113	14	0	153	21	42	11	4	78	31	157	30	0	218	568
Total	71	326	136	0	533	135	494	92	0	721	115	232	56	12	415	136	635	139	0	910	2579
Grand Total	905	2056	971	224	4156	1246	7320	707	164	9437	529	2670	500	229	3928	529	4226	1015	159	5929	23450
Apprch %	21.8	49.5	23.4	5.4		13.2	77.6	7.5	1.7		13.5	68.0	12.7	5.8		8.9	71.3	17.1	2.7		
Total %	3.9	8.8	4.1	1.0	17.7	5.3	31.2	3.0	0.7	40.2	2.3	11.4	2.1	1.0	16.8	2.3	18.0	4.3	0.7	25.3	



Sabra, Wang & Associates, Inc.

1504 Joh Avenue, Suite 160

Baltimore, Maryland 21227 File Name : WAYNE AVE @ FENTON ST.

Weather: SUNNY

Counted By: AK, CK

Town: SILVER SPRING

County: MONTGOMERY

TEL. (410) 737-6544 Site Code : 00000000

Start Date : 6/2/2005

Page No : 1

Groups Printed- Unshifted

Start Time	FENTON STREET From North					WAYNE AVENUE From East					FENTON STREET From South					WAYNE AVENUE From West					Int. Total
	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	
Factor	1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		
06:00 AM	0	17	11	1	29	8	36	1	1	46	5	17	2	2	26	1	13	5	1	20	121
06:15 AM	1	20	1	0	22	14	36	4	1	55	10	27	2	1	40	1	12	1	0	14	131
06:30 AM	3	22	6	0	31	17	76	3	4	100	9	35	5	0	49	1	10	4	0	15	195
06:45 AM	3	33	6	0	42	29	76	3	3	111	6	34	3	0	43	2	27	2	2	33	229
Total	7	92	24	1	124	68	224	11	9	312	30	113	12	3	158	5	62	12	3	82	676
07:00 AM	2	33	10	8	53	25	91	1	6	123	14	41	7	4	66	2	17	15	1	35	277
07:15 AM	2	43	9	5	59	48	91	2	3	144	22	40	7	4	73	3	27	7	2	39	315
07:30 AM	3	57	9	2	71	69	121	2	3	195	18	52	11	5	86	9	40	6	6	61	413
07:45 AM	5	68	12	1	86	69	144	7	4	224	22	60	18	2	102	6	39	9	4	58	470
Total	12	201	40	16	269	211	447	12	16	686	76	193	43	15	327	20	123	37	13	193	1475
08:00 AM	7	71	14	5	97	89	164	9	9	271	26	66	21	7	120	5	35	10	6	56	544
08:15 AM	5	63	21	8	97	76	142	15	9	242	27	71	39	6	143	8	55	14	6	83	565
08:30 AM	8	78	25	9	120	82	154	13	5	254	31	67	44	0	142	9	60	18	0	87	603
08:45 AM	7	82	22	9	120	72	150	14	7	243	26	68	42	7	143	6	56	16	8	86	592
Total	27	294	82	31	434	319	610	51	30	1010	110	272	146	20	548	28	206	58	20	312	2304
09:00 AM	3	51	15	8	77	70	152	11	8	241	24	71	30	4	129	11	61	22	5	99	546
09:15 AM	7	70	14	11	102	46	115	13	5	179	21	64	13	0	98	12	47	11	5	75	454
09:30 AM	39	77	6	21	143	37	89	21	9	156	18	37	14	9	78	9	45	15	15	84	461
09:45 AM	10	54	14	8	86	39	93	7	9	148	20	60	17	12	109	7	32	17	5	61	404
Total	59	252	49	48	408	192	449	52	31	724	83	232	74	25	414	39	185	65	30	319	1865
10:00 AM	3	42	11	8	64	36	64	7	8	115	10	67	17	6	100	10	42	28	10	90	369
10:15 AM	7	54	14	12	87	40	69	7	9	125	11	52	18	11	92	12	42	25	11	90	394
10:30 AM	7	44	16	8	75	45	45	5	10	105	8	53	21	3	85	10	35	15	4	64	329
10:45 AM	8	43	8	9	68	27	44	5	4	80	9	55	21	10	95	8	25	17	2	52	295
Total	25	183	49	37	294	148	222	24	31	425	38	227	77	30	372	40	144	85	27	296	1387
11:00 AM	13	38	9	8	68	49	37	9	9	104	15	55	19	3	92	7	43	17	12	79	343
11:15 AM	12	48	14	12	86	42	42	13	12	109	9	56	20	7	92	16	43	19	8	86	373
11:30 AM	12	43	25	12	92	37	41	5	9	92	11	79	37	10	137	14	46	20	6	86	407
11:45 AM	15	51	15	12	93	43	38	12	11	104	11	80	43	6	140	21	47	12	11	91	428
Total	52	180	63	44	339	171	158	39	41	409	46	270	119	26	461	58	179	68	37	342	1551
12:00 PM	11	66	16	7	100	47	63	9	6	125	20	83	38	10	151	12	61	21	9	103	479
12:15 PM	9	53	16	21	99	49	66	8	15	138	10	82	31	7	130	20	55	25	7	107	474
12:30 PM	9	65	16	7	97	61	49	6	8	124	14	85	27	12	138	18	71	29	6	124	483
12:45 PM	13	59	19	24	115	54	60	10	23	147	12	81	35	25	153	22	67	21	9	119	534
Total	42	243	67	59	411	211	238	33	52	534	56	331	131	54	572	72	254	96	31	453	1970
01:00 PM	16	63	23	26	128	40	36	7	25	108	19	75	29	5	128	22	50	32	21	125	489
01:15 PM	23	55	18	13	109	49	52	10	12	123	10	76	34	8	128	27	52	27	14	120	480
01:30 PM	10	65	21	19	115	46	59	12	8	125	14	86	34	19	153	15	79	23	17	134	527
01:45 PM	15	62	15	13	105	58	53	10	11	132	11	79	32	28	150	22	73	18	17	130	517
Total	64	245	77	71	457	193	200	39	56	488	54	316	129	60	559	86	254	100	69	509	2013
02:00 PM	6	63	15	22	106	49	49	8	15	121	16	80	32	13	141	26	77	28	7	138	506
02:15 PM	9	63	11	16	99	42	62	8	6	118	11	73	49	11	144	24	92	24	5	145	506
02:30 PM	12	48	6	4	70	36	51	1	14	102	28	119	60	6	213	20	79	34	3	136	521
02:45 PM	14	78	18	8	118	42	78	7	6	133	21	109	51	16	197	13	71	28	7	119	567
Total	41	252	50	50	393	169	240	24	41	474	76	381	192	46	695	83	319	114	22	538	2100
03:00 PM	11	70	5	10	96	54	59	15	14	142	15	94	75	13	197	18	89	22	11	140	575
03:15 PM	18	47	13	8	86	66	42	4	30	142	26	77	67	20	190	14	105	23	6	148	566
03:30 PM	9	52	9	11	81	43	52	15	18	128	16	91	36	5	148	17	104	24	12	157	514
03:45 PM	11	55	6	19	91	40	46	7	6	99	18	110	45	8	181	21	70	18	6	115	486
Total	49	224	33	48	354	203	199	41	68	511	75	372	223	46	716	70	368	87	35	560	2141



Sabra, Wang & Associates, Inc.

1504 Joh Avenue, Suite 160

Baltimore, Maryland 21277 File Name : WAYNE AVE @ FENTON ST.

Weather: SUNNY

Counted By: AK, CK

Town: SILVER SPRING

County: MONTGOMERY

TEL. (410) 737-6554 Site Code : 00000000

Start Date : 6/2/2005

Page No : 2

Groups Printed- Unshifted

Start Time	FENTON STREET From North					WAYNE AVENUE From East					FENTON STREET From South					WAYNE AVENUE From West					Int. Total
	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	
Factor	1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		
04:00 PM	10	49	11	3	73	52	44	22	15	133	11	101	54	8	174	14	103	27	4	148	528
04:15 PM	15	70	15	9	109	53	47	8	9	117	16	100	68	12	196	9	115	29	8	161	583
04:30 PM	17	52	10	22	101	59	68	3	14	144	13	79	54	3	149	20	104	32	9	165	559
04:45 PM	12	58	13	6	89	41	49	5	5	100	18	88	68	20	194	24	113	31	9	177	560
Total	54	229	49	40	372	205	208	38	43	494	58	368	244	43	713	67	435	119	30	651	2230
05:00 PM	9	87	12	10	118	43	61	8	17	129	25	74	49	13	161	18	137	43	8	206	614
05:15 PM	13	72	9	17	111	61	73	9	21	164	23	100	57	27	207	17	149	24	14	204	686
05:30 PM	21	77	13	23	134	70	70	7	11	158	14	95	55	31	195	9	140	46	14	209	696
05:45 PM	24	62	6	44	136	39	50	4	21	114	12	123	82	30	247	15	127	39	7	188	685
Total	67	298	40	94	499	213	254	28	70	565	74	392	243	101	810	59	553	152	43	807	2681
06:00 PM	8	63	12	6	89	78	87	13	18	196	11	94	55	24	184	6	138	40	18	202	671
06:15 PM	10	61	11	5	87	74	89	14	14	191	13	90	49	19	171	7	128	36	18	189	638
06:30 PM	8	57	9	8	82	65	78	5	15	163	12	83	45	15	155	6	117	31	14	168	568
06:45 PM	6	55	8	10	79	51	71	4	8	134	9	71	37	12	129	4	99	25	9	137	479
Total	32	236	40	29	337	268	325	36	55	684	45	338	186	70	639	23	482	132	59	696	2356
Grand Total	531	2929	663	568	4691	2571	3774	428	543	7316	821	3805	1819	539	6984	650	3564	1125	419	5758	24749
Apprch %	11.3	62.4	14.1	12.1		35.1	51.6	5.9	7.4		11.8	54.5	26.0	7.7		11.3	61.9	19.5	7.3		
Total %	2.1	11.8	2.7	2.3	19.0	10.4	15.2	1.7	2.2	29.6	3.3	15.4	7.3	2.2	28.2	2.6	14.4	4.5	1.7	23.3	

Sabra, Wang & Associates, Inc.  
 1504 Joh Avenue, Suite 160  
 Baltimore, Maryland 21227  
 TEL. (410) 737-6564

Counter:  
 Counted By:  
 Weather:  
 Other:

File Name : MD787@~3  
 Site Code : 00000000  
 Start Date : 6/9/2005  
 Page No : 1

Groups Printed- 1 - Unshifted

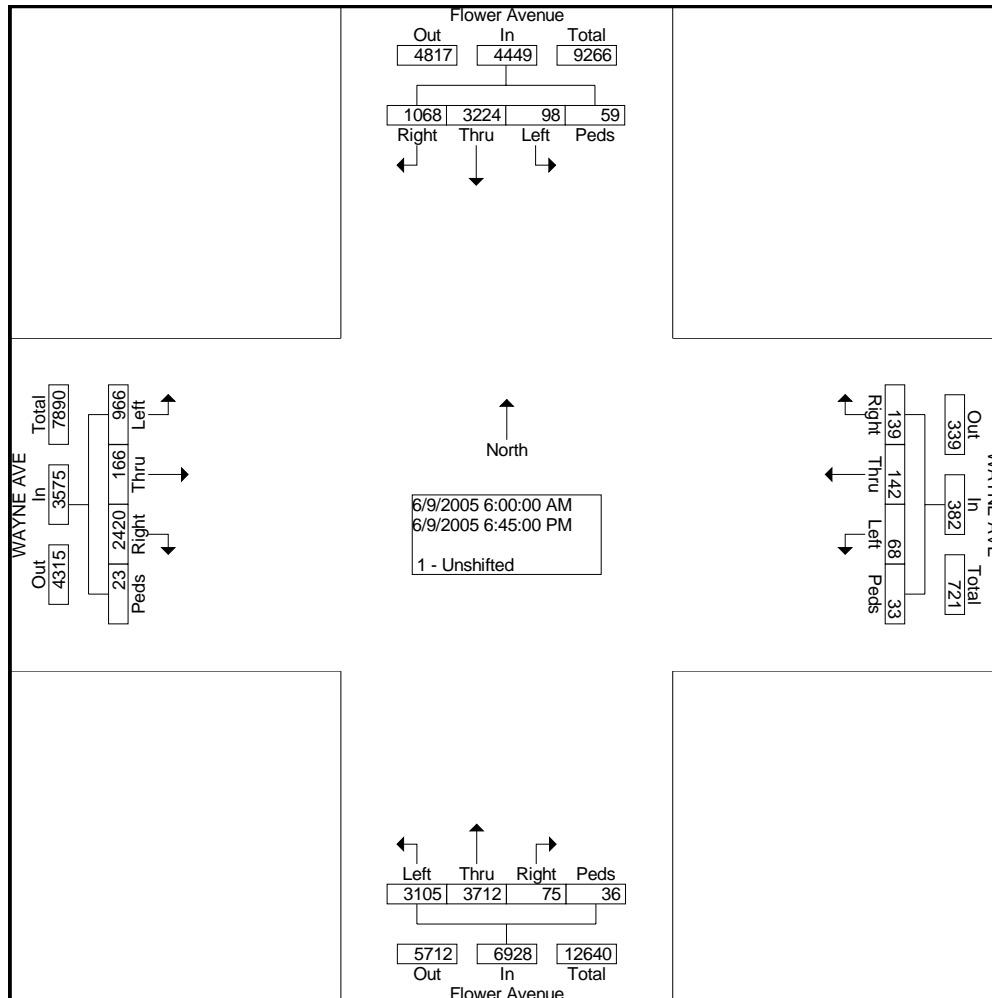
Start Time	Flower Avenue From North					WAYNE AVE From East					Flower Avenue From South					WAYNE AVE From West					Int. Total
	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	
Factor	1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		
06:00 AM	5	28	7	0	40	0	2	0	0	2	31	32	1	0	64	5	1	12	0	18	124
06:15 AM	2	30	11	0	43	2	1	1	0	4	34	44	1	0	79	5	1	15	1	22	148
06:30 AM	1	43	10	0	54	0	2	1	0	3	66	58	0	1	125	8	1	6	0	15	197
06:45 AM	1	46	12	0	59	1	1	1	3	6	54	54	0	1	109	12	0	24	3	39	213
Total	9	147	40	0	196	3	6	3	3	15	185	188	2	2	377	30	3	57	4	94	682
07:00 AM	1	76	34	0	111	0	6	3	0	9	89	62	0	1	152	18	1	12	0	31	303
07:15 AM	2	66	52	0	120	0	8	1	1	10	89	100	1	0	190	12	1	32	0	45	365
07:30 AM	0	54	39	0	93	0	6	4	1	11	107	79	0	1	187	15	0	28	2	45	336
07:45 AM	0	64	32	0	96	0	7	0	2	9	135	92	1	2	230	16	4	45	0	65	400
Total	3	260	157	0	420	0	27	8	4	39	420	333	2	4	759	61	6	117	2	186	1404
08:00 AM	4	64	20	1	89	3	4	1	2	10	126	89	2	1	218	18	1	32	0	51	368
08:15 AM	3	56	24	0	83	1	3	3	3	10	121	81	1	0	203	18	2	43	0	63	359
08:30 AM	2	42	27	0	71	4	7	0	0	11	121	57	2	0	180	12	4	40	0	56	318
08:45 AM	2	52	22	0	76	3	2	3	0	8	107	83	1	1	192	14	0	53	0	67	343
Total	11	214	93	1	319	11	16	7	5	39	475	310	6	2	793	62	7	168	0	237	1388
09:00 AM	1	54	24	5	84	1	2	9	6	18	117	80	1	2	200	18	3	39	0	60	362
09:15 AM	0	58	23	2	83	2	1	7	5	15	124	51	2	0	177	9	1	28	1	39	314
09:30 AM	1	52	17	0	70	0	0	0	0	0	117	55	3	0	175	10	2	30	0	42	287
09:45 AM	3	69	24	3	99	1	2	3	0	6	49	62	1	0	112	11	6	22	0	39	256
Total	5	233	88	10	336	4	5	19	11	39	407	248	7	2	664	48	12	119	1	180	1219
10:00 AM	5	54	33	0	92	0	1	0	0	1	58	59	1	0	118	10	6	35	0	51	262
10:15 AM	3	59	12	0	74	0	3	3	0	6	56	48	0	0	104	14	1	30	0	45	229
10:30 AM	2	45	10	1	58	0	1	3	0	4	38	51	0	0	89	7	1	24	0	32	183
10:45 AM	4	46	15	0	65	0	2	5	0	7	40	55	2	1	98	6	0	26	0	32	202
Total	14	204	70	1	289	0	7	11	0	18	192	213	3	1	409	37	8	115	0	160	876
11:00 AM	2	47	14	1	64	1	3	3	0	7	36	32	1	0	69	11	0	36	0	47	187
11:15 AM	1	87	6	0	94	4	6	0	0	10	23	50	0	0	73	20	3	39	1	63	240
11:30 AM	1	51	9	0	61	1	1	4	2	8	42	53	3	0	98	10	3	33	1	47	214
11:45 AM	2	49	8	0	59	2	2	1	0	5	37	64	1	0	102	12	3	43	0	58	224
Total	6	234	37	1	278	8	12	8	2	30	138	199	5	0	342	53	9	151	2	215	865
12:00 PM	1	64	22	1	88	1	2	2	1	6	23	66	1	0	90	12	3	38	0	53	237
12:15 PM	1	58	12	1	72	0	0	1	0	1	49	68	0	0	117	10	4	32	0	46	236
12:30 PM	2	54	13	7	76	1	1	5	0	7	43	67	3	0	113	10	1	33	0	44	240
12:45 PM	1	43	12	2	58	5	1	2	0	8	40	52	2	0	94	18	0	39	0	57	217
Total	5	219	59	11	294	7	4	10	1	22	155	253	6	0	414	50	8	142	0	200	930
01:00 PM	5	42	21	4	72	1	5	0	0	6	29	36	3	0	68	13	2	33	2	50	196
01:15 PM	3	48	25	5	81	2	4	1	0	7	36	54	6	1	97	10	0	45	0	55	240
01:30 PM	2	41	19	2	64	1	3	3	1	8	38	58	6	1	103	8	1	43	1	53	228
01:45 PM	1	60	10	1	72	2	1	3	0	6	36	62	3	2	103	6	2	47	0	55	236
Total	11	191	75	12	289	6	13	7	1	27	139	210	18	4	371	37	5	168	3	213	900
02:00 PM	1	62	12	0	75	2	0	5	0	7	41	59	0	1	101	15	3	40	0	58	241
02:15 PM	1	70	16	0	87	0	1	6	0	7	56	70	1	1	128	18	0	46	2	66	288
02:30 PM	0	56	14	0	70	0	3	5	0	8	42	81	1	0	124	15	2	50	0	67	269
02:45 PM	0	55	19	1	75	2	2	0	0	4	43	51	0	0	94	18	4	59	0	81	254
Total	2	243	61	1	307	4	6	16	0	26	182	261	2	2	447	66	9	195	2	272	1052
03:00 PM	1	51	8	0	60	0	2	3	0	5	44	80	0	3	127	22	2	60	1	85	277
03:15 PM	1	57	30	1	89	0	3	1	0	4	35	66	2	2	105	16	1	59	0	76	274
03:30 PM	6	90	24	0	120	6	2	6	0	14	27	66	0	1	94	27	6	57	0	90	318
03:45 PM	5	73	20	1	99	4	3	7	1	15	36	85	2	1	124	26	7	58	0	91	329
Total	13	271	82	2	368	10	10	17	1	38	142	297	4	7	450	91	16	234	1	342	1198

Counter:  
 Counted By:  
 Weather:  
 Other:

File Name : MD787@~3  
 Site Code : 00000000  
 Start Date : 6/9/2005  
 Page No : 2

Groups Printed- 1 - Unshifted

Start Time	Flower Avenue From North					WAYNE AVE From East					Flower Avenue From South					WAYNE AVE From West					Int. Total
	Left	Thru	Rig ht	Ped s	App. Total	Left	Thru	Rig ht	Ped s	App. Total	Left	Thru	Rig ht	Ped s	App. Total	Left	Thru	Rig ht	Ped s	App. Total	
Factor	1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		
04:00 PM	3	72	21	0	96	1	2	1	0	4	35	81	3	1	120	25	5	51	2	83	303
04:15 PM	3	65	12	1	81	1	2	3	2	8	44	89	0	2	135	30	4	79	1	114	338
04:30 PM	2	82	21	2	107	2	2	3	0	7	49	73	0	0	122	29	6	83	0	118	354
04:45 PM	1	86	18	3	108	1	3	2	0	6	67	96	3	0	166	45	7	83	0	135	415
Total	9	305	72	6	392	5	9	9	2	25	195	339	6	3	543	129	22	296	3	450	1410
05:00 PM	4	73	16	3	96	1	3	2	0	6	47	80	2	2	131	32	6	86	0	124	357
05:15 PM	3	87	26	2	118	0	4	1	1	6	43	102	2	1	148	50	4	92	1	147	419
05:30 PM	1	105	28	3	137	2	4	7	0	13	61	98	4	1	164	20	4	101	0	125	439
05:45 PM	1	96	40	1	138	1	6	6	0	13	67	96	1	2	166	47	10	83	1	141	458
Total	9	361	110	9	489	4	17	16	1	38	218	376	9	6	609	149	24	362	2	537	1673
06:00 PM	0	95	38	1	134	2	4	5	1	12	75	136	1	1	213	42	15	84	2	143	502
06:15 PM	1	89	29	1	120	1	3	2	0	6	69	125	1	0	195	45	12	85	1	143	464
06:30 PM	0	81	30	2	113	2	2	1	1	6	60	119	0	0	179	39	6	75	0	120	418
06:45 PM	0	77	27	1	105	1	1	0	0	2	53	105	3	2	163	27	4	52	0	83	353
Total	1	342	124	5	472	6	10	8	2	26	257	485	5	3	750	153	37	296	3	489	1737
Grand Total	98	3224	1068	59	4449	68	142	139	33	382	3105	3712	75	36	6928	966	166	2420	23	3575	15334
Apprch %	2.2	72.5	24.0	1.3		17.8	37.2	36.4	8.6		44.8	53.6	1.1	0.5		27.0	4.6	67.7	0.6		
Total %	0.6	21.0	7.0	0.4	29.0	0.4	0.9	0.9	0.2	2.5	20.2	24.2	0.5	0.2	45.2	6.3	1.1	15.8	0.1	23.3	



Sabra, Wang & Associates, Inc.

1504 Joh Avenue Suite 160

Baltimore, MD 21202 Site Name : WAYNE AVE @ MANSFIELD RD.

410-737-6536 Site Code : 00000123

Start Date : 04/20/2006

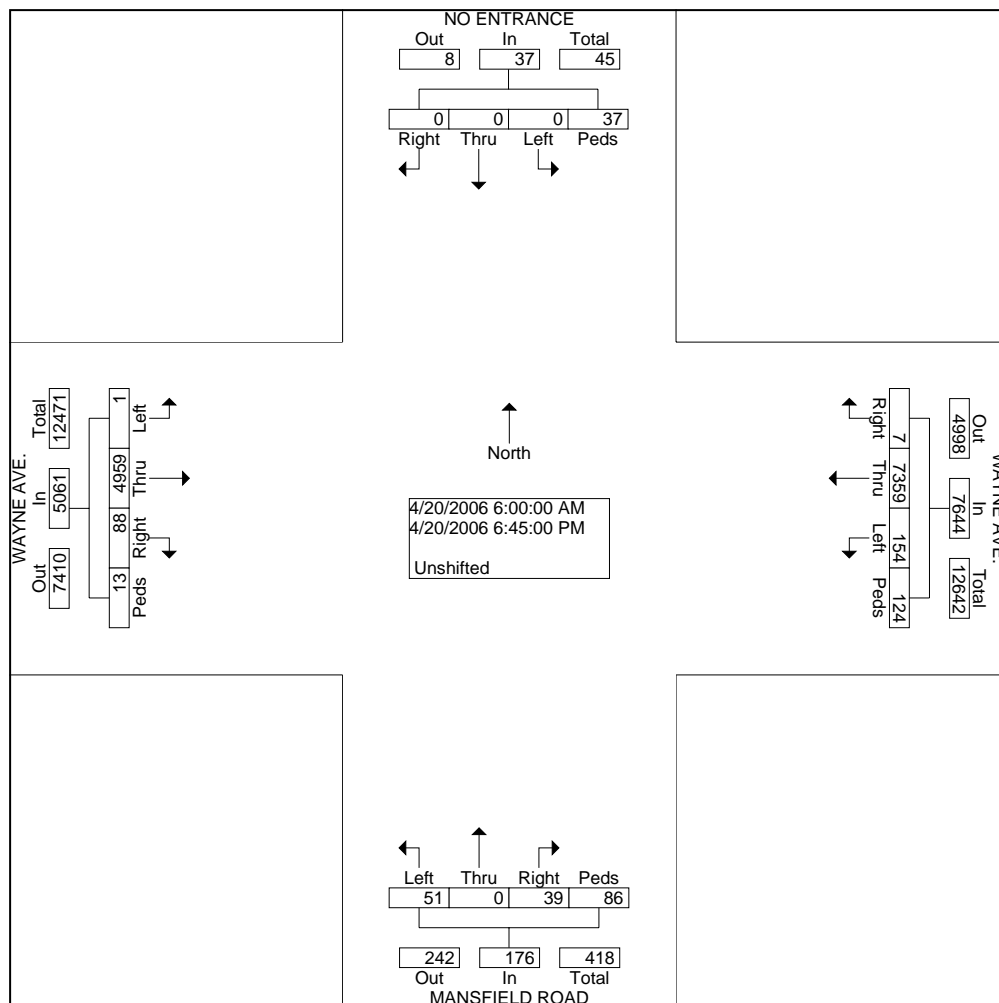
Page No : 1

Weather: SUNNY  
 Counted By: ROB, JANET  
 Town: SILVER SPRING  
 County: MONTGOMERY

Groups Printed- Unshifted

Start Time	NO ENTRANCE From North					WAYNE AVE. From East					MANSFIELD ROAD From South					WAYNE AVE. From West					Int. Total
	Rig ht	Thr u	Left	Ped s	App. Total	Rig ht	Thr u	Left	Ped s	App. Total	Rig ht	Thr u	Left	Ped s	App. Total	Rig ht	Thr u	Left	Ped s	App. Total	
Factor	1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		
06:00 AM	0	0	0	1	1	0	52	0	0	52	1	0	0	2	3	0	3	0	0	3	59
06:15 AM	0	0	0	2	2	0	64	0	1	65	1	0	0	1	2	0	12	0	0	12	81
06:30 AM	0	0	0	4	4	0	113	0	1	114	0	0	0	1	1	0	19	0	0	19	138
06:45 AM	0	0	0	2	2	0	129	1	1	131	0	0	0	0	0	0	23	0	0	23	156
Total	0	0	0	9	9	0	358	1	3	362	2	0	0	4	6	0	57	0	0	57	434
07:00 AM	0	0	0	2	2	0	151	0	4	155	1	0	0	2	3	0	34	0	0	34	194
07:15 AM	0	0	0	1	1	0	182	1	2	185	1	0	0	2	3	0	39	0	0	39	228
07:30 AM	0	0	0	7	7	0	272	2	2	276	1	0	2	2	5	0	45	0	2	47	335
07:45 AM	0	0	0	4	4	0	313	0	4	317	0	0	2	2	4	1	89	0	4	94	419
Total	0	0	0	14	14	0	918	3	12	933	3	0	4	8	15	1	207	0	6	214	1176
08:00 AM	0	0	0	1	1	0	300	1	2	303	1	0	0	3	4	1	70	0	0	71	379
08:15 AM	0	0	0	0	0	0	254	4	5	263	0	0	1	3	4	0	83	0	0	83	350
08:30 AM	0	0	0	0	0	0	289	2	11	302	2	0	1	3	6	0	72	0	0	72	380
08:45 AM	0	0	0	0	0	0	292	1	4	297	1	0	2	1	4	1	83	0	1	85	386
Total	0	0	0	1	1	0	1135	8	22	1165	4	0	4	10	18	2	308	0	1	311	1495
09:00 AM	0	0	0	0	0	0	304	0	2	306	1	0	3	3	7	1	78	0	0	79	392
09:15 AM	0	0	0	0	0	0	215	0	3	218	0	0	0	0	0	0	78	0	0	78	296
09:30 AM	0	0	0	0	0	0	193	1	5	199	1	0	0	0	1	3	68	0	0	71	271
09:45 AM	0	0	0	3	3	0	173	5	0	178	2	0	0	4	6	3	93	0	0	96	283
Total	0	0	0	3	3	0	885	6	10	901	4	0	3	7	14	7	317	0	0	324	1242
10:00 AM	0	0	0	1	1	0	162	3	1	166	2	0	0	2	4	1	49	0	0	50	221
10:15 AM	0	0	0	3	3	0	150	2	0	152	1	0	0	1	2	0	51	0	0	51	208
10:30 AM	0	0	0	0	0	0	143	0	0	143	2	0	0	3	5	1	51	0	0	52	200
10:45 AM	0	0	0	0	0	0	139	2	3	144	1	0	0	1	2	1	54	0	0	55	201
Total	0	0	0	4	4	0	594	7	4	605	6	0	0	7	13	3	205	0	0	208	830
11:00 AM	0	0	0	1	1	0	105	4	2	111	1	0	0	1	2	2	65	0	1	68	182
11:15 AM	0	0	0	0	0	0	95	3	0	98	0	0	0	1	1	1	59	0	0	60	159
11:30 AM	0	0	0	0	0	0	91	1	1	93	0	0	2	1	3	0	23	0	0	23	119
11:45 AM	0	0	0	1	1	1	86	1	3	91	0	0	1	2	3	1	52	0	0	53	148
Total	0	0	0	2	2	1	377	9	6	393	1	0	3	5	9	4	199	0	1	204	608
12:00 PM	0	0	0	0	0	1	90	4	2	97	1	0	0	1	2	2	59	0	0	61	160
12:15 PM	0	0	0	0	0	0	82	3	5	90	0	0	1	2	3	0	64	0	0	64	157
12:30 PM	0	0	0	1	1	0	95	1	0	96	1	0	2	0	3	0	78	0	0	78	178
12:45 PM	0	0	0	0	0	4	91	8	1	104	0	0	4	3	7	1	38	0	0	39	150
Total	0	0	0	1	1	5	358	16	8	387	2	0	7	6	15	3	239	0	0	242	645
01:00 PM	0	0	0	0	0	0	80	1	1	82	0	0	0	2	2	0	65	0	0	65	149
01:15 PM	0	0	0	0	0	0	89	0	8	97	0	0	0	0	0	1	68	0	0	69	166
01:30 PM	0	0	0	0	0	0	82	4	5	91	2	0	1	0	3	2	73	0	0	75	169
01:45 PM	0	0	0	0	0	0	86	0	8	94	1	0	0	2	3	0	79	0	0	79	176
Total	0	0	0	0	0	0	337	5	22	364	3	0	1	4	8	3	285	0	0	288	660
02:00 PM	0	0	0	0	0	0	94	3	5	102	0	0	0	5	5	1	67	0	0	68	175
02:15 PM	0	0	0	0	0	0	97	6	1	104	1	0	0	3	4	1	77	0	0	78	186
02:30 PM	0	0	0	1	1	1	108	5	1	115	5	0	7	6	18	0	99	1	0	100	234
02:45 PM	0	0	0	0	0	0	94	5	4	103	0	0	2	2	4	0	118	0	0	118	225
Total	0	0	0	1	1	1	393	19	11	424	6	0	9	16	31	2	361	1	0	364	820
03:00 PM	0	0	0	0	0	0	96	4	2	102	0	0	3	6	9	3	112	0	0	115	226
03:15 PM	0	0	0	0	0	0	109	4	1	114	0	0	0	1	1	0	115	0	1	116	231
03:30 PM	0	0	0	0	0	0	115	8	6	129	0	0	0	2	2	1	128	0	0	129	260
03:45 PM	0	0	0	0	0	0	138	6	6	150	0	0	0	4	4	3	123	0	4	130	284
Total	0	0	0	0	0	0	458	22	15	495	0	0	3	13	16	7	478	0	5	490	1001

04:00 PM	0	0	0	0	0	0	152	11	0	163	0	0	0	0	0	3	134	0	0	137	300
04:15 PM	0	0	0	0	0	0	141	9	0	150	3	0	6	0	9	5	139	0	0	144	303
04:30 PM	0	0	0	0	0	0	134	5	0	139	0	0	4	0	4	2	126	0	0	128	271
04:45 PM	0	0	0	0	0	0	128	4	0	132	1	0	1	0	2	7	157	0	0	164	298
Total	0	0	0	0	0	0	555	29	0	584	4	0	11	0	15	17	556	0	0	573	1172
05:00 PM	0	0	0	0	0	0	135	2	2	139	2	0	0	0	2	10	189	0	0	199	340
05:15 PM	0	0	0	0	0	0	157	2	2	161	0	0	1	0	1	6	238	0	0	244	406
05:30 PM	0	0	0	0	0	0	141	3	0	144	1	0	1	0	2	8	261	0	0	269	415
05:45 PM	0	0	0	0	0	0	147	5	0	152	0	0	0	3	3	1	256	0	0	257	412
Total	0	0	0	0	0	0	580	12	4	596	3	0	2	3	8	25	944	0	0	969	1573
06:00 PM	0	0	0	0	0	0	134	1	0	135	0	0	1	2	3	4	249	0	0	253	391
06:15 PM	0	0	0	0	0	0	110	8	3	121	1	0	2	0	3	0	203	0	0	203	327
06:30 PM	0	0	0	0	0	0	86	4	1	91	0	0	0	1	1	3	178	0	0	181	273
06:45 PM	0	0	0	2	2	0	81	4	3	88	0	0	1	0	1	7	173	0	0	180	271
Total	0	0	0	2	2	0	411	17	7	435	1	0	4	3	8	14	803	0	0	817	1262
Grand Total	0	0	0	37	37	7	735	154	124	7644	39	0	51	86	176	88	495	1	13	5061	12918
Apprch %	0.0	0.0	0.0	100		0.1	96.	2.0	1.6		22.	0.0	29.	48.		1.7	98.	0.0	0.3		
Total %	0.0	0.0	0.0	0.3	0.3	0.1	57.	1.2	1.0	59.2	0.3	0.0	0.4	0.7	1.4	0.7	38.	0.0	0.1	39.2	



Sabra, Wang & Associates, Inc.

1504 Joh Avenue Suite 160

Baltimore, MD 21227

410-737-6564

File Name : wayne ave @ cedar st.

Site Code : 00000111

Start Date : 04/18/2006

Page No : 1

Weather: SUNNY  
 Counted By: ROB, JANET  
 Town: SILVER SPRING  
 County: MONTGOMERY

Groups Printed- Unshifted

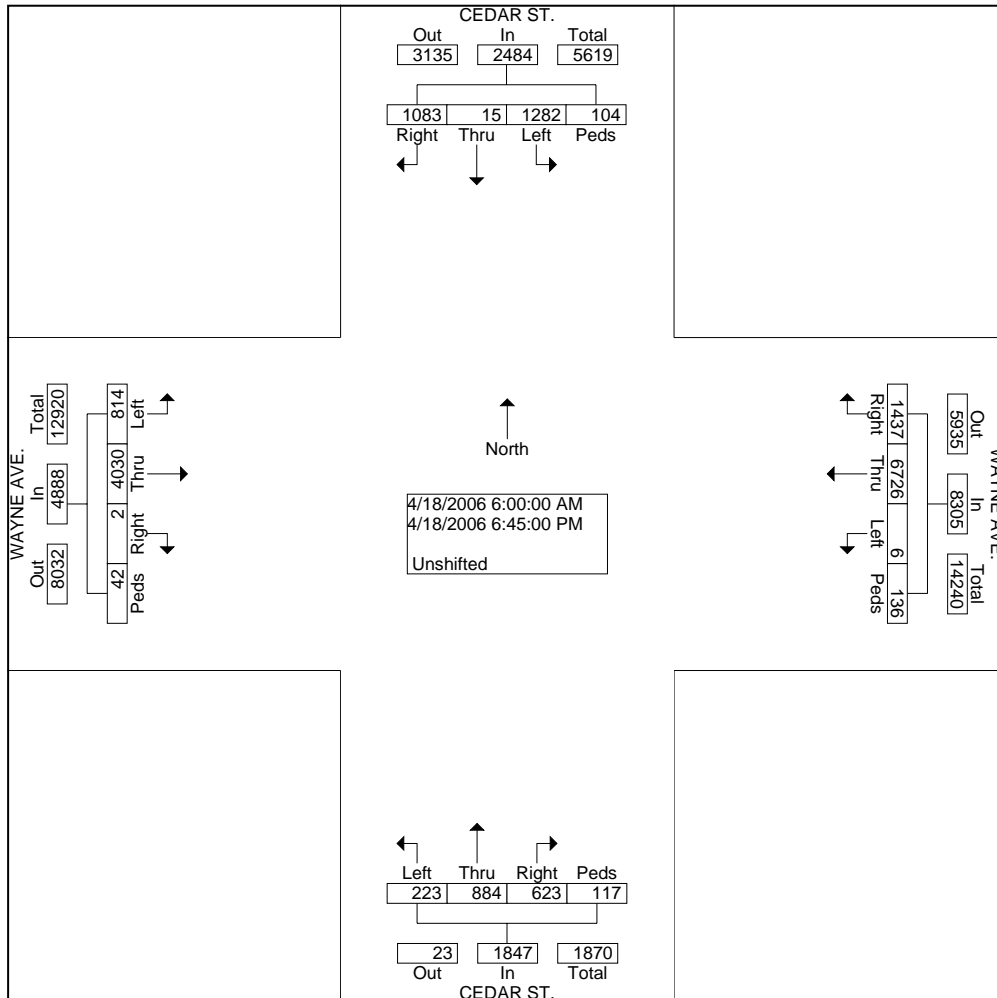
Start Time	CEDAR ST. From North					WAYNE AVE. From East					CEDAR ST. From South					WAYNE AVE. From West					Int. Total
	Rig ht	Thr u	Left	Ped s	App. Total	Rig ht	Thr u	Left	Ped s	App. Total	Rig ht	Thr u	Left	Ped s	App. Total	Rig ht	Thr u	Left	Ped s	App. Total	
Factor	1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		
06:00 AM	3	0	2	1	6	4	40	1	0	45	1	2	0	0	3	0	13	1	0	14	68
06:15 AM	3	0	2	1	6	7	69	0	0	76	1	2	2	0	5	0	9	2	1	12	99
06:30 AM	8	0	4	1	13	7	89	0	7	103	3	3	0	1	7	0	14	1	1	16	139
06:45 AM	5	4	3	0	12	21	125	0	4	150	3	5	3	7	18	0	14	3	0	17	197
Total	19	4	11	3	37	39	323	1	11	374	8	12	5	8	33	0	50	7	2	59	503
07:00 AM	2	0	5	0	7	13	127	0	1	141	5	11	4	2	22	0	23	0	0	23	193
07:15 AM	5	1	7	0	13	46	138	0	6	190	9	12	0	3	24	0	15	3	0	18	245
07:30 AM	6	0	4	0	10	22	158	0	2	182	4	10	0	7	21	0	24	4	1	29	242
07:45 AM	10	0	4	3	17	27	162	0	7	196	7	15	0	2	24	0	20	0	0	20	257
Total	23	1	20	3	47	108	585	0	16	709	25	48	4	14	91	0	82	7	1	90	937
08:00 AM	14	0	11	0	25	37	207	0	1	245	5	18	1	3	27	0	28	4	2	34	331
08:15 AM	18	0	13	1	32	52	198	1	0	251	8	22	1	6	37	0	31	4	3	38	358
08:30 AM	24	0	16	3	43	39	239	0	3	281	6	20	5	8	39	0	42	2	2	46	409
08:45 AM	32	0	15	9	56	61	222	0	5	288	4	34	5	3	46	0	76	15	3	94	484
Total	88	0	55	13	156	189	866	1	9	1065	23	94	12	20	149	0	177	25	10	212	1582
09:00 AM	43	2	14	10	69	53	230	0	5	288	6	17	1	0	24	0	73	20	2	95	476
09:15 AM	16	2	25	5	48	65	190	0	2	257	11	23	7	2	43	0	95	16	1	112	460
09:30 AM	17	2	22	12	53	62	184	0	0	246	13	28	6	0	47	0	71	13	0	84	430
09:45 AM	24	1	15	4	44	45	160	0	2	207	8	23	7	2	40	0	79	9	2	90	381
Total	100	7	76	31	214	225	764	0	9	998	38	91	21	4	154	0	318	58	5	381	1747
10:00 AM	21	0	18	5	44	41	189	0	0	230	6	19	7	1	33	0	112	14	1	127	434
10:15 AM	26	0	24	5	55	32	171	1	2	206	9	14	3	0	26	0	115	13	1	129	416
10:30 AM	23	1	38	1	63	37	167	2	4	210	9	15	3	0	27	0	122	12	0	134	434
10:45 AM	13	0	24	2	39	27	150	0	3	180	7	6	1	0	14	0	120	15	2	137	370
Total	83	1	104	13	201	137	677	3	9	826	31	54	14	1	100	0	469	54	4	527	1654
11:00 AM	24	0	20	1	45	16	116	0	3	135	8	5	8	0	21	1	113	15	0	129	330
11:15 AM	20	0	13	4	37	15	148	0	5	168	6	9	2	4	21	0	78	9	1	88	314
11:30 AM	14	0	14	1	29	19	124	0	1	144	9	6	2	4	21	0	63	14	3	80	274
11:45 AM	24	0	10	5	39	25	132	0	3	160	6	8	1	1	16	0	62	23	1	86	301
Total	82	0	57	11	150	75	520	0	12	607	29	28	13	9	79	1	316	61	5	383	1219
12:00 PM	21	0	12	0	33	33	112	0	1	146	5	5	3	0	13	0	75	12	0	87	279
12:15 PM	24	0	19	5	48	11	115	0	2	128	6	10	3	2	21	0	86	16	2	104	301
12:30 PM	19	0	16	3	38	13	96	0	3	112	13	12	1	3	29	0	80	10	3	93	272
12:45 PM	16	0	27	5	48	23	60	0	3	86	11	10	3	2	26	0	75	19	0	94	254
Total	80	0	74	13	167	80	383	0	9	472	35	37	10	7	89	0	316	57	5	378	1106
01:00 PM	21	0	24	1	46	15	64	0	3	82	10	13	1	3	27	0	63	9	2	74	229
01:15 PM	16	0	29	0	45	18	93	1	3	115	10	12	4	2	28	0	56	14	3	73	261
01:30 PM	25	0	23	1	49	41	85	0	3	129	11	19	3	3	36	0	62	14	0	76	290
01:45 PM	19	0	18	0	37	35	102	0	0	137	12	18	2	0	32	0	50	6	1	57	263
Total	81	0	94	2	177	109	344	1	9	463	43	62	10	8	123	0	231	43	6	280	1043
02:00 PM	20	0	20	1	41	18	85	0	0	103	10	15	5	3	33	0	68	15	0	83	260
02:15 PM	17	1	18	4	40	19	84	0	4	107	8	10	5	9	32	0	61	4	0	65	244
02:30 PM	22	0	20	0	42	24	95	0	8	127	10	12	5	1	28	0	57	5	0	62	259
02:45 PM	15	0	31	2	48	39	132	0	0	171	11	30	4	1	46	0	61	10	2	73	338
Total	74	1	89	7	171	100	396	0	12	508	39	67	19	14	139	0	247	34	2	283	1101
03:00 PM	15	0	40	2	57	14	121	0	3	138	14	10	3	2	29	0	63	14	2	79	303
03:15 PM	18	0	28	1	47	26	115	0	3	144	17	20	4	3	44	0	69	14	0	83	318
03:30 PM	29	0	18	1	48	18	107	0	2	127	18	23	2	3	46	0	111	7	0	118	339
03:45 PM	22	0	23	0	45	33	127	0	0	160	28	16	3	5	52	0	144	20	0	164	421
Total	84	0	109	4	197	91	470	0	8	569	77	69	12	13	171	0	387	55	2	444	1381

Sabra, Wang & Associates, Inc.  
 1504 Joh Avenue Suite 160  
 Baltimore, MD 21227  
 410-737-6564

File Name : wayne ave @ cedar st.  
 Site Code : 00000111  
 Start Date : 04/18/2006  
 Page No : 2

Groups Printed- Unshifted

Start Time	CEDAR ST. From North					WAYNE AVE. From East					CEDAR ST. From South					WAYNE AVE. From West					Int. Total
	Rig ht	Thru	Left	Ped s	App. Total	Rig ht	Thru	Left	Ped s	App. Total	Rig ht	Thru	Left	Ped s	App. Total	Rig ht	Thru	Left	Ped s	App. Total	
Factor	1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		
04:00 PM	24	0	38	3	65	17	135	0	4	156	31	11	6	2	50	0	142	14	0	156	427
04:15 PM	14	0	41	0	55	14	119	0	4	137	23	14	4	3	44	0	118	14	0	132	368
04:30 PM	18	0	43	0	61	29	121	0	9	159	40	32	5	1	78	0	131	19	0	150	448
04:45 PM	26	0	58	1	85	23	116	0	9	148	24	18	1	4	47	1	132	14	0	147	427
Total	82	0	180	4	266	83	491	0	26	600	118	75	16	10	219	1	523	61	0	585	1670
05:00 PM	35	1	55	0	91	35	128	0	0	163	29	24	8	0	61	0	150	34	0	184	499
05:15 PM	40	0	60	0	100	21	124	0	0	145	32	48	2	0	82	0	126	64	0	190	517
05:30 PM	41	0	33	0	74	26	142	0	0	168	16	50	13	0	79	0	118	53	0	171	492
05:45 PM	42	0	53	0	95	52	150	0	1	203	23	53	31	5	112	0	107	41	0	148	558
Total	158	1	201	0	360	134	544	0	1	679	100	175	54	5	334	0	501	192	0	693	2066
06:00 PM	32	0	51	0	83	27	98	0	5	130	21	18	12	2	53	0	110	35	0	145	411
06:15 PM	28	0	56	0	84	11	85	0	0	96	18	16	6	2	42	0	105	33	0	138	360
06:30 PM	37	0	53	0	90	13	88	0	0	101	10	14	4	0	28	0	103	49	0	152	371
06:45 PM	32	0	52	0	84	16	92	0	0	108	8	24	11	0	43	0	95	43	0	138	373
Total	129	0	212	0	341	67	363	0	5	435	57	72	33	4	166	0	413	160	0	573	1515
Grand Total	1083	15	1282	104	2484	1437	6726	6	136	8305	623	884	223	117	1847	2	4030	814	42	4888	17524
Apprch %	43.6	0.6	51.6	4.2		17.3	81.0	0.1	1.6		33.7	47.9	12.1	6.3		0.0	82.4	16.7	0.9		
Total %	6.2	0.1	7.3	0.6	14.2	8.2	38.4	0.0	0.8	47.4	3.6	5.0	1.3	0.7	10.5	0.0	23.0	4.6	0.2	27.9	



Sabra, Wang & Associates, Inc.  
 1504 Joh Avenue, Suite 160  
 Baltimore, Maryland 21227  
 TEL. (410) 737-6564

Weather: SUNNY  
 Counted By: AK, CK  
 Town: SILVER SPRING  
 County: MONTGOMERY

File Name : WAYNEA~1  
 Site Code : 00000000  
 Start Date : 4/11/2006  
 Page No : 1

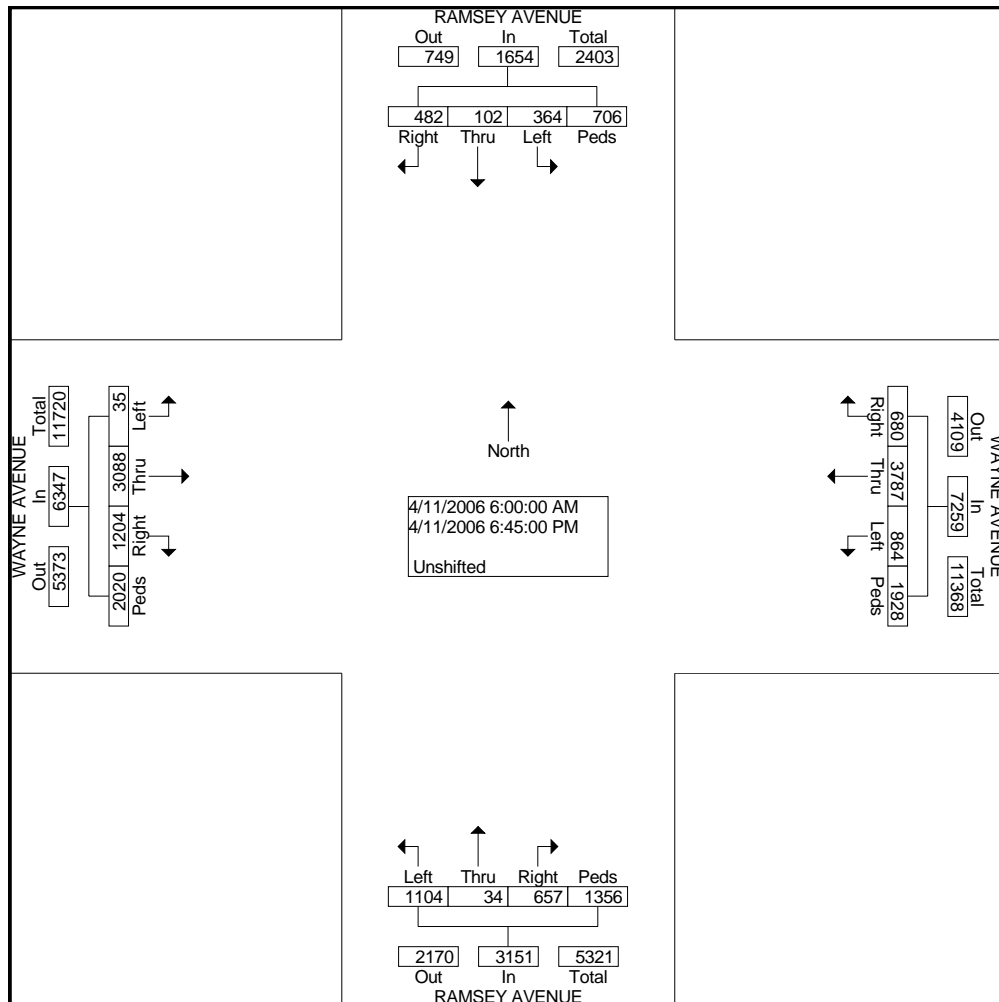
Groups Printed- Unshifted

Start Time	RAMSEY AVENUE From North					WAYNE AVENUE From East					RAMSEY AVENUE From South					WAYNE AVENUE From West					Int. Total
	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	
Factor	1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		
06:00 AM	0	1	0	1	2	20	33	2	2	57	9	0	3	0	12	1	21	9	8	39	110
06:15 AM	0	0	0	1	1	18	53	0	8	79	9	0	9	2	20	0	7	9	12	28	128
06:30 AM	1	0	0	0	1	20	63	4	7	94	14	0	4	1	19	0	17	14	12	43	157
06:45 AM	1	0	0	0	1	9	90	7	14	120	15	0	3	3	21	1	20	15	15	51	193
Total	2	1	0	2	5	67	239	13	31	350	47	0	19	6	72	2	65	47	47	161	588
07:00 AM	0	0	1	4	5	23	70	11	25	129	17	0	16	13	46	0	26	30	26	82	262
07:15 AM	2	0	1	5	8	27	60	10	28	125	27	0	8	24	59	2	29	24	32	87	279
07:30 AM	1	0	1	7	9	24	67	7	26	124	32	0	13	30	75	2	41	20	30	93	301
07:45 AM	0	0	1	3	4	21	72	7	28	128	30	1	17	27	75	1	39	23	36	99	306
Total	3	0	4	19	26	95	269	35	107	506	106	1	54	94	255	5	135	97	124	361	1148
08:00 AM	0	0	0	10	10	30	99	16	24	169	27	0	9	18	54	0	52	22	49	123	356
08:15 AM	1	0	0	9	10	27	85	14	26	152	31	0	13	17	61	0	58	25	40	123	346
08:30 AM	2	1	0	9	12	31	97	42	45	215	22	1	8	35	66	0	62	44	73	179	472
08:45 AM	1	0	1	16	18	34	104	38	42	218	19	0	12	53	84	0	63	38	71	172	492
Total	4	1	1	44	50	122	385	110	137	754	99	1	42	123	265	0	235	129	233	597	1666
09:00 AM	5	0	0	10	15	14	87	72	56	229	29	0	21	33	83	0	65	39	72	176	503
09:15 AM	5	0	1	9	15	19	72	77	54	222	21	0	18	38	77	0	53	31	64	148	462
09:30 AM	2	0	0	8	10	18	77	64	31	190	19	0	9	22	50	0	61	32	37	130	380
09:45 AM	1	0	1	14	16	12	82	39	22	155	28	0	14	17	59	2	67	26	49	144	374
Total	13	0	2	41	56	63	318	252	163	796	97	0	62	110	269	2	246	128	222	598	1719
10:00 AM	1	0	0	10	11	10	65	45	51	171	20	0	6	14	40	0	62	22	59	143	365
10:15 AM	2	0	0	7	9	10	58	38	32	138	14	0	7	18	39	0	50	16	40	106	292
10:30 AM	2	0	3	5	10	13	66	20	22	121	12	1	11	15	39	0	68	20	22	110	280
10:45 AM	1	1	4	8	14	11	65	21	24	121	14	0	10	18	42	1	66	21	24	112	289
Total	6	1	7	30	44	44	254	124	129	551	60	1	34	65	160	1	246	79	145	471	1226
11:00 AM	1	0	5	9	15	10	60	15	22	107	15	1	12	20	48	0	64	25	21	110	280
11:15 AM	2	0	4	13	19	9	62	11	34	116	18	0	10	21	49	2	64	26	35	127	311
11:30 AM	4	3	7	9	23	25	78	13	35	151	34	12	32	28	106	2	55	20	45	122	402
11:45 AM	2	0	4	12	18	12	68	3	69	152	14	5	15	24	58	0	74	24	31	129	357
Total	9	3	20	43	75	56	268	42	160	526	81	18	69	93	261	4	257	95	132	488	1350
12:00 PM	2	0	2	10	14	17	64	7	43	131	25	3	8	10	46	2	43	31	38	114	305
12:15 PM	2	0	8	7	17	11	72	2	53	138	15	0	13	14	42	0	73	21	56	150	347
12:30 PM	3	0	5	9	17	15	80	7	42	144	19	2	11	20	52	2	68	20	48	138	351
12:45 PM	0	0	5	16	21	12	73	5	58	148	12	3	14	35	64	3	73	23	49	148	381
Total	7	0	20	42	69	55	289	21	196	561	71	8	46	79	204	7	257	95	191	550	1384
01:00 PM	2	0	6	25	33	11	69	2	64	146	15	0	8	18	41	0	72	21	48	141	361
01:15 PM	2	1	3	27	33	12	82	4	83	181	21	1	11	29	62	0	75	24	45	144	420
01:30 PM	3	0	2	10	15	9	74	6	65	154	15	0	15	36	66	0	70	19	51	140	375
01:45 PM	1	1	1	14	17	11	69	4	44	128	24	0	14	45	83	1	71	14	41	127	355
Total	8	2	12	76	98	43	294	16	256	609	75	1	48	128	252	1	288	78	185	552	1511
02:00 PM	0	1	1	10	12	12	63	6	34	115	0	0	0	30	30	0	74	0	57	131	288
02:15 PM	1	0	4	15	20	9	54	4	25	92	14	1	7	27	49	1	66	20	33	120	281
02:30 PM	0	1	5	15	21	12	55	2	22	91	15	1	8	28	52	0	62	20	30	112	276
02:45 PM	1	0	4	18	23	14	58	4	24	100	19	0	9	32	60	1	60	22	32	115	298
Total	2	2	14	58	76	47	230	16	105	398	48	2	24	117	191	2	262	62	152	478	1143
03:00 PM	1	1	8	19	29	18	59	3	23	103	22	1	12	35	70	0	58	24	35	117	319
03:15 PM	2	0	4	22	28	15	62	6	39	122	25	0	15	36	76	0	51	29	32	112	338
03:30 PM	4	2	8	21	35	18	68	5	47	138	28	1	14	38	81	1	56	29	30	116	370
03:45 PM	7	3	10	26	46	15	69	6	32	122	23	0	12	44	79	1	54	10	28	93	340
Total	14	6	30	88	138	66	258	20	141	485	98	2	53	153	306	2	219	92	125	438	1367



Groups Printed- Unshifted

Start Time	RAMSEY AVENUE From North					WAYNE AVENUE From East					RAMSEY AVENUE From South					WAYNE AVENUE From West					Int. Total
	Left	Thru	Rght	Peds	App. Total	Left	Thru	Rght	Peds	App. Total	Left	Thru	Rght	Peds	App. Total	Left	Thru	Rght	Peds	App. Total	
Factor	1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		
04:00 PM	16	4	29	19	68	16	74	3	39	132	29	0	16	27	72	2	71	23	41	137	409
04:15 PM	21	15	44	27	107	13	68	2	48	131	27	0	14	31	72	0	64	18	44	126	436
04:30 PM	20	9	41	22	92	18	77	1	57	153	32	0	20	35	87	0	74	27	39	140	472
04:45 PM	16	6	44	25	91	16	89	4	52	161	38	0	25	44	107	1	70	29	41	141	500
Total	73	34	158	93	358	63	308	10	196	577	126	0	75	137	338	3	279	97	165	544	1817
05:00 PM	20	7	43	22	92	18	92	3	48	161	33	0	22	40	95	0	77	25	42	144	492
05:15 PM	27	9	46	18	100	24	96	4	43	167	29	0	15	34	78	0	82	26	46	154	499
05:30 PM	38	5	33	19	95	16	82	0	45	143	26	0	19	29	74	2	76	33	49	160	472
05:45 PM	43	8	26	26	103	23	99	2	36	160	31	0	12	41	84	0	80	28	44	152	499
Total	128	29	148	85	390	81	369	9	172	631	119	0	68	144	331	2	315	112	181	610	1962
06:00 PM	39	6	21	29	95	19	91	3	49	162	22	0	18	23	63	1	82	30	37	150	470
06:15 PM	27	10	19	25	81	16	79	4	35	134	20	0	12	38	70	2	80	23	29	134	419
06:30 PM	19	5	14	18	56	15	71	4	25	115	15	0	16	23	54	1	60	20	22	103	328
06:45 PM	10	2	12	13	37	12	65	1	26	104	20	0	17	23	60	0	62	20	30	112	313
Total	95	23	66	85	269	62	306	12	135	515	77	0	63	107	247	4	284	93	118	499	1530
Grand Total	364	102	482	706	1654	864	378	680	192	7259	110	34	657	135	3151	35	308	120	202	6347	1841
Aprch %	22.0	6.2	29.1	42.7		11.9	52.2	9.4	26.6		35.0	1.1	20.9	43.0		0.6	48.7	19.0	31.8		
Total %	2.0	0.6	2.6	3.8	9.0	4.7	20.6	3.7	10.5	39.4	6.0	0.2	3.6	7.4	17.1	0.2	16.8	6.5	11.0	34.5	



Groups Printed- Unshifted

Start Time	Woodmont Avenue From North				Battery Lane From East				Woodmont Avenue From South				Battery Lane From West				Int. Total
	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	
06:00 AM	3	32	6	1	1	2	0	0	3	7	3	1	5	22	5	3	94
06:15 AM	1	53	14	0	0	4	0	0	1	10	5	0	0	16	7	2	113
06:30 AM	9	60	20	1	1	0	0	0	2	11	7	2	3	18	7	2	143
06:45 AM	10	97	32	4	4	7	3	1	4	20	14	3	5	28	8	3	243
Total	23	242	72	6	6	13	3	1	10	48	29	6	13	84	27	10	593
07:00 AM	17	139	28	0	4	9	2	1	10	25	16	4	10	29	5	3	302
07:15 AM	13	184	38	2	2	7	4	4	5	37	23	1	12	44	15	4	395
07:30 AM	11	215	36	3	8	15	3	2	10	38	13	4	9	46	10	4	427
07:45 AM	24	235	46	3	8	10	2	2	5	44	10	4	13	54	13	5	478
Total	65	773	148	8	22	41	11	9	30	144	62	13	44	173	43	16	1602
08:00 AM	17	242	37	8	9	12	3	4	11	44	11	4	16	72	25	3	518
08:15 AM	10	272	44	5	12	17	1	4	7	39	11	6	15	60	25	5	533
08:30 AM	12	225	29	2	15	14	2	2	5	52	15	6	23	38	28	7	475
08:45 AM	19	257	40	3	11	8	2	1	6	41	3	4	13	48	26	8	490
Total	58	996	150	18	47	51	8	11	29	176	40	20	67	218	104	23	2016
09:00 AM	14	259	36	2	11	12	1	1	7	44	12	1	16	54	40	6	516
09:15 AM	12	207	22	2	11	11	3	7	7	45	15	1	13	45	15	2	418
09:30 AM	6	209	30	1	13	10	1	2	5	41	13	4	12	29	14	4	394
09:45 AM	3	144	21	2	10	10	1	3	7	54	9	2	21	21	21	1	330
Total	35	819	109	7	45	43	6	13	26	184	49	8	62	149	90	13	1658
10:00 AM	3	170	25	3	12	10	0	1	6	55	12	1	19	18	13	3	351
10:15 AM	3	140	23	2	9	10	1	2	8	47	14	1	13	24	13	2	312
10:30 AM	7	149	19	2	8	8	2	0	4	57	10	4	14	16	17	1	318
10:45 AM	0	134	18	1	12	10	1	2	11	59	10	1	14	39	12	2	326
Total	13	593	85	8	41	38	4	5	29	218	46	7	60	97	55	8	1307
11:00 AM	3	103	18	2	7	9	0	1	4	59	8	1	20	16	11	2	264
11:15 AM	2	101	21	2	5	9	1	3	8	72	15	6	20	30	7	2	304
11:30 AM	1	146	20	3	5	13	0	1	6	67	9	3	12	25	9	2	322
11:45 AM	3	114	18	0	6	12	2	2	16	78	18	1	13	45	8	0	336
Total	9	464	77	7	23	43	3	7	34	276	50	11	65	116	35	6	1226
12:00 PM	3	105	20	6	18	12	2	0	11	80	20	8	15	35	13	3	351
12:15 PM	3	70	21	1	10	10	0	2	10	78	13	5	12	34	15	0	284
12:30 PM	3	113	23	0	8	14	2	0	8	75	17	3	13	22	17	2	320
12:45 PM	3	117	26	2	8	18	3	2	11	88	9	3	14	25	10	2	341
Total	12	405	90	9	44	54	7	4	40	321	59	19	54	116	55	7	1296
01:00 PM	1	108	16	2	11	7	4	1	16	92	20	1	16	33	14	5	347
01:15 PM	10	85	21	3	4	18	3	3	6	85	17	4	11	16	11	2	299
01:30 PM	6	99	22	7	14	15	3	1	10	85	15	2	17	16	10	0	322
01:45 PM	4	118	23	0	13	6	2	0	4	80	14	3	13	19	10	2	311
Total	21	410	82	12	42	46	12	5	36	342	66	10	57	84	45	9	1279
02:00 PM	6	96	19	3	9	15	1	2	11	94	10	0	22	11	5	3	307
02:15 PM	2	73	25	1	7	29	0	0	14	114	9	0	5	14	4	8	305
02:30 PM	2	78	31	5	12	12	5	0	14	89	4	2	11	20	7	1	293
02:45 PM	9	91	38	2	6	10	0	0	13	86	10	3	16	18	9	6	317
Total	19	338	113	11	34	66	6	2	52	383	33	5	54	63	25	18	1222
03:00 PM	5	82	26	0	8	14	0	2	13	97	13	3	23	25	8	3	322
03:15 PM	5	101	26	0	6	10	2	0	7	96	10	2	16	30	7	3	321
03:30 PM	6	98	38	1	12	14	2	1	6	79	16	2	19	34	14	2	344
03:45 PM	12	118	29	2	17	20	2	0	16	114	23	1	23	41	12	5	435
Total	28	399	119	3	43	58	6	3	42	386	62	8	81	130	41	13	1422
04:00 PM	4	89	29	0	10	14	1	1	11	117	20	3	11	31	13	1	355
04:15 PM	15	112	22	1	11	20	0	1	8	90	9	0	13	29	9	3	343
04:30 PM	12	102	33	3	6	10	1	0	5	101	15	3	4	40	9	6	350
04:45 PM	9	111	28	4	13	14	1	0	3	91	12	6	17	46	7	6	368
Total	40	414	112	8	40	58	3	2	27	399	56	12	45	146	38	16	1416

05:00 PM	9	129	38	2	7	16	0	2	17	135	22	0	24	37	12	8	458
05:15 PM	13	135	41	2	7	18	0	0	11	124	13	3	15	31	11	6	430
05:30 PM	18	164	27	2	14	23	3	2	23	143	26	1	18	34	13	7	518
05:45 PM	8	170	43	5	7	23	1	1	9	131	17	3	18	27	12	4	479
Total	48	598	149	11	35	80	4	5	60	533	78	7	75	129	48	25	1885
06:00 PM	9	146	48	2	12	20	0	1	11	138	27	7	13	34	13	1	482
06:15 PM	5	158	43	2	15	20	1	2	12	129	12	4	23	39	15	3	483
06:30 PM	9	145	29	5	9	21	1	2	12	104	12	5	14	41	21	3	433
06:45 PM	5	115	42	6	8	13	0	2	10	125	14	0	15	46	14	2	417
Total	28	564	162	15	44	74	2	7	45	496	65	16	65	160	63	9	1815
Grand Total	399	7015	1468	123	466	665	75	74	460	3906	695	142	742	1665	669	173	18737
Apprch %	4.4	77.9	16.3	1.4	36.4	52.0	5.9	5.8	8.8	75.1	13.4	2.7	22.8	51.2	20.6	5.3	
Total %	2.1	37.4	7.8	0.7	2.5	3.5	0.4	0.4	2.5	20.8	3.7	0.8	4.0	8.9	3.6	0.9	

Location: Woodmont Ave. & Battery Ln

County: Montgomery

Weather: Clear

Counters: JA, JW

Groups Printed- Unshifted

Start Time	Woodmont Avenue From North				Cordell Avenue From East				Woodmont Avenue From South				Cordell Avenue From West				Int. Total
	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	
Factor	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
06:00 AM	2	32	4	0	1	0	2	1	0	7	4	0	0	0	2	2	57
06:15 AM	4	52	4	1	1	0	2	6	1	10	0	3	1	0	2	6	93
06:30 AM	4	55	9	2	1	0	2	2	1	7	6	1	3	0	0	3	96
06:45 AM	9	88	12	4	2	0	6	5	1	21	9	2	0	0	2	7	168
Total	19	227	29	7	5	0	12	14	3	45	19	6	4	0	6	18	414
07:00 AM	10	125	13	4	4	0	5	7	1	21	9	4	7	0	3	8	221
07:15 AM	10	183	8	1	6	0	7	8	2	33	7	3	2	0	6	5	281
07:30 AM	9	209	15	2	5	0	11	7	1	32	11	0	2	0	3	11	318
07:45 AM	14	221	21	5	8	0	3	10	3	40	11	1	5	0	2	13	357
Total	43	738	57	12	23	0	26	32	7	126	38	8	16	0	14	37	1177
08:00 AM	15	248	13	3	6	0	9	7	2	38	10	2	7	0	5	20	385
08:15 AM	10	281	18	9	5	0	3	15	0	38	7	1	6	0	7	21	421
08:30 AM	18	223	27	6	6	0	9	4	0	50	7	3	5	0	3	13	374
08:45 AM	13	256	25	9	10	0	3	11	2	51	15	1	3	0	4	25	428
Total	56	1008	83	27	27	0	24	37	4	177	39	7	21	0	19	79	1608
09:00 AM	14	273	23	8	10	0	3	5	4	43	16	5	5	0	5	25	439
09:15 AM	10	206	17	3	9	0	19	6	1	52	15	4	4	0	8	8	362
09:30 AM	10	203	23	7	10	0	7	9	2	51	16	9	6	0	8	11	372
09:45 AM	8	153	14	8	6	0	10	8	3	45	13	2	7	0	9	9	295
Total	42	835	77	26	35	0	39	28	10	191	60	20	22	0	30	53	1468
10:00 AM	12	165	18	9	4	0	6	9	1	47	12	6	4	0	5	11	309
10:15 AM	9	128	25	4	10	0	9	4	4	46	20	4	7	0	7	10	287
10:30 AM	2	152	20	3	2	0	8	5	2	50	5	6	7	0	8	17	287
10:45 AM	14	119	25	2	8	0	5	3	3	51	12	4	5	0	9	7	267
Total	37	564	88	18	24	0	28	21	10	194	49	20	23	0	29	45	1150
11:00 AM	9	91	21	7	5	0	6	7	2	37	9	3	10	0	6	8	221
11:15 AM	6	84	23	6	3	0	9	6	3	53	10	5	7	0	8	9	232
11:30 AM	5	131	24	3	5	0	7	16	5	34	14	12	10	0	8	8	282
11:45 AM	4	113	11	3	4	0	4	10	2	68	14	3	1	0	13	13	263
Total	24	419	79	19	17	0	26	39	12	192	47	23	28	0	35	38	998
12:00 PM	6	112	18	12	7	1	9	25	5	66	18	12	11	0	16	33	351
12:15 PM	9	75	11	9	4	0	7	12	7	41	19	13	6	0	8	34	255
12:30 PM	12	102	24	12	7	0	13	3	6	56	19	14	12	0	16	24	320
12:45 PM	7	89	39	17	13	0	22	12	7	66	13	12	16	0	8	46	367
Total	34	378	92	50	31	1	51	52	25	229	69	51	45	0	48	137	1293
01:00 PM	13	102	18	14	5	0	11	7	4	55	16	19	12	0	12	41	329
01:15 PM	3	82	15	19	8	0	8	20	4	53	21	16	21	0	19	29	318
01:30 PM	6	98	19	17	8	0	10	17	7	65	19	9	10	0	5	31	321
01:45 PM	12	103	26	16	7	0	9	19	5	39	18	19	7	0	11	18	309
Total	34	385	78	66	28	0	38	63	20	212	74	63	50	0	47	119	1277
02:00 PM	10	82	18	9	5	0	10	6	5	59	18	13	14	0	8	22	279
02:15 PM	9	59	16	6	4	0	12	7	7	65	23	6	13	0	9	31	267
02:30 PM	7	70	20	12	1	0	6	6	6	41	13	13	13	0	3	25	236
02:45 PM	14	74	18	13	6	0	6	9	5	61	18	6	15	0	7	16	268
Total	40	285	72	40	16	0	34	28	23	226	72	38	55	0	27	94	1050
03:00 PM	13	76	9	7	3	0	6	8	2	70	20	11	12	0	4	21	262
03:15 PM	10	98	6	4	3	0	12	3	3	55	31	5	9	0	7	22	268
03:30 PM	9	100	15	12	4	0	8	10	4	55	20	5	10	0	4	8	264
03:45 PM	10	118	19	3	2	0	11	7	3	66	17	4	13	0	12	11	296
Total	42	392	49	26	12	0	37	28	12	246	88	25	44	0	27	62	1090

Groups Printed- Unshifted

Start Time	Woodmont Avenue From North				Cordell Avenue From East				Woodmont Avenue From South				Cordell Avenue From West				Int. Total	
	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds		
Factor	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	
04:00 PM	22	67	23	5	6	0	12	8	4	60	30	12	12	0	11	17		289
04:15 PM	10	101	21	13	2	0	7	7	3	74	21	11	18	0	2	19		309
04:30 PM	10	88	19	17	6	0	6	15	2	62	27	14	12	0	8	24		310
04:45 PM	10	101	20	5	3	0	4	11	7	69	21	11	17	0	5	20		304
Total	52	357	83	40	17	0	29	41	16	265	99	48	59	0	26	80		1212
05:00 PM	15	104	29	9	1	0	8	10	3	83	28	5	18	0	8	14		335
05:15 PM	8	122	23	12	4	0	8	12	5	81	26	11	21	0	3	21		357
05:30 PM	14	151	26	20	7	0	12	17	6	98	31	14	19	0	18	34		467
05:45 PM	13	146	30	8	2	0	3	13	6	106	23	15	14	0	15	20		414
Total	50	523	108	49	14	0	31	52	20	368	108	45	72	0	44	89		1573
06:00 PM	7	131	33	9	5	0	11	12	4	75	37	14	24	0	10	22		394
06:15 PM	19	122	47	12	3	0	7	18	7	93	29	17	12	0	12	26		424
06:30 PM	16	113	46	11	9	0	7	33	9	78	22	39	11	0	26	36		456
06:45 PM	8	100	29	18	8	0	13	14	5	84	27	19	23	0	9	38		395
Total	50	466	155	50	25	0	38	77	25	330	115	89	70	0	57	122		1669
Grand Total	523	6577	1050	430	274	1	413	512	187	2801	877	443	509	0	409	973		15979
Apprch %	6.1	76.7	12.2	5.0	22.8	0.1	34.4	42.7	4.3	65.0	20.4	10.3	26.9	0.0	21.6	51.5		
Total %	3.3	41.2	6.6	2.7	1.7	0.0	2.6	3.2	1.2	17.5	5.5	2.8	3.2	0.0	2.6	6.1		

Location: Woodmont Ave. & Cordell Ave.  
 County: Montgomery  
 Weather: Clear  
 Counters: CM

Groups Printed- Unshifted

Start Time	Woodmont Avenue From North				Edgemoor Lane From East				Woodmont Avenue From South				Edgemoor Lane From West				Int. Total
	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	
Factor	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	
06:00 AM	9	61	2	0	7	0	0	0	0	0	0	0	0	0	3	2	84
06:15 AM	18	74	0	1	6	0	0	1	0	0	0	1	0	0	5	4	110
06:30 AM	15	108	2	2	5	0	0	2	0	0	0	0	0	0	11	2	147
06:45 AM	21	170	7	3	9	0	0	3	0	0	0	1	0	0	12	2	228
Total	63	413	11	6	27	0	0	6	0	0	0	2	0	0	31	10	569
07:00 AM	23	193	6	1	11	0	0	3	0	0	0	3	0	0	21	3	264
07:15 AM	21	280	6	3	5	0	0	7	0	0	0	4	0	0	16	3	345
07:30 AM	35	285	6	5	11	0	0	3	0	0	0	7	0	0	19	15	386
07:45 AM	25	394	9	0	12	0	0	4	0	0	0	6	0	0	36	13	499
Total	104	1152	27	9	39	0	0	17	0	0	0	20	0	0	92	34	1494
08:00 AM	31	429	5	2	10	0	0	8	0	0	0	3	0	0	31	3	522
08:15 AM	21	403	2	4	12	0	0	10	0	0	0	2	0	0	44	15	513
08:30 AM	18	424	5	6	14	0	0	9	0	0	0	2	0	0	43	10	531
08:45 AM	25	440	6	10	13	0	0	9	0	0	0	6	0	0	50	13	572
Total	95	1696	18	22	49	0	0	36	0	0	0	13	0	0	168	41	2138
09:00 AM	21	430	3	3	11	0	0	2	0	0	0	0	0	0	52	8	530
09:15 AM	13	378	5	4	11	0	0	7	0	0	0	4	0	0	35	9	466
09:30 AM	20	319	3	1	14	0	0	10	0	0	0	1	0	0	33	8	409
09:45 AM	15	251	11	3	21	0	0	6	0	0	0	0	0	0	25	8	340
Total	69	1378	22	11	57	0	0	25	0	0	0	5	0	0	145	33	1745
10:00 AM	14	243	5	8	16	0	0	5	0	0	0	1	0	0	26	3	321
10:15 AM	12	208	8	1	15	0	0	2	0	0	0	0	0	0	15	9	270
10:30 AM	17	198	14	3	17	0	0	10	0	0	0	0	0	0	25	3	287
10:45 AM	19	165	10	3	27	0	0	10	0	0	0	1	0	0	15	3	253
Total	62	814	37	15	75	0	0	27	0	0	0	2	0	0	81	18	1131
11:00 AM	15	204	13	1	20	0	0	8	0	0	0	1	0	0	23	8	293
11:15 AM	13	198	12	1	18	0	0	11	0	0	0	0	0	0	21	8	282
11:30 AM	20	209	9	1	14	0	0	11	0	0	1	1	0	0	20	9	295
11:45 AM	15	212	12	2	11	0	0	12	0	0	0	0	0	0	23	12	299
Total	63	823	46	5	63	0	0	42	0	0	1	2	0	0	87	37	1169
12:00 PM	11	234	12	3	26	0	0	21	0	0	0	1	0	0	17	15	340
12:15 PM	17	179	13	8	10	0	0	20	0	0	0	0	0	0	13	21	281
12:30 PM	16	220	11	5	19	0	0	25	0	0	0	0	0	0	13	13	322
12:45 PM	9	212	11	6	8	0	0	20	0	0	0	3	0	0	5	25	299
Total	53	845	47	22	63	0	0	86	0	0	0	4	0	0	48	74	1242
01:00 PM	13	207	12	1	13	0	0	33	0	0	0	1	0	0	15	22	317
01:15 PM	21	214	10	7	13	0	0	25	0	0	0	0	0	0	14	18	322
01:30 PM	11	210	16	14	15	0	0	26	0	0	0	2	0	0	18	11	323
01:45 PM	17	212	10	3	21	0	0	14	0	0	0	0	0	0	19	17	313
Total	62	843	48	25	62	0	0	98	0	0	0	3	0	0	66	68	1275
02:00 PM	13	182	10	3	14	0	0	14	0	0	0	0	0	0	12	9	257
02:15 PM	14	202	17	6	10	0	0	15	0	0	0	1	0	0	12	11	288
02:30 PM	14	163	17	1	18	0	0	13	0	0	0	0	0	0	23	8	257
02:45 PM	9	212	14	11	20	0	0	11	0	0	0	0	0	0	14	14	305
Total	50	759	58	21	62	0	0	53	0	0	0	1	0	0	61	42	1107
03:00 PM	20	205	16	6	15	0	0	15	0	0	0	1	0	0	18	7	303
03:15 PM	10	205	6	1	21	0	0	11	0	0	0	0	0	0	13	12	279
03:30 PM	17	232	11	3	24	0	0	13	0	0	0	0	0	0	17	15	332
03:45 PM	14	224	4	5	12	0	0	8	0	0	0	0	0	0	19	9	295
Total	61	866	37	15	72	0	0	47	0	0	0	1	0	0	67	43	1209

Groups Printed- Unshifted

Start Time	Woodmont Avenue From North				Edgemoor Lane From East				Woodmont Avenue From South				Edgemoor Lane From West				Int. Total
	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	
Factor	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
04:00 PM	22	217	7	8	21	0	0	5	0	0	0	0	0	0	21	2	303
04:15 PM	15	216	11	6	27	0	0	11	0	0	0	0	0	0	21	7	314
04:30 PM	15	245	12	5	23	0	0	10	0	0	0	1	0	0	23	17	351
04:45 PM	12	235	17	10	14	0	0	8	0	0	0	0	0	0	19	13	328
Total	64	913	47	29	85	0	0	34	0	0	0	1	0	0	84	39	1296
05:00 PM	14	268	18	3	34	0	0	11	0	0	0	0	0	0	22	13	383
05:15 PM	11	277	25	4	25	0	0	11	0	0	0	0	0	0	25	5	383
05:30 PM	13	293	23	6	29	0	0	16	0	0	0	0	0	0	16	17	413
05:45 PM	18	299	23	5	28	0	0	14	0	0	0	1	0	0	23	12	423
Total	56	1137	89	18	116	0	0	52	0	0	0	1	0	0	86	47	1602
06:00 PM	14	266	22	8	32	0	0	19	0	0	0	0	0	0	22	8	391
06:15 PM	21	266	17	6	27	0	0	6	0	0	0	0	0	0	25	21	389
06:30 PM	16	235	18	2	23	0	0	11	0	0	0	0	0	0	33	11	349
06:45 PM	13	249	14	3	20	0	0	8	0	0	0	0	0	0	23	9	339
Total	64	1016	71	19	102	0	0	44	0	0	0	0	0	0	103	49	1468
Grand Total	866	1265 5	558	217	872	0	0	567	0	0	1	55	0	0	1119	535	17445
Apprch %	6.1	88.5	3.9	1.5	60.6	0.0	0.0	39.4	0.0	0.0	1.8	98.2	0.0	0.0	67.7	32.3	
Total %	5.0	72.5	3.2	1.2	5.0	0.0	0.0	3.3	0.0	0.0	0.0	0.3	0.0	0.0	6.4	3.1	

Location: Woodmont Ave. & Edgemoor Ln  
 County: Montgomery  
 Weather: Clear  
 Counters: LM

Groups Printed- Unshifted

Start Time	Woodmont Avenue From North				Montgomery Lane From East				Woodmont Avenue From South				Montgomery Lane From West				Int. Total	
	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds		
Factor	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	
06:00 AM	29	20	0	2	0	0	0	1	0	0	0	0	0	0	0	0	2	54
06:15 AM	42	23	1	3	0	0	0	5	0	0	0	1	0	0	0	0	6	81
06:30 AM	63	40	1	2	0	0	0	8	0	0	0	2	0	0	0	0	8	124
06:45 AM	85	58	4	3	0	0	0	7	0	0	0	10	0	0	0	0	11	178
Total	219	141	6	10	0	0	0	21	0	0	0	13	0	0	0	0	27	437
07:00 AM	85	61	2	2	0	0	0	14	0	0	0	4	0	0	0	0	4	172
07:15 AM	111	101	8	4	0	0	0	15	0	0	0	10	0	0	0	0	12	261
07:30 AM	147	104	4	5	0	0	0	15	0	0	0	13	0	0	0	0	15	303
07:45 AM	173	141	4	2	0	0	0	29	0	0	0	10	0	0	0	0	19	378
Total	516	407	18	13	0	0	0	73	0	0	0	37	0	0	0	0	50	1114
08:00 AM	205	128	3	2	0	0	0	32	0	0	0	18	0	0	0	0	15	403
08:15 AM	170	138	2	5	0	0	0	37	0	0	0	16	0	0	0	0	17	385
08:30 AM	182	135	1	1	0	0	0	36	0	0	0	21	0	0	0	0	14	390
08:45 AM	188	173	0	3	0	0	0	25	0	0	0	18	0	0	0	0	14	421
Total	745	574	6	11	0	0	0	130	0	0	0	73	0	0	0	0	60	1599
09:00 AM	192	130	0	0	0	0	0	21	0	0	0	14	0	0	0	0	8	365
09:15 AM	144	126	2	0	0	0	0	20	0	0	0	3	0	0	0	0	1	296
09:30 AM	140	137	1	1	0	0	0	29	0	0	0	14	0	0	0	0	6	328
09:45 AM	131	88	3	5	0	0	0	10	0	0	0	7	0	0	0	0	6	250
Total	607	481	6	6	0	0	0	80	0	0	0	38	0	0	0	0	21	1239
10:00 AM	121	97	2	0	0	0	0	7	0	0	0	20	0	0	0	0	16	263
10:15 AM	98	92	3	5	0	0	0	11	0	0	0	19	0	0	0	0	12	240
10:30 AM	93	90	10	1	0	0	0	10	0	0	0	9	0	0	0	0	12	225
10:45 AM	81	84	7	5	0	0	0	6	0	0	0	15	0	0	0	0	4	202
Total	393	363	22	11	0	0	0	34	0	0	0	63	0	0	0	0	44	930
11:00 AM	118	84	5	2	0	0	0	4	0	0	0	6	0	0	0	0	10	229
11:15 AM	106	98	8	0	0	0	0	3	0	0	0	12	0	0	0	0	3	230
11:30 AM	108	105	7	1	0	0	0	5	0	0	0	16	0	0	0	0	13	255
11:45 AM	110	117	10	2	0	0	0	14	0	0	0	57	0	0	0	0	13	323
Total	442	404	30	5	0	0	0	26	0	0	0	91	0	0	0	0	39	1037
12:00 PM	112	122	8	3	0	0	0	15	0	0	0	78	0	0	0	0	36	374
12:15 PM	87	77	13	3	0	0	0	14	0	0	0	36	0	0	0	0	35	265
12:30 PM	126	106	4	0	0	0	0	38	0	0	0	32	0	0	0	0	19	325
12:45 PM	101	99	4	13	0	0	0	58	0	0	0	35	0	0	0	0	26	336
Total	426	404	29	19	0	0	0	125	0	0	0	181	0	0	0	0	116	1300
01:00 PM	100	105	4	7	0	0	0	57	0	0	0	43	0	0	0	0	18	334
01:15 PM	122	102	4	8	0	0	0	44	0	0	0	37	0	0	0	0	18	335
01:30 PM	107	92	7	8	0	0	0	28	0	0	0	29	0	0	0	0	10	281
01:45 PM	146	92	6	11	0	0	0	41	0	0	0	30	0	0	0	0	18	344
Total	475	391	21	34	0	0	0	170	0	0	0	139	0	0	0	0	64	1294
02:00 PM	107	82	4	8	0	0	0	24	0	0	0	31	0	0	0	0	13	269
02:15 PM	92	97	7	4	0	0	0	19	0	0	0	24	0	0	0	0	13	256
02:30 PM	113	87	10	0	0	0	0	20	0	0	0	23	0	0	0	0	11	264
02:45 PM	101	90	18	4	0	0	0	21	0	0	0	16	0	0	0	0	8	258
Total	413	356	39	16	0	0	0	84	0	0	0	94	0	0	0	0	45	1047
03:00 PM	153	112	0	0	0	0	0	20	0	0	0	16	0	0	0	0	7	308
03:15 PM	136	81	2	0	0	0	0	38	0	0	0	7	0	0	0	0	17	281
03:30 PM	165	92	8	1	0	0	0	32	0	0	0	7	0	0	0	0	11	316
03:45 PM	140	98	6	4	0	0	0	43	0	0	0	13	0	0	0	0	12	316
Total	594	383	16	5	0	0	0	133	0	0	0	43	0	0	0	0	47	1221



File Name : Woodmont Ave@Montgomery Ln  
 Site Code : 01031505  
 Start Date : 3/28/2006  
 Page No : 2

Groups Printed- Unshifted

Start Time	Woodmont Avenue From North				Montgomery Lane From East				Woodmont Avenue From South				Montgomery Lane From West				Int. Total	
	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds		
Factor	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	
04:00 PM	158	87	7	6	0	0	0	18	0	0	0	30	0	0	0	13		319
04:15 PM	165	96	10	9	0	0	0	22	0	0	0	19	0	0	0	19		340
04:30 PM	169	113	10	4	0	0	0	19	0	0	0	26	0	0	0	21		362
04:45 PM	166	80	14	11	0	0	0	17	0	0	0	47	0	0	0	24		359
Total	658	376	41	30	0	0	0	76	0	0	0	122	0	0	0	77		1380
05:00 PM	182	122	26	5	0	0	0	26	0	0	0	27	0	0	0	18		406
05:15 PM	174	119	20	3	0	0	0	20	0	0	0	22	0	0	0	16		374
05:30 PM	203	133	20	6	0	0	0	26	0	0	0	37	0	0	0	20		445
05:45 PM	173	146	31	3	0	0	0	60	0	0	0	15	0	0	0	16		444
Total	732	520	97	17	0	0	0	132	0	0	0	101	0	0	0	70		1669
06:00 PM	169	122	10	5	0	0	0	63	0	0	0	19	0	0	0	10		398
06:15 PM	178	134	18	4	0	0	0	26	0	0	0	40	0	0	0	19		419
06:30 PM	159	111	18	14	0	0	0	18	0	0	0	50	0	0	0	22		392
06:45 PM	132	122	27	11	0	0	0	19	0	0	0	32	0	0	0	13		356
Total	638	489	73	34	0	0	0	126	0	0	0	141	0	0	0	64		1565
Grand Total	6858	5289	404	211	0	0	0	1210	0	0	0	1136	0	0	0	724		15832
Apprch %	53.7	41.4	3.2	1.7	0.0	0.0	0.0	100.0	0.0	0.0	0.0	100.0	0.0	0.0	0.0	100.0		
Total %	43.3	33.4	2.6	1.3	0.0	0.0	0.0	7.6	0.0	0.0	0.0	7.2	0.0	0.0	0.0	4.6		

Location: Woodmont Ave. & Montgomery Ln  
 County: Montgomery  
 Weather: Clear  
 Counters: JW, JA

Groups Printed- Unshifted

Start Time	Woodmont Avenue From North				Norfolk Avenue From East				Woodmont Avenue From South				Norfolk Avenue From West				Int. Total
	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	
Factor	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	
06:00 AM	1	20	4	0	7	1	2	3	0	6	3	7	2	5	2	2	65
06:15 AM	2	21	4	1	3	3	3	7	2	5	6	4	3	3	1	3	71
06:30 AM	5	26	6	1	4	2	2	3	3	5	6	8	3	6	1	8	89
06:45 AM	9	32	5	0	15	2	6	12	1	12	14	22	2	9	4	9	154
Total	17	99	19	2	29	8	13	25	6	28	29	41	10	23	8	22	379
07:00 AM	17	56	8	1	17	7	7	5	7	12	13	18	3	9	9	11	200
07:15 AM	16	66	9	5	10	9	7	10	3	12	9	18	6	19	9	11	219
07:30 AM	10	84	10	2	6	13	3	16	3	19	14	17	2	5	11	9	224
07:45 AM	17	96	12	3	19	22	5	14	5	24	17	23	6	21	12	21	317
Total	60	302	39	11	52	51	22	45	18	67	53	76	17	54	41	52	960
08:00 AM	18	123	11	9	22	32	11	25	2	21	10	26	4	31	19	31	395
08:15 AM	13	137	9	13	16	19	9	19	3	11	15	46	5	18	20	59	412
08:30 AM	23	136	8	10	27	21	4	18	6	17	16	46	7	23	31	33	426
08:45 AM	13	132	10	13	14	21	7	22	4	36	21	39	7	20	28	28	415
Total	67	528	38	45	79	93	31	84	15	85	62	157	23	92	98	151	1648
09:00 AM	15	98	18	11	27	8	4	21	3	29	17	44	6	28	27	23	379
09:15 AM	21	113	10	8	14	14	15	14	7	24	22	29	3	23	18	23	358
09:30 AM	3	101	7	7	10	22	8	10	7	18	18	34	8	25	16	15	309
09:45 AM	6	90	6	7	8	7	5	14	5	28	12	29	6	7	15	28	273
Total	45	402	41	33	59	51	32	59	22	99	69	136	23	83	76	89	1319
10:00 AM	8	92	12	11	11	8	7	17	4	20	18	38	7	17	13	21	304
10:15 AM	12	77	5	19	5	9	9	13	3	26	16	36	4	11	25	21	291
10:30 AM	11	76	6	13	13	12	5	14	4	23	20	18	2	9	11	28	265
10:45 AM	7	66	6	15	12	7	3	20	3	30	16	22	5	22	15	26	275
Total	38	311	29	58	41	36	24	64	14	99	70	114	18	59	64	96	1135
11:00 AM	7	55	10	14	8	25	5	12	8	22	18	15	7	16	10	19	251
11:15 AM	9	71	5	3	4	15	5	9	5	29	27	17	5	19	16	8	247
11:30 AM	7	76	14	15	12	12	8	19	6	26	21	27	4	14	23	19	303
11:45 AM	16	78	6	12	12	10	14	19	8	35	14	44	4	16	18	17	323
Total	39	280	35	44	36	62	32	59	27	112	80	103	20	65	67	63	1124
12:00 PM	10	68	16	17	20	13	16	37	6	26	23	43	8	15	24	31	373
12:15 PM	14	64	13	25	12	8	5	36	5	19	15	80	8	12	16	28	360
12:30 PM	9	66	10	23	7	22	8	37	8	29	20	57	6	18	12	23	355
12:45 PM	6	66	12	19	9	16	9	34	11	39	12	91	5	25	23	22	399
Total	39	264	51	84	48	59	38	144	30	113	70	271	27	70	75	104	1487
01:00 PM	8	73	12	18	8	10	7	37	10	30	18	52	10	19	15	37	364
01:15 PM	5	55	15	21	7	7	4	30	7	36	13	68	9	17	19	24	337
01:30 PM	8	68	5	15	8	12	6	26	4	48	21	68	10	16	28	42	385
01:45 PM	9	62	9	28	10	15	6	24	4	28	18	74	7	14	18	26	352
Total	30	258	41	82	33	44	23	117	25	142	70	262	36	66	80	129	1438
02:00 PM	11	58	13	12	7	13	6	24	12	38	19	36	1	15	25	20	310
02:15 PM	11	56	4	9	12	13	7	35	5	35	13	41	2	19	18	5	285
02:30 PM	7	56	3	14	4	12	4	11	10	23	19	20	4	13	14	19	233
02:45 PM	9	57	6	8	9	16	6	16	9	41	23	34	2	23	21	18	298
Total	38	227	26	43	32	54	23	86	36	137	74	131	9	70	78	62	1126
03:00 PM	4	53	3	20	14	22	2	15	5	42	20	21	4	15	17	32	289
03:15 PM	9	45	7	28	10	9	9	20	3	22	15	26	7	13	11	38	272
03:30 PM	7	53	2	8	8	10	5	12	6	36	25	26	5	21	12	22	258
03:45 PM	7	43	7	7	7	16	12	21	4	34	13	30	5	19	8	15	248
Total	27	194	19	63	39	57	28	68	18	134	73	103	21	68	48	107	1067

Groups Printed- Unshifted

Start Time	Woodmont Avenue From North				Norfolk Avenue From East				Woodmont Avenue From South				Norfolk Avenue From West				Int. Total	
	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds		
Factor	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	
04:00 PM	14	66	8	5	2	11	7	10	8	33	19	22	8	16	22	13		264
04:15 PM	10	56	2	16	12	15	7	17	2	37	17	24	3	23	15	27		283
04:30 PM	6	50	4	13	10	13	9	13	8	44	18	28	2	14	13	20		265
04:45 PM	16	68	3	12	8	24	6	14	6	46	20	29	5	15	10	19		301
Total	46	240	17	46	32	63	29	54	24	160	74	103	18	68	60	79		1113
05:00 PM	9	68	5	23	11	15	7	34	10	53	29	43	6	25	16	32		386
05:15 PM	17	67	2	18	19	33	9	20	10	52	21	46	5	19	22	47		407
05:30 PM	15	82	7	17	10	25	12	44	12	58	21	57	10	20	22	26		438
05:45 PM	12	72	14	18	14	39	18	35	14	55	32	43	7	27	23	22		445
Total	53	289	28	76	54	112	46	133	46	218	103	189	28	91	83	127		1676
06:00 PM	19	82	10	22	16	16	9	21	12	52	32	35	12	21	36	24		419
06:15 PM	16	78	6	21	13	13	6	37	11	69	17	43	8	28	28	16		410
06:30 PM	6	79	12	16	16	13	10	28	6	45	18	29	7	15	19	17		336
06:45 PM	12	82	5	18	8	24	6	22	7	47	20	39	10	13	21	17		351
Total	53	321	33	77	53	66	31	108	36	213	87	146	37	77	104	74		1516
Grand Total	552	3715	416	664	587	756	372	1046	317	1607	914	1832	287	886	882	1155		15988
Apprch %	10.3	69.5	7.8	12.4	21.3	27.4	13.5	37.9	6.8	34.4	19.6	39.2	8.9	27.6	27.5	36.0		
Total %	3.5	23.2	2.6	4.2	3.7	4.7	2.3	6.5	2.0	10.1	5.7	11.5	1.8	5.5	5.5	7.2		

Location: Woodmont Ave. & Norfolk Ave.  
 County: Montgomery  
 Weather: Clear  
 Counters: SK, AS

Groups Printed- Unshifted

Start Time	Woodmont Avenue From North				Metro/Parking From East				Woodmont Avenue From South				- From West				Int. Total	
	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds		
Factor	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	
06:00 AM	18	53	0	3	0	0	0	1	0	0	0	0	0	0	0	0	0	75
06:15 AM	8	77	0	2	0	0	0	3	0	0	0	1	0	0	0	0	0	91
06:30 AM	18	106	0	5	1	0	0	5	0	0	0	0	0	0	0	0	0	135
06:45 AM	33	158	0	8	2	0	0	15	0	0	0	1	0	0	0	0	0	217
Total	77	394	0	18	3	0	0	24	0	0	0	2	0	0	0	0	0	518
07:00 AM	57	168	0	13	0	0	0	22	0	0	0	3	0	0	0	0	0	263
07:15 AM	56	245	0	17	3	0	0	30	0	0	0	0	0	0	0	0	0	351
07:30 AM	62	253	0	20	1	0	0	21	0	0	0	3	0	0	0	0	0	360
07:45 AM	91	351	0	12	0	0	0	35	0	0	0	1	0	0	0	0	0	490
Total	266	1017	0	62	4	0	0	108	0	0	0	7	0	0	0	0	0	1464
08:00 AM	122	348	0	31	3	0	0	29	0	0	0	2	0	0	0	0	0	535
08:15 AM	114	345	0	20	3	0	0	72	0	0	0	5	0	0	0	0	0	559
08:30 AM	147	334	0	29	5	0	0	77	0	0	0	2	0	0	0	0	0	594
08:45 AM	115	388	0	23	3	0	0	53	0	0	0	8	0	0	0	0	0	590
Total	498	1415	0	103	14	0	0	231	0	0	0	17	0	0	0	0	0	2278
09:00 AM	145	348	0	20	3	0	0	43	0	0	0	3	0	0	0	0	0	562
09:15 AM	91	333	0	12	3	0	0	32	0	0	0	0	0	0	0	0	0	471
09:30 AM	70	296	0	10	2	0	0	36	0	0	0	3	0	0	0	0	0	417
09:45 AM	52	245	0	14	7	0	0	18	0	0	0	2	0	0	0	0	0	338
Total	358	1222	0	56	15	0	0	129	0	0	0	8	0	0	0	0	0	1788
10:00 AM	39	246	0	9	3	0	0	26	0	0	0	1	0	0	0	0	0	324
10:15 AM	33	205	0	16	0	0	0	28	0	0	0	1	0	0	0	0	0	283
10:30 AM	36	204	0	10	5	0	0	20	0	0	0	4	0	0	0	0	0	279
10:45 AM	27	180	0	2	2	0	0	24	0	0	0	4	0	0	0	0	0	239
Total	135	835	0	37	10	0	0	98	0	0	0	10	0	0	0	0	0	1125
11:00 AM	25	222	0	7	3	0	0	13	0	0	0	2	0	0	0	0	0	272
11:15 AM	22	215	0	11	2	0	0	28	0	0	0	1	0	0	0	0	0	279
11:30 AM	21	222	0	7	9	0	0	31	0	0	0	2	0	0	0	0	0	292
11:45 AM	26	220	0	3	9	0	0	56	0	0	0	1	0	0	0	0	0	315
Total	94	879	0	28	23	0	0	128	0	0	0	6	0	0	0	0	0	1158
12:00 PM	36	241	0	13	4	0	0	61	0	0	0	0	0	0	0	0	0	355
12:15 PM	22	180	0	8	11	0	0	71	0	0	0	1	0	0	0	0	0	293
12:30 PM	26	226	0	4	8	0	0	56	0	0	0	0	0	0	0	0	0	320
12:45 PM	15	210	0	12	3	0	0	86	0	0	0	4	0	0	0	0	0	330
Total	99	857	0	37	26	0	0	274	0	0	0	5	0	0	0	0	0	1298
01:00 PM	24	211	0	7	10	0	0	117	0	0	0	2	0	0	0	0	0	371
01:15 PM	32	209	0	14	6	0	0	83	0	0	0	1	0	0	0	0	0	345
01:30 PM	16	227	0	13	14	0	0	85	0	0	0	4	0	0	0	0	0	359
01:45 PM	22	230	0	13	6	0	0	69	0	0	0	3	0	0	0	0	0	343
Total	94	877	0	47	36	0	0	354	0	0	0	10	0	0	0	0	0	1418
02:00 PM	16	192	0	6	4	0	0	51	0	0	0	0	0	0	0	0	0	269
02:15 PM	22	202	0	9	8	0	0	34	0	0	0	3	0	0	0	0	0	278
02:30 PM	21	183	0	6	12	0	0	35	0	0	0	0	0	0	0	0	0	257
02:45 PM	20	226	0	3	13	0	0	45	0	0	0	0	0	0	0	0	0	307
Total	79	803	0	24	37	0	0	165	0	0	0	3	0	0	0	0	0	1111
03:00 PM	18	220	0	8	7	0	0	44	0	0	0	0	0	0	0	0	0	297
03:15 PM	17	222	0	3	12	0	0	33	0	0	0	1	0	0	0	0	0	288
03:30 PM	20	253	0	11	8	0	0	42	0	0	0	1	0	0	0	0	0	335
03:45 PM	15	240	0	18	18	0	0	44	0	0	0	0	0	0	0	0	0	335
Total	70	935	0	40	45	0	0	163	0	0	0	2	0	0	0	0	0	1255

Groups Printed- Unshifted

Start Time	Woodmont Avenue From North				Metro/Parking From East				Woodmont Avenue From South				- From West				Int. Total
	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	
Factor	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	
04:00 PM	28	231	0	9	20	0	0	57	0	0	0	1	0	0	0	0	346
04:15 PM	27	237	0	12	21	0	0	50	0	0	0	2	0	0	0	0	349
04:30 PM	32	259	0	15	37	0	0	44	0	0	0	0	0	0	0	0	387
04:45 PM	22	246	0	11	36	0	0	52	0	0	0	1	0	0	0	0	368
Total	109	973	0	47	114	0	0	203	0	0	0	4	0	0	0	0	1450
05:00 PM	20	304	0	11	53	0	0	81	0	0	0	0	0	0	0	0	469
05:15 PM	37	290	0	20	42	0	0	61	0	0	0	0	0	0	0	0	450
05:30 PM	38	300	0	17	41	0	0	90	0	0	0	0	0	0	0	0	486
05:45 PM	44	306	0	16	51	0	0	101	0	0	0	0	0	0	0	0	518
Total	139	1200	0	64	187	0	0	333	0	0	0	0	0	0	0	0	1923
06:00 PM	31	289	0	14	33	0	0	117	0	0	0	5	0	0	0	0	489
06:15 PM	41	277	0	17	35	0	0	92	0	0	0	0	0	0	0	0	462
06:30 PM	49	242	0	12	34	0	0	68	0	0	0	2	0	0	0	0	407
06:45 PM	36	256	0	10	28	0	0	65	0	0	0	1	0	0	0	0	396
Total	157	1064	0	53	130	0	0	342	0	0	0	8	0	0	0	0	1754
Grand Total	2175	12471	0	616	644	0	0	2552	0	0	0	82	0	0	0	0	18540
Apprch %	14.3	81.7	0.0	4.0	20.2	0.0	0.0	79.8	0.0	0.0	0.0	100.0	0.0	0.0	0.0	0.0	
Total %	11.7	67.3	0.0	3.3	3.5	0.0	0.0	13.8	0.0	0.0	0.0	0.4	0.0	0.0	0.0	0.0	

Location: Woodmont Ave. & North Ave.  
 County: Montgomery  
 Weather: Clear

## Groups Printed- Unshifted

Start Time	Woodmont Avenue From North				Old Georgetown Road From East				Woodmont Avenue From South				Old Georgetown Road From West				Int. Total
	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	
Factor	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	
06:00 AM	0	14	1	3	7	32	9	1	0	0	0	0	9	0	51	3	130
06:15 AM	0	18	4	6	9	52	11	2	0	0	0	5	5	0	65	5	182
06:30 AM	0	27	9	11	8	68	10	6	0	0	0	6	11	0	90	2	248
06:45 AM	0	53	8	14	15	105	17	4	0	0	0	7	15	0	130	1	369
Total	0	112	22	34	39	257	47	13	0	0	0	18	40	0	336	11	929
07:00 AM	0	50	3	15	14	88	22	10	0	0	0	7	19	0	158	4	390
07:15 AM	0	66	5	19	20	102	17	19	0	0	0	7	19	0	221	6	501
07:30 AM	0	80	11	27	23	143	16	12	0	0	0	16	24	0	223	9	584
07:45 AM	0	104	12	28	22	155	32	14	0	0	0	22	23	0	302	9	723
Total	0	300	31	89	79	488	87	55	0	0	0	52	85	0	904	28	2198
08:00 AM	0	108	8	27	25	167	36	15	0	0	0	18	41	0	332	14	791
08:15 AM	0	117	8	51	24	149	36	18	0	0	0	21	24	0	285	16	749
08:30 AM	0	131	9	35	16	158	43	14	0	0	0	22	31	0	300	13	772
08:45 AM	0	115	15	37	40	129	36	20	0	0	0	34	44	0	316	9	795
Total	0	471	40	150	105	603	151	67	0	0	0	95	140	0	1233	52	3107
09:00 AM	0	146	18	34	20	158	44	16	0	0	0	17	48	0	288	15	804
09:15 AM	0	119	10	24	33	140	30	11	0	0	0	21	38	0	244	13	683
09:30 AM	0	124	12	31	19	135	39	9	0	0	0	12	27	0	199	11	618
09:45 AM	0	84	15	24	35	105	32	7	0	0	0	12	29	0	158	12	513
Total	0	473	55	113	107	538	145	43	0	0	0	62	142	0	889	51	2618
10:00 AM	0	77	16	15	23	141	28	14	0	0	0	122	31	0	162	8	637
10:15 AM	0	63	8	17	33	118	19	6	0	0	0	14	21	0	132	5	436
10:30 AM	0	68	12	23	17	103	30	9	0	0	0	12	23	0	144	9	450
10:45 AM	0	69	9	29	23	108	26	23	0	0	0	21	21	0	102	12	443
Total	0	277	45	84	96	470	103	52	0	0	0	169	96	0	540	34	1966
11:00 AM	0	65	10	18	20	115	33	6	0	0	0	20	26	0	147	13	473
11:15 AM	0	87	15	23	16	117	30	11	0	0	0	15	22	0	120	5	461
11:30 AM	0	72	16	33	38	119	25	11	0	0	0	15	17	0	128	18	492
11:45 AM	0	80	9	38	24	118	29	21	0	0	0	23	31	0	135	15	523
Total	0	304	50	112	98	469	117	49	0	0	0	73	96	0	530	51	1949
12:00 PM	0	82	18	66	32	107	35	29	0	0	0	34	37	0	143	22	605
12:15 PM	0	73	10	90	26	145	28	35	0	0	0	30	29	0	110	46	622
12:30 PM	0	84	18	68	30	162	28	44	0	0	0	34	28	0	133	33	662
12:45 PM	0	68	20	58	32	143	19	121	0	0	0	175	31	0	132	27	826
Total	0	307	66	282	120	557	110	229	0	0	0	273	125	0	518	128	2715
01:00 PM	0	78	18	67	29	131	30	45	0	0	0	41	27	0	125	20	611
01:15 PM	0	76	17	79	40	124	22	41	0	0	0	27	30	0	129	9	594
01:30 PM	0	77	16	54	28	132	32	21	0	0	0	22	25	0	132	9	548
01:45 PM	0	94	23	50	20	142	38	44	0	0	0	16	23	0	125	8	583
Total	0	325	74	250	117	529	122	151	0	0	0	106	105	0	511	46	2336
02:00 PM	0	74	19	39	17	133	33	25	0	0	0	27	22	0	114	13	516
02:15 PM	0	68	13	31	33	135	30	11	0	0	0	5	25	0	132	27	510
02:30 PM	0	58	20	34	19	152	28	11	0	0	0	10	26	0	117	18	493
02:45 PM	0	71	13	21	21	146	15	19	0	0	0	21	33	0	143	15	518
Total	0	271	65	125	90	566	106	66	0	0	0	63	106	0	506	73	2037
03:00 PM	0	69	19	30	21	164	30	23	0	0	0	26	31	0	151	22	586
03:15 PM	0	67	14	31	20	130	23	18	0	0	0	42	13	0	134	18	510
03:30 PM	0	76	15	40	21	155	34	20	0	0	0	23	29	0	163	14	590
03:45 PM	0	65	18	25	24	187	25	21	0	0	0	17	20	0	153	15	570
Total	0	277	66	126	86	636	112	82	0	0	0	108	93	0	601	69	2256

File Name : Woodmont Ave@Old Georgetown Rd  
 Site Code : 01031505  
 Start Date : 3/28/2006  
 Page No : 2

Groups Printed- Unshifted

Start Time	Woodmont Avenue From North				Old Georgetown Road From East				Woodmont Avenue From South				Old Georgetown Road From West				Int. Total
	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	
Factor	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	
04:00 PM	0	72	27	21	25	179	19	15	0	0	0	19	28	0	149	15	569
04:15 PM	0	75	21	32	17	186	20	19	0	0	0	20	27	0	150	9	576
04:30 PM	0	68	22	45	26	209	21	16	0	0	0	24	29	0	178	10	648
04:45 PM	0	78	18	57	26	228	22	21	0	0	0	28	22	0	160	14	674
Total	0	293	88	155	94	802	82	71	0	0	0	91	106	0	637	48	2467
05:00 PM	0	97	38	42	30	250	41	31	0	0	0	28	39	0	173	13	782
05:15 PM	0	113	43	34	27	226	29	23	0	0	0	26	46	0	173	10	750
05:30 PM	0	102	21	60	36	215	48	40	0	0	0	30	17	0	191	24	784
05:45 PM	0	107	19	56	35	252	46	37	0	0	0	36	44	0	198	11	841
Total	0	419	121	192	128	943	164	131	0	0	0	120	146	0	735	58	3157
06:00 PM	0	103	36	51	25	248	39	32	0	0	0	28	30	0	174	23	789
06:15 PM	0	118	33	39	26	236	39	27	0	0	0	30	50	0	160	14	772
06:30 PM	0	84	24	46	32	213	37	41	0	0	0	26	40	0	153	22	718
06:45 PM	0	89	15	40	29	192	34	19	0	0	0	23	36	0	158	21	656
Total	0	394	108	176	112	889	149	119	0	0	0	107	156	0	645	80	2935
Grand Total	0	4223	831	1888	1271	7747	1495	1128	0	0	0	1337	1436	0	8585	729	30670
Apprch %	0.0	60.8	12.0	27.2	10.9	66.5	12.8	9.7	0.0	0.0	0.0	100.0	13.4	0.0	79.9	6.8	
Total %	0.0	13.8	2.7	6.2	4.1	25.3	4.9	3.7	0.0	0.0	0.0	4.4	4.7	0.0	28.0	2.4	

Location: Woodmont Ave. & Old Georgetown  
 County: Montgomery  
 Weather: Clear  
 Counters: MS, LH

Groups Printed- Unshifted

Start Time	Woodmont Avenue From North				- From East				Woodmont Avenue From South				St. Elmo From West				Int. Total
	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	
06:00 AM	0	25	10	0	0	0	0	0	1	9	0	0	2	0	1	3	51
06:15 AM	0	39	16	0	0	0	0	0	2	9	0	0	2	0	1	3	72
06:30 AM	0	40	16	2	0	0	0	0	2	8	0	1	6	0	3	3	81
06:45 AM	0	76	16	0	0	0	0	0	2	18	0	4	13	0	1	5	135
Total	0	180	58	2	0	0	0	0	7	44	0	5	23	0	6	14	339
07:00 AM	0	107	25	1	0	0	0	0	1	21	0	4	10	0	3	5	177
07:15 AM	0	136	59	4	0	0	0	0	2	23	0	0	19	0	1	4	248
07:30 AM	0	164	53	0	0	0	0	0	1	23	0	1	21	0	5	17	285
07:45 AM	0	167	64	0	0	0	0	0	2	33	0	1	21	0	10	7	305
Total	0	574	201	5	0	0	0	0	6	100	0	6	71	0	19	33	1015
08:00 AM	0	195	64	0	0	0	0	0	2	34	0	0	16	0	6	36	353
08:15 AM	0	221	72	3	0	0	0	0	7	18	0	2	27	0	10	49	409
08:30 AM	0	173	59	6	0	0	0	0	2	26	0	1	31	0	7	15	320
08:45 AM	0	216	54	0	0	0	0	0	5	45	0	6	23	0	12	27	388
Total	0	805	249	9	0	0	0	0	16	123	0	9	97	0	35	127	1470
09:00 AM	0	239	49	0	0	0	0	0	3	36	0	9	27	0	11	24	398
09:15 AM	0	183	40	1	0	0	0	0	3	39	0	1	29	0	9	9	314
09:30 AM	0	180	41	2	0	0	0	0	1	33	0	4	36	0	9	17	323
09:45 AM	0	141	27	0	0	0	0	0	4	35	0	2	26	0	6	3	244
Total	0	743	157	3	0	0	0	0	11	143	0	16	118	0	35	53	1279
10:00 AM	0	132	42	0	0	0	0	0	3	31	0	5	29	0	14	9	265
10:15 AM	0	109	36	0	0	0	0	0	3	36	0	4	34	0	10	8	240
10:30 AM	0	125	37	1	0	0	0	0	2	28	0	3	29	0	6	10	241
10:45 AM	0	94	42	0	0	0	0	0	8	30	0	2	36	0	3	7	222
Total	0	460	157	1	0	0	0	0	16	125	0	14	128	0	33	34	968
11:00 AM	0	71	31	0	0	0	0	0	6	28	0	1	20	0	9	2	168
11:15 AM	0	74	21	0	0	0	0	0	8	31	0	4	35	0	7	4	184
11:30 AM	0	121	23	3	0	0	0	0	9	29	0	7	24	0	9	13	238
11:45 AM	0	99	31	0	0	0	0	0	5	48	0	7	36	0	9	15	250
Total	0	365	106	3	0	0	0	0	28	136	0	19	115	0	34	34	840
12:00 PM	0	105	30	0	0	0	0	0	5	45	0	17	44	0	9	20	275
12:15 PM	0	62	25	7	0	0	0	0	6	26	0	8	41	0	11	12	198
12:30 PM	0	97	28	1	0	0	0	0	8	35	0	5	46	0	6	9	235
12:45 PM	0	86	24	3	0	0	0	0	4	49	0	10	37	0	16	22	251
Total	0	350	107	11	0	0	0	0	23	155	0	40	168	0	42	63	959
01:00 PM	0	94	25	9	0	0	0	0	5	42	0	5	33	0	13	16	242
01:15 PM	0	79	30	0	0	0	0	0	9	40	0	3	38	0	13	14	226
01:30 PM	0	84	27	1	0	0	0	0	7	57	0	14	34	0	5	28	257
01:45 PM	0	91	30	2	0	0	0	0	9	32	0	7	30	0	11	11	223
Total	0	348	112	12	0	0	0	0	30	171	0	29	135	0	42	69	948
02:00 PM	0	61	34	0	0	0	0	0	6	39	0	14	43	0	16	14	227
02:15 PM	0	46	26	0	0	0	0	0	6	38	0	1	57	0	9	19	202
02:30 PM	0	49	25	5	0	0	0	0	6	25	0	5	35	0	10	13	173
02:45 PM	0	61	26	0	0	0	0	0	7	42	0	2	42	0	7	12	199
Total	0	217	111	5	0	0	0	0	25	144	0	22	177	0	42	58	801
03:00 PM	0	50	33	2	0	0	0	0	10	38	0	13	54	0	10	13	223
03:15 PM	0	66	42	2	0	0	0	0	7	31	0	5	58	0	5	26	242
03:30 PM	0	68	40	0	0	0	0	0	2	44	0	9	35	0	8	13	219
03:45 PM	0	101	31	5	0	0	0	0	8	43	0	3	43	0	7	8	249
Total	0	285	146	9	0	0	0	0	27	156	0	30	190	0	30	60	933
04:00 PM	0	58	26	1	0	0	0	0	4	44	0	8	50	0	7	20	218
04:15 PM	0	66	39	2	0	0	0	0	5	42	0	9	56	0	5	10	234
04:30 PM	0	57	45	3	0	0	0	0	9	46	0	5	45	0	7	24	241
04:45 PM	0	76	33	1	0	0	0	0	9	48	0	2	49	0	4	11	233
Total	0	257	143	7	0	0	0	0	27	180	0	24	200	0	23	65	926



05:00 PM	0	81	32	2	0	0	0	0	8	58	0	4	56	0	1	6	248
05:15 PM	0	85	44	5	0	0	0	0	6	60	0	5	52	0	8	20	285
05:30 PM	0	110	66	1	0	0	0	0	7	73	0	4	62	0	6	18	347
05:45 PM	0	116	47	1	0	0	0	0	12	68	0	8	67	0	11	24	354
Total	0	392	189	9	0	0	0	0	33	259	0	21	237	0	26	68	1234
06:00 PM	0	82	64	1	0	0	0	0	12	61	0	6	55	0	16	16	313
06:15 PM	0	105	32	1	0	0	0	0	5	78	0	13	51	0	7	21	313
06:30 PM	0	101	47	1	0	0	0	0	8	54	0	4	55	0	9	20	299
06:45 PM	0	86	31	6	0	0	0	0	9	54	0	8	62	0	17	15	288
Total	0	374	174	9	0	0	0	0	34	247	0	31	223	0	49	72	1213
Grand Total	0	5350	1910	85	0	0	0	0	283	1983	0	266	1882	0	416	750	12925
Apprch %	0.0	72.8	26.0	1.2	0.0	0.0	0.0	0.0	11.2	78.3	0.0	10.5	61.7	0.0	13.6	24.6	
Total %	0.0	41.4	14.8	0.7	0.0	0.0	0.0	0.0	2.2	15.3	0.0	2.1	14.6	0.0	3.2	5.8	

Location: Woodmont Ave. & St. Elmo

County: Montgomery

Weather: Clear

Counters: LM





**Appendix B**  
**Travel Time Data**



## Woodmont Ave AM NB

Study Name : **Woodmont NB**  
 Study Date : **10/6/2006**  
 Page No. : **1**

### Study Summary

#### *Runs Used in This Study*

Run Title	Start Date	Start Time	Length	Before/After	Run Type
Woodmont-NB-001	06/21/06	07:34	6097	Before	Primary
Woodmont-NB-002	06/21/06	07:49	6191	Before	Secondary
Woodmont-NB-003	06/21/06	08:04	6306	Before	Secondary
Woodmont-NB-004	06/21/06	08:22	6134	Before	Secondary
Woodmont-NB-005	06/21/06	08:39	6060	Before	Secondary

**Notes:**

#### *Node Info*

#	Len	Name
1	0	Montgomery
2	327	East-West
3	503	Waverly
4	441	MD 355
5	482	Commerce
6	388	Woodmont
7	696	Norfolk
8	602	St. Elmo
9	386	Cordell
10	665	Battery
11	988	MD 355
12	619	Jones Bridge

Length of Study Route = 6,097 feet

## Woodmont Ave AM NB

Study Name : **Woodmont NB**

Study Date : **10/6/2006**

Page No. : **2**

### Overall Output Statistics

Node #	Length	Node	Travel Time	# of Stops	Avg Speed	Total Delay	Time <= 0 MPH	Time <= 35 MPH	Time <= 55 MPH
1	0	Montgomery							
2	327	East-West	73.6	1.4	3.0	68.6	49.0	73.6	73.6
3	503	Waverly	30.4	0.8	11.3	22.4	3.2	30.4	30.4
4	441	MD 355	36.0	1.0	8.4	29.0	10.4	36.0	36.0
5	482	Commerce	13.6	0.0	24.2	6.2	0.0	13.6	13.6
6	388	Woodmont	25.0	0.4	10.6	19.0	11.0	25.0	25.0
7	696	Norfolk	27.2	0.2	17.4	16.2	3.6	26.8	27.2
8	602	St. Elmo	25.2	0.6	16.3	16.0	3.2	25.2	25.2
9	386	Cordell	23.6	0.6	11.2	17.6	5.6	23.6	23.6
10	665	Battery	31.6	0.4	14.3	21.4	4.0	31.6	31.6
11	988	MD 355	87.0	0.8	7.7	72.0	57.0	86.6	87.0
12	619	Jones Bridge	30.2	0.2	14.0	20.8	9.2	29.8	29.8
<b>Total</b>	<b>6,097</b>		<b>403.4</b>	<b>6.4</b>	<b>10.3</b>	<b>309.2</b>	<b>156.2</b>	<b>402.2</b>	<b>403.0</b>

Stats based on 5 BEFORE runs.

Stops based on a Stop Speed of 5 MPH.

Total Delay based on a Normal Speed of 45 MPH.

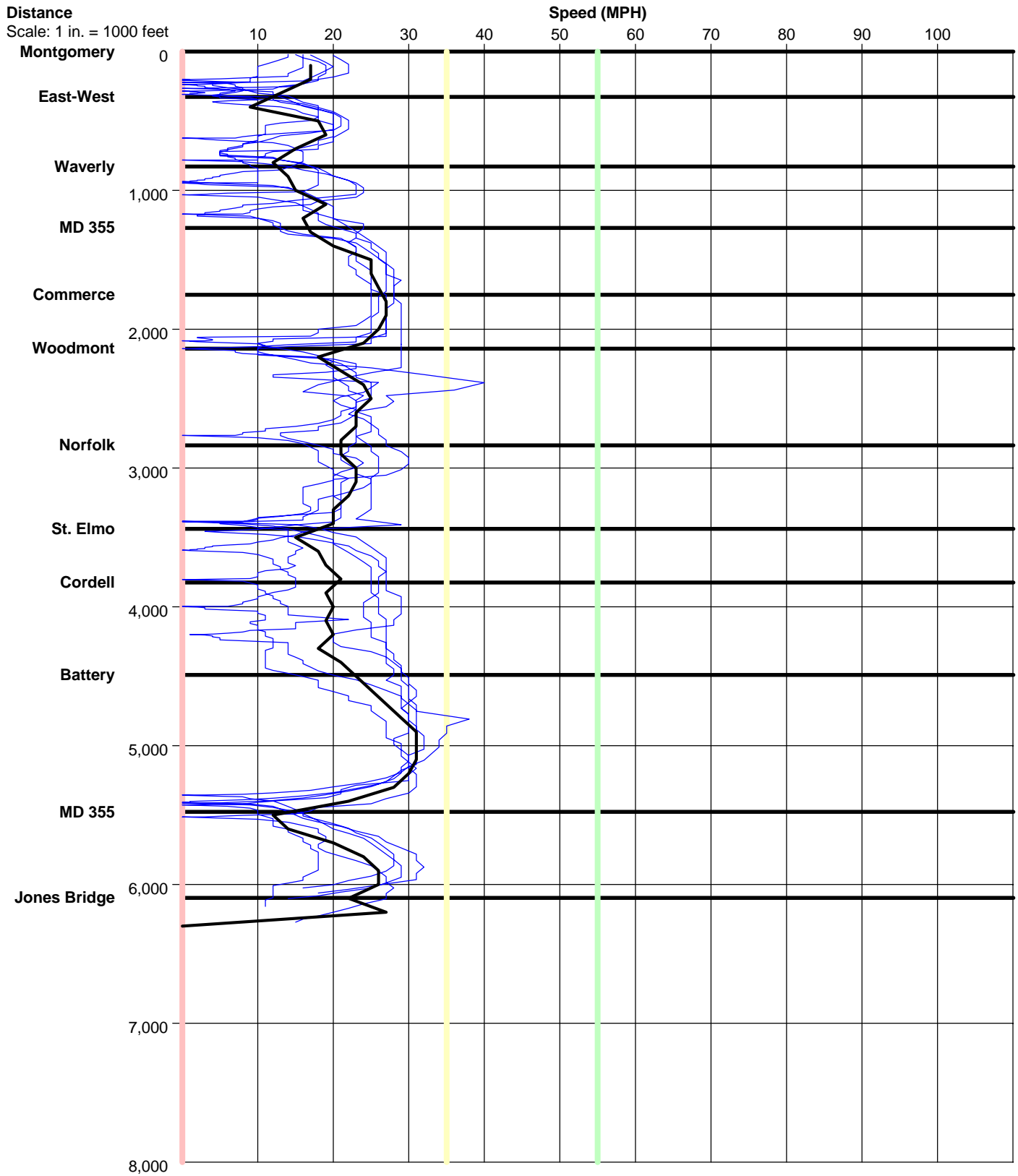
# Woodmont Ave AM NB

Study Name : **Woodmont NB**

Study Date : **10/6/2006**

Page No. : **3**

## Speed/Distance Profiles of All Runs



## Woodmont Ave AM SB

Study Name : **Woodmont SB**  
 Study Date : **10/6/2006**  
 Page No. : **1**

### Study Summary

#### *Runs Used in This Study*

Run Title	Start Date	Start Time	Length	Before/ After	Run Type
Woodmont-SB-001	06/21/06	07:28	6529	Before	Primary
Woodmont-SB-002	06/21/06	07:43	6699	Before	Secondary
Woodmont-SB-003	06/21/06	07:58	6647	Before	Secondary
Woodmont-SB-004	06/21/06	08:16	6676	Before	Secondary
Woodmont-SB-005	06/21/06	08:34	6587	Before	Secondary
Woodmont-SB-006	06/21/06	08:49	6681	Before	Secondary

**Notes:**

#### **Node Info**

#	Len	Name
1	0	Jones Bridge
2	717	Woodmont
3	903	Battery Lane
4	682	Cordell Ave
5	370	St. Elmo Ave
6	571	Norfolk
7	678	Old Georgetown
8	590	Edgemoor
9	534	Montgomery
10	321	East Lane
11	330	MD 355
12	402	Waverly St
13	431	Pearl

Length of Study Route = 6,529 feet



## Woodmont Ave AM SB

Study Name : **Woodmont SB**

Study Date : **10/6/2006**

Page No. : **2**

### Overall Output Statistics

Node #	Length	Node	Travel Time	# of Stops	Avg Speed	Total Delay	Time <= 0 MPH	Time <= 35 MPH	Time <= 55 MPH
1	0	Jones Bridge							
2	717	Woodmont	21.3	0.0	22.9	10.3	0.0	21.3	21.3
3	903	Battery Lane	40.7	0.7	15.1	26.7	7.5	40.7	40.7
4	682	Cordell Ave	29.5	0.5	15.8	19.2	4.8	29.5	29.5
5	370	St. Elmo Ave	11.2	0.0	22.6	5.2	0.0	11.2	11.2
6	571	Norfolk	30.8	0.5	12.6	21.8	11.8	30.8	30.8
7	678	Old Georgetown	32.8	0.7	14.1	22.5	3.8	32.8	32.8
8	590	Edgemoor	34.2	0.2	11.8	25.2	14.0	34.2	34.2
9	534	Montgomery	13.5	0.0	27.0	5.5	0.0	13.3	13.5
10	321	East Lane	15.3	0.2	14.3	10.3	3.2	15.3	15.3
11	330	MD 355	29.8	0.5	7.5	24.8	18.3	29.8	29.8
12	402	Waverly St	42.3	0.7	6.5	36.3	23.8	42.3	42.3
13	431	Pearl	17.7	0.3	16.6	10.8	1.2	17.5	17.5
<b>Total</b>	<b>6,529</b>		<b>319.2</b>	<b>4.2</b>	<b>13.9</b>	<b>218.7</b>	<b>88.5</b>	<b>318.8</b>	<b>319.0</b>

Stats based on 6 BEFORE runs.

Stops based on a Stop Speed of 5 MPH.

Total Delay based on a Normal Speed of 45 MPH.

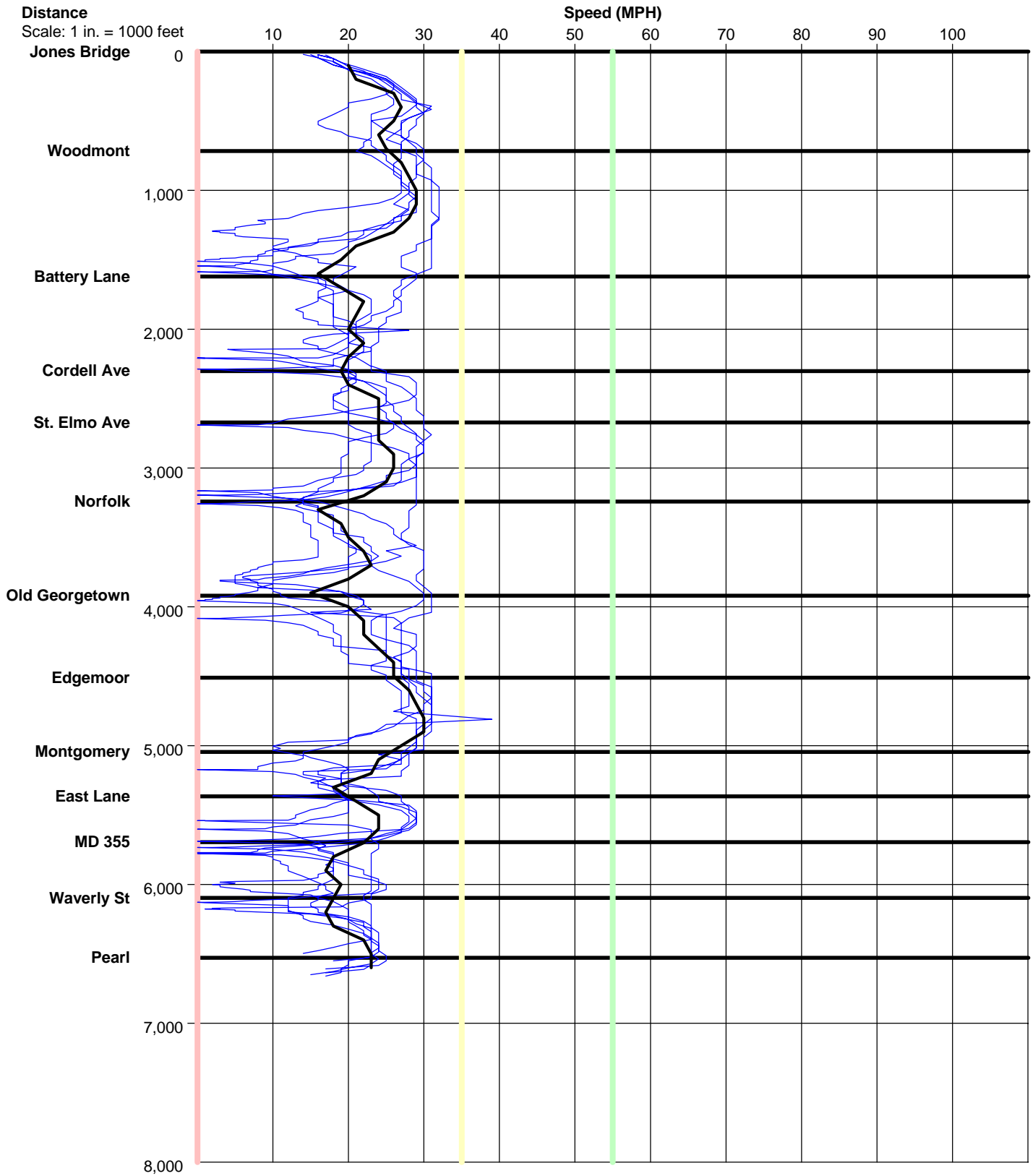
# Woodmont Ave AM SB

Study Name : **Woodmont SB**

Study Date : **10/6/2006**

Page No. : **3**

## Speed/Distance Profiles of All Runs



## Woodmont Ave PM NB

Study Name : **Woodmont PM NB**  
 Study Date : **10/6/2006**  
 Page No. : **1**

### Study Summary

#### *Runs Used in This Study*

Run Title	Start Date	Start Time	Length	Before/ After	Run Type
Woodmont-NB-001	06/21/06	16:26	6007	Before	Primary
Woodmont-NB-002	06/21/06	16:44	6447	Before	Secondary
Woodmont-NB-003	06/21/06	17:02	6043	Before	Secondary
Woodmont-NB-004	06/21/06	17:21	5961	Before	Secondary
Woodmont-NB-005	06/21/06	17:46	6422	Before	Secondary
Woodmont-NB-006	06/21/06	18:06	6008	Before	Secondary

#### *Node Info*

#	Len	Name
1	0	Montgomery
2	340	East-West
3	448	Waverly
4	364	MD 355
5	517	Commerce
6	405	Woodmont
7	747	Norfolk
8	587	St. Elmo
9	382	Cordell
10	720	Battery
11	878	MD 355
12	619	Jones Bridge

Length of Study Route = 6,007 feet

#### **Notes:**

## Woodmont Ave PM NB

Study Name : **Woodmont PM NB**

Study Date : **10/6/2006**

Page No. : **2**

### Overall Output Statistics

Node #	Length	Node	Travel Time	# of Stops	Avg Speed	Total Delay	Time <= 0 MPH	Time <= 35 MPH	Time <= 55 MPH
1	0	Montgomery							
2	340	East-West	14.5	0.2	16.0	9.5	0.0	14.5	14.5
3	448	Waverly	23.8	0.3	12.8	16.8	0.3	23.5	23.8
4	364	MD 355	41.8	1.0	5.9	35.8	20.3	41.3	41.5
5	517	Commerce	44.3	0.5	8.0	36.3	20.7	44.3	44.3
6	405	Woodmont	30.2	0.3	9.2	24.0	12.7	30.2	30.2
7	747	Norfolk	47.3	0.7	10.8	36.0	18.0	47.3	47.3
8	587	St. Elmo	36.7	1.0	10.9	27.7	8.7	36.7	36.7
9	382	Cordell	28.8	0.7	9.0	22.8	9.5	28.8	28.8
10	720	Battery	32.2	0.5	15.3	21.2	5.5	31.2	31.7
11	878	MD 355	97.2	1.0	6.2	83.5	65.0	96.7	97.2
12	619	Jones Bridge	95.5	1.0	4.4	86.3	69.7	95.0	95.0
<b>Total</b>	<b>6,007</b>		<b>492.3</b>	<b>7.2</b>	<b>8.3</b>	<b>400.0</b>	<b>230.3</b>	<b>489.5</b>	<b>491.0</b>

Stats based on 6 BEFORE runs.

Stops based on a Stop Speed of 5 MPH.

Total Delay based on a Normal Speed of 45 MPH.

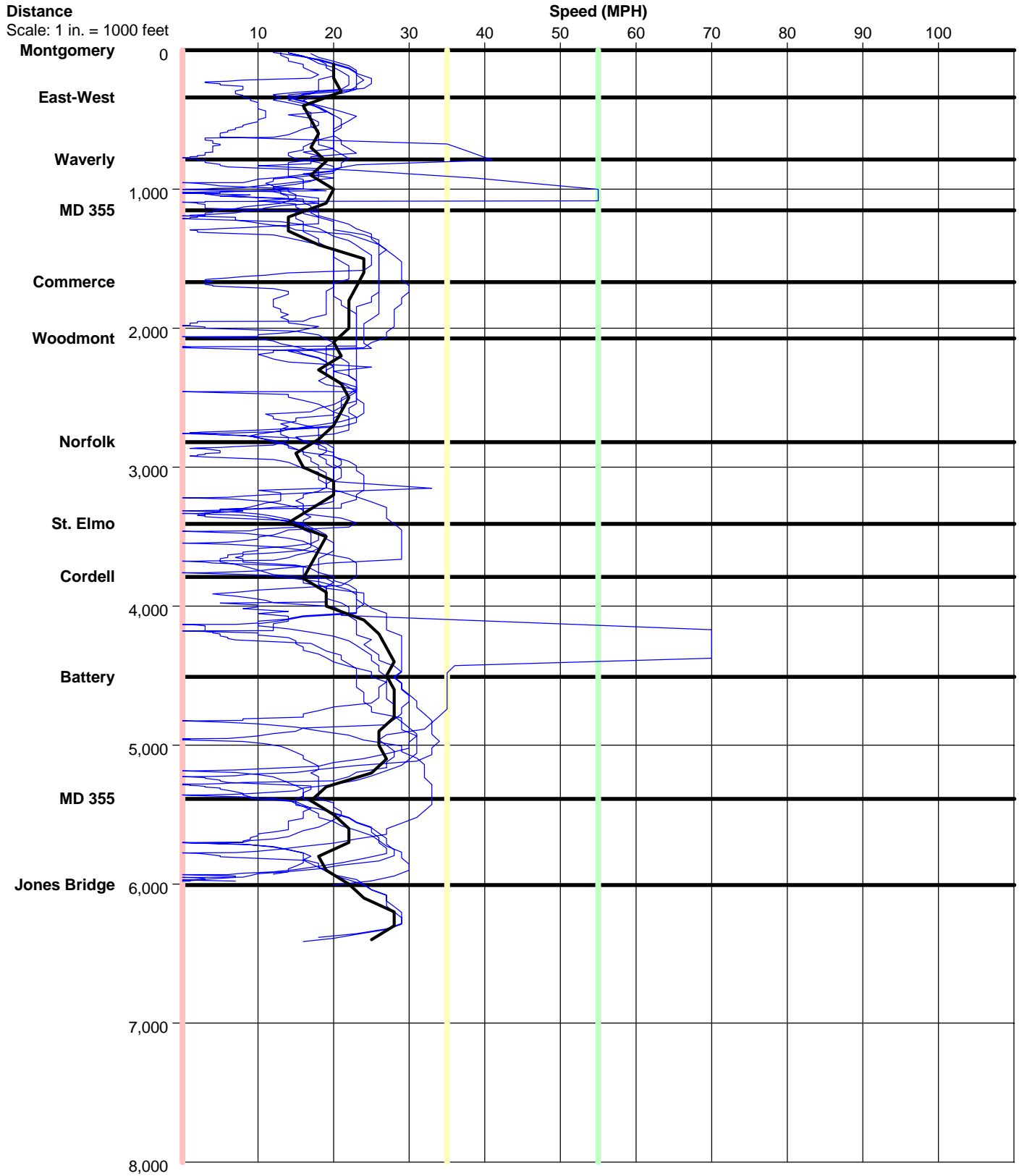
# Woodmont Ave PM NB

Study Name : **Woodmont PM NB**

Study Date : **10/6/2006**

Page No. : **3**

## Speed/Distance Profiles of All Runs



## Woodmont Ave PM SB

Study Name : **Woodmont PM SB**  
 Study Date : **10/6/2006**  
 Page No. : **1**

### Study Summary

#### *Runs Used in This Study*

Run Title	Start Date	Start Time	Length	Before/ After	Run Type
Woodmont-SB-001	06/21/06	16:38	6580	Before	Primary
Woodmont-SB-002	06/21/06	16:56	6723	Before	Secondary
Woodmont-SB-003	06/21/06	17:14	6983	Before	Secondary
Woodmont-SB-004	06/21/06	17:38	6578	Before	Secondary
Woodmont-SB-005	06/21/06	17:59	6754	Before	Secondary
Woodmont-SB-006	06/21/06	18:20	6460	Before	Secondary

#### **Notes:**

#### **Node Info**

#	Len	Name
1	0	Jones Bridge
2	731	Woodmont
3	895	Battery Lane
4	657	Cordell Ave
5	379	St. Elmo Ave
6	541	Norfolk
7	819	Old Georgetown
8	552	Edgemoor
9	545	Montgomery
10	241	East Lane
11	337	MD 355
12	383	Waverly St
13	500	Pearl

Length of Study Route = 6,580 feet

## Woodmont Ave PM SB

Study Name : **Woodmont PM SB**

Study Date : **10/6/2006**

Page No. : **2**

### Overall Output Statistics

Node #	Length	Node	Travel Time	# of Stops	Avg Speed	Total Delay	Time <= 0 MPH	Time <= 35 MPH	Time <= 55 MPH
1	0	Jones Bridge							
2	731	Woodmont	20.2	0.0	24.7	9.0	0.0	20.2	20.2
3	895	Battery Lane	40.7	0.7	15.0	26.7	15.0	40.5	40.7
4	657	Cordell Ave	27.0	0.3	16.6	17.0	6.7	26.7	27.0
5	379	St. Elmo Ave	36.8	1.2	7.0	30.8	16.3	36.8	36.8
6	541	Norfolk	23.5	0.3	15.7	15.3	4.2	23.5	23.5
7	819	Old Georgetown	39.5	0.8	14.1	26.8	7.3	39.0	39.5
8	552	Edgemoor	23.8	0.0	15.8	15.3	5.5	22.8	23.8
9	545	Montgomery	13.7	0.0	27.2	5.5	0.0	13.0	13.0
10	241	East Lane	8.2	0.2	20.1	4.3	0.0	7.8	7.8
11	337	MD 355	24.8	0.2	9.3	19.8	11.0	24.8	24.8
12	383	Waverly St	23.8	0.2	11.0	17.8	10.7	23.8	23.8
13	500	Pearl	18.5	0.3	18.4	11.2	0.8	18.0	18.0
<b>Total</b>	<b>6,580</b>		<b>300.5</b>	<b>4.2</b>	<b>14.9</b>	<b>199.7</b>	<b>77.5</b>	<b>297.0</b>	<b>299.0</b>

Stats based on 6 BEFORE runs.

Stops based on a Stop Speed of 5 MPH.

Total Delay based on a Normal Speed of 45 MPH.

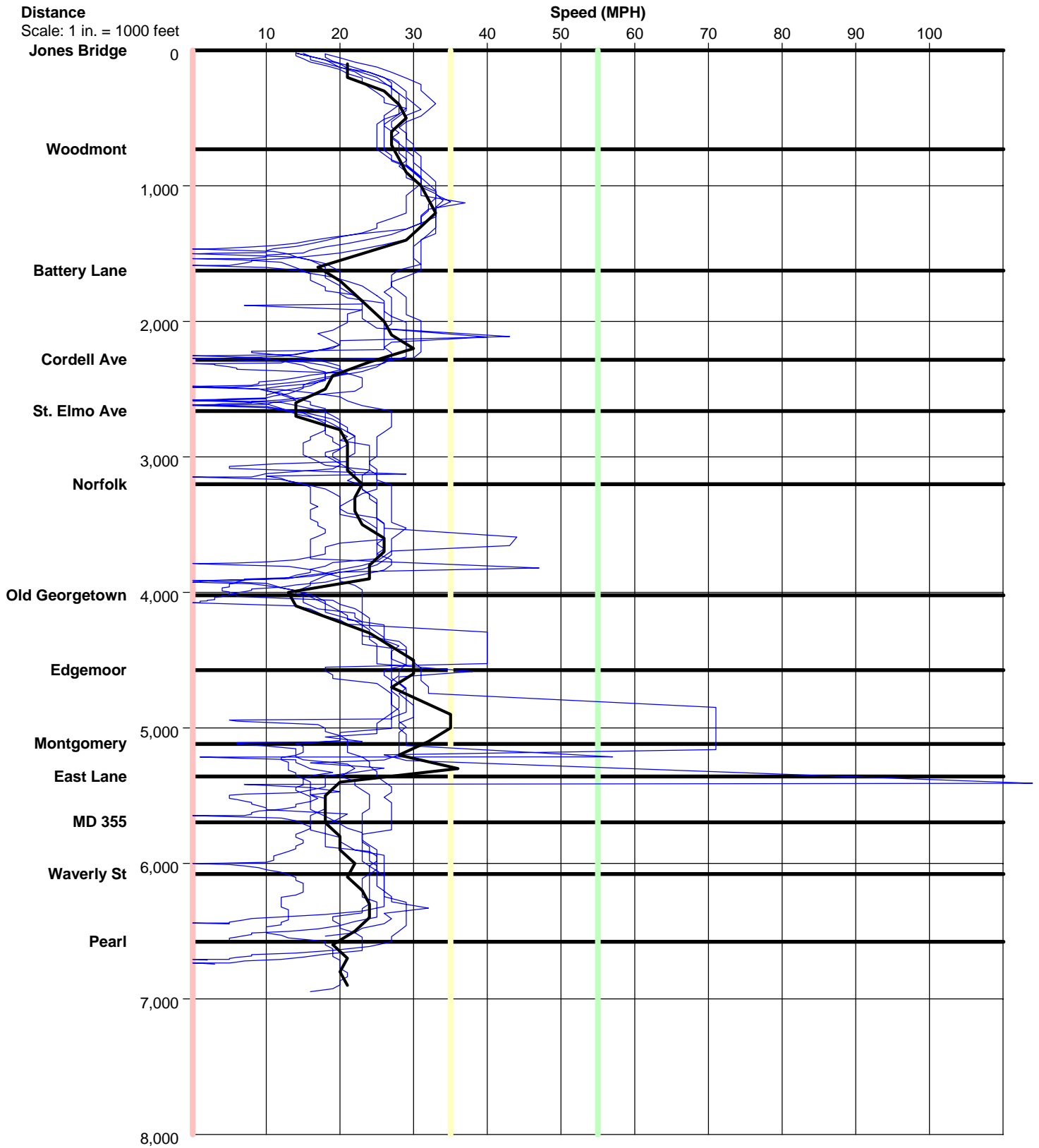
# Woodmont Ave PM SB

Study Name : **Woodmont PM SB**

Study Date : **10/6/2006**

Page No. : **3**

## Speed/Distance Profiles of All Runs





MD 410 EB AM- Bethesda to Silver Spring  
GPS Travel Time Study

Study Name : **MD 410 AM EB**  
Study Date : **12/21/2006**  
Page No. : **2**

**Study Summary**

**Runs Used in This Study**

Run Title	Start Date	Start Time	Length	Before/ After	Run Type
Spring Bethesda-EB-001	10/24/06	07:11	22048	Before	Primary
Spring Bethesda-EB-002	10/24/06	07:50	22409	Before	Secondary
Spring Bethesda-EB-003	10/24/06	08:25	22238	Before	Secondary
Spring Bethesda-EB-004	10/24/06	08:59	23029	Before	Secondary
SpringBethesda-EB-001	10/24/06	07:19	22384	Before	Primary
SpringBethesda-EB-002	10/24/06	07:52	22372	Before	Secondary
SpringBethesda-EB-003	10/24/06	08:30	22137	Before	Secondary

**Node Info**

#	Len	Name
1	0	MD 355
2	5389	MD 185
3	1886	Brookville
4	2630	Beach
5	3457	Grubb
6	4912	16th Street
7	1259	Colesville
8	2683	Georgia

Length of Study Route = 22,216 feet

**Notes:**

MD 410 EB AM- Bethesda to Silver Spring  
GPS Travel Time Study

Study Name : **MD 410 AM EB**  
Study Date : **12/21/2006**  
Page No. : **3**

**Overall Output Statistics**

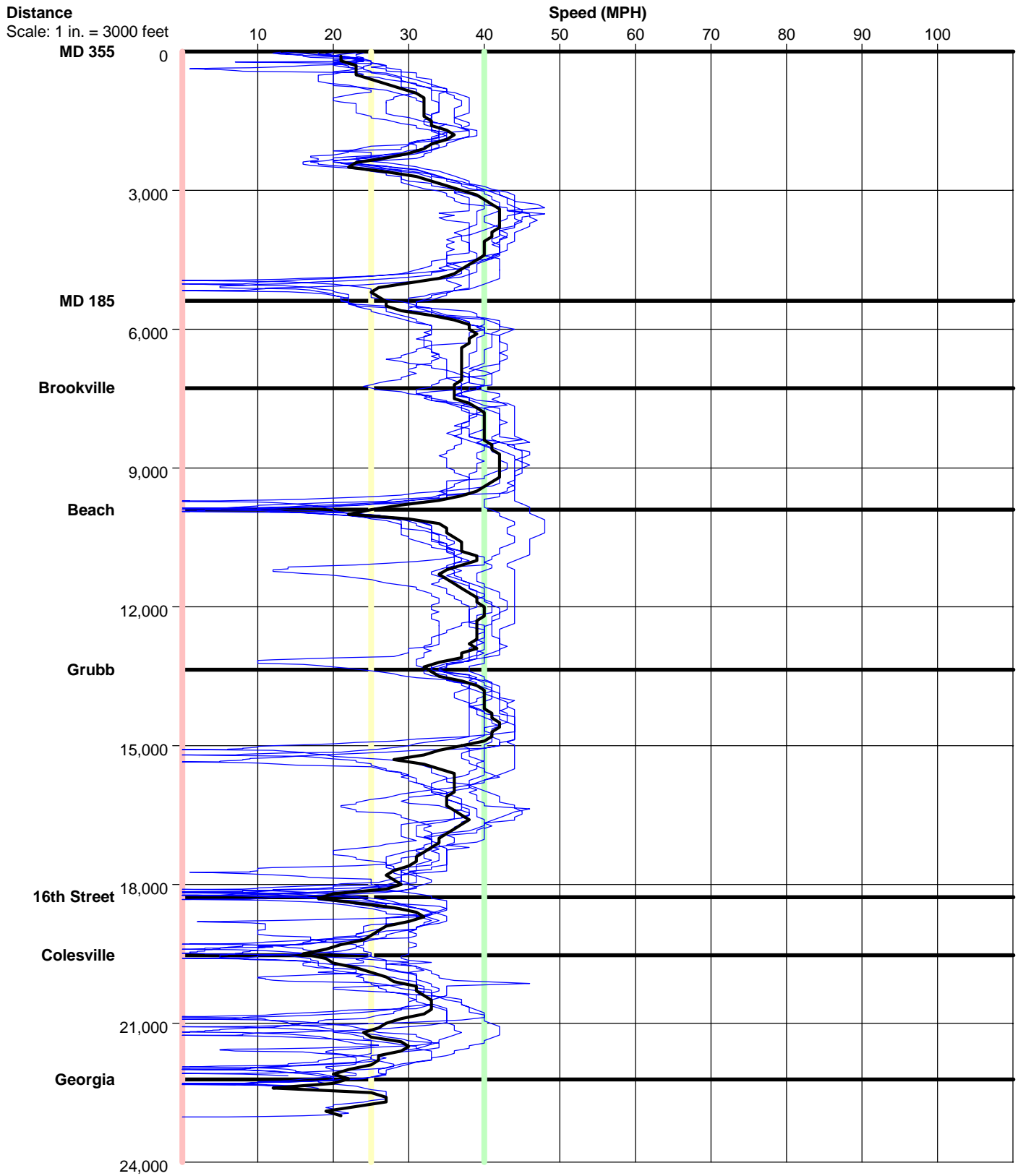
Node #	Length	Node	Travel Time	# of Stops	Avg Speed	Total Delay	Time <= 0 MPH	Time <= 25 MPH	Time <= 40 MPH
1	0	MD 355							
2	5389	MD 185	130.3	0.7	28.2	48.3	5.7	44.6	113.7
3	1886	Brookville	36.9	0.0	34.9	7.9	0.0	1.9	29.0
4	2630	Beach	62.0	0.6	28.9	22.0	10.6	19.0	41.9
5	3457	Grubb	82.1	0.0	28.7	29.6	13.1	21.4	64.6
6	4912	16th Street	142.3	1.3	23.5	67.6	33.9	57.3	121.4
7	1259	Colesville	72.6	0.7	11.8	53.4	25.4	56.6	72.6
8	2683	Georgia	136.1	1.6	13.4	95.7	53.7	99.6	134.3
<b>Total</b>	<b>22,216</b>		<b>662.3</b>	<b>4.9</b>	<b>22.9</b>	<b>324.4</b>	<b>142.4</b>	<b>300.3</b>	<b>577.4</b>

Stats based on 7 BEFORE runs.  
Stops based on a Stop Speed of 5 MPH.  
Total Delay based on a Normal Speed of 45 MPH.

MD 410 EB AM- Bethesda to Silver Spring  
GPS Travel Time Study

Study Name : MD 410 AM EB  
Study Date : 12/21/2006  
Page No. : 8

Speed/Distance Profiles of All Runs



MD 410 WB AM- Bethesda to Silver Spring  
GPS Travel Time Study

Study Name : **MD 410 AM WB**  
Study Date : **12/21/2006**  
Page No. : **2**

**Study Summary**

**Runs Used in This Study**

Run Title	Start Date	Start Time	Length	Before/ After	Run Type
Spring Bethesda-WB-001	10/24/06	07:30	21905	Before	Primary
Spring Bethesda-WB-002	10/24/06	08:03	22097	Before	Secondary
Spring Bethesda-WB-003	10/24/06	08:38	22052	Before	Secondary
SpringBethesda-WB-001	10/24/06	06:59	22106	Before	Primary
SpringBethesda-WB-002	10/24/06	07:35	21784	Before	Secondary
SpringBethesda-WB-003	10/24/06	08:07	22189	Before	Secondary

**Node Info**

#	Len	Name
1	0	Georgia
2	2733	Colesville
3	1258	16th Street
4	4950	Grubb
5	3420	Beach
6	3042	Brookville
7	1527	MD 185
8	5075	MD 355

Length of Study Route = 22,005 feet

**Notes:**

MD 410 WB AM- Bethesda to Silver Spring  
GPS Travel Time Study

Study Name : **MD 410 AM WB**  
Study Date : **12/21/2006**  
Page No. : **3**

**Overall Output Statistics**

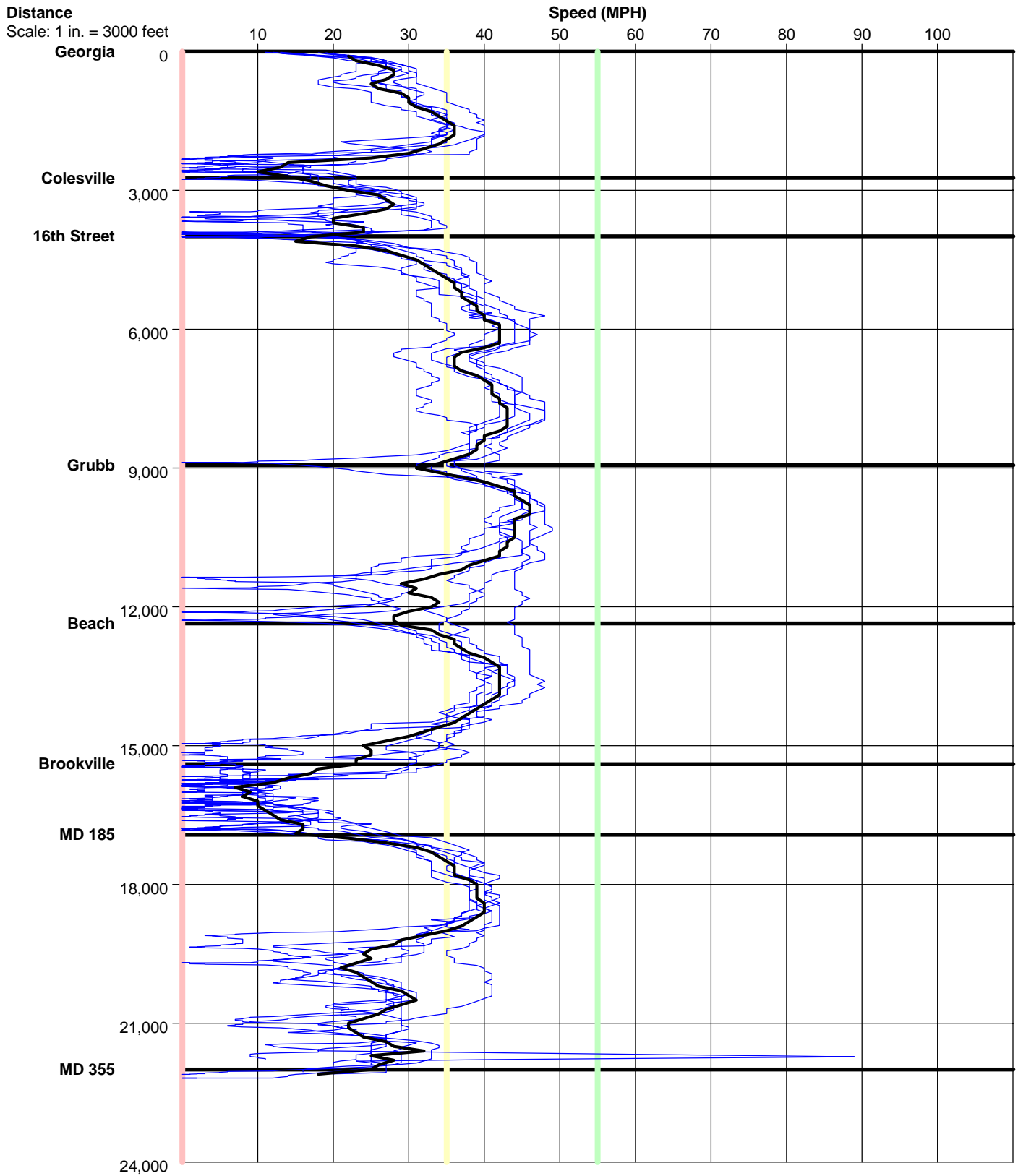
Node #	Length	Node	Travel Time	# of Stops	Avg Speed	Total Delay	Time <= 0 MPH	Time <= 35 MPH	Time <= 55 MPH
1	0	Georgia							
2	2733	Colesville	136.8	1.3	13.6	95.2	40.5	130.0	136.8
3	1258	16th Street	121.8	1.2	7.0	102.8	73.8	121.7	121.8
4	4950	Grubb	124.7	0.5	27.1	49.5	30.0	65.0	124.7
5	3420	Beach	93.5	0.7	24.9	41.5	22.0	52.7	93.5
6	3042	Brookville	95.2	0.8	21.8	49.2	15.0	61.7	95.2
7	1527	MD 185	370.7	3.7	2.8	347.3	225.2	370.7	370.7
8	5075	MD 355	137.2	0.5	25.2	60.8	3.7	105.5	136.7
<b>Total</b>	<b>22,005</b>		<b>1079.8</b>	<b>8.7</b>	<b>13.9</b>	<b>746.3</b>	<b>410.2</b>	<b>907.2</b>	<b>1079.3</b>

Stats based on 6 BEFORE runs.  
Stops based on a Stop Speed of 5 MPH.  
Total Delay based on a Normal Speed of 45 MPH.

MD 410 WB AM- Bethesda to Silver Spring  
GPS Travel Time Study

Study Name : MD 410 AM WB  
Study Date : 12/21/2006  
Page No. : 8

Speed/Distance Profiles of All Runs



**MD 410 EB PM- Bethesda to Silver Spring**  
GPS Travel Time Study

Study Name : **MD 410 EB PM**  
Study Date : **12/21/2006**  
Page No. : **2**

**Study Summary**

**Runs Used in This Study**

Run Title	Start Date	Start Time	Length	Before/ After	Run Type
Spring Bethesda-EB-001	10/24/06	15:18	23154	Before	Primary
Spring Bethesda-EB-002	10/24/06	16:07	22296	Before	Secondary
Spring Bethesda-EB-003	10/24/06	16:33	23406	Before	Secondary
Spring Bethesda-EB-004	10/24/06	17:05	22327	Before	Secondary
Spring Bethesda-EB-005	10/24/06	17:40	22003	Before	Secondary
SpringBethesda-EB-001	10/24/06	15:56	22605	Before	Primary
SpringBethesda-EB-002	10/24/06	16:22	22087	Before	Secondary
SpringBethesda-EB-003	10/24/06	16:52	23619	Before	Secondary
SpringBethesda-EB-004	10/24/06	17:22	22616	Before	Secondary

**Node Info**

#	Len	Name
1	0	MD 355
2	5388	MD 185
3	1979	Brookville
4	3161	Beach
5	3520	Grubb
6	4957	16th Street
7	1244	Colesville
8	2630	Georgia

Length of Study Route = 22,879 feet

**Notes:**

MD 410 EB PM- Bethesda to Silver Spring  
GPS Travel Time Study

Study Name : **MD 410 EB PM**  
Study Date : **12/21/2006**  
Page No. : **3**

**Overall Output Statistics**

Node #	Length	Node	Travel Time	# of Stops	Avg Speed	Total Delay	Time <= 0 MPH	Time <= 25 MPH	Time <= 40 MPH
1	0	MD 355							
2	5388	MD 185	265.3	3.0	13.8	183.3	69.4	194.1	254.7
3	1979	Brookville	40.1	0.0	33.6	10.0	0.0	2.4	36.7
4	3161	Beach	82.4	1.7	26.1	34.3	13.3	31.2	69.7
5	3520	Grubb	73.7	0.6	32.6	19.9	3.2	10.6	59.1
6	4957	16th Street	182.6	2.3	18.5	107.3	30.6	107.7	169.8
7	1244	Colesville	65.0	0.7	13.0	46.0	27.4	43.9	64.9
8	2630	Georgia	125.2	1.7	14.3	90.8	49.6	95.7	124.4
<b>Total</b>	<b>22,879</b>		<b>834.3</b>	<b>9.9</b>	<b>18.7</b>	<b>491.7</b>	<b>193.6</b>	<b>485.6</b>	<b>779.2</b>

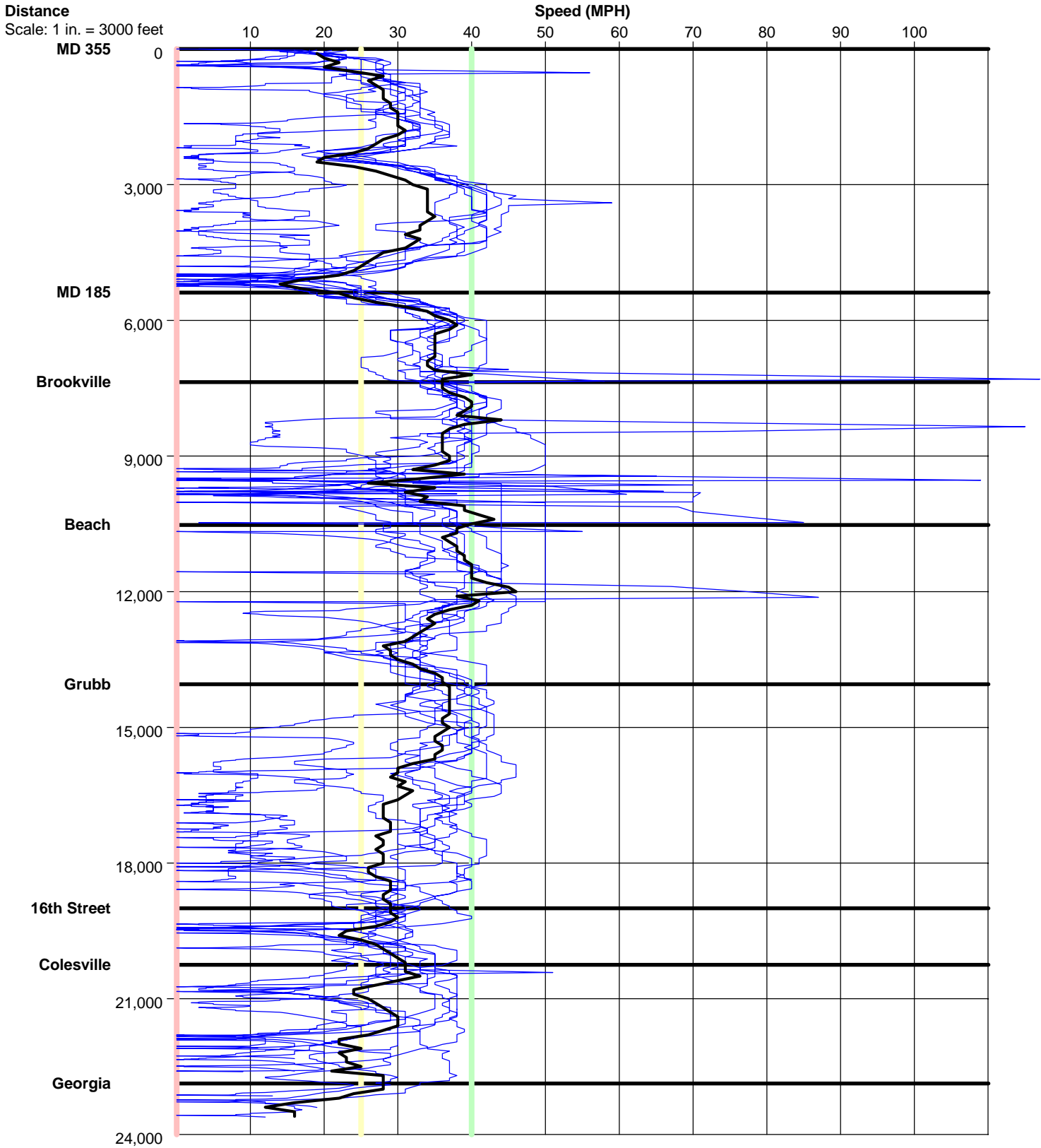
Stats based on 9 BEFORE runs.  
Stops based on a Stop Speed of 5 MPH.  
Total Delay based on a Normal Speed of 45 MPH.



MD 410 EB PM- Bethesda to Silver Spring  
GPS Travel Time Study

Study Name : MD 410 EB PM  
Study Date : 12/21/2006  
Page No. : 12

Speed/Distance Profiles of All Runs



**MD 410 WB PM- Bethesda to Silver Spring**  
GPS Travel Time Study

Study Name : **MD 410 WB PM**  
Study Date : **12/21/2006**  
Page No. : **2**

**Study Summary**

**Runs Used in This Study**

Run Title	Start Date	Start Time	Length	Before/ After	Run Type
Spring Bethesda-WB-001	10/24/06	15:33	21911	Before	Primary
Spring Bethesda-WB-002	10/24/06	16:20	21980	Before	Secondary
Spring Bethesda-WB-003	10/24/06	16:49	22044	Before	Secondary
Spring Bethesda-WB-004	10/24/06	17:23	22043	Before	Secondary
SpringBethesda-WB-001	10/24/06	15:41	22003	Before	Primary
SpringBethesda-WB-002	10/24/06	16:09	22098	Before	Secondary
SpringBethesda-WB-003	10/24/06	16:40	21988	Before	Secondary
SpringBethesda-WB-004	10/24/06	17:09	22157	Before	Secondary

**Node Info**

#	Len	Name
1	0	Georgia
2	2741	Colesville
3	1240	16th Street
4	4924	Grubb
5	3427	Beach
6	2565	Brookville
7	1959	MD 185
8	5101	MD 355

Length of Study Route = 21,957 feet

**Notes:**

**MD 410 WB PM- Bethesda to Silver Spring**  
GPS Travel Time Study

Study Name : **MD 410 WB PM**  
Study Date : **12/21/2006**  
Page No. : **3**

**Overall Output Statistics**

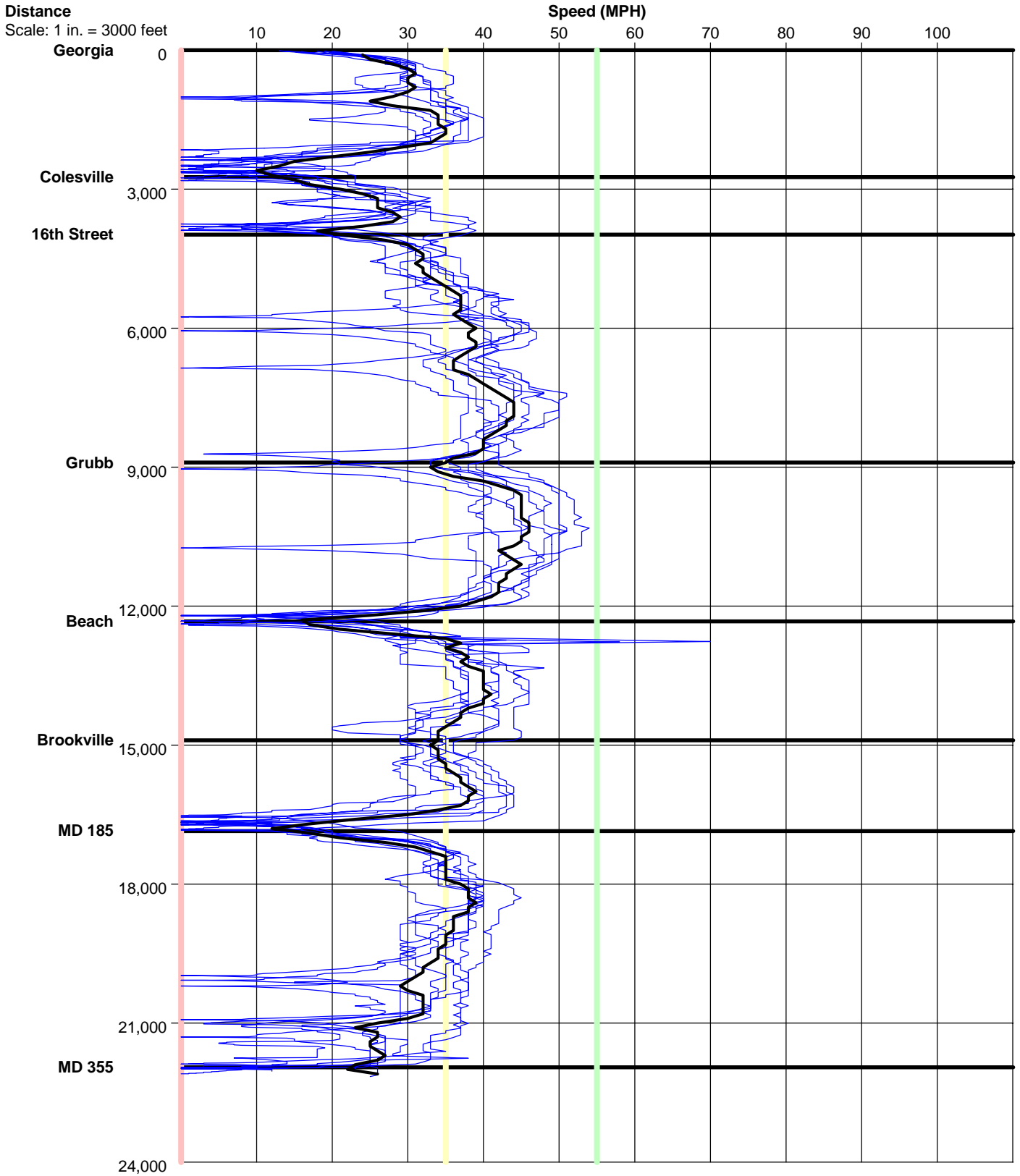
<b>Node #</b>	<b>Length</b>	<b>Node</b>	<b>Travel Time</b>	<b># of Stops</b>	<b>Avg Speed</b>	<b>Total Delay</b>	<b>Time &lt;= 0 MPH</b>	<b>Time &lt;= 35 MPH</b>	<b>Time &lt;= 55 MPH</b>
1	0	Georgia							
2	2741	Colesville	158.6	1.8	11.8	116.6	58.0	149.6	158.6
3	1240	16th Street	68.1	0.6	12.4	49.1	22.6	66.5	68.1
4	4924	Grubb	100.8	0.5	33.3	25.8	4.9	43.6	100.8
5	3427	Beach	109.3	1.0	21.4	57.3	42.1	65.0	109.3
6	2565	Brookville	60.0	0.3	29.1	20.9	7.3	32.6	59.8
7	1959	MD 185	116.8	1.3	11.4	86.8	58.4	100.1	116.8
8	5101	MD 355	134.5	1.3	25.9	57.3	11.0	99.5	134.4
<b>Total</b>	<b>21,957</b>		<b>748.0</b>	<b>6.6</b>	<b>20.0</b>	<b>413.6</b>	<b>204.3</b>	<b>557.0</b>	<b>747.6</b>

Stats based on 8 BEFORE runs.  
Stops based on a Stop Speed of 5 MPH.  
Total Delay based on a Normal Speed of 45 MPH.

MD 410 WB PM- Bethesda to Silver Spring  
GPS Travel Time Study

Study Name : MD 410 WB PM  
Study Date : 12/21/2006  
Page No. : 8

Speed/Distance Profiles of All Runs



**EB Campus Drive / Riverdale Road - AM Peak**  
GPS Travel Time Study

Study Name : **Campus Drive EB**  
Study Date : **11/29/2006**  
Page No. : **2**

**Study Summary**

**Runs Used in This Study**

Run Title	Start Date	Start Time	Length	Before/ After	Run Type
Campus-EB-001	10/03/06	07:19	25818	Before	Primary
Campus-EB-002	10/03/06	08:02	25783	Before	Secondary
Campus-EB-003	10/03/06	08:44	25769	Before	Secondary

**Notes:**

**Node Info**

#	Len	Name
1	0	Campus at Adelphi
2	861	Campus at Presidential
3	4233	Campus at Regents
4	1534	Campus at US 1
5	5001	PBPwy at River
6	5957	River at 201
7	1328	201 at Rittenhouse
8	1026	201 at 410
9	2652	410 at Mustang
10	1388	410 at SB 295
11	489	410 at NB 295
12	557	410 at 67th
13	792	410 at Riverdale

Length of Study Route = 25,818 feet

EB Campus Drive / Riverdale Road - AM Peak  
GPS Travel Time Study

Study Name : **Campus Drive EB**  
Study Date : **11/29/2006**  
Page No. : **3**

**Overall Output Statistics**

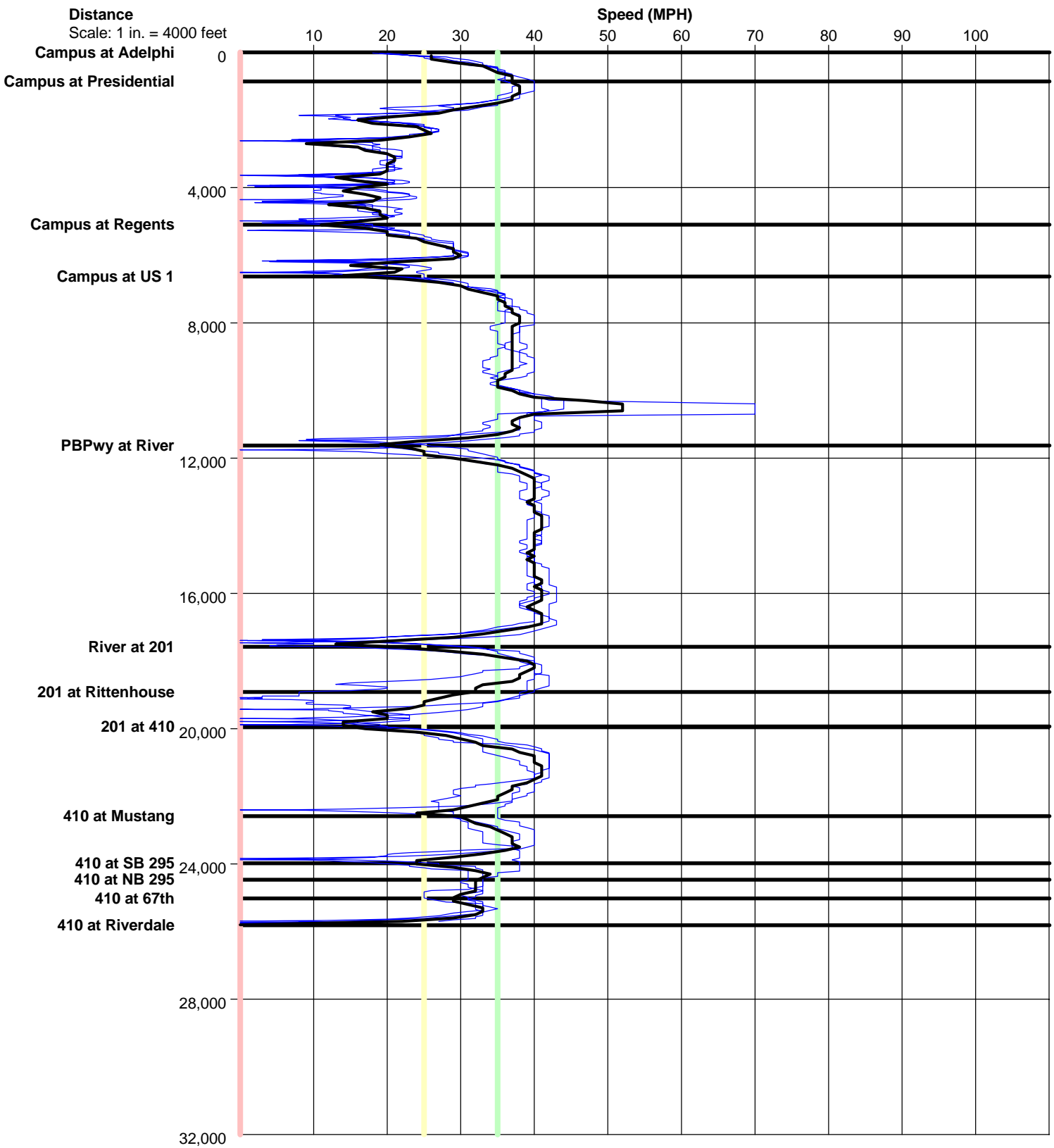
Node #	Length	Node	Travel Time	# of Stops	Avg Speed	Total Delay	Time <= 0 MPH	Time <= 25 MPH	Time <= 35 MPH
1	0	Campus at Adelphi							
2	861	Campus at Presidential	19.3	0.0	30.4	1.7	0.0	3.7	11.3
3	4233	Campus at Regents	169.3	4.0	17.0	86.7	5.0	146.3	160.0
4	1534	Campus at US 1	99.0	2.0	10.6	69.0	46.0	83.7	99.0
5	5001	PBPwy at River	97.7	0.0	34.9	2.0	0.0	9.0	35.7
6	5957	River at 201	131.3	1.7	30.9	15.0	10.7	33.0	45.7
7	1328	201 at Rittenhouse	27.3	0.0	33.1	2.7	0.0	6.3	10.7
8	1026	201 at 410	185.3	1.7	3.8	165.0	134.7	178.3	182.7
9	2652	410 at Mustang	55.0	0.3	32.9	3.3	0.3	6.3	28.3
10	1388	410 at SB 295	55.0	0.7	17.2	28.3	22.7	31.7	41.7
11	489	410 at NB 295	11.0	0.0	30.3	1.0	0.0	1.3	9.7
12	557	410 at 67th	12.0	0.0	31.6	1.0	0.0	1.3	12.0
13	792	410 at Riverdale	52.0	0.7	10.4	37.7	32.0	38.3	51.0
<b>Total</b>	<b>25,818</b>		<b>914.3</b>	<b>11.0</b>	<b>19.3</b>	<b>413.3</b>	<b>251.3</b>	<b>539.3</b>	<b>687.7</b>

Stats based on 3 BEFORE runs.  
Stops based on a Stop Speed of 5 MPH.  
Total Delay based on a Normal Speed of 35 MPH.

EB Campus Drive / Riverdale Road - AM Peak  
GPS Travel Time Study

Study Name : **Campus Drive EB**  
Study Date : **11/29/2006**  
Page No. : **8**

**Speed/Distance Profiles of All Runs**



WB Campus Drive / Riverdale Road - AM Peak  
GPS Travel Time Study

Study Name : **Campus Drive WB AM**  
Study Date : **11/29/2006**  
Page No. : **2**

**Study Summary**

*Runs Used in This Study*

Run Title	Start Date	Start Time	Length	Before/ After	Run Type
Campus-WB-001	10/03/06	06:56	25772	Before	Primary
Campus-WB-002	10/03/06	07:36	25850	Before	Secondary
Campus-WB-003	10/03/06	08:20	25648	Before	Secondary

**Notes:**

*Node Info*

#	Len	Name
1	0	410 at Riverdale
2	830	410 at 67th
3	558	410 at NB 295
4	522	410 at SB 295
5	1328	410 at Mustang
6	2602	201 at 410
7	1125	201 at Rittenhouse
8	1229	River at 201
9	5911	PBPwy at River
10	4956	Campus at US 1
11	1524	Campus at Regents
12	4330	Campus at Presidential
13	857	Campus at Adelphi

Length of Study Route = 25,772 feet



WB Campus Drive / Riverdale Road - AM Peak  
GPS Travel Time Study

Study Name : **Campus Drive WB AM**  
Study Date : **11/29/2006**  
Page No. : **3**

**Overall Output Statistics**

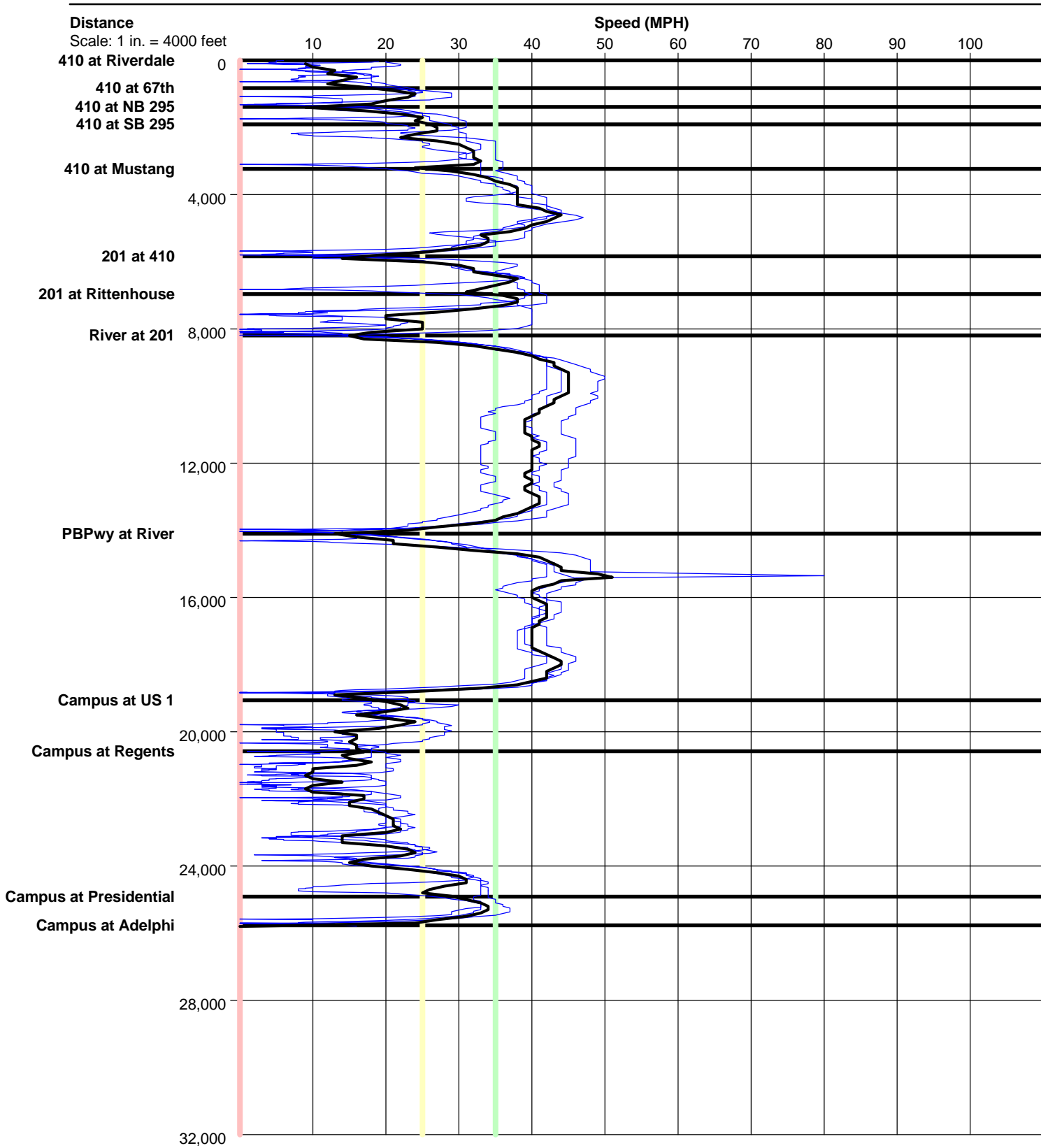
Node #	Length	Node	Travel Time	# of Stops	Avg Speed	Total Delay	Time <= 0 MPH	Time <= 25 MPH	Time <= 35 MPH
1	0	410 at Riverdale							
2	830	410 at 67th	62.0	1.3	9.1	45.7	12.3	62.0	62.0
3	558	410 at NB 295	39.0	1.0	9.8	28.0	12.0	36.3	39.0
4	522	410 at SB 295	24.7	0.3	14.4	14.7	7.3	19.0	24.7
5	1328	410 at Mustang	47.7	0.3	19.0	21.3	12.3	24.7	44.3
6	2602	201 at 410	68.3	1.0	26.0	17.3	10.7	24.7	40.0
7	1125	201 at Rittenhouse	30.3	0.3	25.3	8.7	3.3	12.0	19.0
8	1229	River at 201	164.0	2.0	5.1	140.0	107.3	152.0	155.3
9	5911	PBPwy at River	125.0	1.0	32.2	11.0	11.7	29.0	57.7
10	4956	Campus at US 1	149.0	1.0	22.7	52.0	46.0	74.3	82.3
11	1524	Campus at Regents	82.3	2.3	12.6	52.3	10.0	73.7	82.3
12	4330	Campus at Presidential	239.7	5.3	12.3	155.0	5.3	220.7	239.7
13	857	Campus at Adelphi	111.3	1.0	5.2	95.7	88.3	97.7	108.3
<b>Total</b>	<b>25,772</b>		<b>1143.3</b>	<b>17.0</b>	<b>15.4</b>	<b>641.7</b>	<b>326.7</b>	<b>826.0</b>	<b>954.7</b>

Stats based on 3 BEFORE runs.  
Stops based on a Stop Speed of 5 MPH.  
Total Delay based on a Normal Speed of 35 MPH.

WB Campus Drive / Riverdale Road - AM Peak  
GPS Travel Time Study

Study Name : Campus Drive WB AM  
Study Date : 11/29/2006  
Page No. : 8

Speed/Distance Profiles of All Runs



EB Campus Drive / Riverdale - PM Peak  
GPS Travel Time Study

Study Name : **Campus EB PM**  
Study Date : **11/29/2006**  
Page No. : **2**

**Study Summary**

*Runs Used in This Study*

Run Title	Start Date	Start Time	Length	Before/ After	Run Type
Campus-EB-001	10/03/06	16:21	25808	Before	Primary
Campus-EB-002	10/03/06	17:02	25861	Before	Secondary
Campus-EB-003	10/03/06	17:50	26595	Before	Secondary

**Notes:**

**Node Info**

#	Len	Name
1	0	Campus at Adelphi
2	849	Campus at Presidential
3	4297	Campus at Regents
4	1431	Campus at US 1
5	4884	PBPwy at River
6	5985	River at 201
7	2374	201 at Rittenhouse
8	80	201 at 410
9	2654	410 at Mustang
10	1412	410 at SB 295
11	473	410 at NB 295
12	576	410 at 67th
13	793	410 at Riverdale

Length of Study Route = 25,808 feet

EB Campus Drive / Riverdale - PM Peak  
GPS Travel Time Study

Study Name : **Campus EB PM**  
Study Date : **11/29/2006**  
Page No. : **3**

**Overall Output Statistics**

Node #	Length	Node	Travel Time	# of Stops	Avg Speed	Total Delay	Time <= 0 MPH	Time <= 25 MPH	Time <= 35 MPH
1	0	Campus at Adelphi							
2	849	Campus at Presidential	18.0	0.0	32.2	1.0	0.0	2.7	11.3
3	4297	Campus at Regents	337.3	6.0	8.7	253.3	57.0	316.3	327.3
4	1431	Campus at US 1	149.0	2.0	6.5	121.0	83.0	140.0	149.0
5	4884	PBPwy at River	93.7	0.3	35.6	2.7	1.3	10.0	26.7
6	5985	River at 201	118.7	0.3	34.4	3.3	0.7	22.0	39.3
7	2374	201 at Rittenhouse	90.0	1.0	18.0	43.3	38.7	52.3	62.0
8	80	201 at 410	23.3	0.0	2.3	21.3	20.0	23.3	23.3
9	2654	410 at Mustang	127.7	3.3	14.2	75.7	21.3	95.0	115.3
10	1412	410 at SB 295	108.3	2.7	8.9	80.3	25.7	102.7	108.3
11	473	410 at NB 295	32.3	1.0	10.0	23.0	3.3	31.7	32.3
12	576	410 at 67th	22.3	0.0	17.6	10.7	0.0	20.3	22.3
13	793	410 at Riverdale	51.3	0.7	10.5	35.7	23.0	42.0	50.7
<b>Total</b>	<b>25,808</b>		<b>1172.0</b>	<b>17.3</b>	<b>15.0</b>	<b>671.3</b>	<b>274.0</b>	<b>858.3</b>	<b>968.0</b>

Stats based on 3 BEFORE runs.

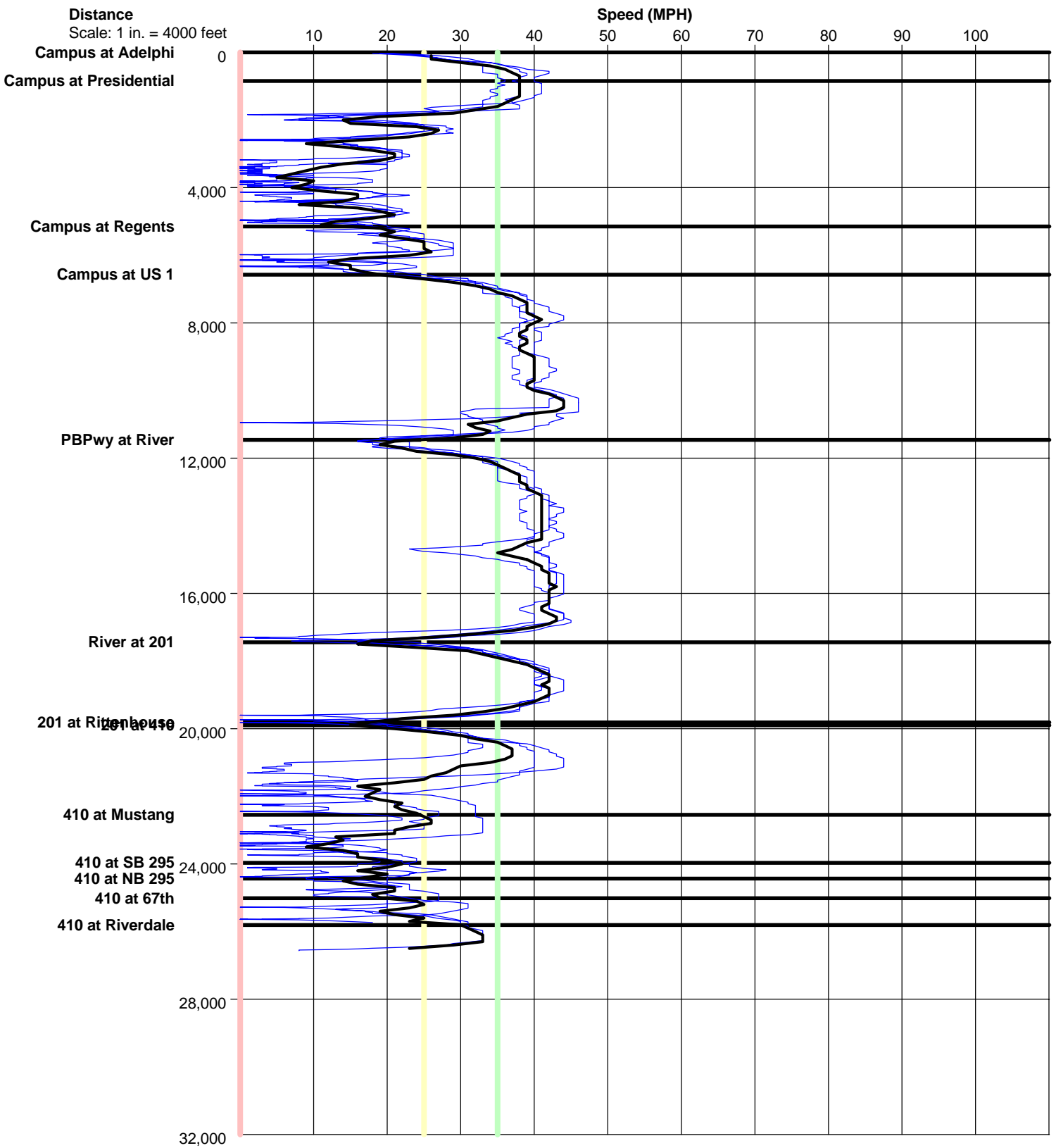
Stops based on a Stop Speed of 5 MPH.

Total Delay based on a Normal Speed of 35 MPH.

EB Campus Drive / Riverdale - PM Peak  
GPS Travel Time Study

Study Name : **Campus EB PM**  
Study Date : **11/29/2006**  
Page No. : **9**

**Speed/Distance Profiles of All Runs**



WB Campus Drive / Riverdale - PM Peak  
GPS Travel Time Study

Study Name : **Campus WB PM**  
Study Date : **11/29/2006**  
Page No. : **2**

**Study Summary**

**Runs Used in This Study**

Run Title	Start Date	Start Time	Length	Before/ After	Run Type
Campus-WB-001	10/03/06	15:56	25780	Before	Primary
Campus-WB-002	10/03/06	16:36	25549	Before	Secondary
Campus-WB-003	10/03/06	17:25	25782	Before	Secondary

**Notes:**

**Node Info**

#	Len	Name
1	0	410 at Riverdale
2	812	410 at 67th
3	539	410 at NB 295
4	497	410 at SB 295
5	1348	410 at Mustang
6	2610	201 at 410
7	1114	201 at Rittenhouse
8	1349	River at 201
9	5910	PBPwy at River
10	4931	Campus at US 1
11	1475	Campus at Regents
12	4320	Campus at Presidential
13	875	Campus at Adelphi

Length of Study Route = 25,780 feet

WB Campus Drive / Riverdale - PM Peak  
GPS Travel Time Study

Study Name : **Campus WB PM**  
Study Date : **11/29/2006**  
Page No. : **3**

**Overall Output Statistics**

Node #	Length	Node	Travel Time	# of Stops	Avg Speed	Total Delay	Time <= 0 MPH	Time <= 25 MPH	Time <= 35 MPH
1	0	410 at Riverdale							
2	812	410 at 67th	51.3	0.7	10.8	35.3	18.0	45.7	51.3
3	539	410 at NB 295	27.7	0.3	13.3	16.7	11.7	20.0	27.7
4	497	410 at SB 295	18.0	0.3	18.8	7.7	5.3	9.0	17.0
5	1348	410 at Mustang	38.3	0.3	24.0	12.3	5.3	17.7	30.3
6	2610	201 at 410	99.3	1.7	17.9	48.3	36.7	55.0	76.0
7	1114	201 at Rittenhouse	52.0	0.7	14.6	30.0	11.0	38.0	52.0
8	1349	River at 201	59.0	1.0	15.6	32.7	19.0	37.3	54.0
9	5910	PBPwy at River	127.0	0.7	31.7	14.0	18.3	31.7	43.3
10	4931	Campus at US 1	162.3	1.0	20.7	66.0	57.7	86.7	98.3
11	1475	Campus at Regents	62.3	0.7	16.1	33.3	1.0	62.3	62.3
12	4320	Campus at Presidential	385.7	8.3	7.6	301.7	67.3	366.3	382.7
13	875	Campus at Adelphi	113.7	1.3	5.2	98.3	82.7	103.0	112.7
<b>Total</b>	<b>25,780</b>		<b>1196.7</b>	<b>17.0</b>	<b>14.7</b>	<b>696.3</b>	<b>334.0</b>	<b>872.7</b>	<b>1007.7</b>

Stats based on 3 BEFORE runs.

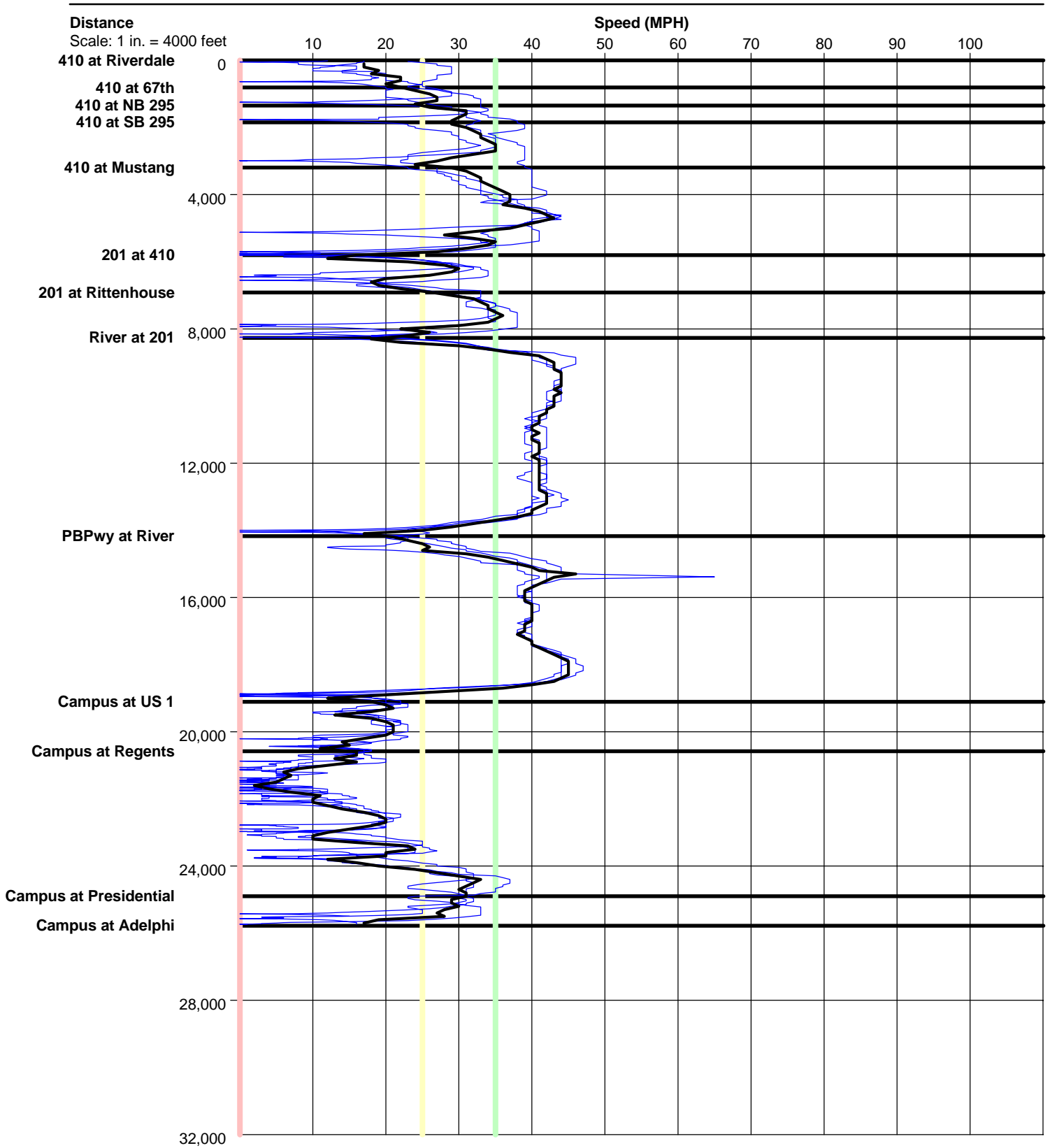
Stops based on a Stop Speed of 5 MPH.

Total Delay based on a Normal Speed of 35 MPH.

WB Campus Drive / Riverdale - PM Peak  
GPS Travel Time Study

Study Name : **Campus WB PM**  
Study Date : **11/29/2006**  
Page No. : **8**

**Speed/Distance Profiles of All Runs**





October Travel Time Runs  
Jones Bridge Road Corridor

November 2005

**AM Peak**

Eastbound Jones Bridge Road (Rockville Pike to Jones Mill Road)

Run	1	2	3	Average	
Total Travel Time	4.52	4.52	5.13	<b>4.72</b>	<b>Minutes</b>
Delay at MD 185	0	17	72	<b>30</b>	<b>Seconds</b>
Delay at Jones Mill Road	80	87	74	<b>80</b>	<b>Seconds</b>

Westbound Jones Bridge Road (Jones Mill Road to Rockville Pike)

Run	1	2	3	Average	
Total Travel Time	6.58	5.70	8.03	<b>6.77</b>	<b>Minutes</b>
Delay at Jones Mill Road	81	79	75	<b>78</b>	<b>Seconds</b>
Delay at MD 185	144	14	102	<b>87</b>	<b>Seconds</b>
Delay at MD 355	0	52	115	<b>56</b>	<b>Seconds</b>

**AM Peak**

Eastbound Jones Bridge Road (Rockville Pike to Jones Mill Road)

Run	1	2	3	Average	
Total Travel Time	3.83	5.48	4.32	<b>4.54</b>	<b>Minutes</b>
Delay at MD 185	0	14	55	<b>23</b>	<b>Seconds</b>
Delay at Jones Mill Road	26	42	29	<b>32</b>	<b>Seconds</b>

Westbound Jones Bridge Road (Jones Mill Road to Rockville Pike)

Run	1	2	3	Average	
Total Travel Time	9.58	8.97	8.18	<b>8.91</b>	<b>Minutes</b>
Delay at Jones Mill Road	0	70	69	<b>46</b>	<b>Seconds</b>
Delay at MD 185	134	10	4	<b>49</b>	<b>Seconds</b>
Delay at MD 355	162	168	171	<b>167</b>	<b>Seconds</b>

New Carrollton Clockwise - AM Peak  
GPS Travel Time Study

Study Name : **New Carrollton NB AM**  
Study Date : **12/11/2006**  
Page No. : **2**

**Study Summary**

**Runs Used in This Study**

Run Title	Start Date	Start Time	Length	Before/ After	Run Type
New Carrollton-NB-001	10/10/06	06:37	23813	Before	Primary
New Carrollton-NB-002	10/10/06	07:02	23815	Before	Secondary
New Carrollton-NB-003	10/10/06	07:30	23883	Before	Secondary
New Carrollton-NB-004	10/10/06	07:55	25565	Before	Secondary
New Carrollton-NB-005	10/10/06	08:20	23930	Before	Secondary

**Node Info**

#	Len	Name
1	0	Harkins at Ellin
2	1654	Harkins at West Lanham
3	392	West Lanham at
4	1453	Annapolis at Riverdale
5	3461	Riverdale at Lamont
6	1429	Riverdale at Finns
7	2962	Riverdale at Auburn
8	1124	Riverdale at Veterans
9	6041	Veterans at Annapolis
10	1836	Veternas at Ellin
11	3461	Ellin at Harkins

**Notes:**

Length of Study Route = 23,813 feet

New Carrollton Clockwise - AM Peak  
GPS Travel Time Study

Study Name : **New Carrollton NB AM**  
Study Date : **12/11/2006**  
Page No. : **3**

**Overall Output Statistics**

Node #	Length	Node	Travel Time	# of Stops	Avg Speed	Total Delay	Time <= 0 MPH	Time <= 25 MPH	Time <= 35 MPH
1	0	Harkins at Ellin							
2	1654	Harkins at West Lanham	43.8	0.4	25.7	18.8	2.2	14.2	43.2
3	392	West Lanham at Annapolis	24.4	0.8	11.0	18.4	7.8	23.2	24.4
4	1453	Annapolis at Riverdale	99.8	1.0	9.9	77.8	63.6	76.8	86.2
5	3461	Riverdale at Lamont	105.6	0.4	22.3	53.0	27.8	47.4	71.6
6	1429	Riverdale at Finns	36.4	0.6	26.8	14.4	3.6	11.8	24.8
7	2962	Riverdale at Auburn	63.8	0.4	31.7	18.8	6.2	15.0	26.0
8	1124	Riverdale at Veterans	46.6	1.0	16.4	29.6	12.4	29.8	42.6
9	6041	Veterans at Annapolis	160.4	1.6	25.7	69.2	49.2	81.8	91.4
10	1836	Veternas at Ellin	66.2	0.8	18.9	38.2	27.8	38.0	45.0
11	3461	Ellin at Harkins	89.0	0.4	26.5	36.4	19.2	31.0	47.6
<b>Total</b>	<b>23,813</b>		<b>736.0</b>	<b>7.4</b>	<b>22.1</b>	<b>374.6</b>	<b>219.8</b>	<b>369.0</b>	<b>502.8</b>

Stats based on 5 BEFORE runs.

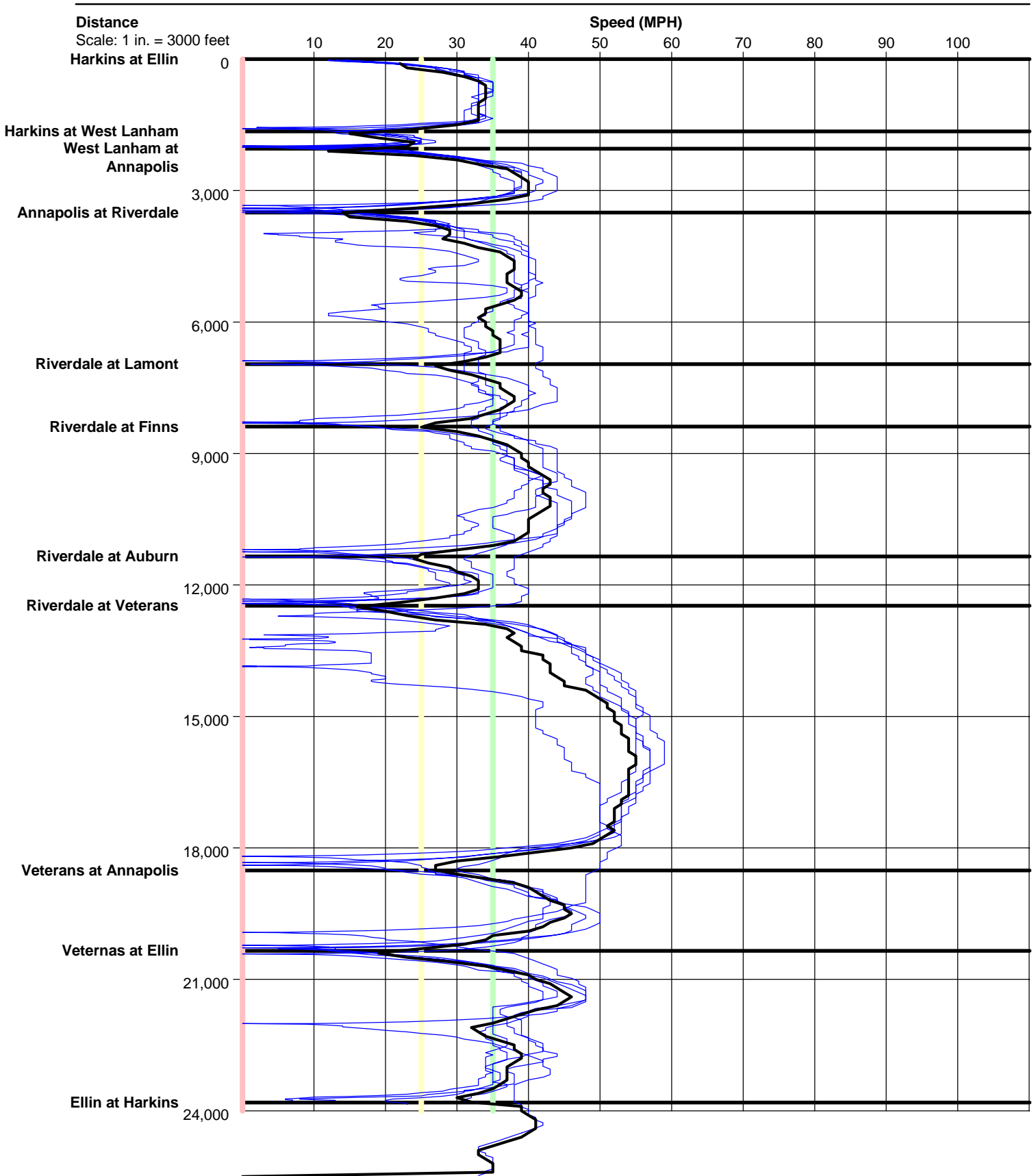
Stops based on a Stop Speed of 5 MPH.

Total Delay based on a Normal Speed of 45 MPH.

New Carrollton Clockwise - AM Peak  
GPS Travel Time Study

Study Name : **New Carrollton NB AM**  
Study Date : **12/11/2006**  
Page No. : **8**

**Speed/Distance Profiles of All Runs**



New Carrollton Clockwise - PM Peak  
GPS Travel Time Study

Study Name : **New Carrollton PM Clockwise**  
Study Date : **12/11/2006**  
Page No. : **2**

**Study Summary**

**Runs Used in This Study**

Run Title	Start Date	Start Time	Length	Before/ After	Run Type
New Carrollton PM-NB-001	10/10/06	15:29	23835	Before	Primary
New Carrollton PM-NB-002	10/10/06	15:59	23814	Before	Secondary
New Carrollton PM-NB-003	10/10/06	16:25	23775	Before	Secondary
New Carrollton PM-NB-004	10/10/06	16:53	23850	Before	Secondary
New Carrollton PM-NB-005	10/10/06	17:21	23870	Before	Secondary
New Carrollton PM-NB-006	10/10/06	17:40	23484	Before	Secondary

**Node Info**

#	Len	Name
1	0	Harkins at Ellin
2	1633	Harkins at West Lanham
3	403	West Lanham at
4	1488	Annapolis at Riverdale
5	3458	Riverdale at Lamont
6	1416	Riverdale at Finns
7	3006	Riverdale at Auburn
8	1127	Riverdale at Veterans
9	5956	Veterans at Annapolis
10	1897	Veternas at Ellin
11	3451	Ellin at Harkins

Length of Study Route = 23,835 feet

**Notes:**

New Carrollton Clockwise - PM Peak  
GPS Travel Time Study

Study Name : **New Carrollton PM Clockwise**  
Study Date : **12/11/2006**  
Page No. : **3**

**Overall Output Statistics**

Node #	Length	Node	Travel Time	# of Stops	Avg Speed	Total Delay	Time <= 0 MPH	Time <= 25 MPH	Time <= 35 MPH
1	0	Harkins at Ellin							
2	1633	Harkins at West Lanham	39.3	0.2	28.3	14.3	0.0	9.2	35.7
3	403	West Lanham at Annapolis	26.3	0.7	10.4	20.3	9.5	23.2	25.2
4	1488	Annapolis at Riverdale	107.0	0.8	9.5	84.0	62.3	84.5	100.8
5	3458	Riverdale at Lamont	97.2	0.7	24.3	44.5	19.3	42.2	56.7
6	1416	Riverdale at Finns	30.0	0.2	32.2	8.8	1.8	7.0	12.0
7	3006	Riverdale at Auburn	60.2	0.3	34.1	14.2	0.8	13.2	20.5
8	1127	Riverdale at Veterans	88.5	1.0	8.7	71.3	48.3	71.7	86.7
9	5956	Veterans at Annapolis	156.5	1.2	25.9	66.2	50.2	71.8	89.8
10	1897	Veternas at Ellin	80.7	1.0	16.0	51.7	31.5	53.7	62.5
11	3451	Ellin at Harkins	90.2	0.8	26.1	39.3	18.7	32.2	52.7
<b>Total</b>	<b>23,835</b>		<b>775.8</b>	<b>6.8</b>	<b>20.9</b>	<b>414.7</b>	<b>242.5</b>	<b>408.5</b>	<b>542.5</b>

Stats based on 6 BEFORE runs.

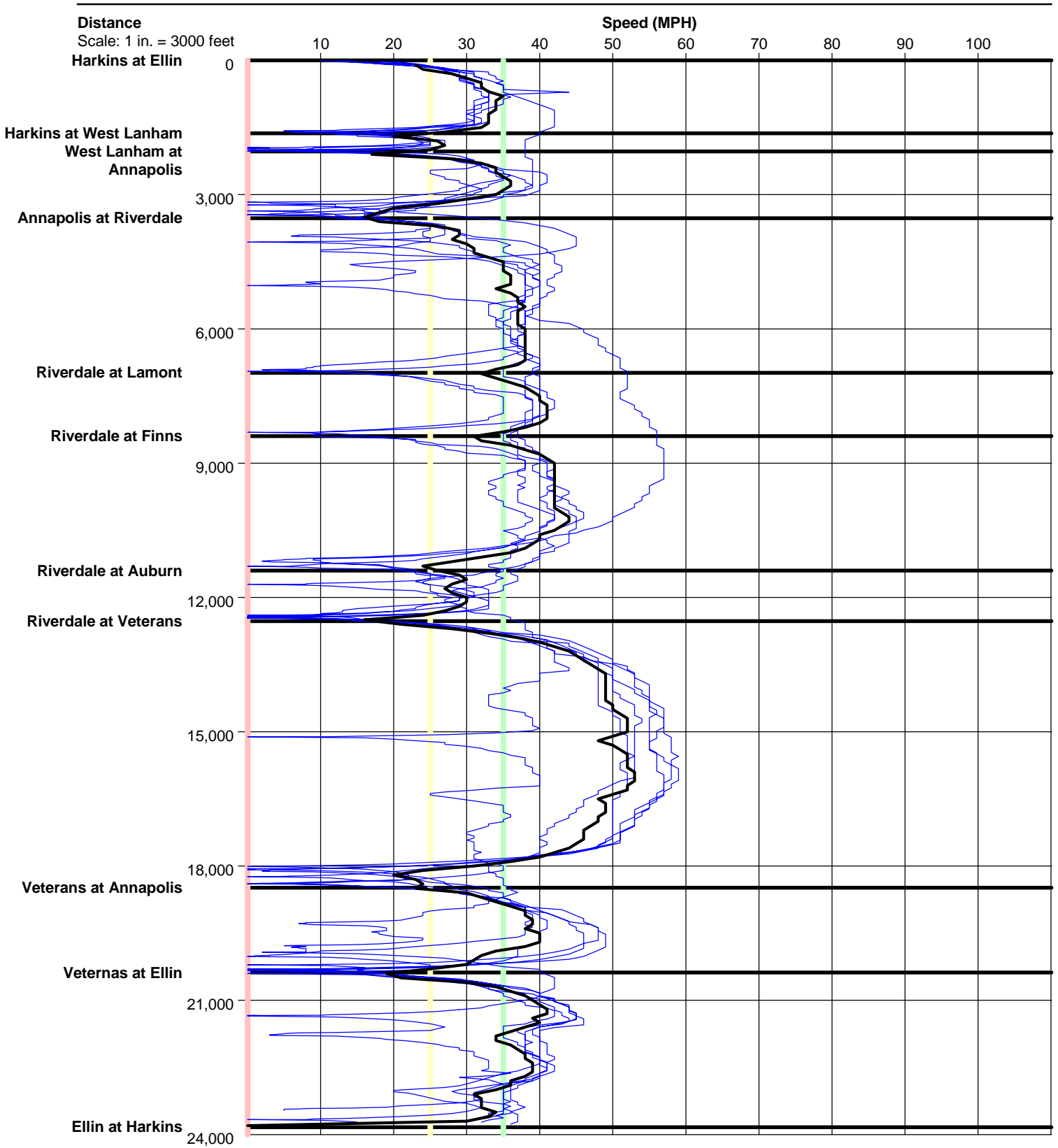
Stops based on a Stop Speed of 5 MPH.

Total Delay based on a Normal Speed of 45 MPH.

New Carrollton Clockwise - PM Peak  
GPS Travel Time Study

Study Name : **New Carrollton PM Clockwise**  
Study Date : **12/11/2006**  
Page No. : **8**

**Speed/Distance Profiles of All Runs**



New Carrollton CounterClockwise - AM Peak  
GPS Travel Time Study

Study Name : **New Carrollton SB AM**  
Study Date : **12/11/2006**  
Page No. : **2**

**Study Summary**

*Runs Used in This Study*

Run Title	Start Date	Start Time	Length	Before/ After	Run Type
New Carrollton-SB-001	10/10/06	06:49	23588	Before	Primary
New Carrollton-SB-002	10/10/06	07:17	23577	Before	Secondary
New Carrollton-SB-003	10/10/06	07:44	23559	Before	Secondary
New Carrollton-SB-004	10/10/06	08:11	23584	Before	Secondary
New Carrollton-SB-005	10/10/06	08:34	23570	Before	Secondary

*Node Info*

#	Len	Name
1	0	Ellin at Harkins
2	3318	Veternas at Ellin
3	1867	Veterans at Annapolis
4	5959	Riverdale at Veterans
5	1084	Riverdale at Auburn
6	2952	Riverdale at Finns
7	1394	Riverdale at Lamont
8	3419	Annapolis at Riverdale
9	1499	West Lanham at
10	456	Harkins at West Lanham
11	1640	Harkins at Ellin

**Notes:**

Length of Study Route = 23,588 feet



New Carrollton CounterClockwise - AM Peak  
GPS Travel Time Study

Study Name : **New Carrollton SB AM**  
Study Date : **12/11/2006**  
Page No. : **3**

**Overall Output Statistics**

Node #	Length	Node	Travel Time	# of Stops	Avg Speed	Total Delay	Time <= 0 MPH	Time <= 25 MPH	Time <= 35 MPH
1	0	Ellin at Harkins							
2	3318	Veternas at Ellin	62.2	0.0	36.4	11.8	0.0	4.0	16.8
3	1867	Veterans at Annapolis	81.2	0.8	15.7	52.4	30.4	57.0	69.2
4	5959	Riverdale at Veterans	90.8	0.4	44.7	5.2	0.0	9.6	18.6
5	1084	Riverdale at Auburn	27.4	0.2	27.0	10.6	0.0	7.4	24.0
6	2952	Riverdale at Finns	59.2	0.4	34.0	14.2	2.4	8.2	16.4
7	1394	Riverdale at Lamont	28.6	0.2	33.2	7.2	0.8	5.0	12.4
8	3419	Annapolis at Riverdale	74.8	0.2	31.2	22.8	3.6	11.6	41.6
9	1499	West Lanham at Annapolis	56.0	1.0	18.3	33.0	16.4	32.8	42.8
10	456	Harkins at West Lanham	28.0	1.0	11.1	21.0	9.2	25.0	28.0
11	1640	Harkins at Ellin	54.2	0.6	20.6	30.0	14.6	24.2	48.2
<b>Total</b>	<b>23,588</b>		<b>562.4</b>	<b>4.8</b>	<b>28.6</b>	<b>208.2</b>	<b>77.4</b>	<b>184.8</b>	<b>318.0</b>

Stats based on 5 BEFORE runs.

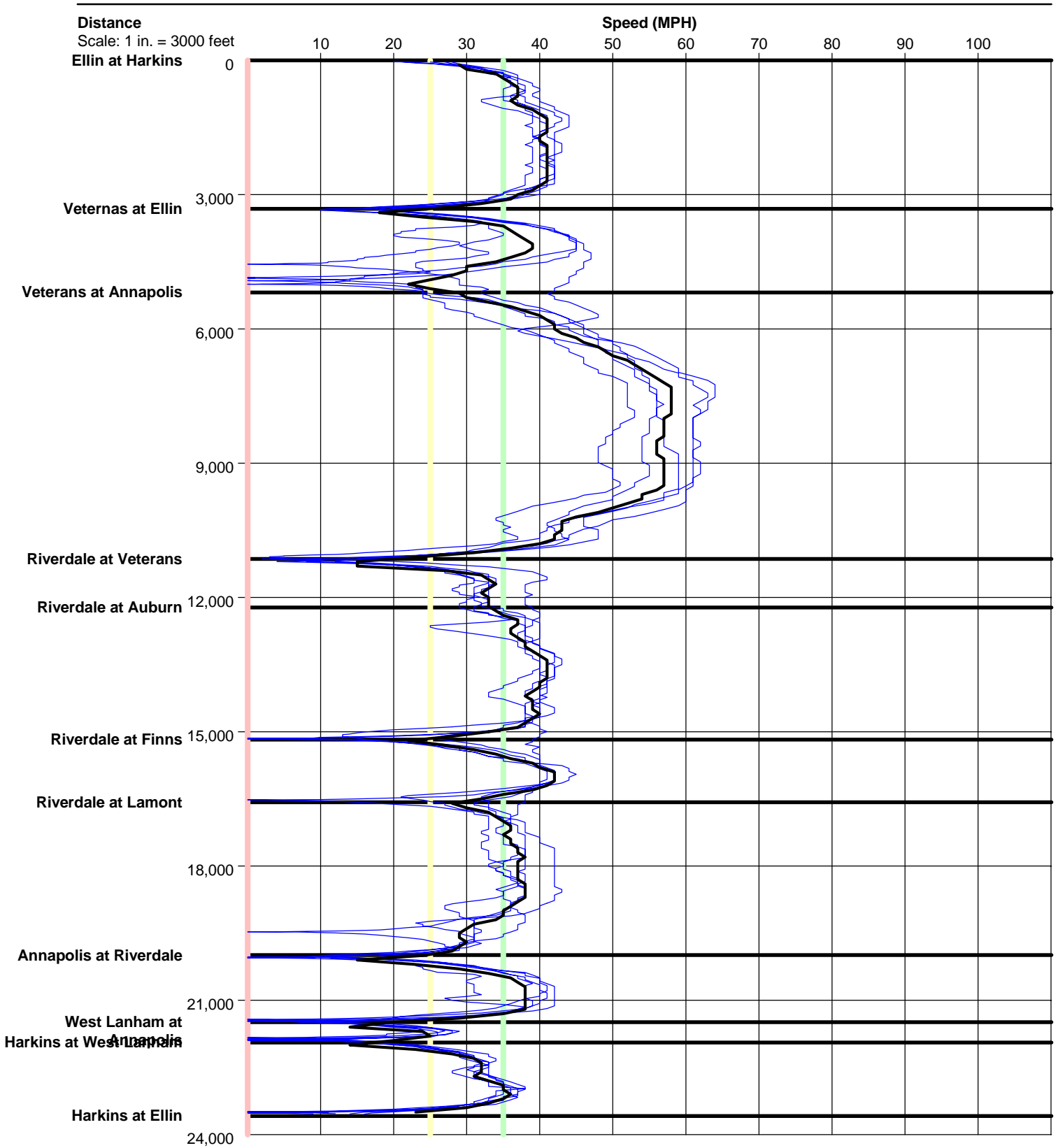
Stops based on a Stop Speed of 5 MPH.

Total Delay based on a Normal Speed of 45 MPH.

New Carrollton CounterClockwise - AM Peak  
GPS Travel Time Study

Study Name : **New Carrollton SB AM**  
Study Date : **12/11/2006**  
Page No. : **8**

**Speed/Distance Profiles of All Runs**



New Carrollton CounterClockwise - PM Peak  
GPS Travel Time Study

Study Name : **New Carrollton PM**

CounterClockwi

Study Date : **12/11/2006**

**Study Summary**

Page No. : **2**

**Runs Used in This Study**

Run Title	Start Date	Start Time	Length	Before/ After	Run Type
New Carrollton PM-SB-001	10/10/06	15:43	23550	Before	Primary
New Carrollton PM-SB-002	10/10/06	16:13	23667	Before	Secondary
New Carrollton PM-SB-003	10/10/06	16:41	23591	Before	Secondary
New Carrollton PM-SB-004	10/10/06	17:09	23634	Before	Secondary

**Node Info**

#	Len	Name
1	0	Ellin at Harkins
2	3346	Veterans at Ellin
3	1829	Veterans at Annapolis
4	6009	Riverdale at Veterans
5	1030	Riverdale at Auburn
6	3000	Riverdale at Finns
7	1377	Riverdale at Lamont
8	3446	Annapolis at Riverdale
9	1499	West Lanham at
10	401	Harkins at West Lanham
11	1613	Harkins at Ellin

**Notes:**

Length of Study Route = 23,550 feet

New Carrollton CounterClockwise - PM Peak  
GPS Travel Time Study

Study Name : **New Carrollton PM**

CounterClockwi

Study Date : **12/11/2006**

**Overall Output Statistics**

Page No. : **3**

Node #	Length	Node	Travel Time	# of Stops	Avg Speed	Total Delay	Time <= 0 MPH	Time <= 25 MPH	Time <= 35 MPH
1	0	Ellin at Harkins							
2	3346	Veternas at Ellin	64.5	0.0	35.4	13.5	0.0	5.5	20.5
3	1829	Veterans at Annapolis	139.8	1.3	8.9	111.8	85.5	113.5	124.8
4	6009	Riverdale at Veterans	94.3	0.3	43.5	3.8	0.8	7.0	20.8
5	1030	Riverdale at Auburn	42.5	0.5	16.5	26.5	13.5	25.8	42.5
6	3000	Riverdale at Finns	70.5	0.5	29.0	24.8	1.0	19.5	41.8
7	1377	Riverdale at Lamont	32.0	0.0	29.3	11.0	0.0	8.0	22.0
8	3446	Annapolis at Riverdale	92.8	0.5	25.3	40.5	6.5	37.3	79.0
9	1499	West Lanham at Annapolis	46.5	0.8	22.0	23.5	8.0	22.8	30.3
10	401	Harkins at West Lanham	21.5	1.0	12.7	15.5	1.5	20.0	21.5
11	1613	Harkins at Ellin	48.0	0.0	22.9	23.5	2.3	18.0	46.3
<b>Total</b>	<b>23,550</b>		<b>652.3</b>	<b>4.8</b>	<b>24.6</b>	<b>294.3</b>	<b>119.0</b>	<b>277.3</b>	<b>449.3</b>

Stats based on 4 BEFORE runs.

Stops based on a Stop Speed of 5 MPH.

Total Delay based on a Normal Speed of 45 MPH.

# New Carrollton CounterClockwise - PM Peak

GPS Travel Time Study

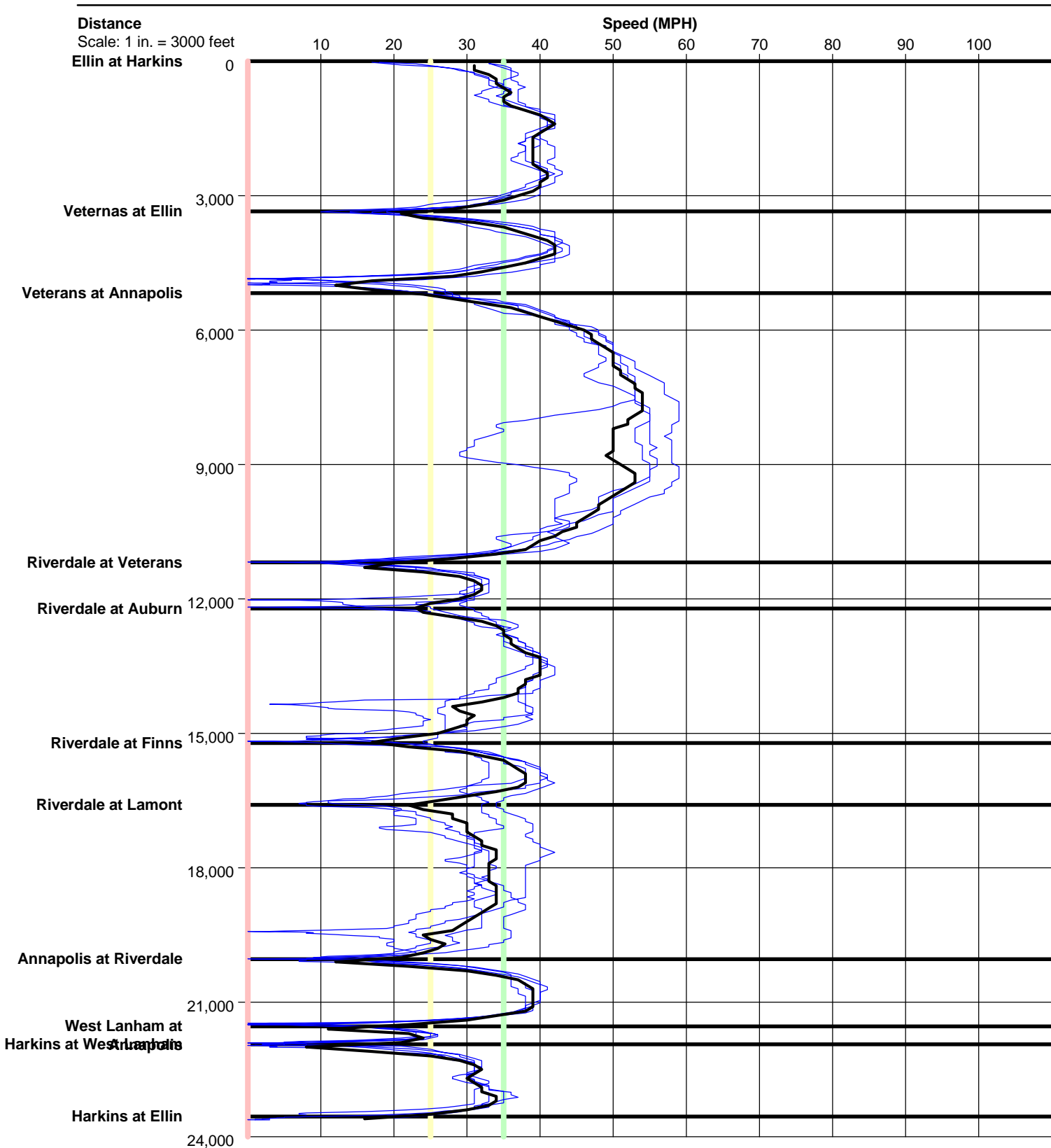
Study Name : **New Carrollton PM**

CounterClockwi

Study Date : **12/11/2006**

## Speed/Distance Profiles of All Runs

Page No. : **8**



EB Wayne Avenue - AM Peak  
GPS Travel Time Study

Study Name : **Silver Spring EB - AM**  
Study Date : **12/11/2006**  
Page No. : **2**

**Study Summary**

**Runs Used in This Study**

Run Title	Start Date	Start Time	Length	Before/ After	Run Type
SilverSpring-EB-001	09/27/06	06:58	14008	Before	Primary
SilverSpring-EB-002	09/27/06	07:34	14174	Before	Secondary
SilverSpring-EB-004	09/27/06	08:34	13946	Before	Secondary

**Notes:**

**Node Info**

#	Len	Name
1	0	Spring at 2nd
2	645	Spring at Fenwick
3	302	Spring at Apple
4	704	Wayne at Colesville
5	970	Wayne at Georgia
6	795	Wayne at Fenton
7	989	Wayne at Cedar
8	1536	Wayne at Dale
9	1177	Wayne at Mansfield
10	801	Wayne at Sligo Creek
11	2038	Wayne at Flower
12	1687	Flower at Piney
13	328	Piney at Greenwood
14	340	Piney at Arliss
15	1156	Piney at Barron
16	540	Piney at MD 193

Length of Study Route = 14,008 feet

**EB Wayne Avenue - AM Peak**  
GPS Travel Time Study

Study Name : **Silver Spring EB - AM**  
Study Date : **12/11/2006**  
Page No. : **3**

**Overall Output Statistics**

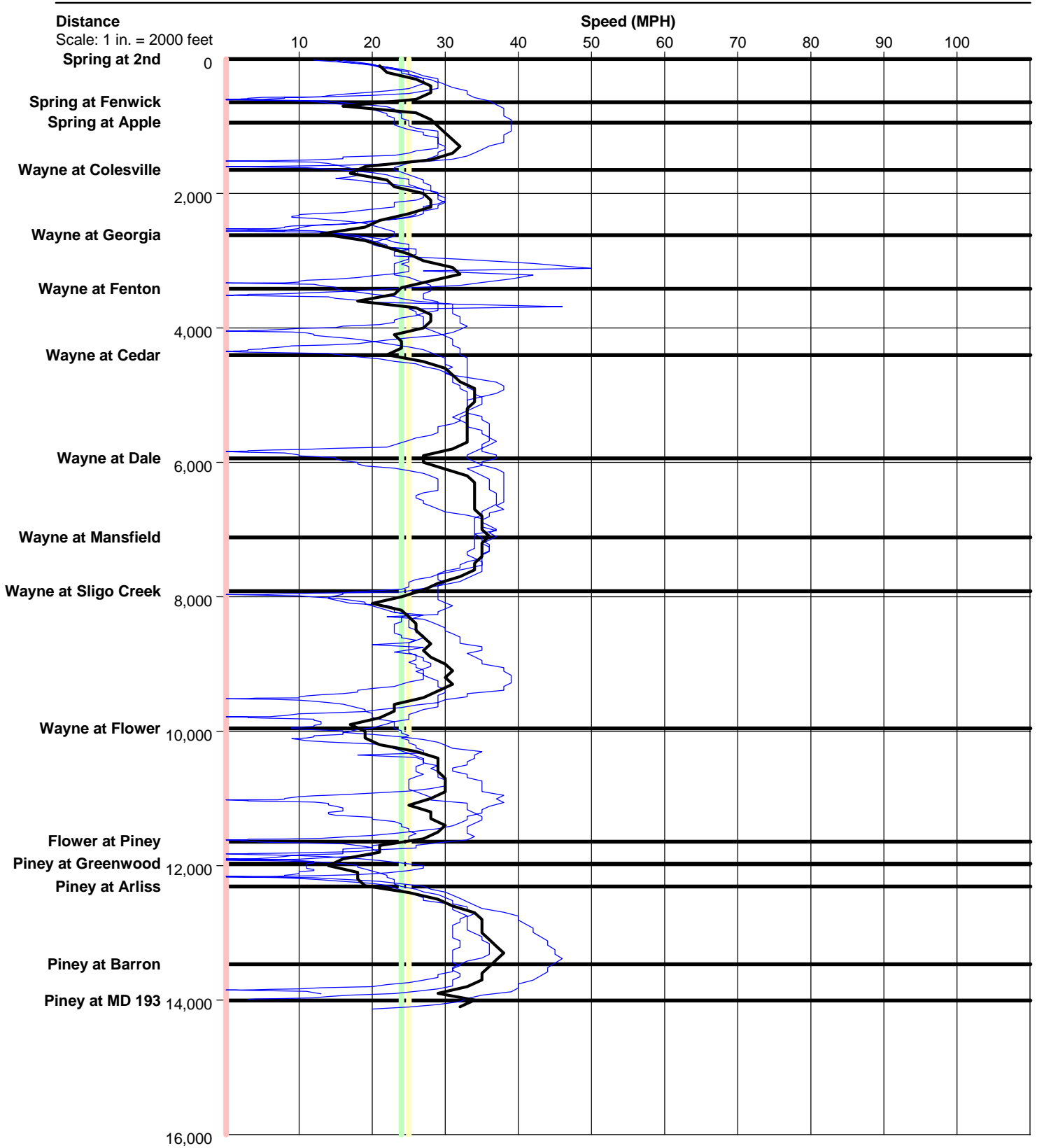
<b>Node #</b>	<b>Length</b>	<b>Node</b>	<b>Travel Time</b>	<b># of Stops</b>	<b>Avg Speed</b>	<b>Total Delay</b>	<b>Time &lt;= 0 MPH</b>	<b>Time &lt;= 25 MPH</b>	<b>Time &lt;= 24 MPH</b>
1	0	Spring at 2nd							
2	645	Spring at Fenwick	37.7	0.7	11.7	27.7	13.0	30.3	28.7
3	302	Spring at Apple	8.0	0.0	25.7	3.0	0.0	6.0	5.7
4	704	Wayne at Colesville	62.0	0.7	7.7	51.0	42.0	51.3	50.3
5	970	Wayne at Georgia	50.7	0.7	13.1	35.7	17.0	39.3	38.3
6	795	Wayne at Fenton	30.7	0.3	17.7	18.3	6.7	24.0	20.0
7	989	Wayne at Cedar	53.3	1.0	12.6	38.0	15.3	38.7	38.3
8	1536	Wayne at Dale	44.0	0.3	23.8	21.0	6.7	15.3	15.0
9	1177	Wayne at Mansfield	24.7	0.0	32.5	6.7	0.0	1.7	1.7
10	801	Wayne at Sligo Creek	17.3	0.0	31.5	5.3	0.0	2.0	1.3
11	2038	Wayne at Flower	72.7	1.0	19.1	41.7	10.0	43.0	42.0
12	1687	Flower at Piney	68.3	0.7	16.8	42.3	16.7	40.7	39.3
13	328	Piney at Greenwood	36.3	1.0	6.2	31.3	19.0	35.3	35.3
14	340	Piney at Arliss	45.0	0.7	5.2	39.7	30.0	43.7	43.7
15	1156	Piney at Barron	23.3	0.0	33.8	5.3	0.0	0.7	0.3
16	540	Piney at MD 193	28.7	0.7	12.8	21.0	13.7	20.3	20.0
<b>Total</b>	<b>14,008</b>		<b>602.7</b>	<b>7.7</b>	<b>15.8</b>	<b>388.0</b>	<b>190.0</b>	<b>392.3</b>	<b>380.0</b>

Stats based on 3 BEFORE runs.  
Stops based on a Stop Speed of 5 MPH.  
Total Delay based on a Normal Speed of 45 MPH.

EB Wayne Avenue - AM Peak  
GPS Travel Time Study

Study Name : Silver Spring EB - AM  
Study Date : 12/11/2006  
Page No. : 8

Speed/Distance Profiles of All Runs





WB Wayne Avenue - AM Peak  
GPS Travel Time Study

Study Name : **Silver Spring WB - AM**  
Study Date : **12/11/2006**  
Page No. : **2**

**Study Summary**

*Runs Used in This Study*

Run Title	Start Date	Start Time	Length	Before/ After	Run Type
SilverSpring-WB-001	09/27/06	07:11	14003	Before	Primary
SilverSpring-WB-002	09/27/06	07:49	14012	Before	Secondary
SilverSpring-WB-004	09/27/06	08:52	13961	Before	Secondary

**Notes:**

*Node Info*

#	Len	Name
1	0	Piney at MD 193
2	558	Piney at Barron
3	1146	Piney at Arliss
4	323	Piney at Greenwood
5	344	Flower at Piney
6	1817	Wayne at Flower
7	1955	Wayne at Sligo Creek
8	769	Wayne at Mansfield
9	1196	Wayne at Dale
10	1570	Wayne at Cedar
11	968	Wayne at Fenton
12	739	Wayne at Georgia
13	907	Wayne at Colesville
14	691	Spring at Apple
15	299	Spring at Fenwick
16	721	Spring at 2nd

Length of Study Route = 14,003 feet

WB Wayne Avenue - AM Peak  
GPS Travel Time Study

Study Name : **Silver Spring WB - AM**  
Study Date : **12/11/2006**  
Page No. : **3**

**Overall Output Statistics**

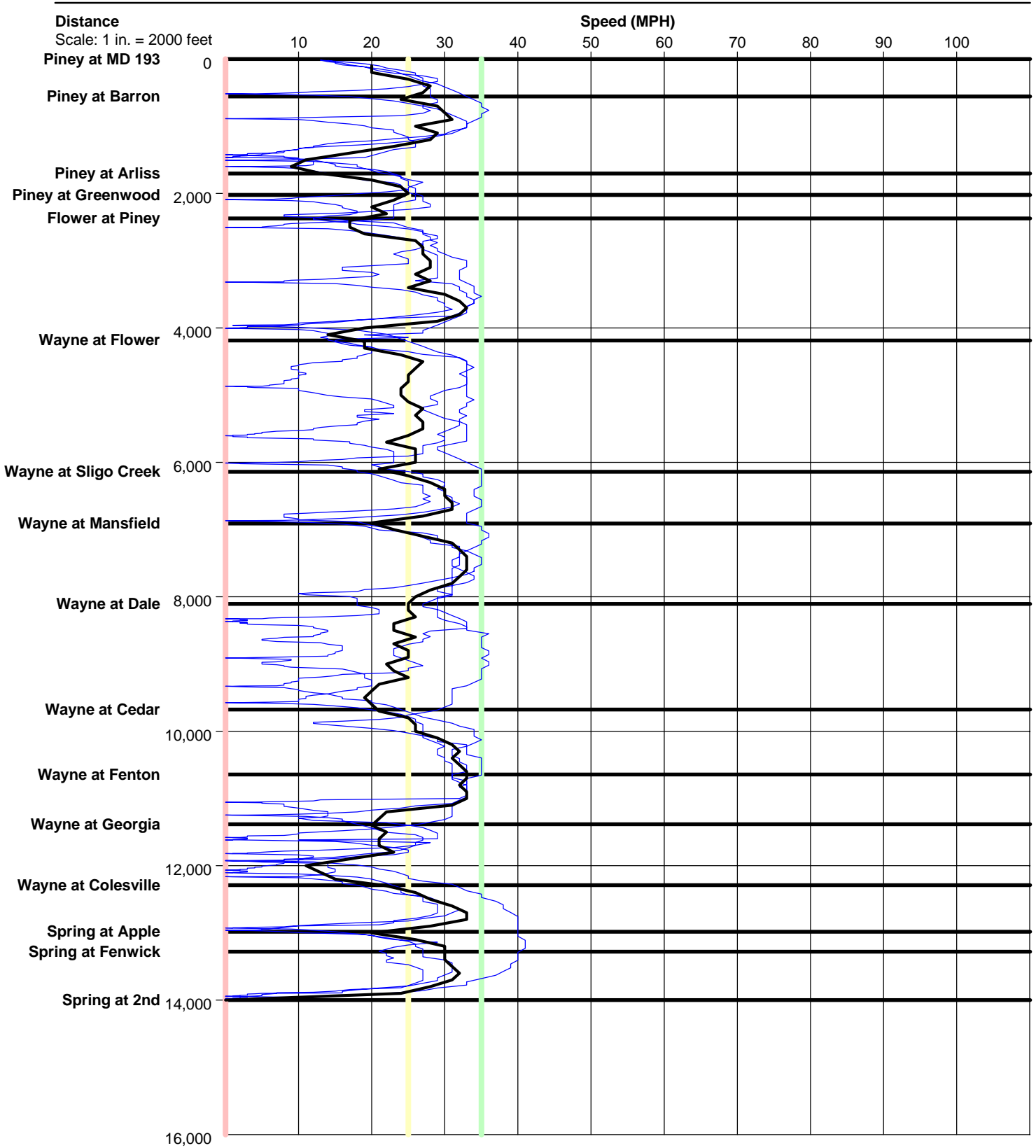
Node #	Length	Node	Travel Time	# of Stops	Avg Speed	Total Delay	Time <= 0 MPH	Time <= 25 MPH	Time <= 35 MPH
1	0	Piney at MD 193							
2	558	Piney at Barron	22.7	0.3	16.8	14.0	4.7	15.0	22.7
3	1146	Piney at Arliss	91.0	1.7	8.6	73.7	39.7	79.3	90.0
4	323	Piney at Greenwood	9.7	0.0	22.8	4.7	0.0	5.3	9.7
5	344	Flower at Piney	19.7	0.3	11.9	14.3	5.7	17.7	19.7
6	1817	Wayne at Flower	94.0	1.3	13.2	66.0	34.3	67.7	94.0
7	1955	Wayne at Sligo Creek	100.0	1.0	13.3	70.0	28.7	74.0	100.0
8	769	Wayne at Mansfield	24.3	0.3	21.5	12.3	1.7	11.7	24.3
9	1196	Wayne at Dale	28.7	0.0	28.4	10.3	0.0	6.3	27.3
10	1570	Wayne at Cedar	83.7	2.0	12.8	59.7	15.0	67.3	80.7
11	968	Wayne at Fenton	23.3	0.0	28.3	8.3	0.0	4.3	22.7
12	739	Wayne at Georgia	53.7	0.7	9.4	42.7	29.7	42.7	53.7
13	907	Wayne at Colesville	151.3	2.0	4.1	137.3	95.3	145.7	151.3
14	691	Spring at Apple	24.3	0.7	19.4	14.0	2.3	14.7	20.7
15	299	Spring at Fenwick	8.0	0.0	25.5	3.0	0.0	4.0	6.3
16	721	Spring at 2nd	51.7	0.7	9.5	41.0	22.7	40.3	48.7
<b>Total</b>	<b>14,003</b>		<b>786.0</b>	<b>11.0</b>	<b>12.1</b>	<b>571.3</b>	<b>279.7</b>	<b>596.0</b>	<b>771.7</b>

Stats based on 3 BEFORE runs.  
Stops based on a Stop Speed of 5 MPH.  
Total Delay based on a Normal Speed of 45 MPH.

WB Wayne Avenue - AM Peak  
GPS Travel Time Study

Study Name : Silver Spring WB - AM  
Study Date : 12/11/2006  
Page No. : 8

Speed/Distance Profiles of All Runs



EB Wayne Avenue - PM Peak  
GPS Travel Time Study

Study Name : **Silver Spring EB PM**  
Study Date : **12/11/2006**  
Page No. : **2**

**Study Summary**

**Runs Used in This Study**

Run Title	Start Date	Start Time	Length	Before/ After	Run Type
Silver Spring PM-EB-001	12/30/99	15:54	15560	Before	Primary
Silver Spring PM-EB-002	12/30/99	16:26	15514	Before	Primary
Silver Spring PM-EB-003	12/30/99	17:01	15172	Before	Primary

**Notes:**

**Node Info**

#	Len	Name
1	0	Spring at 2nd
2	654	Spring at Fenwick
3	290	Spring at Apple
4	680	Wayne at Colesville
5	1011	Wayne at Georgia
6	642	Wayne at Fenton
7	974	Wayne at Cedar
8	1536	Wayne at Dale
9	1185	Wayne at Mansfield
10	822	Wayne at Sligo Creek
11	2044	Wayne at Flower
12	1769	Flower at Piney
13	351	Piney at Greenwood
14	305	Piney at Arliss
15	1107	Piney at Barron
16	481	Piney at MD 193

Length of Study Route = 13,851 feet

**EB Wayne Avenue - PM Peak**  
GPS Travel Time Study

Study Name : **Silver Spring EB PM**  
Study Date : **12/11/2006**  
Page No. : **3**

**Overall Output Statistics**

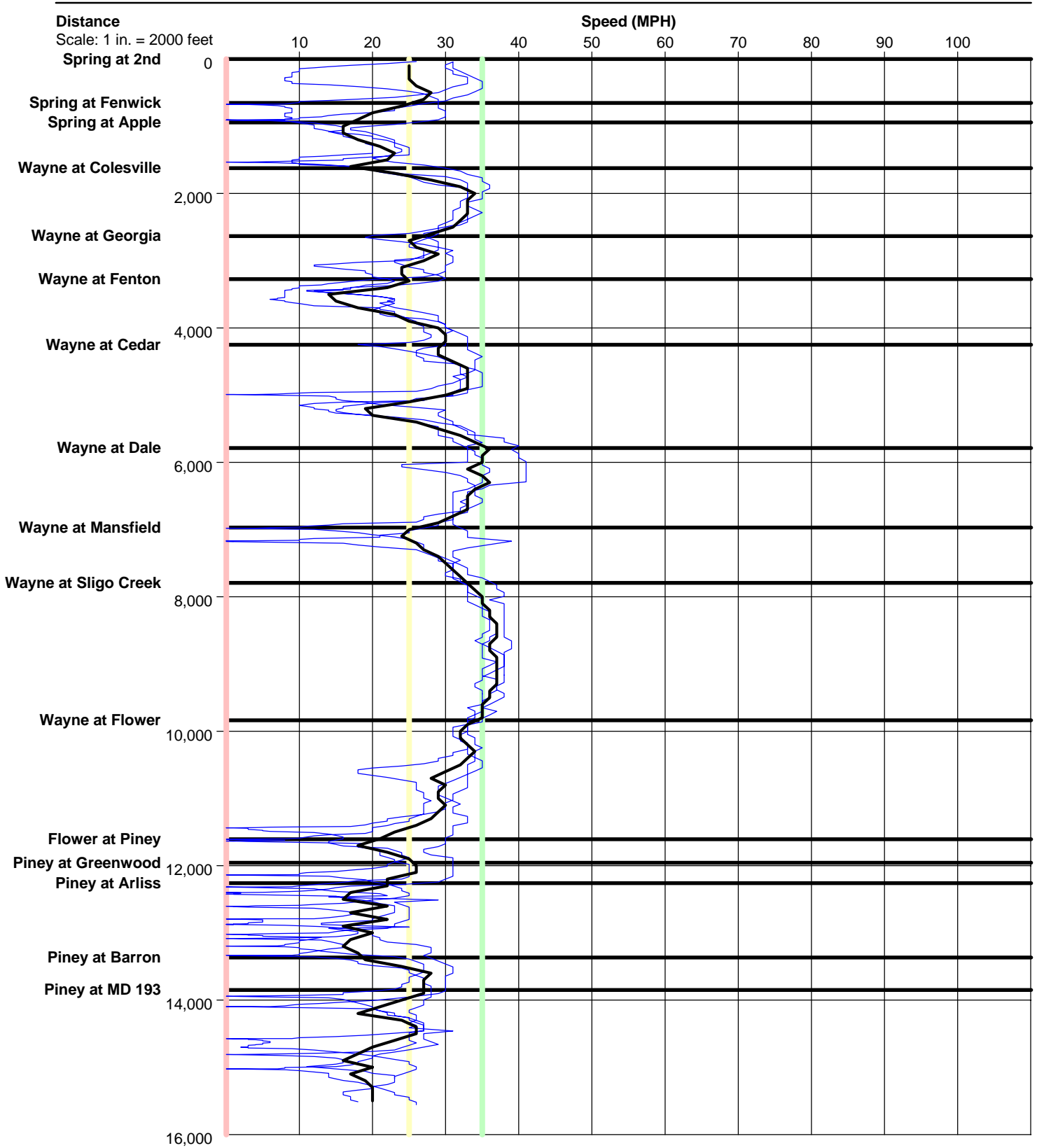
<b>Node #</b>	<b>Length</b>	<b>Node</b>	<b>Travel Time</b>	<b># of Stops</b>	<b>Avg Speed</b>	<b>Total Delay</b>	<b>Time &lt;= 0 MPH</b>	<b>Time &lt;= 25 MPH</b>	<b>Time &lt;= 35 MPH</b>
1	0	Spring at 2nd							
2	654	Spring at Fenwick	21.3	0.0	20.9	11.3	0.0	10.7	21.3
3	290	Spring at Apple	92.0	1.0	2.1	87.7	75.7	90.0	92.0
4	680	Wayne at Colesville	33.3	0.3	13.9	22.7	5.7	31.3	33.3
5	1011	Wayne at Georgia	22.7	0.0	30.4	6.7	0.0	3.0	21.7
6	642	Wayne at Fenton	17.7	0.0	24.8	7.7	0.0	6.3	17.7
7	974	Wayne at Cedar	33.3	0.0	19.9	18.3	0.0	22.0	33.3
8	1536	Wayne at Dale	45.3	0.3	23.1	21.7	5.7	18.0	44.0
9	1185	Wayne at Mansfield	25.3	0.0	31.9	7.3	0.0	2.3	21.0
10	822	Wayne at Sligo Creek	52.7	0.7	10.6	39.7	28.7	36.7	51.3
11	2044	Wayne at Flower	38.3	0.0	36.4	7.3	0.0	0.0	10.7
12	1769	Flower at Piney	55.0	0.7	21.9	28.0	7.3	23.0	54.7
13	351	Piney at Greenwood	19.7	0.3	12.2	13.7	6.3	17.0	19.7
14	305	Piney at Arliss	33.0	0.3	6.3	28.0	22.7	30.0	33.0
15	1107	Piney at Barron	202.3	3.0	3.7	185.3	140.0	198.7	202.3
16	481	Piney at MD 193	12.7	0.0	25.9	5.0	0.0	3.3	12.7
<b>Total</b>	<b>13,851</b>		<b>704.7</b>	<b>6.7</b>	<b>13.4</b>	<b>490.3</b>	<b>292.0</b>	<b>492.3</b>	<b>668.7</b>

Stats based on 3 BEFORE runs.  
Stops based on a Stop Speed of 5 MPH.  
Total Delay based on a Normal Speed of 45 MPH.

EB Wayne Avenue - PM Peak  
GPS Travel Time Study

Study Name : **Silver Spring EB PM**  
Study Date : **12/11/2006**  
Page No. : **8**

**Speed/Distance Profiles of All Runs**



WB Wayne Avenue - PM Peak  
GPS Travel Time Study

Study Name : **Silver Spring WB PM**  
Study Date : **12/11/2006**  
Page No. : **2**

**Study Summary**

*Runs Used in This Study*

Run Title	Start Date	Start Time	Length	Before/ After	Run Type
Silver Spring-WB-001	09/27/06	15:57	14050	Before	Primary
Silver Spring-WB-003	09/27/06	17:04	13710	Before	Secondary

**Notes:**

**Node Info**

#	Len	Name
1	0	Piney at MD 193
2	572	Piney at Barron
3	1107	Piney at Arliss
4	334	Piney at Greenwood
5	345	Flower at Piney
6	1764	Wayne at Flower
7	2023	Wayne at Sligo Creek
8	844	Wayne at Mansfield
9	1172	Wayne at Dale
10	1577	Wayne at Cedar
11	900	Wayne at Fenton
12	758	Wayne at Georgia
13	981	Wayne at Colesville
14	693	Spring at Apple
15	309	Spring at Fenwick
16	671	Spring at 2nd

Length of Study Route = 14,050 feet

WB Wayne Avenue - PM Peak  
GPS Travel Time Study

Study Name : **Silver Spring WB PM**  
Study Date : **12/11/2006**  
Page No. : **3**

**Overall Output Statistics**

Node #	Length	Node	Travel Time	# of Stops	Avg Speed	Total Delay	Time <= 0 MPH	Time <= 25 MPH	Time <= 35 MPH
1	0	Piney at MD 193							
2	572	Piney at Barron	34.0	0.5	11.5	25.0	8.5	32.5	34.0
3	1107	Piney at Arliss	26.0	0.0	29.0	9.0	0.0	5.5	26.0
4	334	Piney at Greenwood	8.5	0.0	26.8	3.5	0.0	1.5	8.5
5	345	Flower at Piney	11.0	0.0	21.4	6.0	0.0	6.0	11.0
6	1764	Wayne at Flower	64.5	0.5	18.6	37.5	8.5	36.5	64.5
7	2023	Wayne at Sligo Creek	69.5	0.5	19.8	38.5	23.0	33.0	61.5
8	844	Wayne at Mansfield	18.0	0.0	32.0	5.0	0.0	0.0	15.0
9	1172	Wayne at Dale	21.5	0.0	37.2	3.5	0.0	0.0	1.0
10	1577	Wayne at Cedar	31.5	0.0	34.1	7.5	0.0	0.0	24.0
11	900	Wayne at Fenton	40.0	0.5	15.3	26.0	11.0	25.0	40.0
12	758	Wayne at Georgia	87.0	1.0	5.9	75.5	54.5	81.0	87.0
13	981	Wayne at Colesville	147.5	2.5	4.5	132.5	94.5	144.0	147.5
14	693	Spring at Apple	32.0	0.5	14.8	21.5	11.5	18.5	32.0
15	309	Spring at Fenwick	8.0	0.0	26.3	3.0	0.0	2.0	8.0
16	671	Spring at 2nd	64.0	1.5	7.1	56.5	35.0	59.0	63.0
<b>Total</b>	<b>14,050</b>		<b>663.0</b>	<b>7.5</b>	<b>14.4</b>	<b>450.5</b>	<b>246.5</b>	<b>444.5</b>	<b>623.0</b>

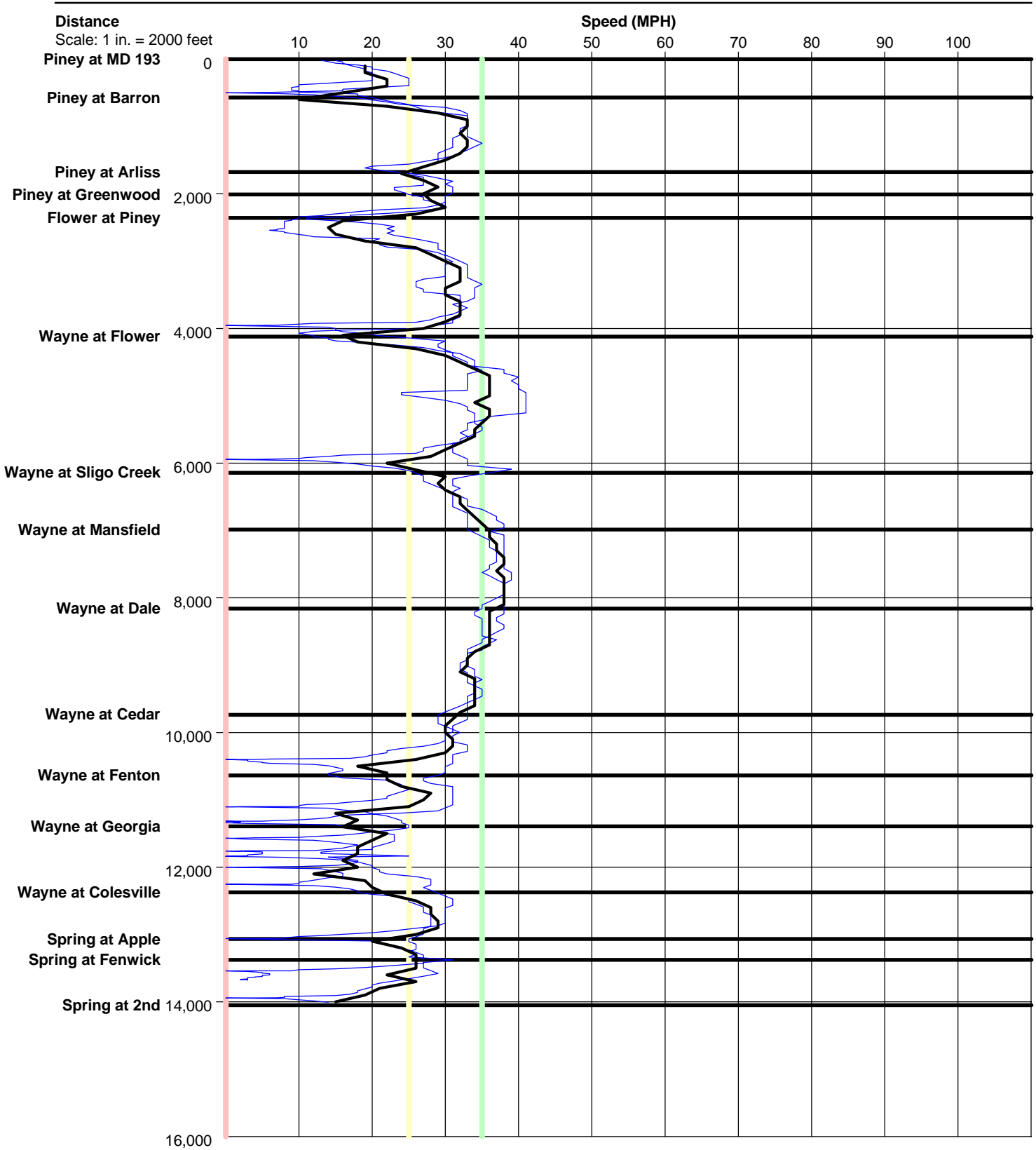
Stats based on 2 BEFORE runs.  
Stops based on a Stop Speed of 5 MPH.  
Total Delay based on a Normal Speed of 45 MPH.



WB Wayne Avenue - PM Peak  
GPS Travel Time Study

Study Name : Silver Spring WB PM  
Study Date : 12/11/2006  
Page No. : 8

Speed/Distance Profiles of All Runs



EB Sligo Avenue - AM Peak  
GPS Travel Time Study

Study Name : **Sligo WB AM**  
Study Date : **12/11/2006**  
Page No. : **2**

**Study Summary**

**Runs Used in This Study**

Run Title	Start Date	Start Time	Length	Before/ After	Run Type
Sligo AM-WB-001	09/28/06	06:59	9052	Before	Primary
Sligo AM-WB-002	09/28/06	07:18	9084	Before	Secondary
Sligo AM-WB-003	09/28/06	07:39	8976	Before	Secondary
Sligo AM-WB-004	09/28/06	08:05	9097	Before	Secondary
Sligo AM-WB-005	09/28/06	08:23	9052	Before	Secondary
Sligo AM-WB-006	09/28/06	08:41	9079	Before	Secondary

**Node Info**

#	Len	Name
1	0	Fenton at Wayne
2	788	Fenton at Thayer
3	471	Fenton at Silver Spring
4	558	Sligo at Fenton
5	1308	Sligo at Chesapeake
6	2603	Piney at Sligo
7	941	Piney at Dale
8	1249	Piney at Sligo Creek
9	1134	Piney at Flower

Length of Study Route = 9,052 feet

**Notes:**

**EB Sligo Avenue - AM Peak**  
GPS Travel Time Study

Study Name : **Sligo WB AM**  
Study Date : **12/11/2006**  
Page No. : **3**

**Overall Output Statistics**

<b>Node #</b>	<b>Length</b>	<b>Node</b>	<b>Travel Time</b>	<b># of Stops</b>	<b>Avg Speed</b>	<b>Total Delay</b>	<b>Time &lt;= 0 MPH</b>	<b>Time &lt;= 25 MPH</b>	<b>Time &lt;= 35 MPH</b>
1	0	Fenton at Wayne							
2	788	Fenton at Thayer	52.0	0.7	10.3	40.0	18.3	47.3	52.0
3	471	Fenton at Silver Spring	14.0	0.3	22.9	7.0	0.0	6.7	14.0
4	558	Sligo at Fenton	38.5	0.7	9.9	29.8	18.0	30.2	38.5
5	1308	Sligo at Chesapeake	35.7	0.2	25.0	15.7	0.0	9.8	35.7
6	2603	Piney at Sligo	77.5	0.3	22.9	37.7	15.3	26.0	77.5
7	941	Piney at Dale	55.2	0.3	11.6	40.7	30.5	38.7	53.8
8	1249	Piney at Sligo Creek	25.5	0.0	33.4	6.3	0.0	0.0	16.7
9	1134	Piney at Flower	23.2	0.0	33.4	6.5	0.0	0.2	16.5
<b>Total</b>	<b>9,052</b>		<b>321.5</b>	<b>2.5</b>	<b>19.2</b>	<b>183.7</b>	<b>82.2</b>	<b>158.8</b>	<b>304.7</b>

Stats based on 6 BEFORE runs.

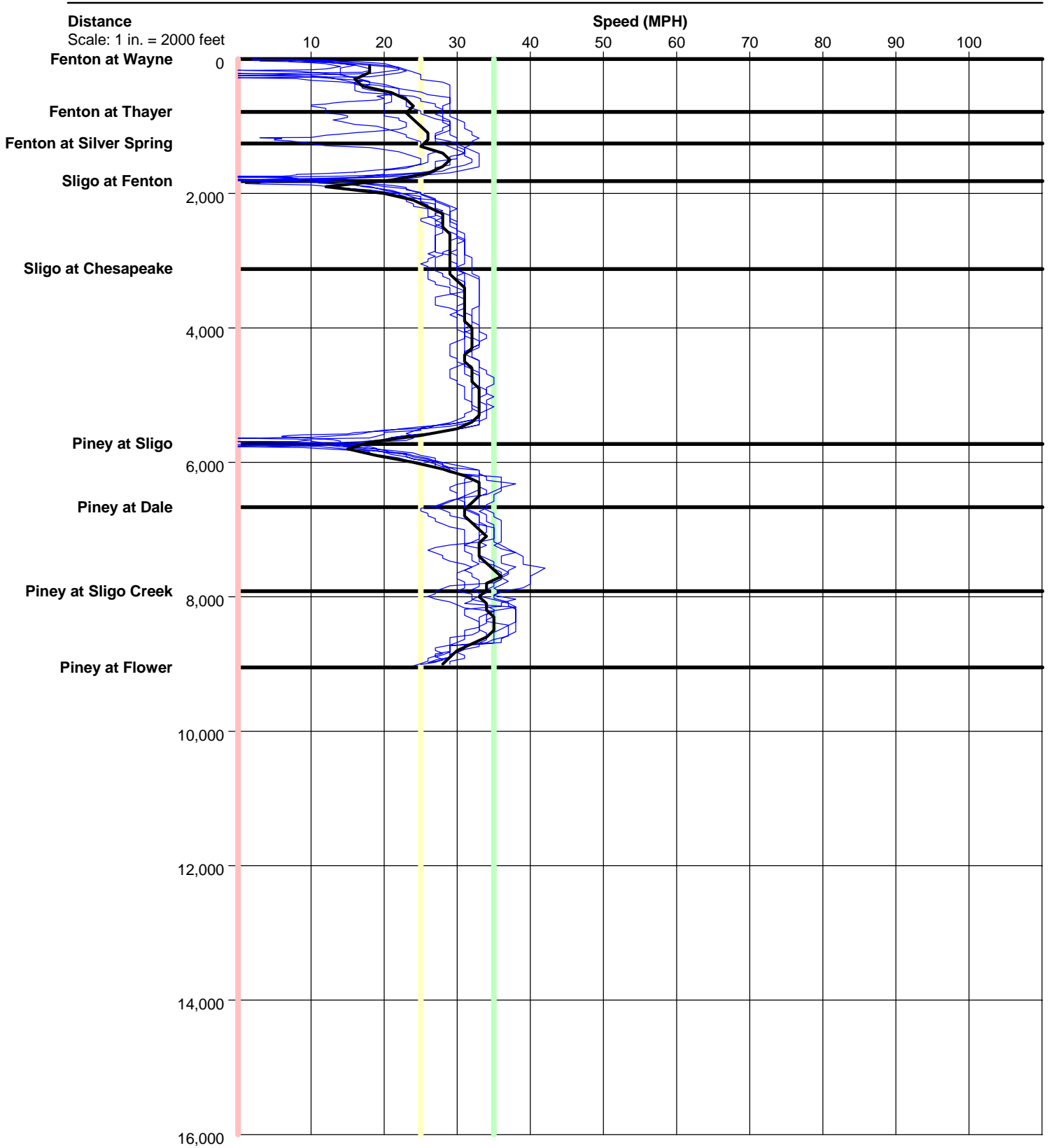
Stops based on a Stop Speed of 5 MPH.

Total Delay based on a Normal Speed of 45 MPH.

EB Sligo Avenue - AM Peak  
GPS Travel Time Study

Study Name : **Sligo WB AM**  
Study Date : **12/11/2006**  
Page No. : **8**

**Speed/Distance Profiles of All Runs**



WB Sligo Avenue - AM Peak  
GPS Travel Time Study

Study Name : **Sligo EB AM**  
Study Date : **12/11/2006**  
Page No. : **2**

**Study Summary**

**Runs Used in This Study**

Run Title	Start Date	Start Time	Length	Before/ After	Run Type
Sligo AM-EB-001	09/28/06	07:06	8940	Before	Primary
Sligo AM-EB-002	09/28/06	07:25	8905	Before	Secondary
Sligo AM-EB-003	09/28/06	07:49	8922	Before	Secondary
Sligo AM-EB-004	09/28/06	08:10	9020	Before	Secondary
Sligo AM-EB-005	09/28/06	08:28	8911	Before	Secondary
Sligo AM-EB-006	09/28/06	08:48	8895	Before	Secondary

**Node Info**

#	Len	Name
1	0	Piney at Flower
2	1118	Piney at Sligo Creek
3	1216	Piney at Dale
4	888	Piney at Sligo
5	2583	Sligo at Chesapeake
6	1333	Sligo at Fenton
7	493	Fenton at Silver Spring
8	468	Fenton at Thayer
9	841	Fenton at Wayne

Length of Study Route = 8,940 feet

**Notes:**

WB Sligo Avenue - AM Peak  
GPS Travel Time Study

Study Name : **Sligo EB AM**  
Study Date : **12/11/2006**  
Page No. : **3**

**Overall Output Statistics**

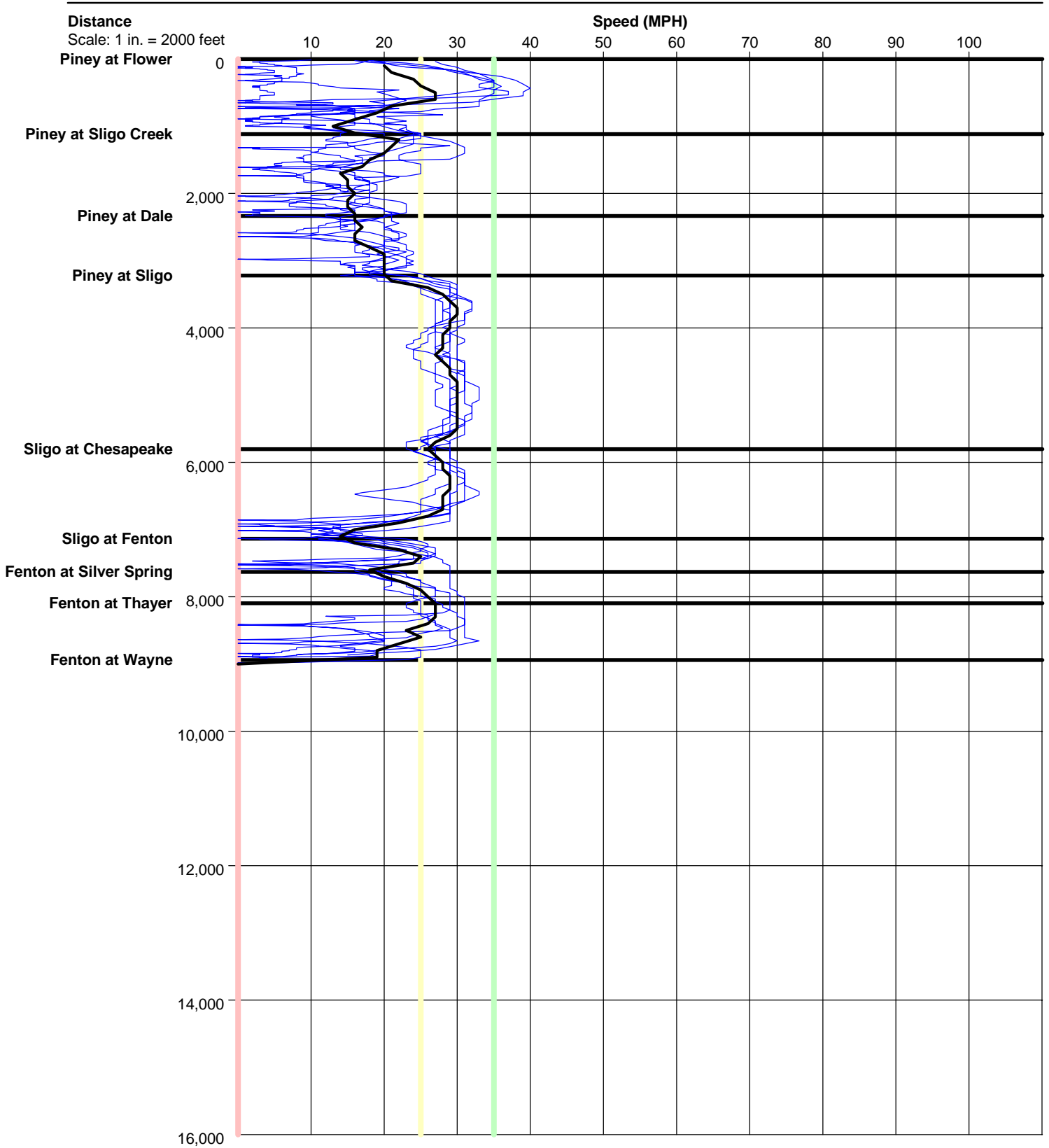
Node #	Length	Node	Travel Time	# of Stops	Avg Speed	Total Delay	Time <= 0 MPH	Time <= 25 MPH	Time <= 35 MPH
1	0	Piney at Flower							
2	1118	Piney at Sligo Creek	102.2	2.0	7.5	85.2	29.7	93.8	100.2
3	1216	Piney at Dale	82.3	1.5	10.1	63.5	17.8	79.8	82.3
4	888	Piney at Sligo	45.7	0.5	13.3	31.8	9.3	45.5	45.7
5	2583	Sligo at Chesapeake	62.5	0.0	28.2	23.0	0.0	5.8	62.5
6	1333	Sligo at Fenton	56.3	0.8	16.1	36.2	13.5	35.2	56.3
7	493	Fenton at Silver Spring	25.0	0.7	13.4	17.2	5.8	20.5	25.0
8	468	Fenton at Thayer	12.7	0.0	25.2	5.7	0.0	6.5	12.7
9	841	Fenton at Wayne	63.5	1.2	9.0	51.2	30.7	53.0	62.7
<b>Total</b>	<b>8,940</b>		<b>450.2</b>	<b>6.7</b>	<b>13.5</b>	<b>313.7</b>	<b>106.8</b>	<b>340.2</b>	<b>447.3</b>

Stats based on 6 BEFORE runs.  
Stops based on a Stop Speed of 5 MPH.  
Total Delay based on a Normal Speed of 45 MPH.

WB Sligo Avenue - AM Peak  
GPS Travel Time Study

Study Name : **Sligo EB AM**  
Study Date : **12/11/2006**  
Page No. : **8**

**Speed/Distance Profiles of All Runs**



EB Sligo Avenue - PM Peak  
GPS Travel Time Study

Study Name : **Sligo WB PM**  
Study Date : **12/11/2006**  
Page No. : **2**

**Study Summary**

**Runs Used in This Study**

Run Title	Start Date	Start Time	Length	Before/After	Run Type
Sligo PM-WB-001	09/28/06	16:05	9025	Before	Primary
Sligo PM-WB-002	09/28/06	16:23	8969	Before	Secondary
Sligo PM-WB-003	09/28/06	16:43	9083	Before	Secondary
Sligo PM-WB-004	09/28/06	17:05	9347	Before	Secondary
Sligo PM-WB-005	09/28/06	17:27	9041	Before	Secondary
Sligo PM-WB-006	09/28/06	17:47	8917	Before	Secondary

**Node Info**

#	Len	Name
1	0	Fenton at Wayne
2	808	Fenton at Thayer
3	531	Fenton at Silver Spring
4	487	Sligo at Fenton
5	1354	Sligo at Chesapeake
6	2556	Piney at Sligo
7	1007	Piney at Dale
8	1206	Piney at Sligo Creek
9	1076	Piney at Flower

Length of Study Route = 9,025 feet

**Notes:**



EB Sligo Avenue - PM Peak  
GPS Travel Time Study

Study Name : **Sligo WB PM**  
Study Date : **12/11/2006**  
Page No. : **3**

**Overall Output Statistics**

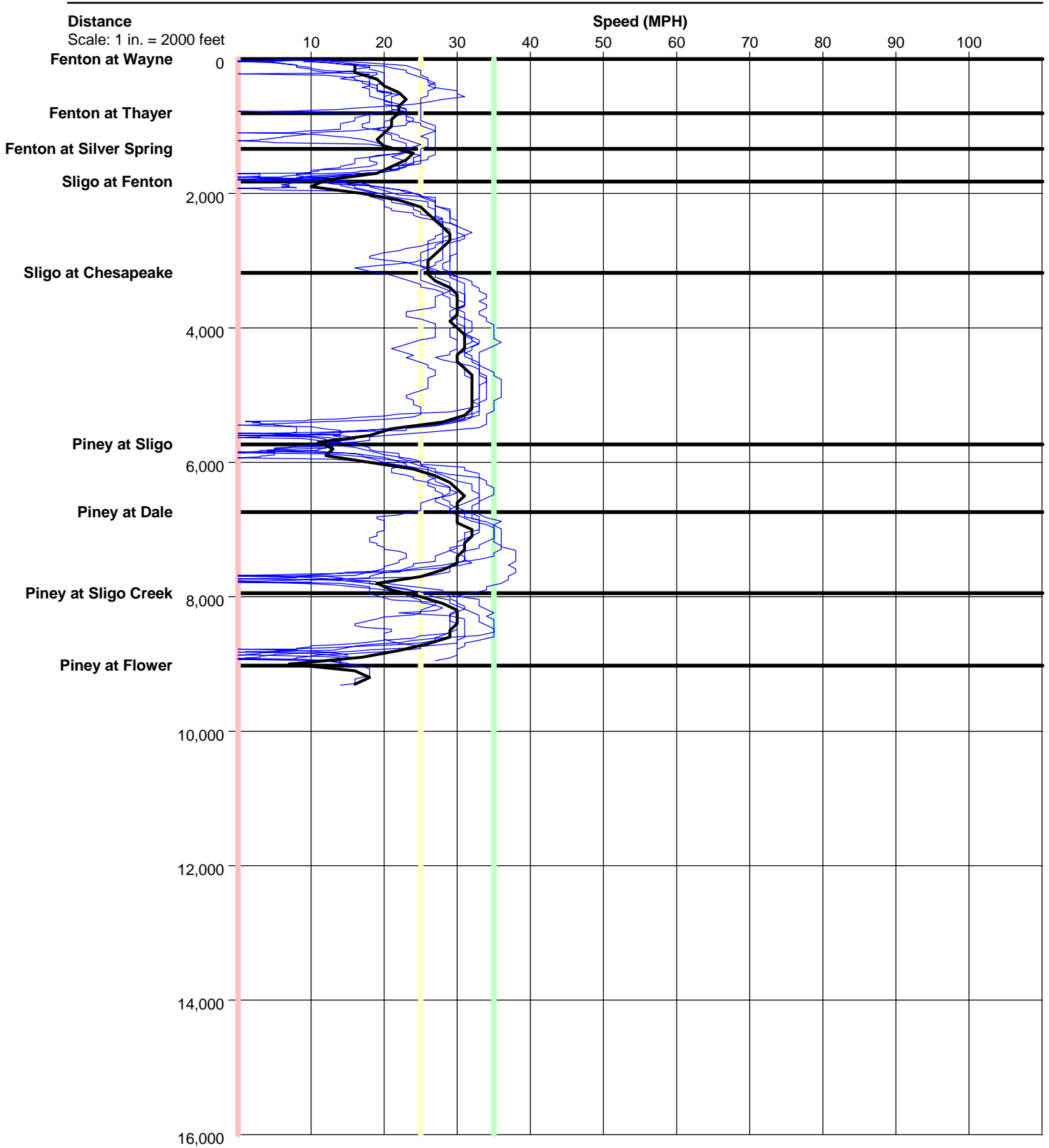
Node #	Length	Node	Travel Time	# of Stops	Avg Speed	Total Delay	Time <= 0 MPH	Time <= 25 MPH	Time <= 35 MPH
1	0	Fenton at Wayne							
2	808	Fenton at Thayer	37.7	0.7	14.6	25.5	3.7	33.5	37.7
3	531	Fenton at Silver Spring	24.7	0.3	14.7	16.7	3.7	20.7	24.7
4	487	Sligo at Fenton	58.2	0.7	5.7	50.5	31.5	56.8	58.2
5	1354	Sligo at Chesapeake	40.7	0.2	22.7	19.7	1.5	16.5	40.7
6	2556	Piney at Sligo	127.2	1.0	13.7	88.2	53.7	82.2	125.0
7	1007	Piney at Dale	39.3	0.8	17.5	23.7	4.2	23.8	39.3
8	1206	Piney at Sligo Creek	58.0	0.8	14.2	39.5	22.2	41.5	53.8
9	1076	Piney at Flower	49.2	0.8	14.9	33.5	11.7	34.2	48.0
<b>Total</b>	<b>9,025</b>		<b>434.8</b>	<b>5.3</b>	<b>14.2</b>	<b>297.2</b>	<b>132.0</b>	<b>309.2</b>	<b>427.3</b>

Stats based on 6 BEFORE runs.  
Stops based on a Stop Speed of 5 MPH.  
Total Delay based on a Normal Speed of 45 MPH.

EB Sligo Avenue - PM Peak  
GPS Travel Time Study

Study Name : **Sligo WB PM**  
Study Date : **12/11/2006**  
Page No. : **8**

**Speed/Distance Profiles of All Runs**



WB Sligo Avenue - PM Peak  
GPS Travel Time Study

Study Name : **Sligo EB PM**  
Study Date : **12/11/2006**  
Page No. : **2**

**Study Summary**

*Runs Used in This Study*

Run Title	Start Date	Start Time	Length	Before/After	Run Type
Sligo PM-EB-001	09/28/06	15:57	8951	Before	Primary
Sligo PM-EB-002	09/28/06	16:12	8959	Before	Secondary
Sligo PM-EB-003	09/28/06	16:34	9014	Before	Secondary
Sligo PM-EB-004	09/28/06	16:52	9018	Before	Secondary
Sligo PM-EB-005	09/28/06	17:16	9029	Before	Secondary
Sligo PM-EB-006	09/28/06	17:35	9011	Before	Secondary

*Node Info*

#	Len	Name
1	0	Piney at Flower
2	1100	Piney at Sligo Creek
3	1255	Piney at Dale
4	865	Piney at Sligo
5	2554	Sligo at Chesapeake
6	1368	Sligo at Fenton
7	504	Fenton at Silver Spring
8	503	Fenton at Thayer
9	802	Fenton at Wayne

Length of Study Route = 8,951 feet

**Notes:**

WB Sligo Avenue - PM Peak  
GPS Travel Time Study

Study Name : **Sligo EB PM**  
Study Date : **12/11/2006**  
Page No. : **3**

**Overall Output Statistics**

Node #	Length	Node	Travel Time	# of Stops	Avg Speed	Total Delay	Time <= 0 MPH	Time <= 35 MPH	Time <= 55 MPH
1	0	Piney at Flower							
2	1100	Piney at Sligo Creek	31.7	0.3	23.7	14.7	3.5	26.7	31.7
3	1255	Piney at Dale	29.0	0.0	29.5	9.5	0.0	23.8	29.0
4	865	Piney at Sligo	32.2	0.3	18.3	19.2	5.2	32.2	32.2
5	2554	Sligo at Chesapeake	62.2	0.2	28.0	23.2	0.0	62.2	62.2
6	1368	Sligo at Fenton	45.8	0.7	20.4	24.8	5.8	45.8	45.8
7	504	Fenton at Silver Spring	30.5	0.8	11.3	22.5	6.8	30.5	30.5
8	503	Fenton at Thayer	18.0	0.2	19.1	10.0	0.0	18.0	18.0
9	802	Fenton at Wayne	73.5	1.0	7.4	61.5	31.3	73.3	73.3
<b>Total</b>	<b>8,951</b>		<b>322.8</b>	<b>3.5</b>	<b>18.9</b>	<b>185.3</b>	<b>52.7</b>	<b>312.5</b>	<b>322.7</b>

Stats based on 6 BEFORE runs.

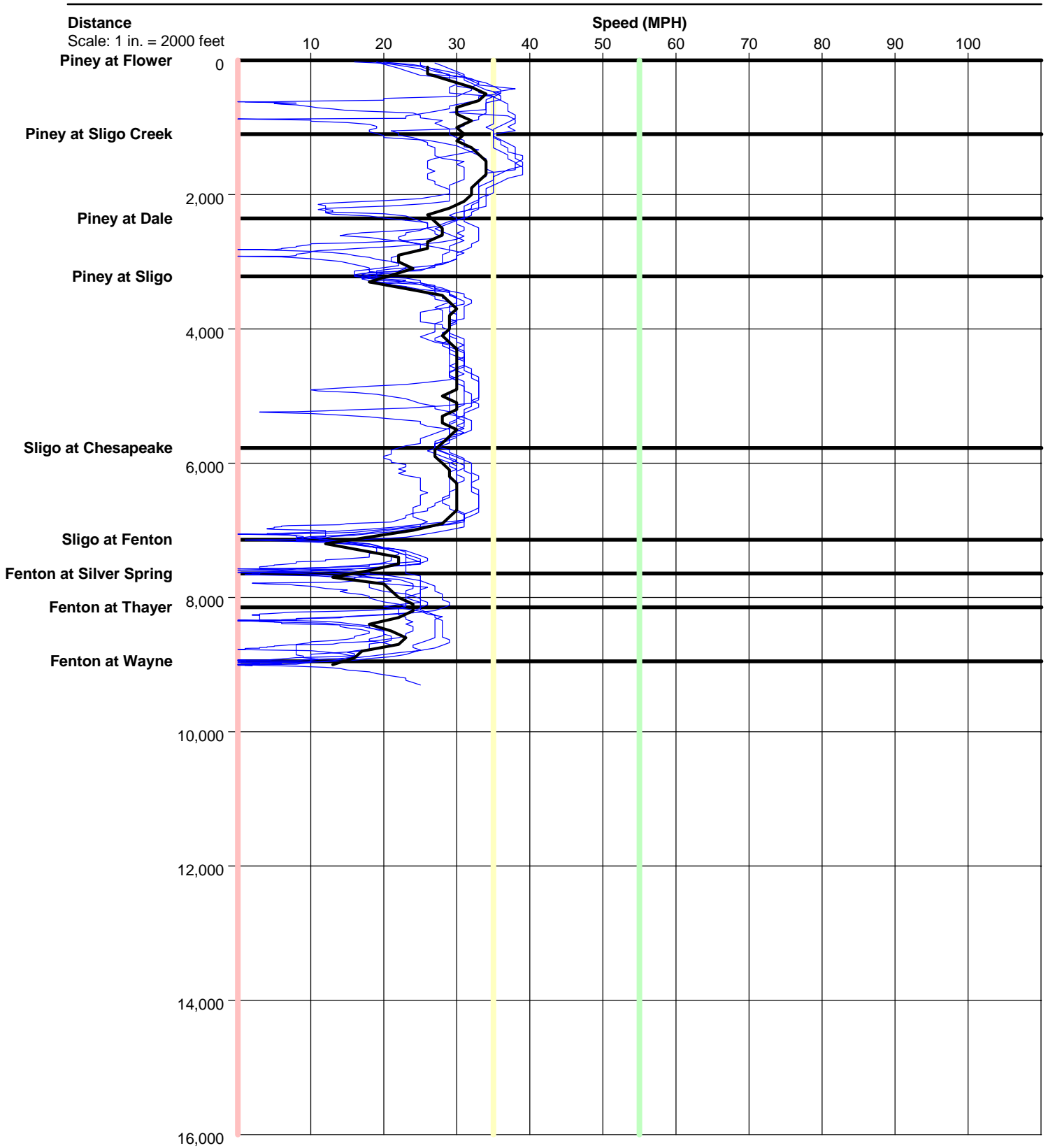
Stops based on a Stop Speed of 5 MPH.

Total Delay based on a Normal Speed of 45 MPH.

WB Sligo Avenue - PM Peak  
GPS Travel Time Study

Study Name : **Sligo EB PM**  
Study Date : **12/11/2006**  
Page No. : **8**

**Speed/Distance Profiles of All Runs**



MD 193 Westbound - AM Peak  
GPS Travel Time Study

Study Name : **University EB AM**  
Study Date : **11/20/2006**  
Page No. : **2**

**Study Summary**

*Runs Used in This Study*

Run Title	Start Date	Start Time	Length	Before/ After	Run Type
University-EB-001	09/28/06	07:10	14268	Before	Primary
University-EB-002	09/28/06	07:35	14324	Before	Secondary
University-EB-003	09/28/06	07:58	14285	Before	Secondary
University-EB-004	09/28/06	08:21	14220	Before	Secondary

**Node Info**

#	Len	Name
1	0	Piney Branch
2	2149	Carroll
3	2353	New Hampshire
4	3006	Riggs
5	2234	23rd St
6	1505	West Park Drive
7	3021	Adelphi Rd

Length of Study Route = 14,268 feet

**Notes:**

**MD 193 Westbound - AM Peak**  
GPS Travel Time Study

Study Name : **University EB AM**  
Study Date : **11/20/2006**  
Page No. : **3**

**Overall Output Statistics**

<b>Node #</b>	<b>Length</b>	<b>Node</b>	<b>Travel Time</b>	<b># of Stops</b>	<b>Avg Speed</b>	<b>Total Delay</b>	<b>Time &lt;= 0 MPH</b>	<b>Time &lt;= 25 MPH</b>	<b>Time &lt;= 45 MPH</b>
1	0	Piney Branch							
2	2149	Carroll	63.5	0.3	23.1	21.3	17.0	26.5	63.5
3	2353	New Hampshire	71.3	1.3	22.5	25.0	9.3	34.8	71.3
4	3006	Riggs	97.8	1.3	21.0	38.8	16.0	44.5	97.8
5	2234	23rd St	94.0	1.0	16.2	50.0	37.0	57.0	94.0
6	1505	West Park Drive	29.0	0.0	35.4	1.0	0.0	1.8	29.0
7	3021	Adelphi Rd	95.0	1.0	21.7	36.8	29.3	48.5	90.0
<b>Total</b>	<b>14,268</b>		<b>450.5</b>	<b>4.8</b>	<b>21.6</b>	<b>172.8</b>	<b>108.5</b>	<b>213.0</b>	<b>445.5</b>

Stats based on 4 BEFORE runs.

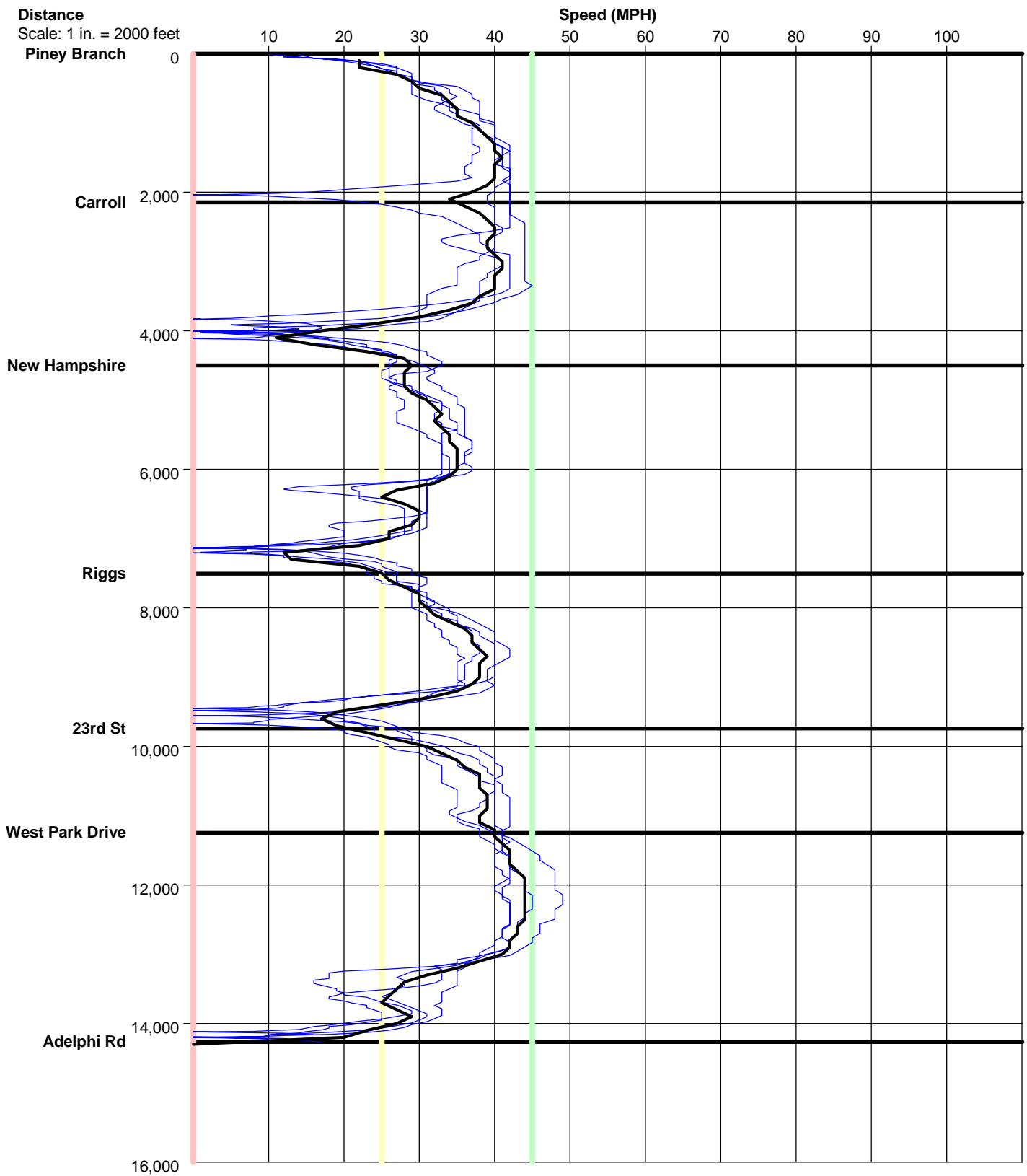
Stops based on a Stop Speed of 5 MPH.

Total Delay based on a Normal Speed of 35 MPH.

MD 193 Westbound - AM Peak  
GPS Travel Time Study

Study Name : **University EB AM**  
Study Date : **11/20/2006**  
Page No. : **8**

**Speed/Distance Profiles of All Runs**





MD 193 Westbound - AM Peak  
GPS Travel Time Study

Study Name : **University WB AM**  
Study Date : **11/20/2006**  
Page No. : **2**

**Study Summary**

*Runs Used in This Study*

Run Title	Start Date	Start Time	Length	Before/ After	Run Type
University-WB-001	09/28/06	06:57	14257	Before	Primary
University-WB-002	09/28/06	07:20	14187	Before	Secondary
University-WB-003	09/28/06	07:45	14211	Before	Secondary
University-WB-004	09/28/06	08:08	14202	Before	Secondary
University-WB-005	09/28/06	08:33	14349	Before	Secondary

*Node Info*

#	Len	Name
1	0	Adelphi Rd
2	396	University Blvd
3	2649	West Park Dr.
4	1530	23rd Street
5	2258	Riggs Road
6	2993	New Hampshire
7	2317	Carroll Ave
8	2114	Piney Branch

Length of Study Route = 14,257 feet

**Notes:**

**MD 193 Westbound - AM Peak**  
GPS Travel Time Study

Study Name : **University WB AM**  
Study Date : **11/20/2006**  
Page No. : **3**

**Overall Output Statistics**

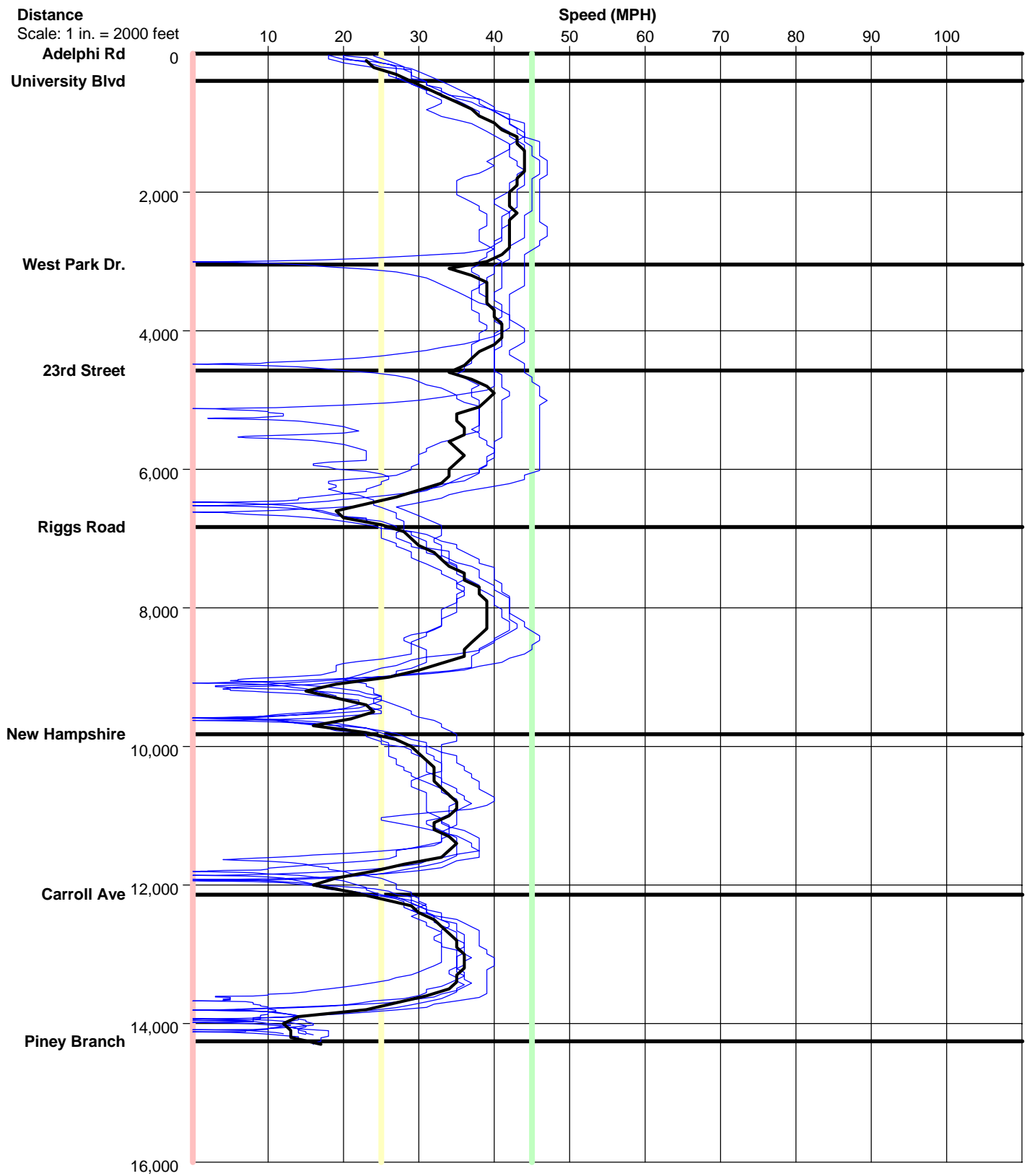
<b>Node #</b>	<b>Length</b>	<b>Node</b>	<b>Travel Time</b>	<b># of Stops</b>	<b>Avg Speed</b>	<b>Total Delay</b>	<b>Time &lt;= 0 MPH</b>	<b>Time &lt;= 25 MPH</b>	<b>Time &lt;= 45 MPH</b>
1	0	Adelphi Rd							
2	396	University Blvd	10.8	0.0	25.0	2.8	0.0	4.4	10.8
3	2649	West Park Dr.	54.8	0.2	33.0	9.0	8.8	10.4	49.4
4	1530	23rd Street	31.8	0.2	32.8	4.2	3.4	6.2	31.8
5	2258	Riggs Road	81.4	1.0	18.9	38.4	24.0	49.2	77.6
6	2993	New Hampshire	165.4	1.4	12.3	106.6	85.0	121.8	165.0
7	2317	Carroll Ave	68.4	1.0	23.1	22.8	8.2	28.0	68.4
8	2114	Piney Branch	149.0	1.6	9.7	108.8	84.2	117.6	148.2
<b>Total</b>	<b>14,257</b>		<b>561.6</b>	<b>5.4</b>	<b>17.3</b>	<b>292.6</b>	<b>213.6</b>	<b>337.6</b>	<b>551.2</b>

Stats based on 5 BEFORE runs.  
Stops based on a Stop Speed of 5 MPH.  
Total Delay based on a Normal Speed of 35 MPH.

MD 193 Westbound - AM Peak  
GPS Travel Time Study

Study Name : University WB AM  
Study Date : 11/20/2006  
Page No. : 8

Speed/Distance Profiles of All Runs







## **Appendix C**

### **Reduction in Auto Trips**



**2000 Base Year Transit Trips, Origins and Destinations by Purpose and Need District**

	Bethesda	ConnLytn	SlvSprg	TakLang	ColPark	Rivrdale	NewCarol	ShadyGrv	Glenmont	GreenBlt	NWDC	NorthDC	EastDC	DCCore	SWMontg	North	East	South	West	Total
<b>1 Bethesda</b>	3,484	358	1,720	583	182	115	64	4,573	1,978	110	1,532	1,352	514	3,719	2,923	3,081	301	1,533	745	<b>28,870</b>
<b>2 ConnLytn</b>	358	14	232	54	15	4	2	184	161	7	112	99	20	412	114	123	8	41	24	<b>1,985</b>
<b>3 SlvSprg</b>	1,720	232	2,378	1,175	403	125	73	1,325	2,334	196	739	2,526	610	4,797	732	2,164	268	994	284	<b>23,075</b>
<b>4 TakLang</b>	583	54	1,175	573	819	87	70	473	503	317	293	1,209	373	2,861	260	644	135	419	152	<b>11,002</b>
<b>5 ColPark</b>	182	15	403	819	679	406	152	147	229	554	110	1,062	821	1,560	88	657	611	569	69	<b>9,133</b>
<b>6 Rivrdale</b>	115	4	125	87	406	191	317	73	30	176	69	326	547	1,391	45	84	268	367	95	<b>4,718</b>
<b>7 NewCarol</b>	64	2	73	70	152	317	466	43	32	83	36	279	869	1,332	27	109	584	1,112	53	<b>5,702</b>
<b>8 ShadyGrv</b>	4,573	184	1,325	473	147	73	43	10,136	2,924	82	708	743	268	3,696	3,874	5,731	185	798	497	<b>36,461</b>
<b>9 Glenmont</b>	1,978	161	2,334	503	229	30	32	2,924	3,469	99	447	770	181	4,104	876	1,972	67	439	218	<b>20,832</b>
<b>10 GreenBlt</b>	110	7	196	317	554	176	83	82	99	297	66	415	328	959	47	377	402	267	46	<b>4,828</b>
<b>11 NWDC</b>	1,532	112	739	293	110	69	36	708	447	66	3,502	3,535	946	13,580	1,806	421	102	2,855	1,029	<b>31,889</b>
<b>12 NorthDC</b>	1,352	99	2,526	1,209	1,062	326	279	743	770	415	3,535	8,390	3,338	25,368	1,225	882	497	5,224	1,023	<b>58,263</b>
<b>13 EastDC</b>	514	20	610	373	821	547	869	268	181	328	946	3,338	4,571	15,589	401	344	757	6,458	611	<b>37,548</b>
<b>14 DCCore</b>	3,719	412	4,797	2,861	1,560	1,391	1,332	3,696	4,104	959	13,580	25,368	15,589	39,853	7,879	7,282	4,457	66,819	20,315	<b>225,975</b>
<b>15 SWMontg</b>	2,923	114	732	260	88	45	27	3,874	876	47	1,806	1,225	401	7,879	2,865	2,282	94	1,472	751	<b>27,757</b>
<b>16 North</b>	3,081	123	2,164	644	657	84	109	5,731	1,972	377	421	882	344	7,282	2,282	11,649	690	905	522	<b>39,918</b>
<b>17 East</b>	301	8	268	135	611	268	584	185	67	402	102	497	757	4,457	94	690	1,146	1,150	205	<b>11,927</b>
<b>18 South</b>	1,533	41	994	419	569	367	1,112	798	439	267	2,855	5,224	6,458	66,819	1,472	905	1,150	101,432	24,816	<b>217,668</b>
<b>19 West</b>	745	24	284	152	69	95	53	497	218	46	1,029	1,023	611	20,315	751	522	205	24,816	39,945	<b>91,399</b>
<b>Total</b>	<b>28,870</b>	<b>1,985</b>	<b>23,075</b>	<b>11,002</b>	<b>9,133</b>	<b>4,718</b>	<b>5,702</b>	<b>36,461</b>	<b>20,832</b>	<b>4,828</b>	<b>31,889</b>	<b>58,263</b>	<b>37,548</b>	<b>225,975</b>	<b>27,757</b>	<b>39,918</b>	<b>11,927</b>	<b>217,668</b>	<b>91,399</b>	<b>888,951</b>

**2030 No Build Transit Trips, Origins and Destinations by Purpose and Need District**

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	
	Bethesda	ConnLytn	SlvSprg	TakLang	ColPark	Rivrdale	NewCarol	ShadyGrv	Glenmont	GreenBlt	NWDC	NorthDC	EastDC	DCCore	SWMontg	North	East	South	West	Total
<b>1 Bethesda</b>	5,507	828	2,009	637	250	114	93	7,284	2,443	135	1,894	1,623	650	4,467	4,062	4,570	379	2,416	1,307	<b>40,663</b>
<b>2 ConnLytn</b>	828	147	609	131	91	9	13	475	425	34	216	276	67	1,012	260	344	28	155	104	<b>5,219</b>
<b>3 SlvSprg</b>	2,009	609	2,700	1,335	674	127	115	1,572	3,054	308	753	2,889	743	4,985	838	2,954	357	1,545	500	<b>28,064</b>
<b>4 TakLang</b>	637	131	1,335	589	1,300	95	109	523	546	460	237	1,213	440	2,755	280	982	232	651	251	<b>12,761</b>
<b>5 ColPark</b>	250	91	674	1,300	1,339	563	304	246	406	1,140	139	1,679	1,313	1,917	139	1,193	978	1,573	153	<b>15,393</b>
<b>6 Rivrdale</b>	114	9	127	95	563	207	432	83	33	241	50	302	627	1,166	44	149	391	556	135	<b>5,319</b>
<b>7 NewCarol</b>	93	13	115	109	304	432	810	76	65	162	41	409	1,416	1,589	44	220	1,013	2,479	109	<b>9,495</b>
<b>8 ShadyGrv</b>	7,284	475	1,572	523	246	83	76	19,657	3,523	124	884	963	371	4,633	6,232	9,429	299	1,487	1,147	<b>59,003</b>
<b>9 Glenmont</b>	2,443	425	3,054	546	406	33	65	3,523	3,953	165	443	857	241	4,532	1,100	2,600	126	697	444	<b>25,649</b>
<b>10 GreenBlt</b>	135	34	308	460	1,140	241	162	124	165	407	67	619	484	987	63	683	604	713	91	<b>7,483</b>
<b>11 NWDC</b>	1,894	216	753	237	139	50	41	884	443	67	3,320	3,458	1,061	14,747	1,817	470	97	3,419	1,494	<b>34,602</b>
<b>12 NorthDC</b>	1,623	276	2,889	1,213	1,679	302	409	963	857	619	3,458	9,368	4,234	29,609	1,284	1,167	613	7,553	1,745	<b>69,856</b>
<b>13 EastDC</b>	650	67	743	440	1,313	627	1,416	371	241	484	1,061	4,234	6,568	19,804	493	620	1,159	11,520	1,308	<b>53,115</b>
<b>14 DCCore</b>	4,467	1,012	4,985	2,755	1,917	1,166	1,589	4,633	4,532	987	14,747	29,609	19,804	51,990	8,630	8,430	4,264	88,691	28,755	<b>282,959</b>
<b>15 SWMontg</b>	4,062	260	838	280	139	44	44	6,232	1,100	63	1,817	1,284	493	8,630	4,516	4,193	143	2,043	1,326	<b>37,503</b>
<b>16 North</b>	4,570	344	2,954	982	1,193	149	220	9,429	2,600	683	470	1,167	620	8,430	4,193	26,951	1,753	2,058	1,445	<b>70,206</b>
<b>17 East</b>	379	28	357	232	978	391	1,013	299	126	604	97	613	1,159	4,264	143	1,753	2,633	2,569	413	<b>18,047</b>
<b>18 South</b>	2,416	155	1,545	651	1,573	556	2,479	1,487	697	713	3,419	7,553	11,520	88,691	2,043	2,058	2,569	183,757	51,410	<b>365,287</b>
<b>19 West</b>	1,307	104	500	251	153	135	109	1,147	444	91	1,494	1,745	1,308	28,755	1,326	1,445	413	51,410	122,659	<b>214,791</b>
<b>Total</b>	<b>40,663</b>	<b>5,219</b>	<b>28,064</b>	<b>12,761</b>	<b>15,393</b>	<b>5,319</b>	<b>9,495</b>	<b>59,003</b>	<b>25,649</b>	<b>7,483</b>	<b>34,602</b>	<b>69,856</b>	<b>53,115</b>	<b>282,959</b>	<b>37,503</b>	<b>70,206</b>	<b>18,047</b>	<b>365,287</b>	<b>214,791</b>	<b>1,355,409</b>



**2030 TSM Transit Trips, Origins and Destinations by Purpose and Need District**

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	
	Bethesda	ConnLytn	SlvSprg	TakLang	ColPark	Rivrdale	NewCarol	ShadyGrv	Glenmont	GreenBit	NWDC	NorthDC	EastDC	DCCore	SWMontg	North	East	South	West	Total
<b>1 Bethesda</b>	5,507	841	2,068	717	272	123	93	7,306	2,450	138	1,894	1,625	651	4,467	4,096	4,593	381	2,420	1,309	<b>40,947</b>
<b>2 ConnLytn</b>	841	147	620	142	100	11	13	482	426	35	217	275	67	1,010	263	348	28	155	104	<b>5,279</b>
<b>3 SlvSprg</b>	2,068	620	2,671	1,340	731	135	120	1,621	3,056	315	756	2,888	743	4,982	859	2,983	360	1,547	504	<b>28,295</b>
<b>4 TakLang</b>	717	142	1,340	564	1,370	132	131	559	549	470	238	1,216	441	2,760	297	1,000	241	654	254	<b>13,072</b>
<b>5 ColPark</b>	272	100	731	1,370	1,522	696	349	254	416	1,149	140	1,687	1,327	1,919	145	1,207	1,003	1,578	155	<b>16,015</b>
<b>6 Rivrdale</b>	123	11	135	132	696	234	462	86	35	263	50	303	630	1,166	46	168	400	559	136	<b>5,632</b>
<b>7 NewCarol</b>	93	13	120	131	349	462	802	76	65	172	40	407	1,406	1,583	44	231	1,014	2,472	109	<b>9,585</b>
<b>8 ShadyGrv</b>	7,306	482	1,621	559	254	86	76	19,801	3,555	126	886	967	372	4,631	6,299	9,522	300	1,491	1,148	<b>59,478</b>
<b>9 Glenmont</b>	2,450	426	3,056	549	416	35	65	3,555	3,967	165	444	858	242	4,537	1,107	2,651	126	700	445	<b>25,790</b>
<b>10 GreenBit</b>	138	35	315	470	1,149	263	172	126	165	408	67	621	487	992	65	687	611	718	91	<b>7,575</b>
<b>11 NWDC</b>	1,894	217	756	238	140	50	40	886	444	67	3,320	3,458	1,061	14,747	1,823	472	98	3,424	1,495	<b>34,627</b>
<b>12 NorthDC</b>	1,625	275	2,888	1,216	1,687	303	407	967	858	621	3,458	9,369	4,234	29,609	1,287	1,172	615	7,575	1,748	<b>69,911</b>
<b>13 EastDC</b>	651	67	743	441	1,327	630	1,406	372	242	487	1,061	4,234	6,568	19,804	494	624	1,161	11,559	1,310	<b>53,177</b>
<b>14 DCCore</b>	4,467	1,010	4,982	2,760	1,919	1,166	1,583	4,631	4,537	992	14,747	29,609	19,804	51,990	8,654	8,445	4,267	88,830	28,794	<b>283,183</b>
<b>15 SWMontg</b>	4,096	263	859	297	145	46	44	6,299	1,107	65	1,823	1,287	494	8,654	4,575	4,231	144	2,052	1,332	<b>37,810</b>
<b>16 North</b>	4,593	348	2,983	1,000	1,207	168	231	9,522	2,651	687	472	1,172	624	8,445	4,231	27,342	1,768	2,065	1,447	<b>70,953</b>
<b>17 East</b>	381	28	360	241	1,003	400	1,014	300	126	611	98	615	1,161	4,267	144	1,768	2,656	2,581	414	<b>18,165</b>
<b>18 South</b>	2,420	155	1,547	654	1,578	559	2,472	1,491	700	718	3,424	7,575	11,559	88,830	2,052	2,065	2,581	185,512	51,734	<b>367,621</b>
<b>19 West</b>	1,309	104	504	254	155	136	109	1,148	445	91	1,495	1,748	1,310	28,794	1,332	1,447	414	51,734	123,947	<b>216,473</b>
<b>Total</b>	<b>40,947</b>	<b>5,279</b>	<b>28,295</b>	<b>13,072</b>	<b>16,015</b>	<b>5,632</b>	<b>9,585</b>	<b>59,478</b>	<b>25,790</b>	<b>7,575</b>	<b>34,627</b>	<b>69,911</b>	<b>53,177</b>	<b>283,183</b>	<b>37,810</b>	<b>70,953</b>	<b>18,165</b>	<b>367,621</b>	<b>216,473</b>	<b>1,363,583</b>

**2030 Reduction in Auto Trips (No-Build to TSM), Origins and Destinations by Purpose and Need District**

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	
	Bethesda	ConnLytn	SlvSprg	TakLang	ColPark	Rivrdale	NewCarol	ShadyGrv	Glenmont	GreenBit	NWDC	NorthDC	EastDC	DCCore	SWMontg	North	East	South	West	Total
<b>1 Bethesda</b>	-	13	59	80	22	9	-	23	8	3	(1)	2	1	-	34	24	3	4	3	<b>285</b>
<b>2 ConnLytn</b>	13	-	11	12	10	2	-	7	1	1	1	(1)	-	(2)	3	4	1	1	-	<b>60</b>
<b>3 SlvSprg</b>	59	11	(29)	6	58	9	5	49	2	7	3	(2)	1	(4)	21	29	3	3	4	<b>231</b>
<b>4 TakLang</b>	80	12	6	(25)	70	37	23	36	3	10	1	4	1	5	17	19	9	4	4	<b>312</b>
<b>5 ColPark</b>	22	10	58	70	183	133	45	8	10	9	2	8	14	2	6	14	25	5	2	<b>622</b>
<b>6 Rivrdale</b>	9	2	9	37	133	27	30	3	2	22	-	2	3	1	3	19	10	3	1	<b>314</b>
<b>7 NewCarol</b>	-	-	5	23	45	30	(8)	-	1	10	(1)	(2)	(11)	(6)	-	11	1	(7)	(1)	<b>90</b>
<b>8 ShadyGrv</b>	23	7	49	36	8	3	-	144	32	2	3	5	1	(2)	68	93	1	4	1	<b>476</b>
<b>9 Glenmont</b>	8	1	2	3	10	2	1	32	14	1	1	1	1	5	7	52	1	3	1	<b>142</b>
<b>10 GreenBit</b>	3	1	7	10	9	22	10	2	1	1	-	3	3	5	2	4	7	5	1	<b>92</b>
<b>11 NWDC</b>	(1)	1	3	1	2	-	(1)	3	1	-	-	-	-	(1)	-	7	2	1	6	<b>25</b>
<b>12 NorthDC</b>	2	(1)	(2)	4	8	2	(2)	5	1	3	-	1	-	-	3	6	2	23	4	<b>55</b>
<b>13 EastDC</b>	1	-	1	1	14	3	(11)	1	1	3	-	-	-	-	1	4	3	39	3	<b>62</b>
<b>14 DCCore</b>	-	(2)	(4)	5	2	1	(6)	(2)	5	5	-	-	-	-	24	16	3	139	39	<b>224</b>
<b>15 SWMontg</b>	34	3	21	17	6	3	-	68	7	2	7	3	1	24	59	39	1	9	7	<b>307</b>
<b>16 North</b>	24	4	29	19	14	19	11	93	52	4	2	6	4	16	39	391	16	7	3	<b>748</b>
<b>17 East</b>	3	1	3	9	25	10	1	1	1	7	1	2	3	3	1	16	23	12	1	<b>118</b>
<b>18 South</b>	4	1	3	4	5	3	(7)	4	3	5	6	23	39	139	9	7	12	1,755	324	<b>2,335</b>
<b>19 West</b>	3	-	4	4	2	1	(1)	1	1	1	2	4	3	39	7	3	1	324	1,288	<b>1,682</b>
<b>Total</b>	<b>285</b>	<b>60</b>	<b>231</b>	<b>312</b>	<b>622</b>	<b>314</b>	<b>90</b>	<b>476</b>	<b>142</b>	<b>92</b>	<b>25</b>	<b>55</b>	<b>62</b>	<b>224</b>	<b>307</b>	<b>748</b>	<b>118</b>	<b>2,335</b>	<b>1,682</b>	<b>8,174</b>

**2030 Low BRT Transit Trips, Origins and Destinations by Purpose and Need District**

	Bethesda	ConnLytn	SivSprg	TakLang	ColPark	Rivrdale	NewCarol	ShadyGrv	Glenmont	GreenBlt	NWDC	NorthDC	EastDC	DCCore	SWMontg	North	East	South	West	Total
1 Bethesda	5,556	906	2,182	698	271	128	93	7,266	2,516	136	1,892	1,626	649	4,449	4,049	4,602	378	2,414	1,303	41,109
2 ConnLytn	906	183	692	151	109	14	15	550	463	37	229	296	74	1,022	286	394	33	163	107	5,719
3 SivSprg	2,182	692	2,951	1,380	765	151	125	1,929	3,096	317	776	2,922	755	5,035	901	3,041	370	1,560	508	29,452
4 TakLang	698	151	1,380	627	1,473	138	149	583	554	485	239	1,223	451	2,762	298	1,004	265	660	252	13,386
5 ColPark	271	109	765	1,473	1,996	812	457	279	469	1,243	155	1,878	1,501	2,043	162	1,295	1,212	1,868	172	18,154
6 Rivrdale	128	14	151	138	812	310	527	97	42	320	61	373	695	1,311	52	200	474	686	154	6,542
7 NewCarol	93	15	125	149	457	527	812	76	71	250	41	437	1,427	1,595	44	271	1,041	2,482	109	10,016
8 ShadyGrv	7,266	550	1,929	583	279	97	76	19,657	3,525	125	884	963	371	4,634	6,217	9,431	299	1,487	1,147	59,516
9 Glenmont	2,516	463	3,096	554	469	42	71	3,525	3,953	165	443	857	242	4,534	1,100	2,602	128	698	445	25,898
10 GreenBlt	136	37	317	485	1,243	320	250	125	165	395	67	621	494	990	63	682	648	720	91	7,845
11 NWDC	1,892	229	776	239	155	61	41	884	443	67	3,320	3,458	1,061	14,747	1,814	470	97	3,419	1,494	34,663
12 NorthDC	1,626	296	2,922	1,223	1,878	373	437	963	857	621	3,458	9,368	4,236	29,609	1,283	1,169	622	7,553	1,745	70,236
13 EastDC	649	74	755	451	1,501	695	1,427	371	242	494	1,061	4,236	6,568	19,804	493	628	1,171	11,521	1,308	53,445
14 DCCore	4,449	1,022	5,035	2,762	2,043	1,311	1,595	4,634	4,534	990	14,747	29,609	19,804	51,990	8,607	8,437	4,263	88,691	28,755	283,275
15 SWMontg	4,049	286	901	298	162	52	44	6,217	1,100	63	1,814	1,283	493	8,607	4,499	4,193	143	2,040	1,321	37,561
16 North	4,602	394	3,041	1,004	1,295	200	271	9,431	2,602	682	470	1,169	628	8,437	4,193	26,955	1,809	2,062	1,445	70,687
17 East	378	33	370	265	1,212	474	1,041	299	128	648	97	622	1,171	4,263	143	1,809	2,730	2,575	414	18,667
18 South	2,414	163	1,560	660	1,868	686	2,482	1,487	698	720	3,419	7,553	11,521	88,691	2,040	2,062	2,575	183,757	51,410	365,761
19 West	1,303	107	508	252	172	154	109	1,147	445	91	1,494	1,745	1,308	28,755	1,321	1,445	414	51,410	122,659	214,835
Total	41,109	5,719	29,452	13,386	18,154	6,542	10,016	59,516	25,898	7,845	34,663	70,236	53,445	283,275	37,561	70,687	18,667	365,761	214,835	1,366,760

**2030 Reduction in Auto Trips (No-Build to Low BRT), Origins and Destinations by Purpose and Need District**

	Bethesda	ConnLytn	SivSprg	TakLang	ColPark	Rivrdale	NewCarol	ShadyGrv	Glenmont	GreenBlt	NWDC	NorthDC	EastDC	DCCore	SWMontg	North	East	South	West	Total
1 Bethesda	49	78	173	61	21	14	-	(18)	73	1	(3)	4	(1)	(18)	(13)	32	(1)	(3)	(4)	446
2 ConnLytn	78	36	83	20	18	5	2	75	38	3	13	20	8	10	26	50	6	9	4	500
3 SivSprg	173	83	251	45	91	25	10	357	42	9	24	33	12	50	63	87	13	16	8	1,389
4 TakLang	61	20	45	38	174	44	40	61	8	25	2	10	11	7	18	22	33	9	1	626
5 ColPark	21	18	91	174	657	249	153	33	63	103	17	199	188	126	23	102	234	296	19	2,761
6 Rivrdale	14	5	25	44	249	103	95	14	10	80	11	72	69	146	9	51	83	131	19	1,223
7 NewCarol	-	2	10	40	153	95	2	1	6	88	1	28	11	6	-	51	28	3	-	521
8 ShadyGrv	(18)	75	357	61	33	14	1	-	3	1	-	1	-	1	(15)	2	(1)	-	-	513
9 Glenmont	73	38	42	8	63	10	6	3	-	-	-	1	-	2	-	2	2	1	1	249
10 GreenBlt	1	3	9	25	103	80	88	1	-	(12)	1	3	10	4	(1)	(1)	44	7	-	362
11 NWDC	(3)	13	24	2	17	11	1	-	-	1	-	-	-	-	(3)	-	-	-	-	61
12 NorthDC	4	20	33	10	199	72	28	1	1	3	-	-	2	-	(2)	2	9	1	-	380
13 EastDC	(1)	8	12	11	188	69	11	-	1	10	-	2	-	1	(1)	8	12	1	-	330
14 DCCore	(18)	10	50	7	126	146	6	1	2	4	-	-	1	-	(23)	8	(1)	-	-	316
15 SWMontg	(13)	26	63	18	23	9	-	(15)	-	(1)	(3)	(2)	(1)	(23)	(17)	1	(1)	(3)	(5)	58
16 North	32	50	87	22	102	51	51	2	2	(1)	-	2	8	8	1	4	57	4	1	481
17 East	(1)	6	13	33	234	83	28	(1)	2	44	-	9	12	(1)	(1)	57	97	7	1	620
18 South	(3)	9	16	9	296	131	3	-	1	7	-	1	1	-	(3)	4	7	-	-	475
19 West	(4)	4	8	1	19	19	-	-	1	-	-	-	-	-	(5)	1	1	-	-	44
Total	446	500	1,389	626	2,761	1,223	521	513	249	362	61	380	330	316	58	481	620	475	44	11,351

**2030 Medium BRT Transit Trips, Origins and Destinations by Purpose and Need District**

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	
	Bethesda	ConnLytn	SlvSprg	TakLang	ColPark	Rivrdale	NewCarol	ShadyGrv	Glenmont	GreenBlt	NWDC	NorthDC	EastDC	DCCore	SWMontg	North	East	South	West	Total
1 Bethesda	5,441	869	2,460	764	288	131	93	7,266	2,659	142	1,892	1,647	651	4,455	4,070	4,735	380	2,414	1,304	41,657
2 ConnLytn	869	174	706	164	113	14	16	526	471	39	230	298	75	1,018	278	425	36	164	106	5,718
3 SlvSprg	2,460	706	3,063	1,437	792	155	133	1,990	3,117	323	816	2,938	759	5,059	934	3,080	381	1,566	512	30,217
4 TakLang	764	164	1,437	699	1,562	157	171	629	565	519	252	1,246	468	2,780	319	1,028	289	678	255	13,977
5 ColPark	288	113	792	1,562	2,075	830	472	287	477	1,249	157	1,897	1,517	2,054	166	1,327	1,237	1,897	174	18,566
6 Rivrdale	131	14	155	157	830	312	538	97	43	322	61	375	699	1,315	53	202	477	690	154	6,621
7 NewCarol	93	16	133	171	472	538	812	76	73	256	41	447	1,427	1,595	44	279	1,048	2,479	109	10,104
8 ShadyGrv	7,266	526	1,990	629	287	97	76	19,657	3,529	126	884	964	371	4,634	6,220	9,483	299	1,487	1,147	59,669
9 Glenmont	2,659	471	3,117	565	477	43	73	3,529	3,953	165	444	857	242	4,534	1,109	2,603	131	698	447	26,112
10 GreenBlt	142	39	323	519	1,249	322	256	126	165	396	67	621	495	988	64	682	652	720	91	7,913
11 NWDC	1,892	230	816	252	157	61	41	884	444	67	3,320	3,458	1,061	14,747	1,817	475	98	3,419	1,494	34,729
12 NorthDC	1,647	298	2,938	1,246	1,897	375	447	964	857	621	3,458	9,369	4,236	29,609	1,285	1,169	627	7,553	1,745	70,337
13 EastDC	651	75	759	468	1,517	699	1,427	371	242	495	1,061	4,236	6,568	19,804	494	630	1,172	11,521	1,308	53,494
14 DCCore	4,455	1,018	5,059	2,780	2,054	1,315	1,595	4,634	4,534	988	14,747	29,609	19,804	51,990	8,625	8,437	4,263	88,691	28,755	283,350
15 SWMontg	4,070	278	934	319	166	53	44	6,220	1,109	64	1,817	1,285	494	8,625	4,505	4,205	144	2,047	1,323	37,698
16 North	4,735	425	3,080	1,028	1,327	202	279	9,483	2,603	682	475	1,169	630	8,437	4,205	26,976	1,818	2,063	1,449	71,064
17 East	380	36	381	289	1,237	477	1,048	299	131	652	98	627	1,172	4,263	144	1,818	2,754	2,577	414	18,793
18 South	2,414	164	1,566	678	1,897	690	2,479	1,487	698	720	3,419	7,553	11,521	88,691	2,047	2,063	2,577	183,757	51,410	365,828
19 West	1,304	106	512	255	174	154	109	1,147	447	91	1,494	1,745	1,308	28,755	1,323	1,449	414	51,410	122,659	214,851
<b>Total</b>	<b>41,657</b>	<b>5,718</b>	<b>30,217</b>	<b>13,977</b>	<b>18,566</b>	<b>6,621</b>	<b>10,104</b>	<b>59,669</b>	<b>26,112</b>	<b>7,913</b>	<b>34,729</b>	<b>70,337</b>	<b>53,494</b>	<b>283,350</b>	<b>37,698</b>	<b>71,064</b>	<b>18,793</b>	<b>365,828</b>	<b>214,851</b>	<b>1,370,693</b>

**2030 Reduction in Auto Trips (No-Build to Medium BRT), Origins and Destinations by Purpose and Need District**

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	
	Bethesda	ConnLytn	SlvSprg	TakLang	ColPark	Rivrdale	NewCarol	ShadyGrv	Glenmont	GreenBlt	NWDC	NorthDC	EastDC	DCCore	SWMontg	North	East	South	West	Total
1 Bethesda	(66)	41	451	127	39	17	-	(18)	217	7	(2)	24	1	(12)	8	166	2	(2)	(3)	995
2 ConnLytn	41	27	97	34	22	6	3	51	46	5	14	22	8	7	18	81	9	10	3	499
3 SlvSprg	451	97	363	103	118	29	18	418	63	15	64	49	16	74	96	126	24	22	12	2,153
4 TakLang	127	34	103	110	262	62	62	106	19	59	15	33	28	25	39	47	57	27	4	1,216
5 ColPark	39	22	118	262	736	267	168	41	71	109	18	218	204	137	27	135	259	325	21	3,173
6 Rivrdale	17	6	29	62	267	105	106	14	10	81	11	74	73	150	10	53	87	134	19	1,303
7 NewCarol	-	3	18	62	168	106	2	1	8	94	1	38	11	6	1	59	35	1	-	609
8 ShadyGrv	(18)	51	418	106	41	14	1	-	7	2	1	2	-	2	(12)	55	(1)	1	-	667
9 Glenmont	217	46	63	19	71	10	8	7	-	-	1	1	1	2	9	3	5	1	3	463
10 GreenBlt	7	5	15	59	109	81	94	2	-	(11)	1	3	11	1	1	(1)	48	7	-	430
11 NWDC	(2)	14	64	15	18	11	1	1	1	1	-	-	-	-	-	5	1	-	-	127
12 NorthDC	24	22	49	33	218	74	38	2	1	3	-	1	2	-	1	2	14	1	1	481
13 EastDC	1	8	16	28	204	73	11	-	1	11	-	2	-	-	1	10	14	1	-	379
14 DCCore	(12)	7	74	25	137	150	6	2	2	1	-	-	-	-	(5)	7	(1)	-	-	391
15 SWMontg	8	18	96	39	27	10	1	(12)	9	1	-	1	1	(5)	(11)	13	1	5	(3)	195
16 North	166	81	126	47	135	53	59	55	3	(1)	5	2	10	7	13	25	66	5	4	859
17 East	2	9	24	57	259	87	35	(1)	5	48	1	14	14	(1)	1	66	121	8	2	746
18 South	(2)	10	22	27	325	134	1	1	1	7	-	1	1	-	5	5	8	-	-	542
19 West	(3)	3	12	4	21	19	-	-	3	-	-	1	-	-	(3)	4	2	-	-	61
<b>Total</b>	<b>995</b>	<b>499</b>	<b>2,153</b>	<b>1,216</b>	<b>3,173</b>	<b>1,303</b>	<b>609</b>	<b>667</b>	<b>463</b>	<b>430</b>	<b>127</b>	<b>481</b>	<b>379</b>	<b>391</b>	<b>195</b>	<b>859</b>	<b>746</b>	<b>542</b>	<b>61</b>	<b>15,284</b>

**2030 High BRT Transit Trips, Origins and Destinations by Purpose and Need District**

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	
	Bethesda	ConnLytn	SlvSprg	TakLang	ColPark	Rivrdale	NewCarol	ShadyGrv	Glenmont	GreenBlt	NWDC	NorthDC	EastDC	DCCore	SWMontg	North	East	South	West	Total
1 Bethesda	5,441	869	2,481	799	300	138	95	7,266	2,658	145	1,892	1,646	652	4,455	4,070	4,739	385	2,414	1,304	41,745
2 ConnLytn	869	174	706	174	117	15	17	526	471	40	230	298	75	1,018	278	426	37	164	106	5,737
3 SlvSprg	2,481	706	3,137	1,482	813	161	138	2,008	3,136	330	823	2,952	765	5,089	942	3,095	391	1,572	516	30,533
4 TakLang	799	174	1,482	722	1,625	168	192	663	585	541	266	1,270	489	2,828	338	1,048	309	700	262	14,455
5 ColPark	300	117	813	1,625	2,081	853	501	307	489	1,250	158	1,900	1,540	2,054	175	1,350	1,261	1,911	175	18,856
6 Rivrdale	138	15	161	168	853	319	549	101	44	330	63	383	707	1,329	57	210	486	700	156	6,764
7 NewCarol	95	17	138	192	501	549	813	76	77	272	41	464	1,430	1,597	44	296	1,059	2,480	109	10,246
8 ShadyGrv	7,266	526	2,008	663	307	101	76	19,657	3,529	129	884	964	372	4,634	6,220	9,483	299	1,487	1,147	59,750
9 Glenmont	2,658	471	3,136	585	489	44	77	3,529	3,953	165	444	857	242	4,534	1,108	2,604	132	698	447	26,169
10 GreenBlt	145	40	330	541	1,250	330	272	129	165	396	67	622	498	988	66	683	662	722	91	7,993
11 NWDC	1,892	230	823	266	158	63	41	884	444	67	3,320	3,458	1,061	14,747	1,817	475	98	3,419	1,494	34,752
12 NorthDC	1,646	298	2,952	1,270	1,900	383	464	964	857	622	3,458	9,369	4,237	29,609	1,285	1,169	637	7,554	1,745	70,415
13 EastDC	652	75	765	489	1,540	707	1,430	372	242	498	1,061	4,237	6,568	19,804	495	634	1,178	11,523	1,308	53,573
14 DCCore	4,455	1,018	5,089	2,828	2,054	1,329	1,597	4,634	4,534	988	14,747	29,609	19,804	51,990	8,625	8,437	4,265	88,691	28,755	283,445
15 SWMontg	4,070	278	942	338	175	57	44	6,220	1,108	66	1,817	1,285	495	8,625	4,505	4,206	145	2,047	1,323	37,740
16 North	4,739	426	3,095	1,048	1,350	210	296	9,483	2,604	683	475	1,169	634	8,437	4,206	26,975	1,838	2,065	1,449	71,179
17 East	385	37	391	309	1,261	486	1,059	299	132	662	98	637	1,178	4,265	145	1,838	2,776	2,579	414	18,948
18 South	2,414	164	1,572	700	1,911	700	2,480	1,487	698	722	3,419	7,554	11,523	88,691	2,047	2,065	2,579	183,757	51,410	365,890
19 West	1,304	106	516	262	175	156	109	1,147	447	91	1,494	1,745	1,308	28,755	1,323	1,449	414	51,410	122,659	214,866
<b>Total</b>	<b>41,745</b>	<b>5,737</b>	<b>30,533</b>	<b>14,455</b>	<b>18,856</b>	<b>6,764</b>	<b>10,246</b>	<b>59,750</b>	<b>26,169</b>	<b>7,993</b>	<b>34,752</b>	<b>70,415</b>	<b>53,573</b>	<b>283,445</b>	<b>37,740</b>	<b>71,179</b>	<b>18,948</b>	<b>365,890</b>	<b>214,866</b>	<b>1,373,051</b>

**2030 Reduction in Auto Trips (No-Build to High BRT), Origins and Destinations by Purpose and Need District**

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	
	Bethesda	ConnLytn	SlvSprg	TakLang	ColPark	Rivrdale	NewCarol	ShadyGrv	Glenmont	GreenBlt	NWDC	NorthDC	EastDC	DCCore	SWMontg	North	East	South	West	Total
1 Bethesda	(66)	41	472	163	50	24	2	(18)	215	10	(2)	23	2	(12)	8	170	7	(2)	(3)	1,083
2 ConnLytn	41	27	97	43	26	6	4	51	46	6	14	23	8	7	18	82	10	10	3	518
3 SlvSprg	472	97	437	147	140	34	23	436	82	22	70	63	23	104	104	141	35	28	16	2,469
4 TakLang	163	43	147	133	325	73	83	140	39	81	29	57	49	73	58	66	77	50	11	1,694
5 ColPark	50	26	140	325	742	290	197	62	83	110	20	221	228	137	36	158	283	338	22	3,464
6 Rivrdale	24	6	34	73	290	112	117	18	12	90	13	81	80	164	13	61	96	144	21	1,445
7 NewCarol	2	4	23	83	197	117	3	1	12	110	1	55	14	8	1	76	46	2	-	751
8 ShadyGrv	(18)	51	436	140	62	18	1	-	7	5	1	2	1	2	(12)	55	-	1	-	747
9 Glenmont	215	46	82	39	83	12	12	7	-	-	1	1	1	2	8	4	7	1	3	521
10 GreenBlt	10	6	22	81	110	90	110	5	-	(11)	1	4	14	1	3	1	58	9	1	510
11 NWDC	(2)	14	70	29	20	13	1	1	1	1	-	-	-	-	-	5	1	-	-	150
12 NorthDC	23	23	63	57	221	81	55	2	1	4	-	1	3	-	1	2	24	1	1	559
13 EastDC	2	8	23	49	228	80	14	1	1	14	-	3	-	-	2	14	20	3	-	458
14 DCCore	(12)	7	104	73	137	164	8	2	2	1	-	-	-	-	(5)	7	1	-	-	487
15 SWMontg	8	18	104	58	36	13	1	(12)	8	3	-	1	2	(5)	(11)	14	2	5	(3)	237
16 North	170	82	141	66	158	61	76	55	4	1	5	2	14	7	14	24	86	7	5	974
17 East	7	10	35	77	283	96	46	-	7	58	1	24	20	1	2	86	143	10	2	902
18 South	(2)	10	28	50	338	144	2	1	1	9	-	1	3	-	5	7	10	-	-	603
19 West	(3)	3	16	11	22	21	-	-	3	1	-	1	-	-	(3)	5	2	-	-	75
<b>Total</b>	<b>1,083</b>	<b>518</b>	<b>2,469</b>	<b>1,694</b>	<b>3,464</b>	<b>1,445</b>	<b>751</b>	<b>747</b>	<b>521</b>	<b>510</b>	<b>150</b>	<b>559</b>	<b>458</b>	<b>487</b>	<b>237</b>	<b>974</b>	<b>902</b>	<b>603</b>	<b>75</b>	<b>17,642</b>

**2030 Low LRT Transit Trips, Origins and Destinations by Purpose and Need District**

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	
	Bethesda	ConnLytn	SlvSprg	TakLang	ColPark	Rivrdale	NewCarol	ShadyGrv	Glenmont	GreenBlt	NWDC	NorthDC	EastDC	DCCore	SWMontg	North	East	South	West	Total
<b>1 Bethesda</b>	5,508	918	2,658	833	307	140	96	7,264	2,813	153	1,898	1,709	669	4,470	4,069	4,875	395	2,450	1,313	<b>42,535</b>
<b>2 ConnLytn</b>	918	174	703	168	113	14	17	550	472	38	235	298	75	1,028	283	429	36	165	106	<b>5,817</b>
<b>3 SlvSprg</b>	2,658	703	3,055	1,477	796	155	131	2,095	3,117	324	850	2,939	760	5,069	967	3,088	383	1,568	510	<b>30,640</b>
<b>4 TakLang</b>	833	168	1,477	693	1,567	157	175	677	573	521	270	1,256	474	2,808	337	1,037	293	685	256	<b>14,254</b>
<b>5 ColPark</b>	307	113	796	1,567	2,080	834	480	298	481	1,251	158	1,898	1,525	2,054	170	1,332	1,247	1,902	175	<b>18,663</b>
<b>6 Rivrdale</b>	140	14	155	157	834	314	541	98	43	323	61	377	700	1,319	55	203	479	692	154	<b>6,656</b>
<b>7 NewCarol</b>	96	17	131	175	480	541	812	76	73	260	41	451	1,427	1,595	44	284	1,047	2,482	109	<b>10,137</b>
<b>8 ShadyGrv</b>	7,264	550	2,095	677	298	98	76	19,657	3,531	129	885	966	371	4,634	6,220	9,510	299	1,487	1,147	<b>59,890</b>
<b>9 Glenmont</b>	2,813	472	3,117	573	481	43	73	3,531	3,953	165	446	857	242	4,534	1,107	2,602	131	698	445	<b>26,277</b>
<b>10 GreenBlt</b>	153	38	324	521	1,251	323	260	129	165	397	68	621	496	988	66	682	654	720	91	<b>7,942</b>
<b>11 NWDC</b>	1,898	235	850	270	158	61	41	885	446	68	3,320	3,458	1,061	14,747	1,817	484	98	3,419	1,494	<b>34,804</b>
<b>12 NorthDC</b>	1,709	298	2,939	1,256	1,898	377	451	966	857	621	3,458	9,369	4,236	29,609	1,285	1,169	629	7,553	1,745	<b>70,422</b>
<b>13 EastDC</b>	669	75	760	474	1,525	700	1,427	371	242	496	1,061	4,236	6,568	19,804	494	631	1,173	11,521	1,308	<b>53,529</b>
<b>14 DCCore</b>	4,470	1,028	5,069	2,808	2,054	1,319	1,595	4,634	4,534	988	14,747	29,609	19,804	51,990	8,625	8,437	4,264	88,691	28,755	<b>283,416</b>
<b>15 SWMontg</b>	4,069	283	967	337	170	55	44	6,220	1,107	66	1,817	1,285	494	8,625	4,505	4,213	144	2,047	1,323	<b>37,765</b>
<b>16 North</b>	4,875	429	3,088	1,037	1,332	203	284	9,510	2,602	682	484	1,169	631	8,437	4,213	26,976	1,823	2,064	1,445	<b>71,279</b>
<b>17 East</b>	395	36	383	293	1,247	479	1,047	299	131	654	98	629	1,173	4,264	144	1,823	2,746	2,577	414	<b>18,827</b>
<b>18 South</b>	2,450	165	1,568	685	1,902	692	2,482	1,487	698	720	3,419	7,553	11,521	88,691	2,047	2,064	2,577	183,757	51,410	<b>365,883</b>
<b>19 West</b>	1,313	106	510	256	175	154	109	1,147	445	91	1,494	1,745	1,308	28,755	1,323	1,445	414	51,410	122,659	<b>214,853</b>
<b>Total</b>	<b>42,535</b>	<b>5,817</b>	<b>30,640</b>	<b>14,254</b>	<b>18,663</b>	<b>6,656</b>	<b>10,137</b>	<b>59,890</b>	<b>26,277</b>	<b>7,942</b>	<b>34,804</b>	<b>70,422</b>	<b>53,529</b>	<b>283,416</b>	<b>37,765</b>	<b>71,279</b>	<b>18,827</b>	<b>365,883</b>	<b>214,853</b>	<b>1,373,585</b>

**2030 Reduction in Auto Trips (No-Build to Low LRT), Origins and Destinations by Purpose and Need District**

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	
	Bethesda	ConnLytn	SlvSprg	TakLang	ColPark	Rivrdale	NewCarol	ShadyGrv	Glenmont	GreenBlt	NWDC	NorthDC	EastDC	DCCore	SWMontg	North	East	South	West	Total
<b>1 Bethesda</b>	1	91	649	197	57	26	4	(20)	370	18	4	87	19	4	7	306	17	34	6	<b>1,873</b>
<b>2 ConnLytn</b>	91	27	94	38	23	6	4	75	47	4	19	22	8	16	23	85	9	10	2	<b>598</b>
<b>3 SlvSprg</b>	649	94	355	143	123	28	16	523	63	16	97	50	17	84	129	134	27	23	10	<b>2,576</b>
<b>4 TakLang</b>	197	38	143	104	268	63	66	155	27	61	33	43	34	53	57	56	61	34	6	<b>1,493</b>
<b>5 ColPark</b>	57	23	123	268	741	271	176	53	75	111	19	219	212	137	31	140	269	329	22	<b>3,270</b>
<b>6 Rivrdale</b>	26	6	28	63	271	107	109	15	10	83	11	75	74	153	12	54	89	137	19	<b>1,338</b>
<b>7 NewCarol</b>	4	4	16	66	176	109	2	1	9	98	1	42	11	6	1	64	34	3	-	<b>642</b>
<b>8 ShadyGrv</b>	(20)	75	523	155	53	15	1	-	8	5	1	4	-	2	(12)	81	-	1	-	<b>888</b>
<b>9 Glenmont</b>	370	47	63	27	75	10	9	8	-	-	4	1	1	2	7	2	5	1	1	<b>629</b>
<b>10 GreenBlt</b>	18	4	16	61	111	83	98	5	-	(10)	1	3	12	1	3	(1)	50	7	-	<b>459</b>
<b>11 NWDC</b>	4	19	97	33	19	11	1	1	4	1	-	-	-	-	-	14	1	-	-	<b>202</b>
<b>12 NorthDC</b>	87	22	50	43	219	75	42	4	1	3	-	1	2	-	1	2	16	1	1	<b>566</b>
<b>13 EastDC</b>	19	8	17	34	212	74	11	-	1	12	-	2	-	-	1	11	14	1	-	<b>414</b>
<b>14 DCCore</b>	4	16	84	53	137	153	6	2	2	1	-	-	-	-	(5)	7	(1)	-	-	<b>457</b>
<b>15 SWMontg</b>	7	23	129	57	31	12	1	(12)	7	3	-	1	1	(5)	(11)	20	1	5	(3)	<b>262</b>
<b>16 North</b>	306	85	134	56	140	54	64	81	2	(1)	14	2	11	7	20	25	70	6	-	<b>1,074</b>
<b>17 East</b>	17	9	27	61	269	89	34	-	5	50	1	16	14	(1)	1	70	113	8	1	<b>781</b>
<b>18 South</b>	34	10	23	34	329	137	3	1	1	7	-	1	1	-	5	6	8	-	-	<b>597</b>
<b>19 West</b>	6	2	10	6	22	19	-	-	1	-	-	-	-	-	(3)	-	1	-	-	<b>63</b>
<b>Total</b>	<b>1,873</b>	<b>598</b>	<b>2,576</b>	<b>1,493</b>	<b>3,270</b>	<b>1,338</b>	<b>642</b>	<b>888</b>	<b>629</b>	<b>459</b>	<b>202</b>	<b>566</b>	<b>414</b>	<b>457</b>	<b>262</b>	<b>1,074</b>	<b>781</b>	<b>597</b>	<b>63</b>	<b>18,176</b>

**2030 Medium LRT Transit Trips, Origins and Destinations by Purpose and Need District**

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	
	Bethesda	ConnLytn	SivSprg	TakLang	ColPark	Rivrdale	NewCarol	ShadyGrv	Glenmont	GreenBit	NWDC	NorthDC	EastDC	DCCore	SWMontg	North	East	South	West	Total
1 Bethesda	5,492	927	2,726	852	315	143	97	7,263	2,853	156	1,900	1,725	673	4,476	4,068	4,906	399	2,455	1,315	42,738
2 ConnLytn	927	175	706	170	115	14	17	558	473	39	237	298	75	1,032	286	434	36	165	107	5,858
3 SivSprg	2,726	706	3,079	1,480	806	156	131	2,140	3,120	329	877	2,942	761	5,076	992	3,098	383	1,569	511	30,877
4 TakLang	852	170	1,480	704	1,600	161	177	693	575	532	275	1,260	477	2,816	344	1,045	297	693	257	14,403
5 ColPark	315	115	806	1,600	2,067	828	472	310	484	1,249	158	1,899	1,516	2,053	173	1,344	1,236	1,897	174	18,693
6 Rivrdale	143	14	156	161	828	312	538	99	42	322	61	375	698	1,315	55	202	477	690	154	6,639
7 NewCarol	97	17	131	177	472	538	812	76	72	256	41	447	1,427	1,595	44	280	1,044	2,482	109	10,113
8 ShadyGrv	7,263	558	2,140	693	310	99	76	19,658	3,538	131	885	970	372	4,634	6,220	9,522	299	1,487	1,147	60,000
9 Glenmont	2,853	473	3,120	575	484	42	72	3,538	3,953	165	447	857	242	4,534	1,110	2,603	130	698	445	26,337
10 GreenBit	156	39	329	532	1,249	322	256	131	165	396	68	621	495	988	66	683	652	720	91	7,953
11 NWDC	1,900	237	877	275	158	61	41	885	447	68	3,320	3,459	1,061	14,747	1,817	489	98	3,419	1,494	34,849
12 NorthDC	1,725	298	2,942	1,260	1,899	375	447	970	857	621	3,459	9,369	4,236	29,609	1,286	1,169	627	7,553	1,745	70,445
13 EastDC	673	75	761	477	1,516	698	1,427	372	242	495	1,061	4,236	6,568	19,804	494	630	1,172	11,521	1,308	53,527
14 DCCore	4,476	1,032	5,076	2,816	2,053	1,315	1,595	4,634	4,534	988	14,747	29,609	19,804	51,990	8,625	8,437	4,263	88,691	28,755	283,436
15 SWMontg	4,068	286	992	344	173	55	44	6,220	1,110	66	1,817	1,286	494	8,625	4,505	4,218	144	2,047	1,323	37,813
16 North	4,906	434	3,098	1,045	1,344	202	280	9,522	2,603	683	489	1,169	630	8,437	4,218	26,979	1,817	2,064	1,445	71,360
17 East	399	36	383	297	1,236	477	1,044	299	130	652	98	627	1,172	4,263	144	1,817	2,740	2,576	414	18,802
18 South	2,455	165	1,569	693	1,897	690	2,482	1,487	698	720	3,419	7,553	11,521	88,691	2,047	2,064	2,576	183,757	51,410	365,889
19 West	1,315	107	511	257	174	154	109	1,147	445	91	1,494	1,745	1,308	28,755	1,323	1,445	414	51,410	122,659	214,857
<b>Total</b>	<b>42,738</b>	<b>5,858</b>	<b>30,877</b>	<b>14,403</b>	<b>18,693</b>	<b>6,639</b>	<b>10,113</b>	<b>60,000</b>	<b>26,337</b>	<b>7,953</b>	<b>34,849</b>	<b>70,445</b>	<b>53,527</b>	<b>283,436</b>	<b>37,813</b>	<b>71,360</b>	<b>18,802</b>	<b>365,889</b>	<b>214,857</b>	<b>1,374,584</b>

**2030 Reduction in Auto Trips (No-Build to Medium LRT), Origins and Destinations by Purpose and Need District**

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	
	Bethesda	ConnLytn	SivSprg	TakLang	ColPark	Rivrdale	NewCarol	ShadyGrv	Glenmont	GreenBit	NWDC	NorthDC	EastDC	DCCore	SWMontg	North	East	South	West	Total
1 Bethesda	(15)	99	717	216	66	29	4	(21)	411	21	6	103	23	9	6	336	21	39	9	2,075
2 ConnLytn	99	28	97	39	24	6	4	83	48	5	21	22	9	21	26	90	9	10	3	639
3 SivSprg	717	97	379	146	132	29	16	568	66	21	124	53	19	91	154	144	26	24	11	2,814
4 TakLang	216	39	146	115	301	66	69	171	29	72	38	48	37	61	64	63	65	42	6	1,643
5 ColPark	66	24	132	301	728	265	168	64	78	109	20	220	204	136	34	152	258	324	21	3,301
6 Rivrdale	29	6	29	66	265	105	106	16	10	81	11	74	72	150	12	53	87	134	19	1,320
7 NewCarol	4	4	16	69	168	106	2	1	8	94	1	38	11	6	1	60	31	3	-	618
8 ShadyGrv	(21)	83	568	171	64	16	1	1	16	7	1	8	1	2	(12)	94	-	1	-	997
9 Glenmont	411	48	66	29	78	10	8	16	-	1	5	1	1	2	10	3	5	1	1	689
10 GreenBit	21	5	21	72	109	81	94	7	1	(11)	1	3	11	1	3	-	48	7	-	470
11 NWDC	6	21	124	38	20	11	1	1	5	1	-	1	-	-	-	19	1	-	-	247
12 NorthDC	103	22	53	48	220	74	38	8	1	3	1	1	2	-	2	2	14	1	-	589
13 EastDC	23	9	19	37	204	72	11	1	1	11	-	2	-	-	1	10	14	1	-	412
14 DCCore	9	21	91	61	136	150	6	2	2	1	-	-	-	-	(5)	7	(1)	-	-	477
15 SWMontg	6	26	154	64	34	12	1	(12)	10	3	-	2	1	(5)	(11)	25	1	5	(3)	310
16 North	336	90	144	63	152	53	60	94	3	-	19	2	10	7	25	28	65	6	-	1,154
17 East	21	9	26	65	258	87	31	-	5	48	1	14	14	(1)	1	65	107	7	1	755
18 South	39	10	24	42	324	134	3	1	1	7	-	1	1	-	5	6	7	-	-	602
19 West	9	3	11	6	21	19	-	-	1	-	-	-	-	(3)	-	1	-	-	-	67
<b>Total</b>	<b>2,075</b>	<b>639</b>	<b>2,814</b>	<b>1,643</b>	<b>3,301</b>	<b>1,320</b>	<b>618</b>	<b>997</b>	<b>689</b>	<b>470</b>	<b>247</b>	<b>589</b>	<b>412</b>	<b>477</b>	<b>310</b>	<b>1,154</b>	<b>755</b>	<b>602</b>	<b>67</b>	<b>19,175</b>

**2030 High LRT Transit Trips, Origins and Destinations by Purpose and Need District**

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	
	Bethesda	ConnLytn	SlvSprg	TakLang	ColPark	Rivrdale	NewCarol	ShadyGrv	Glenmont	GreenBlit	NWDC	NorthDC	EastDC	DCCore	SWMontg	North	East	South	West	Total
1 Bethesda	5,492	927	2,750	876	325	148	98	7,262	2,854	159	1,900	1,726	674	4,476	4,068	4,910	406	2,455	1,316	42,820
2 ConnLytn	927	175	695	174	118	15	17	559	473	40	237	298	76	1,032	286	434	37	165	107	5,861
3 SlvSprg	2,750	695	3,006	1,495	815	162	139	2,160	3,140	332	887	2,954	766	5,105	1,004	3,111	392	1,574	513	30,996
4 TakLang	876	174	1,495	725	1,626	169	194	721	589	542	285	1,274	492	2,841	358	1,056	310	703	261	14,686
5 ColPark	325	118	815	1,626	2,075	855	506	326	490	1,251	163	1,902	1,543	2,054	182	1,359	1,266	1,912	175	18,939
6 Rivrdale	148	15	162	169	855	319	550	106	44	331	63	383	708	1,330	58	211	487	701	156	6,793
7 NewCarol	98	17	139	194	506	550	812	77	77	273	41	467	1,430	1,597	46	299	1,057	2,483	109	10,267
8 ShadyGrv	7,262	559	2,160	721	326	106	77	19,658	3,539	133	885	970	373	4,634	6,220	9,523	300	1,488	1,147	60,078
9 Glenmont	2,854	473	3,140	589	490	44	77	3,539	3,953	165	447	857	242	4,534	1,110	2,604	132	698	445	26,390
10 GreenBlit	159	40	332	542	1,251	331	273	133	165	396	68	622	498	988	67	684	664	722	91	8,021
11 NWDC	1,900	237	887	285	163	63	41	885	447	68	3,320	3,459	1,061	14,747	1,817	489	98	3,419	1,494	34,875
12 NorthDC	1,726	298	2,954	1,274	1,902	383	467	970	857	622	3,459	9,369	4,237	29,609	1,287	1,169	637	7,554	1,745	70,515
13 EastDC	674	76	766	492	1,543	708	1,430	373	242	498	1,061	4,237	6,568	19,804	495	634	1,178	11,524	1,308	53,606
14 DCCore	4,476	1,032	5,105	2,841	2,054	1,330	1,597	4,634	4,534	988	14,747	29,609	19,804	51,990	8,625	8,437	4,265	88,691	28,755	283,510
15 SWMontg	4,068	286	1,004	358	182	58	46	6,220	1,110	67	1,817	1,287	495	8,625	4,505	4,218	146	2,047	1,323	37,857
16 North	4,910	434	3,111	1,056	1,359	211	299	9,523	2,604	684	489	1,169	634	8,437	4,218	26,978	1,841	2,065	1,445	71,463
17 East	406	37	392	310	1,266	487	1,057	300	132	664	98	637	1,178	4,265	146	1,841	2,766	2,577	414	18,972
18 South	2,455	165	1,574	703	1,912	701	2,483	1,488	698	722	3,419	7,554	11,524	88,691	2,047	2,065	2,577	183,757	51,410	365,941
19 West	1,316	107	513	261	175	156	109	1,147	445	91	1,494	1,745	1,308	28,755	1,323	1,445	414	51,410	122,659	214,866
<b>Total</b>	<b>42,820</b>	<b>5,861</b>	<b>30,996</b>	<b>14,686</b>	<b>18,939</b>	<b>6,793</b>	<b>10,267</b>	<b>60,078</b>	<b>26,390</b>	<b>8,021</b>	<b>34,875</b>	<b>70,515</b>	<b>53,606</b>	<b>283,510</b>	<b>37,857</b>	<b>71,463</b>	<b>18,972</b>	<b>365,941</b>	<b>214,866</b>	<b>1,376,449</b>

**2030 Reduction in Auto Trips (No-Build to High LRT), Origins and Destinations by Purpose and Need District**

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	
	Bethesda	ConnLytn	SlvSprg	TakLang	ColPark	Rivrdale	NewCarol	ShadyGrv	Glenmont	GreenBlit	NWDC	NorthDC	EastDC	DCCore	SWMontg	North	East	South	West	Total
1 Bethesda	(15)	100	741	240	75	34	6	(22)	412	24	6	104	24	9	6	341	28	39	9	2,157
2 ConnLytn	100	28	86	44	27	6	4	84	48	6	21	23	9	21	26	90	10	10	3	642
3 SlvSprg	741	86	306	160	142	35	24	588	86	24	134	65	24	120	166	157	36	29	13	2,932
4 TakLang	240	44	160	136	326	75	85	199	43	82	48	61	52	86	78	74	78	53	10	1,925
5 ColPark	75	27	142	326	736	292	202	81	84	111	24	223	230	137	43	167	288	339	22	3,546
6 Rivrdale	34	6	35	75	292	112	118	23	12	91	13	82	81	165	15	62	97	146	21	1,475
7 NewCarol	6	4	24	85	202	118	2	2	12	111	1	58	14	8	2	79	44	4	-	772
8 ShadyGrv	(22)	84	588	199	81	23	2	1	16	9	1	7	2	2	(12)	95	1	1	-	1,075
9 Glenmont	412	48	86	43	84	12	12	16	-	1	5	1	1	2	10	5	7	1	1	741
10 GreenBlit	24	6	24	82	111	91	111	9	1	(11)	1	4	14	1	4	1	60	9	-	538
11 NWDC	6	21	134	48	24	13	1	1	5	1	-	1	-	-	-	19	1	-	-	273
12 NorthDC	104	23	65	61	223	82	58	7	1	4	1	1	3	-	3	2	24	1	-	659
13 EastDC	24	9	24	52	230	81	14	2	1	14	-	3	-	1	2	14	20	4	-	491
14 DCCore	9	21	120	86	137	165	8	2	1	-	-	1	-	-	(5)	7	1	-	-	551
15 SWMontg	6	26	166	78	43	15	2	(12)	10	4	-	3	2	(5)	(11)	26	3	5	(3)	354
16 North	341	90	157	74	167	62	79	95	5	1	19	2	14	7	26	27	89	7	-	1,258
17 East	28	10	36	78	288	97	44	1	7	60	1	24	20	1	3	89	133	9	1	925
18 South	39	10	29	53	339	146	4	1	1	9	-	1	4	-	5	7	9	-	-	654
19 West	9	3	13	10	22	21	-	-	1	-	-	-	-	-	(3)	-	1	-	-	76
<b>Total</b>	<b>2,157</b>	<b>642</b>	<b>2,932</b>	<b>1,925</b>	<b>3,546</b>	<b>1,475</b>	<b>772</b>	<b>1,075</b>	<b>741</b>	<b>538</b>	<b>273</b>	<b>659</b>	<b>491</b>	<b>551</b>	<b>354</b>	<b>1,258</b>	<b>925</b>	<b>654</b>	<b>76</b>	<b>21,040</b>







**Appendix D**  
**Capacity Analysis**

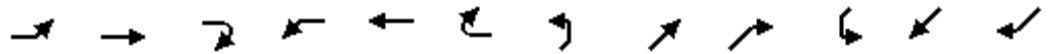


Existing Conditions

HCS Results

HCM Signalized Intersection Capacity Analysis  
 1: 2nd Avenue & MD 384 (Colesville Rd.)

6/10/2008



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations	↘	↑↑	↗	↘	↔		↘	↑↑↑	↗		↑↑↑	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	2.0	2.0	2.0	2.0	2.0		2.0	2.0	2.0		2.0	
Lane Util. Factor	1.00	0.95	1.00	0.91	0.91		1.00	0.91	1.00		0.91	
Frt	1.00	1.00	0.85	1.00	0.94		1.00	1.00	0.85		0.99	
Flt Protected	0.95	1.00	1.00	0.95	0.99		0.95	1.00	1.00		1.00	
Satd. Flow (prot)	1687	3374	1509	1535	3011		1687	4848	1509		4787	
Flt Permitted	0.95	1.00	1.00	0.95	0.99		0.06	1.00	1.00		0.94	
Satd. Flow (perm)	1687	3374	1509	1535	3011		109	4848	1509		4494	
Volume (vph)	57	90	92	249	148	144	132	523	209	4	1289	117
Peak-hour factor, PHF	0.80	0.80	0.80	0.80	0.80	0.80	0.92	0.92	0.92	0.90	0.90	0.90
Adj. Flow (vph)	71	112	115	311	185	180	143	568	227	4	1432	130
RTOR Reduction (vph)	0	0	108	0	60	0	0	0	124	0	7	0
Lane Group Flow (vph)	71	112	7	217	399	0	143	568	103	0	1559	0
Heavy Vehicles (%)	7%	7%	7%	7%	7%	7%	7%	7%	7%	7%	7%	7%
Turn Type	Split		Over	Split		pm+pt		Prot		Perm		
Protected Phases	3	3	1	4	4		1	6	6		2	
Permitted Phases							6			2		
Actuated Green, G (s)	31.0	31.0	6.0	31.0	31.0		70.0	64.2	64.2		59.0	
Effective Green, g (s)	35.0	35.0	9.0	35.0	35.0		74.0	68.2	68.2		63.0	
Actuated g/C Ratio	0.23	0.23	0.06	0.23	0.23		0.49	0.45	0.45		0.42	
Clearance Time (s)	6.0	6.0	5.0	6.0	6.0		5.0	6.0	6.0		6.0	
Vehicle Extension (s)	4.0	4.0	4.0	4.0	4.0		4.0	3.0	3.0		3.0	
Lane Grp Cap (vph)	394	787	91	358	703		148	2204	686		1887	
v/s Ratio Prot	c0.04	0.03	0.00	c0.14	0.13		c0.06	0.12	0.07			
v/s Ratio Perm							0.42			c0.35		
v/c Ratio	0.18	0.14	0.08	0.61	0.57		0.97	0.26	0.15		0.83	
Uniform Delay, d1	46.0	45.6	66.6	51.3	50.8		39.7	25.3	23.9		38.6	
Progression Factor	1.00	1.00	1.00	1.22	1.26		1.00	1.00	1.00		1.00	
Incremental Delay, d2	0.3	0.1	0.5	3.2	1.2		63.5	0.3	0.5		4.3	
Delay (s)	46.3	45.7	67.1	65.6	65.5		103.1	25.5	24.4		42.9	
Level of Service	D	D	E	E	E		F	C	C		D	
Approach Delay (s)	54.1				65.5		37.1				42.9	
Approach LOS	D				E		D				D	

Intersection Summary

HCM Average Control Delay	46.7	HCM Level of Service	D
HCM Volume to Capacity ratio	0.61		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	65.0%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

# HCM Signalized Intersection Capacity Analysis

## 2: Wayne Ave. #1 & Ramsey Rd

6/10/2008





























Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕↕			↕↕↕		↕	↕			↕↕	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		2.0			2.0		2.0	2.0			2.0	
Lane Util. Factor		0.95			0.91		1.00	1.00			1.00	
Frbp, ped/bikes		1.00			1.00		1.00	1.00			1.00	
Flpb, ped/bikes		1.00			0.98		0.75	1.00			0.94	
Frt		0.96			0.96		1.00	0.87			0.97	
Flt Protected		1.00			0.99		0.95	1.00			0.96	
Satd. Flow (prot)		3250			4511		1265	1540			1656	
Flt Permitted		0.95			0.81		0.75	1.00			0.90	
Satd. Flow (perm)		3102			3682		1005	1540			1552	
Volume (vph)	1	291	92	86	367	188	174	9	71	3	0	1
Peak-hour factor, PHF	0.94	0.94	0.94	0.97	0.97	0.97	0.92	0.92	0.92	0.83	0.83	0.83
Adj. Flow (vph)	1	310	98	89	378	194	189	10	77	4	0	1
RTOR Reduction (vph)	0	20	0	0	50	0	0	55	0	0	1	0
Lane Group Flow (vph)	0	389	0	0	611	0	189	32	0	0	4	0
Confl. Peds. (#/hr)	233			137			123			44		
Heavy Vehicles (%)	7%	7%	7%	7%	7%	7%	7%	7%	7%	1%	1%	1%
Turn Type	Perm			pm+pt			Perm			Perm		
Protected Phases		2		1	6			4			8	
Permitted Phases	2			6			4			8		
Actuated Green, G (s)		57.0			100.0		40.0	40.0			40.0	
Effective Green, g (s)		60.0			103.0		43.0	43.0			43.0	
Actuated g/C Ratio		0.40			0.69		0.29	0.29			0.29	
Clearance Time (s)		5.0			5.0		5.0	5.0			5.0	
Vehicle Extension (s)		0.2			0.2		4.0	4.0			4.0	
Lane Grp Cap (vph)		1241			2755		288	441			445	
v/s Ratio Prot					c0.06			0.02				
v/s Ratio Perm		c0.13			0.09		c0.19				0.00	
v/c Ratio		0.31			0.22		0.66	0.07			0.01	
Uniform Delay, d1		30.9			8.7		47.0	39.0			38.3	
Progression Factor		0.73			1.00		1.00	1.00			1.00	
Incremental Delay, d2		0.7			0.2		11.1	0.3			0.0	
Delay (s)		23.1			8.9		58.1	39.3			38.3	
Level of Service		C			A		E	D			D	
Approach Delay (s)		23.1			8.9			52.2			38.3	
Approach LOS		C			A			D			D	
<b>Intersection Summary</b>												
HCM Average Control Delay			22.1				HCM Level of Service				C	
HCM Volume to Capacity ratio			0.39									
Actuated Cycle Length (s)			150.0				Sum of lost time (s)			6.0		
Intersection Capacity Utilization			45.9%				ICU Level of Service			A		
Analysis Period (min)			15									
c Critical Lane Group												

# HCM Signalized Intersection Capacity Analysis

## 3: Wayne Ave. #1 & Georgia Ave

6/10/2008

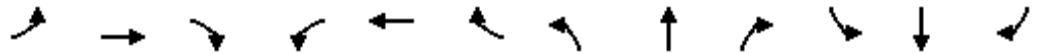
												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		 			 			  			  	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	0.91		1.00	0.91	
Frt	1.00	0.98		1.00	0.98		1.00	0.99		1.00	0.98	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1687	3306		1687	3319		1687	4818		1687	4768	
Flt Permitted	0.19	1.00		0.45	1.00		0.09	1.00		0.16	1.00	
Satd. Flow (perm)	339	3306		799	3319		164	4818		278	4768	
Volume (vph)	58	258	40	77	551	67	86	1145	50	66	1831	226
Peak-hour factor, PHF	0.83	0.83	0.83	0.87	0.87	0.87	0.90	0.90	0.92	0.94	0.94	0.94
Adj. Flow (vph)	70	311	48	89	633	77	96	1272	54	70	1948	240
RTOR Reduction (vph)	0	11	0	0	8	0	0	4	0	0	13	0
Lane Group Flow (vph)	70	349	0	89	702	0	96	1322	0	70	2175	0
Heavy Vehicles (%)	7%	7%	7%	7%	7%	7%	7%	7%	7%	7%	7%	7%
Turn Type	Perm		Perm		pm+pt		pm+pt					
Protected Phases	4		8		1		5		6		2	
Permitted Phases	4		8		5		2					
Actuated Green, G (s)	34.0	34.0		34.0	34.0		50.0	50.0		61.4	61.4	
Effective Green, g (s)	36.0	36.0		36.0	36.0		52.0	52.0		63.4	63.4	
Actuated g/C Ratio	0.30	0.30		0.30	0.30		0.43	0.43		0.53	0.53	
Clearance Time (s)	6.0	6.0		6.0	6.0		4.0	6.0		6.0	6.0	
Vehicle Extension (s)	4.0	4.0		4.0	4.0		3.0	0.2		3.0	0.2	
Lane Grp Cap (vph)	102	992		240	996		180	2088		382	2519	
v/s Ratio Prot		0.11			c0.21		0.04	c0.27		0.03	c0.46	
v/s Ratio Perm	0.21			0.11			0.19			0.07		
v/c Ratio	0.69	0.35		0.37	0.71		0.53	0.63		0.18	0.86	
Uniform Delay, d1	37.0	32.9		33.1	37.3		28.3	26.6		22.2	24.5	
Progression Factor	1.00	1.00		1.38	1.39		1.76	0.68		1.19	1.09	
Incremental Delay, d2	31.6	1.0		3.8	3.6		2.8	1.4		0.9	3.5	
Delay (s)	68.6	33.8		49.3	55.4		52.5	19.4		27.2	30.1	
Level of Service	E	C		D	E		D	B		C	C	
Approach Delay (s)		39.5			54.7			21.7			30.0	
Approach LOS		D			D			C			C	
<b>Intersection Summary</b>												
HCM Average Control Delay			32.4	HCM Level of Service				C				
HCM Volume to Capacity ratio			0.80									
Actuated Cycle Length (s)			120.0	Sum of lost time (s)				12.0				
Intersection Capacity Utilization			79.2%	ICU Level of Service				D				
Analysis Period (min)			15									

c Critical Lane Group

# HCM Signalized Intersection Capacity Analysis

84: 2nd Avenue & Cameron Ave

6/10/2008



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕↕		↕	↕↕			↕↕			↕↕	↕↕
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		2.0		2.0	2.0			2.0			2.0	2.0
Lane Util. Factor		0.95		1.00	0.95			1.00			1.00	1.00
Frt		1.00		1.00	0.94			0.93			1.00	0.85
Flt Protected		0.99		0.95	1.00			0.99			0.96	1.00
Satd. Flow (prot)		3321		1687	3182			1735			1798	1599
Flt Permitted		0.83		0.54	1.00			0.95			0.83	1.00
Satd. Flow (perm)		2787		957	3182			1666			1569	1599
Volume (vph)	75	237	9	13	163	99	5	10	16	81	7	63
Peak-hour factor, PHF	0.90	0.90	0.90	0.84	0.84	0.84	0.69	0.69	0.69	0.87	0.87	0.87
Adj. Flow (vph)	83	263	10	15	194	118	7	14	23	93	8	72
RTOR Reduction (vph)	0	1	0	0	29	0	0	19	0	0	0	59
Lane Group Flow (vph)	0	355	0	15	283	0	0	25	0	0	101	13
Heavy Vehicles (%)	7%	7%	7%	7%	7%	7%	1%	1%	1%	1%	1%	1%
Turn Type	Perm			Perm			Perm			Perm		Perm
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		6
Actuated Green, G (s)		42.2		42.2	42.2			7.8			7.8	7.8
Effective Green, g (s)		45.2		45.2	45.2			10.8			10.8	10.8
Actuated g/C Ratio		0.75		0.75	0.75			0.18			0.18	0.18
Clearance Time (s)		5.0		5.0	5.0			5.0			5.0	5.0
Vehicle Extension (s)		3.0		3.0	3.0			3.0			3.0	3.0
Lane Grp Cap (vph)		2100		721	2397			300			282	288
v/s Ratio Prot					0.09							
v/s Ratio Perm		c0.13		0.02				0.02			c0.06	0.01
v/c Ratio		0.17		0.02	0.12			0.08			0.36	0.05
Uniform Delay, d1		2.1		1.9	2.0			20.5			21.6	20.3
Progression Factor		0.57		1.00	1.00			1.00			1.00	1.00
Incremental Delay, d2		0.2		0.1	0.1			0.1			0.8	0.1
Delay (s)		1.4		1.9	2.1			20.6			22.3	20.4
Level of Service		A		A	A			C			C	C
Approach Delay (s)		1.4			2.1			20.6			21.5	
Approach LOS		A			A			C			C	

## Intersection Summary

HCM Average Control Delay	6.5	HCM Level of Service	A
HCM Volume to Capacity ratio	0.20		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	4.0
Intersection Capacity Utilization	38.2%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis  
 98: 2nd Avenue & Fenwick Ave

6/10/2008



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↕↕	↕	↕	↕	↕
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)		2.0	2.0	2.0	2.0	2.0
Lane Util. Factor		0.95	1.00	1.00	1.00	1.00
Frt		1.00	1.00	0.85	1.00	0.85
Flt Protected		0.99	1.00	1.00	0.95	1.00
Satd. Flow (prot)		3346	1776	1509	1787	1599
Flt Permitted		0.89	1.00	1.00	0.95	1.00
Satd. Flow (perm)		2990	1776	1509	1787	1599
Volume (vph)	53	269	181	50	52	30
Peak-hour factor, PHF	0.92	0.92	0.82	0.82	0.76	0.76
Adj. Flow (vph)	58	292	221	61	68	39
RTOR Reduction (vph)	0	0	0	12	0	34
Lane Group Flow (vph)	0	350	221	49	68	5
Heavy Vehicles (%)	7%	7%	7%	7%	1%	1%
Turn Type	Perm			Perm		Perm
Protected Phases		4	8		6	
Permitted Phases	4			8		6
Actuated Green, G (s)		45.1	45.1	45.1	4.9	4.9
Effective Green, g (s)		48.1	48.1	48.1	7.9	7.9
Actuated g/C Ratio		0.80	0.80	0.80	0.13	0.13
Clearance Time (s)		5.0	5.0	5.0	5.0	5.0
Vehicle Extension (s)		3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)		2397	1424	1210	235	211
v/s Ratio Prot			c0.12		c0.04	
v/s Ratio Perm		0.12		0.03		0.00
v/c Ratio		0.15	0.16	0.04	0.29	0.02
Uniform Delay, d1		1.3	1.3	1.2	23.5	22.7
Progression Factor		1.49	1.50	2.35	1.00	1.00
Incremental Delay, d2		0.1	0.2	0.1	0.7	0.0
Delay (s)		2.1	2.3	2.9	24.2	22.7
Level of Service		A	A	A	C	C
Approach Delay (s)		2.1	2.4		23.7	
Approach LOS		A	A		C	

Intersection Summary




















HCM Average Control Delay	5.3	HCM Level of Service	A
HCM Volume to Capacity ratio	0.17		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	4.0
Intersection Capacity Utilization	31.8%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group



HCM Signalized Intersection Capacity Analysis  
 100: 2nd Avenue & Spring Street

6/10/2008

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lane Util. Factor		1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt		0.95		1.00	0.91		1.00	0.93		1.00	0.99	
Flt Protected		1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1790		1687	1618		1687	1654		1687	1764	
Flt Permitted		0.98		0.48	1.00		0.50	1.00		0.45	1.00	
Satd. Flow (perm)		1760		848	1618		894	1654		794	1764	
Volume (vph)	2	23	13	109	41	60	10	209	176	123	334	15
Peak-hour factor, PHF	0.71	0.71	0.71	0.88	0.88	0.88	0.83	0.83	0.83	0.94	0.94	0.94
Adj. Flow (vph)	3	32	18	124	47	68	12	252	212	131	355	16
RTOR Reduction (vph)	0	17	0	0	53	0	0	16	0	0	1	0
Lane Group Flow (vph)	0	36	0	124	62	0	12	448	0	131	370	0
Heavy Vehicles (%)	1%	1%	1%	7%	7%	7%	7%	7%	7%	7%	7%	7%
Turn Type	Perm			pm+pt			Perm			Perm		
Protected Phases		4		3	8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)		6.8		24.2	24.2		85.8	85.8		85.8	85.8	
Effective Green, g (s)		9.8		27.2	27.2		88.8	88.8		88.8	88.8	
Actuated g/C Ratio		0.08		0.23	0.23		0.74	0.74		0.74	0.74	
Clearance Time (s)		5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Vehicle Extension (s)		3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		144		300	367		662	1224		588	1305	
v/s Ratio Prot				c0.05	0.04			c0.27			0.21	
v/s Ratio Perm		0.02		0.04			0.01			0.17		
v/c Ratio		0.25		0.41	0.17		0.02	0.37		0.22	0.28	
Uniform Delay, d1		51.7		38.9	37.3		4.1	5.6		4.9	5.1	
Progression Factor		1.00		0.94	0.87		0.33	0.37		1.00	1.00	
Incremental Delay, d2		0.9		0.9	0.2		0.0	0.8		0.9	0.5	
Delay (s)		52.6		37.6	32.6		1.4	2.9		5.7	5.7	
Level of Service		D		D	C		A	A		A	A	
Approach Delay (s)		52.6			35.2			2.8			5.7	
Approach LOS		D			D			A			A	
<b>Intersection Summary</b>												
HCM Average Control Delay			12.1			HCM Level of Service				B		
HCM Volume to Capacity ratio			0.35									
Actuated Cycle Length (s)			120.0			Sum of lost time (s)				4.0		
Intersection Capacity Utilization			52.8%			ICU Level of Service				A		
Analysis Period (min)			15									
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis  
 132: Thayer Ave. & Georgia Ave

7/28/2008



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↔		↑↑↑		↔	↑↑↑
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0		4.0			4.0
Lane Util. Factor	1.00		0.91			0.91
Frt	0.91		1.00			1.00
Flt Protected	0.99		1.00			1.00
Satd. Flow (prot)	1662		5079			5085
Flt Permitted	0.99		1.00			1.00
Satd. Flow (perm)	1662		5079			5085
Volume (vph)	50	115	1196	10	0	1981
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	54	125	1300	11	0	2153
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	179	0	1311	0	0	2153
Turn Type					custom	
Protected Phases	4		5		6	2 6
Permitted Phases					2	
Actuated Green, G (s)	20.2		75.8			89.8
Effective Green, g (s)	21.2		76.8			90.8
Actuated g/C Ratio	0.18		0.64			0.76
Clearance Time (s)	5.0		5.0			
Vehicle Extension (s)	3.0		3.0			
Lane Grp Cap (vph)	294		3251			3848
v/s Ratio Prot	c0.11		0.26			c0.42
v/s Ratio Perm						
v/c Ratio	0.61		0.40			0.56
Uniform Delay, d1	45.6		10.5			6.2
Progression Factor	1.00		1.00			0.16
Incremental Delay, d2	3.5		0.4			0.1
Delay (s)	49.1		10.9			1.1
Level of Service	D		B			A
Approach Delay (s)	49.1		10.9			1.1
Approach LOS	D		B			A

**Intersection Summary**

HCM Average Control Delay	7.0	HCM Level of Service	A
HCM Volume to Capacity ratio	0.57		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	54.8%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis  
 1: Wayne Ave & MD 384 (Colesville Rd.)

6/10/2008



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations	↘	↑↑	↗	↘	↔		↘	↑↑↑	↗		↑↑↑	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	2.0	2.0	2.0	2.0	2.0		2.0	2.0	2.0		2.0	
Lane Util. Factor	1.00	0.95	1.00	0.91	0.91		1.00	0.91	1.00		0.91	
Frt	1.00	1.00	0.85	1.00	0.96		1.00	1.00	0.85		0.98	
Flt Protected	0.95	1.00	1.00	0.95	0.99		0.95	1.00	1.00		1.00	
Satd. Flow (prot)	1719	3438	1538	1564	3134		1719	4940	1538		4858	
Flt Permitted	0.95	1.00	1.00	0.95	0.99		0.33	1.00	1.00		0.94	
Satd. Flow (perm)	1719	3438	1538	1564	3134		591	4940	1538		4560	
Volume (vph)	88	134	154	315	231	111	101	1243	315	1	458	57
Peak-hour factor, PHF	0.94	0.94	0.94	0.87	0.87	0.87	0.96	0.96	0.96	0.86	0.86	0.86
Adj. Flow (vph)	94	143	164	362	266	128	105	1295	328	1	533	66
RTOR Reduction (vph)	0	0	149	0	20	0	0	0	161	0	10	0
Lane Group Flow (vph)	94	143	15	247	489	0	105	1295	167	0	590	0
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%
Turn Type	Split		Over	Split			pm+pt		Prot	Perm		
Protected Phases	3	3	1	4	4		1	6	6		2	
Permitted Phases							6			2		
Actuated Green, G (s)	31.0	31.0	10.8	31.0	31.0		70.0	64.2	64.2		54.2	
Effective Green, g (s)	35.0	35.0	13.8	35.0	35.0		74.0	68.2	68.2		58.2	
Actuated g/C Ratio	0.23	0.23	0.09	0.23	0.23		0.49	0.45	0.45		0.39	
Clearance Time (s)	6.0	6.0	5.0	6.0	6.0		5.0	6.0	6.0		6.0	
Vehicle Extension (s)	4.0	4.0	4.0	4.0	4.0		4.0	3.0	3.0		3.0	
Lane Grp Cap (vph)	401	802	141	365	731		395	2246	699		1769	
v/s Ratio Prot	c0.05	0.04	0.01	c0.16	0.16		c0.02	c0.26	0.11			
v/s Ratio Perm							0.11				0.13	
v/c Ratio	0.23	0.18	0.11	0.68	0.67		0.27	0.58	0.24		0.33	
Uniform Delay, d1	46.6	46.0	62.4	52.3	52.2		21.1	30.2	25.0		32.3	
Progression Factor	1.00	1.00	1.00	0.82	0.82		1.00	1.00	1.00		1.00	
Incremental Delay, d2	0.4	0.1	0.5	5.2	2.5		0.5	1.1	0.8		0.5	
Delay (s)	47.0	46.1	62.9	48.2	45.1		21.6	31.3	25.8		32.8	
Level of Service	D	D	E	D	D		C	C	C		C	
Approach Delay (s)		53.2			46.1			29.7			32.8	
Approach LOS		D			D			C			C	

Intersection Summary

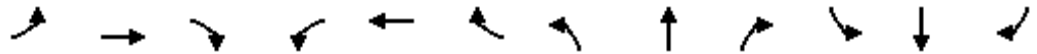
HCM Average Control Delay	36.5	HCM Level of Service	D
HCM Volume to Capacity ratio	0.50		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	65.1%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

# HCM Signalized Intersection Capacity Analysis

## 2: Wayne Ave. #1 & Ramsey Rd

6/10/2008



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕↕		↕	↕↕			↕↕			↕	↕
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		2.0		2.0	2.0			2.0			2.0	2.0
Lane Util. Factor		0.95		0.91	0.91			1.00			1.00	1.00
Frbp, ped/bikes		0.95		1.00	0.99			0.96			1.00	0.70
Flpb, ped/bikes		1.00		1.00	1.00			1.00			1.00	1.00
Frt		0.98		1.00	1.00			0.94			1.00	0.85
Flt Protected		1.00		0.95	1.00			0.97			0.97	1.00
Satd. Flow (prot)		3202		1564	3254			1587			1817	1118
Flt Permitted		0.95		0.47	1.00			0.67			0.67	1.00
Satd. Flow (perm)		3043		766	3254			1096			1263	1118
Volume (vph)	5	327	54	114	460	8	102	4	82	94	39	95
Peak-hour factor, PHF	0.94	0.94	0.94	0.96	0.96	0.96	0.86	0.86	0.86	0.94	0.94	0.94
Adj. Flow (vph)	5	348	57	119	479	8	119	5	95	100	41	101
RTOR Reduction (vph)	0	6	0	0	1	0	0	19	0	0	0	72
Lane Group Flow (vph)	0	404	0	119	486	0	0	200	0	0	141	29
Confl. Peds. (#/hr)			181			172			85			144
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%	5%	5%	5%	1%	1%	1%
Turn Type	Perm			pm+pt			Perm			Perm		Perm
Protected Phases		2		1	6			8			4	4
Permitted Phases	2			6			8			4		4
Actuated Green, G (s)		86.6		100.0	100.0			40.0			40.0	40.0
Effective Green, g (s)		89.6		103.0	103.0			43.0			43.0	43.0
Actuated g/C Ratio		0.60		0.69	0.69			0.29			0.29	0.29
Clearance Time (s)		5.0		4.0	5.0			5.0			5.0	5.0
Vehicle Extension (s)		0.2		3.0	0.2			4.0			4.0	4.0
Lane Grp Cap (vph)		1818		587	2234			314			362	320
v/s Ratio Prot				0.02	c0.15							
v/s Ratio Perm		0.13		0.12				c0.18			0.11	0.03
v/c Ratio		0.22		0.20	0.22			0.64			0.39	0.09
Uniform Delay, d1		14.0		8.2	8.7			46.7			43.0	39.2
Progression Factor		1.85		1.00	1.00			1.00			1.00	1.00
Incremental Delay, d2		0.3		0.2	0.2			9.6			3.1	0.6
Delay (s)		26.2		8.4	8.9			56.3			46.1	39.7
Level of Service		C		A	A			E			D	D
Approach Delay (s)		26.2			8.8			56.3			43.4	
Approach LOS		C			A			E			D	

### Intersection Summary

HCM Average Control Delay	26.3	HCM Level of Service	C
HCM Volume to Capacity ratio	0.34		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	4.0
Intersection Capacity Utilization	56.6%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

# HCM Signalized Intersection Capacity Analysis

## 3: Wayne Ave. #1 & Georgia Ave

6/10/2008

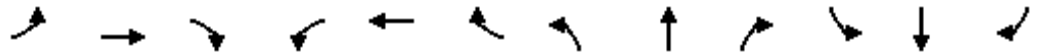
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	0.91		1.00	0.91	
Frt	1.00	0.97		1.00	0.94		1.00	0.99		1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1719	3343		1719	3237		1719	4895		1719	4875	
Flt Permitted	0.31	1.00		0.27	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	556	3343		497	3237		1719	4895		1719	4875	
Volume (vph)	187	457	103	108	305	195	144	1490	96	83	1222	118
Peak-hour factor, PHF	0.98	0.98	0.98	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	191	466	105	114	321	205	152	1568	101	87	1286	124
RTOR Reduction (vph)	0	16	0	0	86	0	0	6	0	0	9	0
Lane Group Flow (vph)	191	555	0	114	440	0	152	1663	0	87	1401	0
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%
Turn Type	Perm		Perm		Prot		Prot					
Protected Phases	4		8		1		5		6		2	
Permitted Phases	4		8									
Actuated Green, G (s)	33.0	33.0		33.0	33.0		10.0	51.0		18.0	59.0	
Effective Green, g (s)	35.0	35.0		35.0	35.0		12.0	53.0		20.0	61.0	
Actuated g/C Ratio	0.29	0.29		0.29	0.29		0.10	0.44		0.17	0.51	
Clearance Time (s)	6.0	6.0		6.0	6.0		6.0	6.0		6.0	6.0	
Vehicle Extension (s)	4.0	4.0		4.0	4.0		3.0	0.2		3.0	0.2	
Lane Grp Cap (vph)	162	975		145	944		172	2162		287	2478	
v/s Ratio Prot		0.17			0.14		c0.09	c0.34		0.05	c0.29	
v/s Ratio Perm	c0.34		0.23									
v/c Ratio	1.18	0.57		0.79	0.47		0.88	0.77		0.30	0.57	
Uniform Delay, d1	42.5	36.1		39.1	34.8		53.3	28.3		43.9	20.4	
Progression Factor	1.00	1.00		1.24	1.36		1.10	0.57		0.65	0.47	
Incremental Delay, d2	127.0	2.4		30.6	1.5		31.7	2.2		2.5	0.9	
Delay (s)	169.5	38.5		78.9	49.0		90.5	18.4		30.9	10.5	
Level of Service	F	D		E	D		F	B		C	B	
Approach Delay (s)		71.3			54.3			24.4			11.7	
Approach LOS		E			D			C			B	
<b>Intersection Summary</b>												
HCM Average Control Delay			32.0		HCM Level of Service				C			
HCM Volume to Capacity ratio			0.85									
Actuated Cycle Length (s)			120.0		Sum of lost time (s)				8.0			
Intersection Capacity Utilization			73.9%		ICU Level of Service				D			
Analysis Period (min)			15									

c Critical Lane Group

# HCM Signalized Intersection Capacity Analysis

85: 2nd Avenue & Cameron Ave

6/10/2008



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕↕		↕	↕↕			↕↕			↕↕	↕↕
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		2.0		2.0	2.0			2.0			2.0	2.0
Lane Util. Factor		0.95		1.00	0.95			1.00			1.00	1.00
Frt		0.99		1.00	0.97			0.96			1.00	0.85
Flt Protected		0.99		0.95	1.00			0.98			0.96	1.00
Satd. Flow (prot)		3366		1719	3340			1772			1809	1599
Flt Permitted		0.79		0.55	1.00			0.86			0.79	1.00
Satd. Flow (perm)		2708		1004	3340			1560			1484	1599
Volume (vph)	85	207	15	25	295	69	16	9	9	86	22	87
Peak-hour factor, PHF	0.94	0.94	0.94	0.93	0.93	0.93	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	90	220	16	27	317	74	17	10	10	93	24	95
RTOR Reduction (vph)	0	3	0	0	15	0	0	8	0	0	0	77
Lane Group Flow (vph)	0	323	0	27	376	0	0	29	0	0	117	18
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%	1%	1%	1%	1%	1%	1%
Turn Type	Perm			Perm			Perm			Perm		Perm
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		6
Actuated Green, G (s)		41.8		41.8	41.8			8.2			8.2	8.2
Effective Green, g (s)		44.8		44.8	44.8			11.2			11.2	11.2
Actuated g/C Ratio		0.75		0.75	0.75			0.19			0.19	0.19
Clearance Time (s)		5.0		5.0	5.0			5.0			5.0	5.0
Vehicle Extension (s)		3.0		3.0	3.0			3.0			3.0	3.0
Lane Grp Cap (vph)		2022		750	2494			291			277	298
v/s Ratio Prot					0.11							
v/s Ratio Perm		c0.12		0.03				0.02			c0.08	0.01
v/c Ratio		0.16		0.04	0.15			0.10			0.42	0.06
Uniform Delay, d1		2.2		2.0	2.2			20.2			21.5	20.1
Progression Factor		1.06		1.00	1.00			1.00			1.00	1.00
Incremental Delay, d2		0.2		0.1	0.1			0.1			1.0	0.1
Delay (s)		2.5		2.1	2.3			20.4			22.6	20.2
Level of Service		A		A	A			C			C	C
Approach Delay (s)		2.5			2.3			20.4			21.5	
Approach LOS		A			A			C			C	

## Intersection Summary

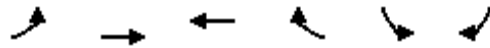
HCM Average Control Delay	7.1	HCM Level of Service	A
HCM Volume to Capacity ratio	0.21		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	4.0
Intersection Capacity Utilization	38.6%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

# HCM Signalized Intersection Capacity Analysis

99: 2nd Avenue & Fenwick Ave

6/10/2008



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↕↕	↕	↕	↕	↕
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)		2.0	2.0	2.0	2.0	2.0
Lane Util. Factor		0.95	1.00	1.00	1.00	1.00
Frt		1.00	1.00	0.85	1.00	0.85
Flt Protected		0.99	1.00	1.00	0.95	1.00
Satd. Flow (prot)		3402	1810	1538	1787	1599
Flt Permitted		0.84	1.00	1.00	0.95	1.00
Satd. Flow (perm)		2894	1810	1538	1787	1599
Volume (vph)	64	239	333	66	68	117
Peak-hour factor, PHF	0.93	0.93	0.94	0.94	0.91	0.91
Adj. Flow (vph)	69	257	354	70	75	129
RTOR Reduction (vph)	0	0	0	16	0	109
Lane Group Flow (vph)	0	326	354	54	75	20
Heavy Vehicles (%)	5%	5%	5%	5%	1%	1%
Turn Type	Perm			Perm		Perm
Protected Phases		4	8		6	
Permitted Phases	4			8		6
Actuated Green, G (s)		43.7	43.7	43.7	6.3	6.3
Effective Green, g (s)		46.7	46.7	46.7	9.3	9.3
Actuated g/C Ratio		0.78	0.78	0.78	0.16	0.16
Clearance Time (s)		5.0	5.0	5.0	5.0	5.0
Vehicle Extension (s)		3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)		2252	1409	1197	277	248
v/s Ratio Prot			c0.20		c0.04	
v/s Ratio Perm		0.11		0.04		0.01
v/c Ratio		0.14	0.25	0.05	0.27	0.08
Uniform Delay, d1		1.7	1.8	1.5	22.4	21.7
Progression Factor		1.18	0.90	0.89	1.00	1.00
Incremental Delay, d2		0.1	0.4	0.1	0.5	0.1
Delay (s)		2.1	2.1	1.4	22.9	21.8
Level of Service		A	A	A	C	C
Approach Delay (s)		2.1	2.0		22.2	
Approach LOS		A	A		C	

## Intersection Summary

HCM Average Control Delay	6.3	HCM Level of Service	A
HCM Volume to Capacity ratio	0.25		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	4.0
Intersection Capacity Utilization	39.8%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis  
 102: 2nd Avenue & Spring Street

6/10/2008



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕		↕	↕		↕	↕		↕	↕	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lane Util. Factor		1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt		0.99		1.00	0.87		1.00	0.95		1.00	1.00	
Flt Protected		0.99		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1838		1719	1570		1719	1718		1719	1806	
Flt Permitted		0.89		0.42	1.00		0.51	1.00		0.32	1.00	
Satd. Flow (perm)		1657		761	1570		918	1718		583	1806	
Volume (vph)	21	54	6	307	17	126	2	348	176	73	273	3
Peak-hour factor, PHF	0.63	0.63	0.63	0.89	0.89	0.89	0.87	0.87	0.87	0.85	0.85	0.85
Adj. Flow (vph)	33	86	10	345	19	142	2	400	202	86	321	4
RTOR Reduction (vph)	0	3	0	0	95	0	0	12	0	0	0	0
Lane Group Flow (vph)	0	126	0	345	66	0	2	590	0	86	325	0
Heavy Vehicles (%)	1%	1%	1%	5%	5%	5%	5%	5%	5%	5%	5%	5%
Turn Type	Perm			pm+pt			Perm			Perm		
Protected Phases		4		3	8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)		13.8		36.8	36.8		73.2	73.2		73.2	73.2	
Effective Green, g (s)		16.8		39.8	39.8		76.2	76.2		76.2	76.2	
Actuated g/C Ratio		0.14		0.33	0.33		0.64	0.64		0.64	0.64	
Clearance Time (s)		5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Vehicle Extension (s)		3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		232		420	521		583	1091		370	1147	
v/s Ratio Prot				c0.14	0.04			c0.34			0.18	
v/s Ratio Perm		c0.08		0.13			0.00			0.15		
v/c Ratio		0.54		0.82	0.13		0.00	0.54		0.23	0.28	
Uniform Delay, d1		48.0		34.3	28.0		8.0	12.2		9.4	9.7	
Progression Factor		1.00		0.94	0.89		0.83	0.62		1.00	1.00	
Incremental Delay, d2		2.6		12.1	0.1		0.0	1.7		1.5	0.6	
Delay (s)		50.6		44.2	24.9		6.7	9.2		10.8	10.4	
Level of Service		D		D	C		A	A		B	B	
Approach Delay (s)		50.6			38.0			9.2			10.5	
Approach LOS		D			D			A			B	

Intersection Summary			
HCM Average Control Delay	21.6	HCM Level of Service	C
HCM Volume to Capacity ratio	0.58		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	6.0
Intersection Capacity Utilization	71.1%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group



HCM Signalized Intersection Capacity Analysis  
 132: Thayer Ave. & Georgia Ave

7/28/2008



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↔		↑↑↑		↔	↑↑↑
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0		4.0		4.0	4.0
Lane Util. Factor	1.00		0.91		1.00	0.91
Frt	0.91		0.99		1.00	1.00
Flt Protected	0.98		1.00		0.95	1.00
Satd. Flow (prot)	1665		5051		1770	5085
Flt Permitted	0.98		1.00		0.06	1.00
Satd. Flow (perm)	1665		5051		118	5085
Volume (vph)	49	105	1773	84	84	1210
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	53	114	1927	91	91	1315
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	167	0	2018	0	91	1315
Turn Type					custom	
Protected Phases	4		5		6	2 6
Permitted Phases					2	
Actuated Green, G (s)	19.9		76.1		90.1	90.1
Effective Green, g (s)	20.9		77.1		91.1	91.1
Actuated g/C Ratio	0.17		0.64		0.76	0.76
Clearance Time (s)	5.0		5.0		5.0	
Vehicle Extension (s)	3.0		3.0		3.0	
Lane Grp Cap (vph)	290		3245		227	3860
v/s Ratio Prot	c0.10		c0.40		0.03	c0.26
v/s Ratio Perm					0.27	
v/c Ratio	0.58		0.62		0.40	0.34
Uniform Delay, d1	45.5		12.8		25.3	4.7
Progression Factor	1.00		1.00		0.84	1.20
Incremental Delay, d2	2.8		0.9		0.9	0.0
Delay (s)	48.2		13.7		22.3	5.7
Level of Service	D		B		C	A
Approach Delay (s)	48.2		13.7			6.7
Approach LOS	D		B			A

**Intersection Summary**

HCM Average Control Delay	12.6	HCM Level of Service	B
HCM Volume to Capacity ratio	0.57		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	60.0%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

# HCM Signalized Intersection Capacity Analysis

9: Ellin Rd. & MD 410

6/11/2008



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↰↰	↱	↕↕	↱	↰	↕↕↕
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	0.97	1.00	0.95	1.00	1.00	0.91
Frt	1.00	0.85	1.00	0.85	1.00	1.00
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	3303	1524	3406	1524	1703	4893
Flt Permitted	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	3303	1524	3406	1524	1703	4893
Volume (vph)	320	100	1715	590	160	1175
Peak-hour factor, PHF	0.83	0.83	0.89	0.89	0.81	0.81
Adj. Flow (vph)	386	120	1927	663	198	1451
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	386	120	1927	663	198	1451
Heavy Vehicles (%)	6%	6%	6%	6%	6%	6%
Turn Type		Free		Free	Prot	
Protected Phases	4		2		1	6
Permitted Phases		Free		Free		
Actuated Green, G (s)	18.5	120.0	67.1	120.0	19.4	91.5
Effective Green, g (s)	19.5	120.0	68.1	120.0	20.4	92.5
Actuated g/C Ratio	0.16	1.00	0.57	1.00	0.17	0.77
Clearance Time (s)	5.0		5.0		5.0	5.0
Vehicle Extension (s)	3.0		6.0		3.0	6.0
Lane Grp Cap (vph)	537	1524	1933	1524	290	3772
v/s Ratio Prot	c0.12		c0.57		c0.12	0.30
v/s Ratio Perm		0.08		0.44		
v/c Ratio	0.72	0.08	1.00	0.44	0.68	0.38
Uniform Delay, d1	47.7	0.0	25.8	0.0	46.8	4.5
Progression Factor	1.00	1.00	0.89	1.00	1.00	1.00
Incremental Delay, d2	4.6	0.1	16.6	0.6	6.5	0.3
Delay (s)	52.2	0.1	39.5	0.6	53.3	4.8
Level of Service	D	A	D	A	D	A
Approach Delay (s)	39.9		29.6			10.6
Approach LOS	D		C			B

## Intersection Summary

HCM Average Control Delay	24.1	HCM Level of Service	C
HCM Volume to Capacity ratio	0.89		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	75.4%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

# HCM Signalized Intersection Capacity Analysis

9: Ellin Rd. & MD 410

6/11/2008



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↙↘	↗	↕↕	↗	↙	↕↕↕
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	0.97	1.00	0.95	1.00	1.00	0.91
Frt	1.00	0.85	1.00	0.85	1.00	1.00
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	3400	1568	3505	1568	1752	5036
Flt Permitted	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	3400	1568	3505	1568	1752	5036
Volume (vph)	595	65	1210	235	85	1490
Peak-hour factor, PHF	0.81	0.81	0.96	0.96	0.91	0.91
Adj. Flow (vph)	735	80	1260	245	93	1637
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	735	80	1260	245	93	1637
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%
Turn Type		Free		Free	Prot	
Protected Phases	4		2		1	6
Permitted Phases		Free		Free		
Actuated Green, G (s)	36.1	150.0	85.8	150.0	13.1	103.9
Effective Green, g (s)	37.1	150.0	86.8	150.0	14.1	104.9
Actuated g/C Ratio	0.25	1.00	0.58	1.00	0.09	0.70
Clearance Time (s)	5.0		5.0		5.0	5.0
Vehicle Extension (s)	3.0		6.0		3.0	6.0
Lane Grp Cap (vph)	841	1568	2028	1568	165	3522
v/s Ratio Prot	c0.22		c0.36		c0.05	0.33
v/s Ratio Perm		0.05		0.16		
v/c Ratio	0.87	0.05	0.62	0.16	0.56	0.46
Uniform Delay, d1	54.2	0.0	20.8	0.0	65.0	10.0
Progression Factor	1.00	1.00	1.10	1.00	1.00	1.00
Incremental Delay, d2	10.0	0.1	1.4	0.2	4.4	0.4
Delay (s)	64.2	0.1	24.2	0.2	69.4	10.5
Level of Service	E	A	C	A	E	B
Approach Delay (s)	57.9		20.3			13.7
Approach LOS	E		C			B

## Intersection Summary
























HCM Average Control Delay	25.0	HCM Level of Service	C
HCM Volume to Capacity ratio	0.68		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	65.1%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

# HCM Signalized Intersection Capacity Analysis

## 4: Fenton St & Wayne Ave.

6/10/2008

												
Movement	NBL	NBT	NBR	SBL	SBT	SBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	2.0	2.0	2.0	2.0	2.0		2.0	2.0		2.0	2.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00		1.00	0.95		1.00	0.95	
Frbp, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Flpb, ped/bikes	1.00	1.00	1.00	0.98	1.00		0.98	1.00		0.98	1.00	
Frt	1.00	1.00	0.85	1.00	0.97		1.00	0.97		1.00	0.99	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1687	1776	1509	1653	1714		1646	3257		1650	3332	
Flt Permitted	0.35	1.00	1.00	0.53	1.00		0.37	1.00		0.46	1.00	
Satd. Flow (perm)	627	1776	1509	917	1714		647	3257		805	3332	
Volume (vph)	108	227	155	23	274	83	34	232	70	300	598	53
Peak-hour factor, PHF	0.97	0.97	0.97	0.86	0.86	0.86	0.96	0.96	0.96	0.89	0.89	0.89
Adj. Flow (vph)	111	234	160	27	319	97	35	242	73	337	672	60
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	111	234	160	27	416	0	35	315	0	337	732	0
Confl. Peds. (#/hr)	34			17			19			29		
Turn Type	Perm		Perm	Perm			Perm			pm+pt		
Protected Phases		2			6			4		3	8	
Permitted Phases	2		2	6			4			8		
Actuated Green, G (s)	52.0	52.0	52.0	52.0	52.0		40.1	40.1		58.0	58.0	
Effective Green, g (s)	55.0	55.0	55.0	55.0	55.0		43.1	43.1		61.0	61.0	
Actuated g/C Ratio	0.46	0.46	0.46	0.46	0.46		0.36	0.36		0.51	0.51	
Clearance Time (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0		4.0	5.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	287	814	692	420	786		232	1170		521	1694	
v/s Ratio Prot		0.13			c0.24			0.10		c0.09	c0.22	
v/s Ratio Perm	0.18		0.11	0.03			0.05			0.24		
v/c Ratio	0.39	0.29	0.23	0.06	0.53		0.15	0.27		0.65	0.43	
Uniform Delay, d1	21.4	20.3	19.7	18.1	23.2		26.1	27.3		18.6	18.6	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	3.9	0.9	0.8	0.3	2.5		1.4	0.6		2.8	0.2	
Delay (s)	25.3	21.2	20.5	18.4	25.8		27.4	27.8		21.4	18.8	
Level of Service	C	C	C	B	C		C	C		C	B	
Approach Delay (s)		21.9			25.3			27.8			19.6	
Approach LOS		C			C			C			B	
<b>Intersection Summary</b>												
HCM Average Control Delay			22.4			HCM Level of Service				C		
HCM Volume to Capacity ratio			0.50									
Actuated Cycle Length (s)			120.0			Sum of lost time (s)			4.0			
Intersection Capacity Utilization			64.1%			ICU Level of Service				C		
Analysis Period (min)			15									

c Critical Lane Group

# HCM Signalized Intersection Capacity Analysis

## 5: Cedar Ave & Wayne Ave.

6/10/2008



Movement	NBL	NBT	NBR	SBL	SBT	SBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations		↕↔		↔		↔		↕↔			↕↔	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		2.0		2.0		2.0		2.0			2.0	
Lane Util. Factor		1.00		1.00		1.00		0.95			0.95	
Frbp, ped/bikes		1.00		1.00		0.93		1.00			0.99	
Flpb, ped/bikes		0.99		1.00		1.00		1.00			1.00	
Frt		0.97		1.00		0.85		1.00			0.97	
Flt Protected		0.99		0.95		1.00		0.99			1.00	
Satd. Flow (prot)		1693		1679		1407		3346			3222	
Flt Permitted		0.99		0.57		1.00		0.67			1.00	
Satd. Flow (perm)		1693		1009		1407		2246			3222	
Volume (vph)	19	102	34	108	0	76	64	315	0	0	826	241
Peak-hour factor, PHF	0.85	0.85	0.85	0.81	0.81	0.81	0.85	0.85	0.85	0.93	0.93	0.93
Adj. Flow (vph)	22	120	40	133	0	94	75	371	0	0	888	259
RTOR Reduction (vph)	0	11	0	0	0	58	0	0	0	0	0	0
Lane Group Flow (vph)	0	171	0	133	0	36	0	446	0	0	1147	0
Conf. Peds. (#/hr)	36		5	5		36	12		6	6		12
Turn Type	Perm		custom		custom		Perm					
Protected Phases		8						2			6	
Permitted Phases	8		4		4		2					
Actuated Green, G (s)		31.0		31.0		31.0		49.0			49.0	
Effective Green, g (s)		34.0		34.0		34.0		52.0			52.0	
Actuated g/C Ratio		0.38		0.38		0.38		0.58			0.58	
Clearance Time (s)		5.0		5.0		5.0		5.0			5.0	
Vehicle Extension (s)		0.2		0.2		0.2		0.2			0.2	
Lane Grp Cap (vph)		640		381		532		1298			1862	
v/s Ratio Prot											c0.36	
v/s Ratio Perm		0.10		c0.13		0.03		0.20				
v/c Ratio		0.27		0.35		0.07		0.34			0.62	
Uniform Delay, d1		19.4		20.1		17.9		10.0			12.5	
Progression Factor		1.00		1.00		1.00		1.00			1.34	
Incremental Delay, d2		1.0		2.5		0.2		0.7			1.2	
Delay (s)		20.4		22.6		18.1		10.7			17.9	
Level of Service		C		C		B		B			B	
Approach Delay (s)		20.4			20.7			10.7			17.9	
Approach LOS		C			C			B			B	

### Intersection Summary

HCM Average Control Delay	16.9	HCM Level of Service	B
HCM Volume to Capacity ratio	0.50		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	4.0
Intersection Capacity Utilization	85.8%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

# HCM Signalized Intersection Capacity Analysis

## 6: Wayne Ave. & Dale Dr

6/10/2008



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕↕			↕↕		↕	↕		↕	↕	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		2.0			2.0		2.0	2.0		2.0	2.0	
Lane Util. Factor		0.95			0.95		1.00	1.00		1.00	1.00	
Frbp, ped/bikes		0.98			0.99		1.00	0.99		1.00	0.97	
Flpb, ped/bikes		1.00			1.00		0.98	1.00		0.99	1.00	
Frt		0.97			0.99		1.00	0.98		1.00	0.94	
Flt Protected		1.00			1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		3211			3268		1655	1730		1667	1629	
Flt Permitted		0.82			0.88		0.22	1.00		0.23	1.00	
Satd. Flow (perm)		2635			2875		377	1730		403	1629	
Volume (vph)	27	256	61	72	865	85	31	282	42	78	225	140
Peak-hour factor, PHF	0.75	0.75	0.75	0.85	0.85	0.85	0.81	0.81	0.81	0.89	0.89	0.89
Adj. Flow (vph)	36	341	81	85	1018	100	38	348	52	88	253	157
RTOR Reduction (vph)	0	16	0	0	0	0	0	7	0	0	29	0
Lane Group Flow (vph)	0	442	0	0	1203	0	38	393	0	88	381	0
Conf. Peds. (#/hr)	52		30	30		52	41		25	25		41
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		6			2			8			4	
Permitted Phases	6			2			8			4		
Actuated Green, G (s)		55.1			55.1		24.9	24.9		24.9	24.9	
Effective Green, g (s)		58.1			58.1		27.9	27.9		27.9	27.9	
Actuated g/C Ratio		0.65			0.65		0.31	0.31		0.31	0.31	
Clearance Time (s)		5.0			5.0		5.0	5.0		5.0	5.0	
Vehicle Extension (s)		3.0			3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		1701			1856		117	536		125	505	
v/s Ratio Prot								0.23			c0.23	
v/s Ratio Perm		0.17			c0.42		0.10			0.22		
v/c Ratio		0.26			0.65		0.32	0.73		0.70	0.75	
Uniform Delay, d1		6.8			9.7		23.8	27.7		27.4	28.0	
Progression Factor		1.09			0.51		1.00	1.00		1.00	1.00	
Incremental Delay, d2		0.4			1.5		1.6	5.2		16.5	6.3	
Delay (s)		7.8			6.5		25.4	32.9		43.9	34.3	
Level of Service		A			A		C	C		D	C	
Approach Delay (s)		7.8			6.5			32.2			36.0	
Approach LOS		A			A			C			D	

### Intersection Summary

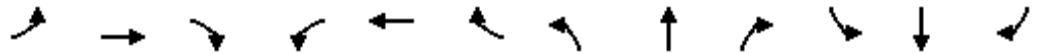
HCM Average Control Delay	16.7	HCM Level of Service	B
HCM Volume to Capacity ratio	0.67		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	4.0
Intersection Capacity Utilization	82.4%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

# HCM Signalized Intersection Capacity Analysis

## 7: Wayne Ave. & Mansfield

6/10/2008



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑			↑↑			↑↓				
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		2.0			2.0			2.0				
Lane Util. Factor		0.95			0.95			1.00				
Frbp, ped/bikes		1.00			1.00			1.00				
Flpb, ped/bikes		1.00			1.00			1.00				
Frt		1.00			1.00			0.94				
Flt Protected		1.00			1.00			0.97				
Satd. Flow (prot)		3370			3372			1624				
Flt Permitted		1.00			0.95			0.97				
Satd. Flow (perm)		3370			3213			1624				
Volume (vph)	0	314	2	7	1056	0	4	0	3	0	0	0
Peak-hour factor, PHF	0.85	0.85	0.85	0.93	0.93	0.93	0.75	0.75	0.75	0.92	0.92	0.92
Adj. Flow (vph)	0	369	2	8	1135	0	5	0	4	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	3	0	0	0	0
Lane Group Flow (vph)	0	371	0	0	1143	0	0	6	0	0	0	0
Conf. Peds. (#/hr)	1		22	22			11			5		
Turn Type					Perm			Split				
Protected Phases		2				6		4	4			
Permitted Phases					6							
Actuated Green, G (s)		55.0			55.0			24.0				
Effective Green, g (s)		59.0			59.0			27.0				
Actuated g/C Ratio		0.66			0.66			0.30				
Clearance Time (s)		6.0			6.0			5.0				
Vehicle Extension (s)		0.2			3.0			0.2				
Lane Grp Cap (vph)		2209			2106			487				
v/s Ratio Prot		0.11						c0.00				
v/s Ratio Perm					c0.36							
v/c Ratio		0.17			0.54			0.01				
Uniform Delay, d1		6.0			8.3			22.1				
Progression Factor		0.48			1.00			1.00				
Incremental Delay, d2		0.2			1.0			0.0				
Delay (s)		3.1			9.3			22.1				
Level of Service		A			A			C				
Approach Delay (s)		3.1			9.3			22.1			0.0	
Approach LOS		A			A			C			A	
<b>Intersection Summary</b>												
HCM Average Control Delay			7.9					HCM Level of Service			A	
HCM Volume to Capacity ratio			0.37									
Actuated Cycle Length (s)			90.0					Sum of lost time (s)			4.0	
Intersection Capacity Utilization			44.1%					ICU Level of Service			A	
Analysis Period (min)			15									

c Critical Lane Group

# HCM Signalized Intersection Capacity Analysis

## 8: Wayne Ave. & Sligo Creek Pkwy

6/10/2008



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗		↖	↗		↖	↗			↖	↗
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	2.0	2.0		2.0	2.0		2.0	2.0			2.0	2.0
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00			1.00	1.00
Frbp, ped/bikes	1.00	0.99		1.00	1.00		1.00	1.00			1.00	1.00
Flpb, ped/bikes	1.00	1.00		0.99	1.00		1.00	1.00			1.00	1.00
Frt	1.00	0.98		1.00	0.99		1.00	0.99			1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00			0.99	1.00
Satd. Flow (prot)	1687	1732		1668	1759		1687	1761			1760	1509
Flt Permitted	0.06	1.00		0.45	1.00		0.16	1.00			0.89	1.00
Satd. Flow (perm)	109	1732		793	1759		280	1761			1586	1509
Volume (vph)	38	221	31	17	787	36	133	285	14	46	272	138
Peak-hour factor, PHF	0.71	0.71	0.71	0.87	0.87	0.87	0.78	0.78	0.78	0.83	0.83	0.83
Adj. Flow (vph)	54	311	44	20	905	41	171	365	18	55	328	166
RTOR Reduction (vph)	0	4	0	0	1	0	0	2	0	0	0	0
Lane Group Flow (vph)	54	351	0	20	945	0	171	381	0	0	383	166
Confl. Peds. (#/hr)	14		8	8		14	2		11	11		2
Turn Type	Perm			Perm			pm+pt			Perm		Prot
Protected Phases		2			6		7	4			8	8
Permitted Phases	2			6			4			8		
Actuated Green, G (s)	62.0	62.0		62.0	62.0		48.0	48.0			28.8	28.8
Effective Green, g (s)	65.0	65.0		65.0	65.0		51.0	51.0			31.8	31.8
Actuated g/C Ratio	0.54	0.54		0.54	0.54		0.42	0.42			0.26	0.26
Clearance Time (s)	5.0	5.0		5.0	5.0		5.0	5.0			5.0	5.0
Vehicle Extension (s)	0.2	0.2		0.2	0.2		3.0	3.0			0.2	0.2
Lane Grp Cap (vph)	59	938		430	953		321	748			420	400
v/s Ratio Prot		0.20			c0.54		c0.08	0.22				0.11
v/s Ratio Perm	0.49			0.03			0.15				c0.24	
v/c Ratio	0.92	0.37		0.05	0.99		0.53	0.51			0.91	0.42
Uniform Delay, d1	25.0	15.8		12.9	27.2		25.0	25.3			42.7	36.4
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00			1.00	1.00
Incremental Delay, d2	94.6	1.1		0.2	27.1		1.7	0.5			23.4	0.3
Delay (s)	119.6	16.9		13.1	54.3		26.7	25.9			66.1	36.7
Level of Service	F	B		B	D		C	C			E	D
Approach Delay (s)		30.5			53.5			26.1			57.2	
Approach LOS		C			D			C			E	

### Intersection Summary

HCM Average Control Delay	44.4	HCM Level of Service	D
HCM Volume to Capacity ratio	0.89		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	6.0
Intersection Capacity Utilization	87.0%	ICU Level of Service	E
Analysis Period (min)	15		

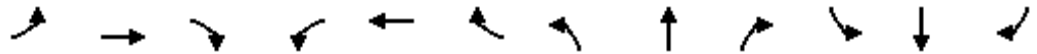
c Critical Lane Group



# HCM Signalized Intersection Capacity Analysis

## 9: Wayne Ave. & Flower Ave

6/10/2008



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕	↗		↕		↖	↖			↕	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		2.0	2.0		2.0		2.0	2.0			2.0	
Lane Util. Factor		1.00	1.00		1.00		1.00	1.00			1.00	
Frbp, ped/bikes		1.00	1.00		0.99		1.00	1.00			0.99	
Flpb, ped/bikes		0.98	1.00		1.00		1.00	1.00			1.00	
Frt		1.00	0.85		0.98		1.00	1.00			0.95	
Flt Protected		0.96	1.00		1.00		0.95	1.00			1.00	
Satd. Flow (prot)		1669	1509		1713		1687	1773			1679	
Flt Permitted		0.82	1.00		0.98		0.40	1.00			0.99	
Satd. Flow (perm)		1424	1509		1683		715	1773			1672	
Volume (vph)	61	6	137	3	25	6	457	360	4	6	248	143
Peak-hour factor, PHF	0.78	0.78	0.78	0.84	0.84	0.84	0.89	0.89	0.89	0.83	0.83	0.83
Adj. Flow (vph)	78	8	176	4	30	7	513	404	4	7	299	172
RTOR Reduction (vph)	0	0	0	0	6	0	0	0	0	0	18	0
Lane Group Flow (vph)	0	86	176	0	35	0	513	408	0	0	460	0
Conf. Peds. (#/hr)	6		2	2		6	1		4	4		1
Turn Type	Perm		pt+ov	Perm			pm+pt				Perm	
Protected Phases		4	4 5		8		5	2				6
Permitted Phases	4			8			2			6		
Actuated Green, G (s)		12.6	33.4		12.6		67.4	67.4			47.6	
Effective Green, g (s)		15.6	35.4		15.6		70.4	70.4			50.6	
Actuated g/C Ratio		0.17	0.39		0.17		0.78	0.78			0.56	
Clearance Time (s)		5.0			5.0		4.0	5.0			5.0	
Vehicle Extension (s)		3.0			3.0		3.0	3.0			3.0	
Lane Grp Cap (vph)		247	594		292		752	1387			940	
v/s Ratio Prot			0.12				c0.14	0.23				
v/s Ratio Perm		c0.06			0.02		0.40				c0.28	
v/c Ratio		0.35	0.30		0.12		0.68	0.29			0.49	
Uniform Delay, d1		32.7	18.7		31.4		5.3	2.8			11.9	
Progression Factor		1.00	1.00		1.00		1.00	1.00			1.00	
Incremental Delay, d2		0.9	0.3		0.2		2.6	0.5			1.8	
Delay (s)		33.6	19.0		31.6		7.8	3.3			13.7	
Level of Service		C	B		C		A	A			B	
Approach Delay (s)		23.8			31.6			5.8			13.7	
Approach LOS		C			C			A			B	

### Intersection Summary

HCM Average Control Delay	11.4	HCM Level of Service	B
HCM Volume to Capacity ratio	0.50		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	6.0
Intersection Capacity Utilization	67.8%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

# HCM Signalized Intersection Capacity Analysis

## 12: Piney Branch Rd. & Arliss

6/10/2008



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↕		↖	↕			↕		↖	↕	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	2.0	2.0		2.0	2.0			2.0		2.0	2.0	
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00		0.95	0.95	
Frbp, ped/bikes	1.00	1.00		1.00	1.00			1.00		1.00	1.00	
Flpb, ped/bikes	1.00	1.00		0.99	1.00			1.00		1.00	1.00	
Frt	1.00	1.00		1.00	0.96			0.90		1.00	0.96	
Flt Protected	0.95	1.00		0.95	1.00			0.99		0.95	0.96	
Satd. Flow (prot)	1687	3373		1671	3228			1679		1603	1567	
Flt Permitted	0.16	1.00		0.47	1.00			0.99		0.95	0.96	
Satd. Flow (perm)	277	3373		821	3228			1679		1603	1567	
Volume (vph)	10	444	1	9	953	386	2	1	8	146	2	20
Peak-hour factor, PHF	0.93	0.93	0.93	0.94	0.94	0.94	0.48	0.48	0.48	0.88	0.88	0.88
Adj. Flow (vph)	11	477	1	10	1014	411	4	2	17	166	2	23
RTOR Reduction (vph)	0	0	0	0	16	0	0	16	0	0	9	0
Lane Group Flow (vph)	11	478	0	10	1409	0	0	7	0	99	83	0
Confl. Peds. (#/hr)	4			5			17			10		
Heavy Vehicles (%)	7%	7%	7%	7%	7%	7%	1%	1%	1%	7%	7%	7%
Turn Type	Perm		Perm		Split		Split					
Protected Phases	6		2		3		3		4		4	
Permitted Phases	6		2									
Actuated Green, G (s)	116.5	116.5		116.5	116.5			4.3		14.2	14.2	
Effective Green, g (s)	119.5	119.5		119.5	119.5			7.3		17.2	17.2	
Actuated g/C Ratio	0.80	0.80		0.80	0.80			0.05		0.11	0.11	
Clearance Time (s)	5.0	5.0		5.0	5.0			5.0		5.0	5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0		3.0	3.0	
Lane Grp Cap (vph)	221	2687		654	2572			82		184	180	
v/s Ratio Prot		0.14			c0.44			c0.00		c0.06	0.05	
v/s Ratio Perm	0.04			0.01								
v/c Ratio	0.05	0.18		0.02	0.55			0.08		0.54	0.46	
Uniform Delay, d1	3.2	3.6		3.1	5.5			68.2		62.7	62.1	
Progression Factor	0.81	0.80		0.81	0.65			1.00		1.00	1.00	
Incremental Delay, d2	0.4	0.1		0.0	0.7			0.4		3.0	1.9	
Delay (s)	3.0	3.0		2.6	4.3			68.6		65.7	63.9	
Level of Service	A	A		A	A			E		E	E	
Approach Delay (s)		3.0			4.2			68.6			64.8	
Approach LOS		A			A			E			E	

### Intersection Summary

HCM Average Control Delay	10.1	HCM Level of Service	B
HCM Volume to Capacity ratio	0.52		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	6.0
Intersection Capacity Utilization	56.7%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

# HCM Signalized Intersection Capacity Analysis

## 13: Piney Branch Rd. & Barron St

6/10/2008


























Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑			↑↑			↑	↑		↑↑	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		2.0			2.0			2.0	2.0		2.0	
Lane Util. Factor		0.95			0.95			1.00	1.00		1.00	
Frt		0.99			1.00			1.00	0.85		0.98	
Flt Protected		1.00			1.00			0.95	1.00		0.96	
Satd. Flow (prot)		3331			3367			1694	1509		1763	
Flt Permitted		0.95			0.92			0.73	1.00		0.66	
Satd. Flow (perm)		3178			3096			1291	1509		1220	
Volume (vph)	1	547	50	30	1164	7	182	6	57	10	0	2
Peak-hour factor, PHF	0.95	0.95	0.95	0.89	0.89	0.89	0.71	0.71	0.71	0.43	0.43	0.43
Adj. Flow (vph)	1	576	53	34	1308	8	256	8	80	23	0	5
RTOR Reduction (vph)	0	3	0	0	0	0	0	0	60	0	4	0
Lane Group Flow (vph)	0	627	0	0	1350	0	0	264	20	0	24	0
Heavy Vehicles (%)	7%	7%	7%	7%	7%	7%	7%	7%	7%	1%	1%	1%
Turn Type	Perm			Perm			Perm		Perm	Perm		
Protected Phases		2			6			8			4	
Permitted Phases	2			6			8		8	4		
Actuated Green, G (s)		104.7			104.7			34.3	34.3		34.3	
Effective Green, g (s)		108.7			108.7			37.3	37.3		37.3	
Actuated g/C Ratio		0.72			0.72			0.25	0.25		0.25	
Clearance Time (s)		6.0			6.0			5.0	5.0		5.0	
Vehicle Extension (s)		3.0			3.0			3.0	3.0		3.0	
Lane Grp Cap (vph)		2303			2244			321	375		303	
v/s Ratio Prot												
v/s Ratio Perm		0.20			0.44			0.20	0.01		0.02	
v/c Ratio		0.27			0.60			0.82	0.05		0.08	
Uniform Delay, d1		7.1			10.1			53.2	42.9		43.2	
Progression Factor		1.10			1.00			1.00	1.00		1.00	
Incremental Delay, d2		0.3			1.2			15.5	0.1		0.1	
Delay (s)		8.1			11.3			68.7	43.0		43.3	
Level of Service		A			B			E	D		D	
Approach Delay (s)		8.1			11.3			62.7			43.3	
Approach LOS		A			B			E			D	
<b>Intersection Summary</b>												
HCM Average Control Delay			18.3			HCM Level of Service				B		
HCM Volume to Capacity ratio			0.65									
Actuated Cycle Length (s)			150.0			Sum of lost time (s)			4.0			
Intersection Capacity Utilization			72.1%			ICU Level of Service				C		
Analysis Period (min)			15									

c Critical Lane Group

# HCM Signalized Intersection Capacity Analysis

## 4: Fenton St & Wayne Ave.



















6/10/2008

												
Movement	NBL	NBT	NBR	SBL	SBT	SBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	2.0	2.0	2.0	2.0	2.0		2.0	2.0		2.0	2.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00		1.00	0.95		1.00	0.95	
Frbp, ped/bikes	1.00	1.00	1.00	1.00	0.97		1.00	0.96		1.00	0.98	
Flpb, ped/bikes	0.94	1.00	1.00	1.00	1.00		0.89	1.00		1.00	1.00	
Frt	1.00	1.00	0.85	1.00	0.98		1.00	0.97		1.00	0.99	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1614	1810	1538	1719	1729		1524	3186		1719	3336	
Flt Permitted	0.37	1.00	1.00	0.25	1.00		0.44	1.00		0.23	1.00	
Satd. Flow (perm)	630	1810	1538	453	1729		701	3186		414	3336	
Volume (vph)	60	412	249	66	274	40	47	554	149	248	425	33
Peak-hour factor, PHF	0.84	0.84	0.84	0.86	0.86	0.86	0.96	0.96	0.96	0.80	0.80	0.80
Adj. Flow (vph)	71	490	296	77	319	47	49	577	155	310	531	41
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	71	490	296	77	366	0	49	732	0	310	572	0
Confl. Peds. (#/hr)	90		112	112		90	71		53	53		71
Turn Type	Perm		Prot	Perm			Perm			pm+pt		
Protected Phases		2	2		6			4		3	8	
Permitted Phases	2			6			4			8		
Actuated Green, G (s)	47.0	47.0	47.0	47.0	47.0		45.3	45.3		63.0	63.0	
Effective Green, g (s)	50.0	50.0	50.0	50.0	50.0		48.3	48.3		66.0	66.0	
Actuated g/C Ratio	0.42	0.42	0.42	0.42	0.42		0.40	0.40		0.55	0.55	
Clearance Time (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0		4.0	5.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	263	754	641	189	720		282	1282		398	1835	
v/s Ratio Prot		c0.27	0.19		0.21			c0.23		c0.10	0.17	
v/s Ratio Perm	0.11			0.17			0.07			0.33		
v/c Ratio	0.27	0.65	0.46	0.41	0.51		0.17	0.57		0.78	0.31	
Uniform Delay, d1	23.0	28.0	25.3	24.6	25.9		23.0	27.8		17.8	14.7	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	2.5	4.3	2.4	6.4	2.6		1.3	1.9		9.3	0.4	
Delay (s)	25.5	32.3	27.7	31.0	28.5		24.4	29.7		27.1	15.1	
Level of Service	C	C	C	C	C		C	C		C	B	
Approach Delay (s)		30.1			28.9			29.3			19.3	
Approach LOS		C			C			C			B	
<b>Intersection Summary</b>												
HCM Average Control Delay			26.5	HCM Level of Service				C				
HCM Volume to Capacity ratio			0.63									
Actuated Cycle Length (s)			120.0	Sum of lost time (s)				6.0				
Intersection Capacity Utilization			75.5%	ICU Level of Service				D				
Analysis Period (min)			15									
c Critical Lane Group												

# HCM Signalized Intersection Capacity Analysis

## 5: Cedar Ave & Wayne Ave.

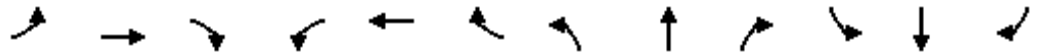
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Movement	NBL	NBT	NBR	SBL	SBT	SBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		2.0		2.0		2.0	2.0	2.0			2.0	
Lane Util. Factor		1.00		1.00		1.00	1.00	0.95			0.95	
Frbp, ped/bikes		0.99		1.00		1.00	1.00	1.00			1.00	
Flpb, ped/bikes		1.00		1.00		1.00	1.00	1.00			1.00	
Frt		0.96		1.00		0.85	1.00	1.00			0.97	
Flt Protected		0.99		0.95		1.00	0.95	1.00			1.00	
Satd. Flow (prot)		1711		1715		1538	1719	3438			3321	
Flt Permitted		0.99		0.38		1.00	0.95	1.00			1.00	
Satd. Flow (perm)		1711		693		1538	1719	3438			3321	
Volume (vph)	54	175	100	201	0	158	192	600	0	0	544	134
Peak-hour factor, PHF	0.74	0.74	0.74	0.90	0.90	0.90	0.91	0.91	0.91	0.83	0.83	0.83
Adj. Flow (vph)	73	236	135	223	0	176	211	659	0	0	655	161
RTOR Reduction (vph)	0	18	0	0	0	104	0	0	0	0	0	0
Lane Group Flow (vph)	0	426	0	223	0	72	211	659	0	0	816	0
Confl. Peds. (#/hr)			5	5			1					1
Turn Type	Perm		custom		custom		Prot					
Protected Phases		8					5	2			6	
Permitted Phases	8		4		4							
Actuated Green, G (s)		34.0		34.0		34.0	14.7	46.0			26.3	
Effective Green, g (s)		37.0		37.0		37.0	17.7	49.0			29.3	
Actuated g/C Ratio		0.41		0.41		0.41	0.20	0.54			0.33	
Clearance Time (s)		5.0		5.0		5.0	5.0	5.0			5.0	
Vehicle Extension (s)		3.0		3.0		3.0	3.0	0.2			0.2	
Lane Grp Cap (vph)		703		285		632	338	1872			1081	
v/s Ratio Prot							c0.12	0.19			c0.25	
v/s Ratio Perm		0.25		c0.32		0.05						
v/c Ratio		0.61		0.78		0.11	0.62	0.35			0.75	
Uniform Delay, d1		20.8		23.0		16.4	33.1	11.6			27.1	
Progression Factor		1.00		1.00		1.00	1.00	1.00			0.91	
Incremental Delay, d2		3.9		19.0		0.4	3.6	0.5			4.3	
Delay (s)		24.6		42.0		16.7	36.7	12.1			29.0	
Level of Service		C		D		B	D	B			C	
Approach Delay (s)		24.6			30.9			18.0			29.0	
Approach LOS		C			C			B			C	
<b>Intersection Summary</b>												
HCM Average Control Delay			24.8				HCM Level of Service				C	
HCM Volume to Capacity ratio			0.73									
Actuated Cycle Length (s)			90.0				Sum of lost time (s)				6.0	
Intersection Capacity Utilization			72.9%				ICU Level of Service				C	
Analysis Period (min)			15									
c Critical Lane Group												

# HCM Signalized Intersection Capacity Analysis

## 6: Wayne Ave. & Dale Dr

6/10/2008



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕↕			↕↕		↕	↕		↕	↕	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		2.0			2.0		2.0	2.0		2.0	2.0	
Lane Util. Factor		0.95			0.95		1.00	1.00		1.00	1.00	
Frbp, ped/bikes		1.00			1.00		1.00	0.99		1.00	1.00	
Flpb, ped/bikes		1.00			1.00		1.00	1.00		1.00	1.00	
Frt		0.98			0.97		1.00	0.95		1.00	0.97	
Flt Protected		0.99			0.99		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		3339			3319		1718	1716		1714	1759	
Flt Permitted		0.64			0.66		0.24	1.00		0.26	1.00	
Satd. Flow (perm)		2153			2214		440	1716		477	1759	
Volume (vph)	165	657	128	103	529	146	63	271	119	163	331	68
Peak-hour factor, PHF	0.91	0.91	0.91	0.96	0.96	0.96	0.91	0.91	0.91	0.89	0.89	0.89
Adj. Flow (vph)	181	722	141	107	551	152	69	298	131	183	372	76
RTOR Reduction (vph)	0	12	0	0	0	0	0	20	0	0	9	0
Lane Group Flow (vph)	0	1032	0	0	810	0	69	409	0	183	439	0
Conf. Peds. (#/hr)							2		6	6		2
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		2			2			8			4	
Permitted Phases	2			2			8			4		
Actuated Green, G (s)		50.2			50.2		29.8	29.8		29.8	29.8	
Effective Green, g (s)		53.2			53.2		32.8	32.8		32.8	32.8	
Actuated g/C Ratio		0.59			0.59		0.36	0.36		0.36	0.36	
Clearance Time (s)		5.0			5.0		5.0	5.0		5.0	5.0	
Vehicle Extension (s)		3.0			3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		1273			1309		160	625		174	641	
v/s Ratio Prot								0.24			0.25	
v/s Ratio Perm		c0.48			0.37		0.16			c0.38		
v/c Ratio		0.81			0.62		0.43	0.65		1.05	0.69	
Uniform Delay, d1		14.4			11.9		21.6	23.9		28.6	24.2	
Progression Factor		1.42			2.30		1.00	1.00		1.00	1.00	
Incremental Delay, d2		5.1			2.1		1.9	2.5		82.6	3.0	
Delay (s)		25.7			29.4		23.4	26.3		111.2	27.3	
Level of Service		C			C		C	C		F	C	
Approach Delay (s)		25.7			29.4			25.9			51.6	
Approach LOS		C			C			C			D	

### Intersection Summary

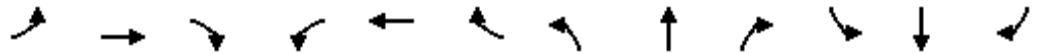
HCM Average Control Delay	32.2	HCM Level of Service	C
HCM Volume to Capacity ratio	0.89		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	4.0
Intersection Capacity Utilization	93.4%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

# HCM Signalized Intersection Capacity Analysis

## 7: Wayne Ave. & Mansfield

6/10/2008



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑			↑↑			↑↓				
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		2.0			2.0			2.0				
Lane Util. Factor		0.95			0.95			1.00				
Frbp, ped/bikes		1.00			1.00			1.00				
Flpb, ped/bikes		1.00			1.00			1.00				
Frt		1.00			1.00			0.97				
Flt Protected		1.00			1.00			0.96				
Satd. Flow (prot)		3427			3435			1687				
Flt Permitted		1.00			0.93			0.96				
Satd. Flow (perm)		3427			3213			1687				
Volume (vph)	0	1004	19	11	679	0	3	0	1	0	0	0
Peak-hour factor, PHF	0.95	0.95	0.95	0.91	0.91	0.91	0.75	0.75	0.75	0.92	0.92	0.92
Adj. Flow (vph)	0	1057	20	12	746	0	4	0	1	0	0	0
RTOR Reduction (vph)	0	1	0	0	0	0	0	1	0	0	0	0
Lane Group Flow (vph)	0	1076	0	0	758	0	0	4	0	0	0	0
Conf. Peds. (#/hr)			2	2					5			
Turn Type				Perm			Perm					
Protected Phases		6			2			4				
Permitted Phases				2			4					
Actuated Green, G (s)		55.0			55.0			24.0				
Effective Green, g (s)		59.0			59.0			27.0				
Actuated g/C Ratio		0.66			0.66			0.30				
Clearance Time (s)		6.0			6.0			5.0				
Vehicle Extension (s)		0.2			0.2			3.0				
Lane Grp Cap (vph)		2247			2106			506				
v/s Ratio Prot		c0.31										
v/s Ratio Perm					0.24			0.00				
v/c Ratio		0.48			0.36			0.01				
Uniform Delay, d1		7.8			7.0			22.1				
Progression Factor		0.77			1.64			1.00				
Incremental Delay, d2		0.5			0.4			0.0				
Delay (s)		6.4			11.9			22.1				
Level of Service		A			B			C				
Approach Delay (s)		6.4			11.9			22.1			0.0	
Approach LOS		A			B			C			A	

### Intersection Summary

HCM Average Control Delay	8.7	HCM Level of Service	A
HCM Volume to Capacity ratio	0.33		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	4.0
Intersection Capacity Utilization	55.0%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

# HCM Signalized Intersection Capacity Analysis

## 8: Wayne Ave. & Sligo Creek Pkwy

6/10/2008



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	2.0	2.0		2.0	2.0		2.0	2.0			2.0	2.0
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00			1.00	1.00
Frbp, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00			1.00	1.00
Flpb, ped/bikes	0.99	1.00		1.00	1.00		1.00	1.00			1.00	1.00
Frt	1.00	0.98		1.00	0.99		1.00	0.99			1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00			0.99	1.00
Satd. Flow (prot)	1707	1770		1719	1794		1718	1788			1789	1538
Flt Permitted	0.31	1.00		0.15	1.00		0.16	1.00			0.86	1.00
Satd. Flow (perm)	565	1770		272	1794		294	1788			1560	1538
Volume (vph)	243	677	116	25	450	28	80	258	22	70	276	142
Peak-hour factor, PHF	0.94	0.94	0.94	0.82	0.82	0.82	0.84	0.84	0.84	0.88	0.88	0.88
Adj. Flow (vph)	259	720	123	30	549	34	95	307	26	80	314	161
RTOR Reduction (vph)	0	7	0	0	2	0	0	3	0	0	0	0
Lane Group Flow (vph)	259	836	0	30	581	0	95	330	0	0	394	161
Conf. Peds. (#/hr)	11			10			10			7		
Turn Type	Perm			Perm			pm+pt			Perm		Perm
Protected Phases		2			6		7	4			8	
Permitted Phases	2			6			4			8		8
Actuated Green, G (s)	50.3	50.3		50.3	50.3		29.7	29.7			21.5	21.5
Effective Green, g (s)	53.3	53.3		53.3	53.3		32.7	32.7			24.5	24.5
Actuated g/C Ratio	0.59	0.59		0.59	0.59		0.36	0.36			0.27	0.27
Clearance Time (s)	5.0	5.0		5.0	5.0		5.0	5.0			5.0	5.0
Vehicle Extension (s)	0.2	0.2		0.2	0.2		3.0	3.0			3.0	3.0
Lane Grp Cap (vph)	335	1048		161	1062		205	650			425	419
v/s Ratio Prot		c0.47			0.32		0.03	c0.18				
v/s Ratio Perm	0.46			0.11			0.14				c0.25	0.10
v/c Ratio	0.77	0.80		0.19	0.55		0.46	0.51			0.93	0.38
Uniform Delay, d1	13.8	14.2		8.4	11.1		21.4	22.4			31.9	26.6
Progression Factor	1.43	1.46		0.48	0.54		1.00	1.00			1.00	1.00
Incremental Delay, d2	14.5	5.8		2.3	1.8		1.7	0.6			26.1	0.6
Delay (s)	34.2	26.5		6.4	7.8		23.0	23.0			58.0	27.2
Level of Service	C	C		A	A		C	C			E	C
Approach Delay (s)		28.3			7.7			23.0			49.1	
Approach LOS		C			A			C			D	

### Intersection Summary

HCM Average Control Delay	27.1	HCM Level of Service	C
HCM Volume to Capacity ratio	0.80		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	6.0
Intersection Capacity Utilization	95.1%	ICU Level of Service	F
Analysis Period (min)	15		

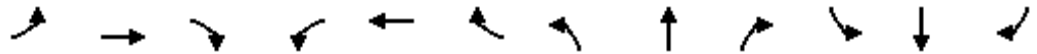
c Critical Lane Group



# HCM Signalized Intersection Capacity Analysis

## 9: Wayne Ave. & Flower Ave

6/10/2008



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕	↗		↕		↖	↖			↕	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		2.0	2.0		2.0		2.0	2.0			2.0	
Lane Util. Factor		1.00	1.00		1.00		1.00	1.00			1.00	
Frbp, ped/bikes		1.00	0.99		0.99		1.00	1.00			0.99	
Flpb, ped/bikes		1.00	1.00		1.00		1.00	1.00			1.00	
Frt		1.00	0.85		0.94		1.00	1.00			0.96	
Flt Protected		0.96	1.00		0.99		0.95	1.00			1.00	
Satd. Flow (prot)		1732	1520		1660		1719	1805			1717	
Flt Permitted		0.76	1.00		0.96		0.33	1.00			1.00	
Satd. Flow (perm)		1363	1520		1604		598	1805			1714	
Volume (vph)	154	41	353	6	17	20	272	455	7	3	385	185
Peak-hour factor, PHF	0.97	0.97	0.97	0.85	0.85	0.85	0.87	0.87	0.87	0.96	0.96	0.96
Adj. Flow (vph)	159	42	364	7	20	24	313	523	8	3	401	193
RTOR Reduction (vph)	0	0	0	0	19	0	0	1	0	0	16	0
Lane Group Flow (vph)	0	201	364	0	32	0	313	530	0	0	581	0
Confl. Peds. (#/hr)	2		4	4		2	6		4	4		6
Turn Type	Perm		pm+ov	Perm		pm+pt		Perm				
Protected Phases		4	5		8		5	2			6	
Permitted Phases	4		4	8		2				6		
Actuated Green, G (s)		17.1	30.6		17.1		62.9	62.9			45.4	
Effective Green, g (s)		20.1	35.6		20.1		65.9	65.9			48.4	
Actuated g/C Ratio		0.22	0.40		0.22		0.73	0.73			0.54	
Clearance Time (s)		5.0	4.0		5.0		4.0	5.0			5.0	
Vehicle Extension (s)		3.0	3.0		3.0		3.0	3.0			3.0	
Lane Grp Cap (vph)		304	635		358		631	1322			922	
v/s Ratio Prot			c0.10				0.09	0.29				
v/s Ratio Perm		c0.15	0.14		0.02		0.28				c0.34	
v/c Ratio		0.66	0.57		0.09		0.50	0.40			0.63	
Uniform Delay, d1		31.8	21.3		27.7		6.4	4.6			14.5	
Progression Factor		1.44	1.16		1.00		1.00	1.00			1.00	
Incremental Delay, d2		3.2	0.7		0.1		0.6	0.9			3.3	
Delay (s)		49.0	25.4		27.8		7.0	5.5			17.8	
Level of Service		D	C		C		A	A			B	
Approach Delay (s)		33.8			27.8			6.1			17.8	
Approach LOS		C			C			A			B	

### Intersection Summary

HCM Average Control Delay	17.6	HCM Level of Service	B
HCM Volume to Capacity ratio	0.62		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	4.0
Intersection Capacity Utilization	83.6%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

# HCM Signalized Intersection Capacity Analysis

## 12: Piney Branch Rd. & Arliss

6/10/2008



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↕		↖	↕			↕		↖	↕	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	2.0	2.0		2.0	2.0			2.0		2.0	2.0	
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00		0.95	0.95	
Frbp, ped/bikes	1.00	1.00		1.00	1.00			1.00		1.00	1.00	
Flpb, ped/bikes	0.99	1.00		0.99	1.00			1.00		1.00	1.00	
Frt	1.00	1.00		1.00	0.97			0.90		1.00	0.97	
Flt Protected	0.95	1.00		0.95	1.00			0.99		0.95	0.97	
Satd. Flow (prot)	1708	3432		1708	3331			1684		1633	1610	
Flt Permitted	0.26	1.00		0.24	1.00			0.99		0.95	0.97	
Satd. Flow (perm)	467	3432		430	3331			1684		1633	1610	
Volume (vph)	40	955	11	19	686	180	4	5	26	346	18	40
Peak-hour factor, PHF	0.95	0.95	0.95	0.91	0.91	0.91	0.83	0.83	0.83	0.96	0.96	0.96
Adj. Flow (vph)	42	1005	12	21	754	198	5	6	31	360	19	42
RTOR Reduction (vph)	0	0	0	0	12	0	0	29	0	0	7	0
Lane Group Flow (vph)	42	1017	0	21	940	0	0	13	0	214	200	0
Confl. Peds. (#/hr)	10			12			24			40		
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%	1%	1%	1%	5%	5%	5%
Turn Type	Perm		Perm		Split		Split					
Protected Phases	6		2		3		3		4		4	
Permitted Phases	6		2									
Actuated Green, G (s)	104.1	104.1		104.1	104.1			5.9		25.0	25.0	
Effective Green, g (s)	107.1	107.1		107.1	107.1			8.9		28.0	28.0	
Actuated g/C Ratio	0.71	0.71		0.71	0.71			0.06		0.19	0.19	
Clearance Time (s)	5.0	5.0		5.0	5.0			5.0		5.0	5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0		3.0	3.0	
Lane Grp Cap (vph)	333	2450		307	2378			100		305	301	
v/s Ratio Prot		c0.30			0.28			c0.01		c0.13	0.12	
v/s Ratio Perm	0.09			0.05								
v/c Ratio	0.13	0.41		0.07	0.40			0.13		0.70	0.67	
Uniform Delay, d1	6.7	8.7		6.4	8.5			66.9		57.1	56.7	
Progression Factor	0.71	0.69		0.81	0.78			1.00		1.00	1.00	
Incremental Delay, d2	0.7	0.5		0.4	0.5			0.6		7.1	5.5	
Delay (s)	5.6	6.5		5.6	7.1			67.5		64.2	62.1	
Level of Service	A	A		A	A			E		E	E	
Approach Delay (s)		6.5			7.1			67.5			63.2	
Approach LOS		A			A			E			E	





















### Intersection Summary

HCM Average Control Delay	17.3	HCM Level of Service	B
HCM Volume to Capacity ratio	0.45		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	6.0
Intersection Capacity Utilization	57.8%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

# HCM Signalized Intersection Capacity Analysis

## 13: Piney Branch Rd. & Barron St

6/10/2008

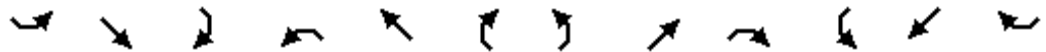
												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	2.0	2.0		2.0	2.0			2.0	2.0		2.0	
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00	1.00		1.00	
Frt	1.00	0.98		1.00	1.00			1.00	0.85		0.99	
Flt Protected	0.95	1.00		0.95	1.00			0.95	1.00		0.96	
Satd. Flow (prot)	1719	3380		1719	3422			1792	1599		1790	
Flt Permitted	0.95	1.00		0.95	1.00			0.73	1.00		0.56	
Satd. Flow (perm)	1719	3380		1719	3422			1367	1599		1054	
Volume (vph)	6	1207	153	17	866	28	144	1	86	22	2	1
Peak-hour factor, PHF	0.96	0.96	0.96	0.94	0.94	0.94	0.80	0.80	0.80	0.58	0.58	0.58
Adj. Flow (vph)	6	1257	159	18	921	30	180	1	108	38	3	2
RTOR Reduction (vph)	0	6	0	0	1	0	0	0	89	0	2	0
Lane Group Flow (vph)	6	1410	0	18	950	0	0	181	19	0	41	0
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%	1%	1%	1%	1%	1%	1%
Turn Type	Prot		Prot		Perm		Perm		Perm			
Protected Phases	5	2		1	6			8				4
Permitted Phases							8		8		4	
Actuated Green, G (s)	0.6	106.2		3.8	109.4			24.0	24.0		24.0	
Effective Green, g (s)	3.6	110.2		6.8	113.4			27.0	27.0		27.0	
Actuated g/C Ratio	0.02	0.73		0.05	0.76			0.18	0.18		0.18	
Clearance Time (s)	5.0	6.0		5.0	6.0			5.0	5.0		5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0	3.0		3.0	
Lane Grp Cap (vph)	41	2483		78	2587			246	288		190	
v/s Ratio Prot	0.00	c0.42		0.01	c0.28							
v/s Ratio Perm								c0.13	0.01		0.04	
v/c Ratio	0.15	0.57		0.23	0.37			0.74	0.07		0.22	
Uniform Delay, d1	71.7	9.1		69.1	6.2			58.1	51.1		52.5	
Progression Factor	1.16	0.45		1.00	1.00			1.00	1.00		1.00	
Incremental Delay, d2	1.5	0.9		1.5	0.4			10.9	0.1		0.6	
Delay (s)	85.0	4.9		70.6	6.6			69.0	51.1		53.1	
Level of Service	F	A		E	A			E	D		D	
Approach Delay (s)		5.3			7.8			62.3			53.1	
Approach LOS		A			A			E			D	
<b>Intersection Summary</b>												
HCM Average Control Delay			13.0	HCM Level of Service				B				
HCM Volume to Capacity ratio			0.58									
Actuated Cycle Length (s)			150.0	Sum of lost time (s)				4.0				
Intersection Capacity Utilization			56.9%	ICU Level of Service				B				
Analysis Period (min)			15									

c Critical Lane Group

# HCM Signalized Intersection Capacity Analysis

20: Harkins Rd & Ellin Rd

6/11/2008



Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00		0.97	1.00		1.00	0.95	
Frt	1.00	1.00	0.85	1.00	0.92		1.00	0.97		1.00	0.95	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1703	1792	1524	1787	1740		3303	1737		1703	3251	
Flt Permitted	0.74	1.00	1.00	0.72	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1322	1792	1524	1360	1740		3303	1737		1703	3251	
Volume (vph)	15	40	100	5	5	5	585	250	65	200	275	120
Peak-hour factor, PHF	0.77	0.77	0.77	0.33	0.33	0.33	0.98	0.98	0.98	0.82	0.82	0.82
Adj. Flow (vph)	19	52	130	15	15	15	597	255	66	244	335	146
RTOR Reduction (vph)	0	0	113	0	13	0	0	9	0	0	51	0
Lane Group Flow (vph)	19	52	17	15	17	0	597	312	0	244	430	0
Heavy Vehicles (%)	6%	6%	6%	1%	1%	1%	6%	6%	6%	6%	6%	6%
Turn Type	Perm		Perm	Perm			Prot			Prot		
Protected Phases		8			4		5	2		1	6	
Permitted Phases	8		8	4								
Actuated Green, G (s)	5.6	5.6	5.6	5.6	5.6		14.2	19.7		10.1	15.6	
Effective Green, g (s)	6.6	6.6	6.6	6.6	6.6		15.2	20.7		11.1	16.6	
Actuated g/C Ratio	0.13	0.13	0.13	0.13	0.13		0.30	0.41		0.22	0.33	
Clearance Time (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0		5.0	5.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	173	235	200	178	228		996	713		375	1071	
v/s Ratio Prot		c0.03			0.01		c0.18	c0.18		0.14	0.13	
v/s Ratio Perm	0.01		0.01	0.01								
v/c Ratio	0.11	0.22	0.09	0.08	0.07		0.60	0.44		0.65	0.40	
Uniform Delay, d1	19.3	19.6	19.2	19.2	19.2		15.0	10.7		17.9	13.1	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.3	0.5	0.2	0.2	0.1		1.0	0.4		4.0	0.2	
Delay (s)	19.6	20.1	19.4	19.4	19.4		16.0	11.1		21.9	13.3	
Level of Service	B	C	B	B	B		B	B		C	B	
Approach Delay (s)		19.6			19.4			14.3			16.2	
Approach LOS		B			B			B			B	

## Intersection Summary

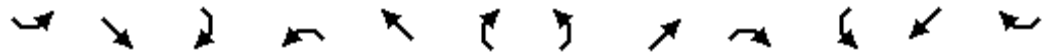
HCM Average Control Delay	15.7	HCM Level of Service	B
HCM Volume to Capacity ratio	0.45		
Actuated Cycle Length (s)	50.4	Sum of lost time (s)	8.0
Intersection Capacity Utilization	45.7%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

# HCM Signalized Intersection Capacity Analysis

20: Harkins Rd & Ellin Rd

6/11/2008



Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00		0.97	1.00		1.00	0.95	
Frt	1.00	1.00	0.85	1.00	0.91		1.00	1.00		1.00	1.00	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1752	1845	1568	1787	1721		3400	1841		1752	3489	
Flt Permitted	0.38	1.00	1.00	0.75	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	695	1845	1568	1418	1721		3400	1841		1752	3489	
Volume (vph)	130	5	460	50	115	150	190	380	5	5	325	10
Peak-hour factor, PHF	0.86	0.86	0.86	0.74	0.74	0.74	0.88	0.88	0.88	0.92	0.92	0.92
Adj. Flow (vph)	151	6	535	68	155	203	216	432	6	5	353	11
RTOR Reduction (vph)	0	0	331	0	57	0	0	1	0	0	3	0
Lane Group Flow (vph)	151	6	204	68	301	0	216	437	0	5	361	0
Heavy Vehicles (%)	3%	3%	3%	1%	1%	1%	3%	3%	3%	3%	3%	3%
Turn Type	Perm		Perm	Perm			Prot			Prot		
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4		4	8								
Actuated Green, G (s)	16.7	16.7	16.7	16.7	16.7		7.0	23.5		0.8	17.3	
Effective Green, g (s)	17.7	17.7	17.7	17.7	17.7		8.0	24.5		1.8	18.3	
Actuated g/C Ratio	0.32	0.32	0.32	0.32	0.32		0.14	0.44		0.03	0.33	
Clearance Time (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0		5.0	5.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	220	583	496	448	544		486	805		56	1140	
v/s Ratio Prot		0.00			0.17		c0.06	c0.24		0.00	0.10	
v/s Ratio Perm	c0.22		0.13	0.05								
v/c Ratio	0.69	0.01	0.41	0.15	0.55		0.44	0.54		0.09	0.32	
Uniform Delay, d1	16.7	13.1	15.1	13.8	15.9		22.0	11.6		26.3	14.2	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	8.6	0.0	0.6	0.2	1.2		0.7	0.8		0.7	0.2	
Delay (s)	25.3	13.1	15.6	13.9	17.1		22.6	12.4		27.0	14.3	
Level of Service	C	B	B	B	B		C	B		C	B	
Approach Delay (s)		17.7			16.6			15.8			14.5	
Approach LOS		B			B			B			B	
























## Intersection Summary

HCM Average Control Delay	16.3	HCM Level of Service	B
HCM Volume to Capacity ratio	0.56		
Actuated Cycle Length (s)	56.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	60.2%	ICU Level of Service	B
Analysis Period (min)	15		

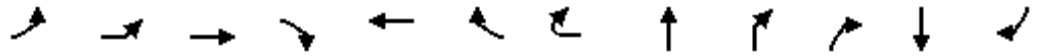
c Critical Lane Group

# HCM Signalized Intersection Capacity Analysis

## 21: Jones Bridge Rd & MD 355

													
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations													
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	2000	1900	
Total Lost time (s)		4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		
Lane Util. Factor		0.95	1.00	0.91	0.91	1.00	1.00	0.91	1.00	1.00	0.91		
Frbp, ped/bikes		1.00	0.80	1.00	1.00	0.98	1.00	1.00	0.96	1.00	1.00		
Flpb, ped/bikes		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		
Frt		1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.99		
Flt Protected		0.97	1.00	0.95	0.97	1.00	0.95	1.00	1.00	0.95	1.00		
Satd. Flow (prot)		3352	1232	1564	3206	1509	1719	4940	1479	1719	5152		
Flt Permitted		0.97	1.00	0.95	0.97	1.00	0.95	1.00	1.00	0.18	1.00		
Satd. Flow (perm)		3352	1232	1564	3206	1509	1719	4940	1479	331	5152		
Volume (vph)	23	22	23	681	286	197	84	1059	273	206	2155	123	
Peak-hour factor, PHF	0.59	0.59	0.59	0.93	0.93	0.93	0.92	0.92	0.92	0.93	0.93	0.93	
Adj. Flow (vph)	39	37	39	732	308	212	91	1151	297	222	2317	132	
RTOR Reduction (vph)	0	0	37	0	0	96	0	0	149	0	3	0	
Lane Group Flow (vph)	0	76	2	366	674	116	91	1151	148	222	2446	0	
Confl. Peds. (#/hr)			92			6			36			3	
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	
Turn Type	Split		Perm	Split		Perm	Prot		Perm	pm+pt			
Protected Phases	3	3		4	4		1	5		6	2		
Permitted Phases			3			4			5		2		
Actuated Green, G (s)		9.4	9.4	46.6	46.6	46.6	10.8	71.0	71.0	93.2	93.2		
Effective Green, g (s)		10.4	10.4	47.6	47.6	47.6	11.8	72.0	72.0	94.2	94.2		
Actuated g/C Ratio		0.06	0.06	0.26	0.26	0.26	0.07	0.40	0.40	0.52	0.52		
Clearance Time (s)		5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0		
Vehicle Extension (s)		3.0	3.0	3.0	3.0	3.0	3.0	8.0	8.0	3.0	8.0		
Lane Grp Cap (vph)		194	71	414	848	399	113	1976	592	435	2696		
v/s Ratio Prot		c0.02		c0.23	0.21		c0.05	0.23		0.10	c0.47		
v/s Ratio Perm			0.00			0.08			0.10	0.17			
v/c Ratio		0.39	0.03	0.88	0.79	0.29	0.81	0.58	0.25	0.51	0.91		
Uniform Delay, d1		81.8	80.0	63.6	61.7	52.8	83.0	42.2	36.0	41.6	38.9		
Progression Factor		1.00	1.00	0.99	0.99	1.02	1.05	0.85	0.42	1.00	1.00		
Incremental Delay, d2		1.3	0.2	17.9	4.7	0.4	30.8	1.2	0.9	1.0	5.7		
Delay (s)		83.1	80.2	80.8	65.8	54.4	117.5	37.2	16.1	42.6	44.7		
Level of Service		F	F	F	E	D	F	D	B	D	D		
Approach Delay (s)		82.1			68.3			37.9			44.5		
Approach LOS		F			E			D			D		
<b>Intersection Summary</b>													
HCM Average Control Delay			48.8									HCM Level of Service	D
HCM Volume to Capacity ratio			0.86										
Actuated Cycle Length (s)			180.0									Sum of lost time (s)	16.0
Intersection Capacity Utilization			92.0%									ICU Level of Service	F
Analysis Period (min)			15										
c	Critical Lane Group												

HCM Signalized Intersection Capacity Analysis  
 84: Jones Bridge Rd & Kensington Parkway



Movement	EBL2	EBL	EBT	EBR	WBT	WBR	WBR2	NBT	NBR	NBR2	SBT	SBR
Lane Configurations	↖	↗	↕		↕	↗		↕	↖	↗	↕	↕
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0		4.0	4.0		4.0			4.0	
Lane Util. Factor	0.91	0.95	0.95		0.91	0.91		0.91			0.91	
Frt	1.00	1.00	0.95		0.99	0.85		0.99			0.97	
Flt Protected	0.95	0.95	1.00		1.00	1.00		1.00			1.00	
Satd. Flow (prot)	1564	1633	3272		3270	1400		4909			4782	
Flt Permitted	0.95	0.95	1.00		1.00	1.00		1.00			1.00	
Satd. Flow (perm)	1564	1633	3272		3270	1400		4909			4782	
Volume (vph)	269	6	259	123	454	221	5	1427	22	41	2855	775
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	286	6	276	131	483	235	5	1518	23	44	3037	824
RTOR Reduction (vph)	0	0	2	0	0	0	0	0	0	0	33	0
Lane Group Flow (vph)	143	149	405	0	507	216	0	1585	0	0	3828	0
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%
Turn Type	Prot	Prot				Perm						
Protected Phases	3	3	8		4			2			2	
Permitted Phases						4						2
Actuated Green, G (s)	7.0	7.0	29.0		16.0	16.0		98.0			98.0	
Effective Green, g (s)	8.0	8.0	30.0		18.0	18.0		100.0			100.0	
Actuated g/C Ratio	0.05	0.05	0.20		0.12	0.12		0.67			0.67	
Clearance Time (s)	5.0	5.0	5.0		6.0	6.0		6.0			6.0	
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0		5.0			5.0	
Lane Grp Cap (vph)	83	87	654		392	168		3273			3188	
v/s Ratio Prot	c0.09	0.09	0.12		c0.16			0.32			c0.80	
v/s Ratio Perm						0.15						
v/c Ratio	1.72	1.71	0.62		1.29	1.29		0.48			1.20	
Uniform Delay, d1	71.0	71.0	54.8		66.0	66.0		12.3			25.0	
Progression Factor	1.00	1.00	1.00		1.00	1.00		0.68			1.14	
Incremental Delay, d2	370.7	364.4	1.8		149.8	165.9		0.5			92.9	
Delay (s)	441.7	435.4	56.5		215.8	231.9		8.8			121.5	
Level of Service	F	F	E		F	F		A			F	
Approach Delay (s)			216.1		220.7			8.8			121.5	
Approach LOS			F		F			A			F	

Intersection Summary

HCM Average Control Delay	122.1	HCM Level of Service	F
HCM Volume to Capacity ratio	1.27		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	116.0%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

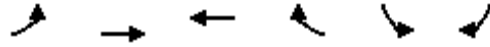
HCM Signalized Intersection Capacity Analysis  
 84: Jones Bridge Rd & Kensington Parkway



Movement	SWL	SWR
Lane Configurations	7	8
Ideal Flow (vphpl)	1900	1900
Total Lost time (s)	4.0	4.0
Lane Util. Factor	1.00	1.00
Frt	1.00	0.85
Flt Protected	0.95	1.00
Satd. Flow (prot)	1719	1538
Flt Permitted	0.95	1.00
Satd. Flow (perm)	1719	1538
Volume (vph)	138	83
Peak-hour factor, PHF	0.94	0.94
Adj. Flow (vph)	147	88
RTOR Reduction (vph)	0	0
Lane Group Flow (vph)	147	88
Heavy Vehicles (%)	5%	5%
Turn Type		Prot
Protected Phases	1	1
Permitted Phases		
Actuated Green, G (s)	6.0	6.0
Effective Green, g (s)	8.0	8.0
Actuated g/C Ratio	0.05	0.05
Clearance Time (s)	6.0	6.0
Vehicle Extension (s)	3.0	3.0
Lane Grp Cap (vph)	92	82
v/s Ratio Prot	c0.09	0.06
v/s Ratio Perm		
v/c Ratio	1.60	1.07
Uniform Delay, d1	71.0	71.0
Progression Factor	1.00	1.00
Incremental Delay, d2	313.8	120.7
Delay (s)	384.8	191.7
Level of Service	F	F
Approach Delay (s)	312.5	
Approach LOS	F	
Intersection Summary		



HCM Signalized Intersection Capacity Analysis  
 86: Jones Bridge Rd & Jones Mill Rd



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0		4.0	
Lane Util. Factor	1.00	1.00	1.00		1.00	
Frt	1.00	1.00	0.98		0.97	
Flt Protected	0.95	1.00	1.00		0.96	
Satd. Flow (prot)	1719	1810	1779		1691	
Flt Permitted	0.95	1.00	1.00		0.96	
Satd. Flow (perm)	1719	1810	1779		1691	
Volume (vph)	38	439	712	100	493	134
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	41	477	774	109	536	146
RTOR Reduction (vph)	0	0	4	0	8	0
Lane Group Flow (vph)	41	477	879	0	674	0
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%
Turn Type	Prot					
Protected Phases	3	6	2		4	
Permitted Phases						
Actuated Green, G (s)	14.9	51.5	51.5		45.4	
Effective Green, g (s)	14.9	53.5	53.5		46.4	
Actuated g/C Ratio	0.12	0.42	0.42		0.37	
Clearance Time (s)	4.0	6.0	6.0		5.0	
Vehicle Extension (s)	3.0	3.0	3.0		4.0	
Lane Grp Cap (vph)	202	764	751		619	
v/s Ratio Prot	c0.02	0.26	c0.49		c0.40	
v/s Ratio Perm						
v/c Ratio	0.20	0.62	1.17		1.09	
Uniform Delay, d1	50.6	28.8	36.6		40.2	
Progression Factor	1.00	1.00	0.14		1.00	
Incremental Delay, d2	0.5	3.8	78.1		62.9	
Delay (s)	51.1	32.6	83.2		103.1	
Level of Service	D	C	F		F	
Approach Delay (s)		34.1	83.2		103.1	
Approach LOS		C	F		F	

Intersection Summary

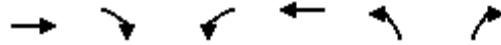
HCM Average Control Delay	77.5	HCM Level of Service	E
HCM Volume to Capacity ratio	1.01		
Actuated Cycle Length (s)	126.8	Sum of lost time (s)	12.0
Intersection Capacity Utilization	85.7%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis  
 152: Jones Bridge Rd & Manor Rd

	→	↘	↙	←	↖	↗
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑	↗	↘	↑	↘	↗
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (prot)	1810	1538	1719	1810	1719	1538
Flt Permitted	1.00	1.00	0.52	1.00	0.95	1.00
Satd. Flow (perm)	1810	1538	939	1810	1719	1538
Volume (vph)	233	16	254	628	61	193
Peak-hour factor, PHF	0.75	0.75	0.93	0.93	0.83	0.83
Adj. Flow (vph)	311	21	273	675	73	233
RTOR Reduction (vph)	0	13	0	0	0	0
Lane Group Flow (vph)	311	8	273	675	73	233
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%
Turn Type		Perm pm+pt			pm+ov	
Protected Phases	2		1	6	4	1
Permitted Phases		2	6			4
Actuated Green, G (s)	15.1	15.1	30.8	29.8	4.3	15.0
Effective Green, g (s)	16.1	16.1	30.8	30.8	5.3	16.0
Actuated g/C Ratio	0.37	0.37	0.70	0.70	0.12	0.36
Clearance Time (s)	5.0	5.0	4.0	5.0	5.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	661	561	845	1264	207	698
v/s Ratio Prot	0.17		0.08	c0.37	0.04	c0.08
v/s Ratio Perm		0.00	0.15			0.07
v/c Ratio	0.47	0.01	0.32	0.53	0.35	0.33
Uniform Delay, d1	10.7	8.9	3.5	3.2	17.8	10.2
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.5	0.0	0.2	0.4	1.0	0.3
Delay (s)	11.3	8.9	3.8	3.6	18.9	10.5
Level of Service	B	A	A	A	B	B
Approach Delay (s)	11.1			3.7	12.5	
Approach LOS	B			A	B	
<b>Intersection Summary</b>						
HCM Average Control Delay			6.9		HCM Level of Service	A
HCM Volume to Capacity ratio			0.48			
Actuated Cycle Length (s)			44.1		Sum of lost time (s)	4.0
Intersection Capacity Utilization			43.1%		ICU Level of Service	A
Analysis Period (min)			15			
c Critical Lane Group						

HCM Signalized Intersection Capacity Analysis  
 154: Jones Bridge Rd & Platt Ridge Rd

























Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑		↵	↑↑	↵	↵
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0		4.0	4.0	4.0	
Lane Util. Factor	0.95		1.00	0.95	1.00	
Frt	0.99		1.00	1.00	1.00	
Flt Protected	1.00		0.95	1.00	0.95	
Satd. Flow (prot)	3413		1719	3438	1787	
Flt Permitted	1.00		0.35	1.00	0.95	
Satd. Flow (perm)	3413		635	3438	1787	
Volume (vph)	622	32	41	1284	1	0
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.31	0.31
Adj. Flow (vph)	676	35	45	1396	3	0
RTOR Reduction (vph)	2	0	0	0	0	0
Lane Group Flow (vph)	709	0	45	1396	3	0
Heavy Vehicles (%)	5%	5%	5%	5%	1%	1%
Turn Type			pm+pt			Perm
Protected Phases	2		1	6	3	
Permitted Phases			6			3
Actuated Green, G (s)	60.7		70.0	70.0	1.8	
Effective Green, g (s)	61.7		71.0	71.0	2.8	
Actuated g/C Ratio	0.75		0.87	0.87	0.03	
Clearance Time (s)	5.0		4.0	5.0	5.0	
Vehicle Extension (s)	3.0		3.0	3.0	3.0	
Lane Grp Cap (vph)	2574		621	2984	61	
v/s Ratio Prot	0.21		0.00	c0.41	c0.00	
v/s Ratio Perm			0.06			
v/c Ratio	0.28		0.07	0.47	0.05	
Uniform Delay, d1	3.1		0.9	1.2	38.2	
Progression Factor	1.00		1.00	1.00	1.00	
Incremental Delay, d2	0.1		0.0	0.1	0.3	
Delay (s)	3.2		1.0	1.3	38.5	
Level of Service	A		A	A	D	
Approach Delay (s)	3.2			1.3	38.5	
Approach LOS	A			A	D	

Intersection Summary

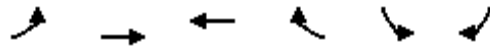
HCM Average Control Delay	2.0	HCM Level of Service	A
HCM Volume to Capacity ratio	0.45		
Actuated Cycle Length (s)	81.8	Sum of lost time (s)	8.0
Intersection Capacity Utilization	45.5%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis  
 156: Jones Bridge Rd & Glenbrook Pkwy

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		 			 			 			 	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0			4.0			4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00			1.00	
Frt	1.00	1.00		1.00	0.99			0.92			0.94	
Flt Protected	0.95	1.00		0.95	1.00			0.98			0.97	
Satd. Flow (prot)	1719	3438		1719	3395			1701			1724	
Flt Permitted	0.17	1.00		0.43	1.00			0.87			0.81	
Satd. Flow (perm)	305	3438		783	3395			1508			1435	
Volume (vph)	13	535	0	5	1121	101	7	0	9	49	0	36
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.67	0.67	0.67	0.81	0.81	0.81
Adj. Flow (vph)	14	582	0	5	1218	110	10	0	13	60	0	44
RTOR Reduction (vph)	0	0	0	0	3	0	0	12	0	0	39	0
Lane Group Flow (vph)	14	582	0	5	1325	0	0	11	0	0	65	0
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%	1%	1%	1%	1%	1%	1%
Turn Type	pm+pt		Perm			Perm			Perm			
Protected Phases	5	2			6			4			8	
Permitted Phases	2			6			4			8		
Actuated Green, G (s)	73.1	73.1		67.9	67.9			7.9			7.9	
Effective Green, g (s)	74.1	74.1		68.9	68.9			7.9			7.9	
Actuated g/C Ratio	0.82	0.82		0.77	0.77			0.09			0.09	
Clearance Time (s)	4.0	5.0		5.0	5.0			4.0			4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0			3.0	
Lane Grp Cap (vph)	270	2831		599	2599			132			126	
v/s Ratio Prot	0.00	c0.17			c0.39							
v/s Ratio Perm	0.04			0.01				0.01			c0.05	
v/c Ratio	0.05	0.21		0.01	0.51			0.08			0.51	
Uniform Delay, d1	2.5	1.7		2.5	4.1			37.7			39.2	
Progression Factor	1.27	1.27		1.00	1.00			1.00			1.00	
Incremental Delay, d2	0.1	0.2		0.0	0.7			0.3			3.5	
Delay (s)	3.2	2.3		2.5	4.8			38.0			42.7	
Level of Service	A	A		A	A			D			D	
Approach Delay (s)		2.3			4.8			38.0			42.7	
Approach LOS		A			A			D			D	
<b>Intersection Summary</b>												
HCM Average Control Delay			6.3	HCM Level of Service				A				
HCM Volume to Capacity ratio			0.51									
Actuated Cycle Length (s)			90.0	Sum of lost time (s)				12.0				
Intersection Capacity Utilization			47.9%	ICU Level of Service				A				
Analysis Period (min)			15									
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis  
 160: Jones Bridge Rd & Grier Rd



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↖	↑↑	↗↗	↖	↖	↖
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0			
Lane Util. Factor		0.95	0.95			
Frt		1.00	1.00			
Flt Protected		1.00	1.00			
Satd. Flow (prot)		3438	3438			
Flt Permitted		1.00	1.00			
Satd. Flow (perm)		3438	3438			
Volume (vph)	0	634	1295	0	0	0
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	689	1408	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	0	689	1408	0	0	0
Heavy Vehicles (%)	5%	5%	5%	5%	1%	1%
Turn Type	pm+pt			pm+ov		pm+ov
Protected Phases	5	2	6	4	4	5
Permitted Phases	2			6		4
Actuated Green, G (s)		120.0	120.0			
Effective Green, g (s)		120.0	120.0			
Actuated g/C Ratio		1.00	1.00			
Clearance Time (s)		6.0	6.0			
Vehicle Extension (s)		3.0	3.0			
Lane Grp Cap (vph)		3438	3438			
v/s Ratio Prot		0.20	c0.41			
v/s Ratio Perm						
v/c Ratio		0.20	0.41			
Uniform Delay, d1		0.0	0.0			
Progression Factor		1.00	1.00			
Incremental Delay, d2		0.0	0.1			
Delay (s)		0.0	0.1			
Level of Service		A	A			
Approach Delay (s)		0.0	0.1		0.0	
Approach LOS		A	A		A	

Intersection Summary

HCM Average Control Delay	0.1	HCM Level of Service	A
HCM Volume to Capacity ratio	0.41		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	0.0
Intersection Capacity Utilization	39.1%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

# HCM Signalized Intersection Capacity Analysis

## 21: Jones Bridge Rd & MD 355

6/10/2008



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕↕	↗	↖	↕↕	↗	↖	↕↕↕	↗	↖	↕↕↕	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	2000	1900
Total Lost time (s)		4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	
Lane Util. Factor		0.95	1.00	0.91	0.91	1.00	1.00	0.91	1.00	1.00	0.91	
Frbp, ped/bikes		1.00	0.80	1.00	1.00	0.98	1.00	1.00	0.96	1.00	1.00	
Flpb, ped/bikes		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Frt		1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	
Flt Protected		0.98	1.00	0.95	0.96	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)		3433	1256	1595	3209	1531	1752	5036	1511	1752	5288	
Flt Permitted		0.98	1.00	0.95	0.96	1.00	0.95	1.00	1.00	0.05	1.00	
Satd. Flow (perm)		3433	1256	1595	3209	1531	1752	5036	1511	98	5288	
Volume (vph)	219	307	67	327	14	231	7	1959	700	502	1666	24
Peak-hour factor, PHF	0.87	0.87	0.87	0.87	0.87	0.87	0.94	0.94	0.94	0.97	0.97	0.97
Adj. Flow (vph)	252	353	77	376	16	266	7	2084	745	518	1718	25
RTOR Reduction (vph)	0	0	17	0	0	225	0	0	196	0	1	0
Lane Group Flow (vph)	0	605	60	188	204	41	7	2084	549	518	1742	0
Confl. Peds. (#/hr)			92			6			36			3
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%
Turn Type	Split		Perm	Split		Perm	Prot		Perm	pm+pt		
Protected Phases	3	3		4	4		1	5		6	2	
Permitted Phases			3			4			5		2	
Actuated Green, G (s)		20.0	20.0	26.5	26.5	26.5	1.5	76.5	76.5	112.0	112.0	
Effective Green, g (s)		21.0	21.0	27.5	27.5	27.5	2.5	77.5	77.5	113.0	113.0	
Actuated g/C Ratio		0.12	0.12	0.15	0.15	0.15	0.01	0.43	0.43	0.63	0.63	
Clearance Time (s)		5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	
Vehicle Extension (s)		3.0	3.0	3.0	3.0	3.0	3.0	8.0	8.0	3.0	8.0	
Lane Grp Cap (vph)		401	147	244	490	234	24	2168	651	411	3320	
v/s Ratio Prot		c0.18		c0.12	0.06		0.00	c0.41		c0.27	0.33	
v/s Ratio Perm			0.05			0.03			0.36	c0.52		
v/c Ratio		1.51	0.41	0.77	0.42	0.17	0.29	0.96	0.84	1.26	0.52	
Uniform Delay, d1		79.5	73.7	73.2	69.0	66.4	87.9	49.8	45.8	65.2	18.6	
Progression Factor		1.00	1.00	1.00	1.00	1.72	1.04	0.81	0.63	1.00	1.00	
Incremental Delay, d2		241.5	1.9	13.6	0.6	0.3	4.3	8.9	8.6	135.5	0.6	
Delay (s)		321.0	75.6	86.7	69.6	114.2	95.9	49.4	37.6	200.7	19.2	
Level of Service		F	E	F	E	F	F	D	D	F	B	
Approach Delay (s)		293.3			92.5			46.4			60.8	
Approach LOS		F			F			D			E	

### Intersection Summary

HCM Average Control Delay	82.3	HCM Level of Service	F
HCM Volume to Capacity ratio	1.20		
Actuated Cycle Length (s)	180.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	110.2%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis  
 84: Jones Bridge Rd & Kensington Parkway

6/10/2008



Movement	EBL2	EBL	EBT	EBR	WBT	WBR	WBR2	NBT	NBR	NBR2	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0		4.0	4.0		4.0			4.0	
Lane Util. Factor	0.91	0.95	0.95		0.91	0.91		0.91			0.91	
Frt	1.00	1.00	0.98		0.94	0.85		1.00			0.98	
Flt Protected	0.95	0.95	1.00		1.00	1.00		1.00			1.00	
Satd. Flow (prot)	1595	1665	3427		3167	1427		5012			4930	
Flt Permitted	0.95	0.95	1.00		1.00	1.00		1.00			1.00	
Satd. Flow (perm)	1595	1665	3427		3167	1427		5012			4930	
Volume (vph)	1063	62	601	104	228	281	13	2420	16	64	1863	304
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	1096	64	620	107	235	290	13	2495	16	66	1921	313
RTOR Reduction (vph)	0	0	9	0	0	0	0	0	0	0	15	0
Lane Group Flow (vph)	567	593	718	0	378	160	0	2577	0	0	2219	0
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%
Turn Type	Prot	Prot				Perm						
Protected Phases	3	3	8		4			2			2	
Permitted Phases						4						2
Actuated Green, G (s)	36.0	36.0	58.0		16.0	16.0		69.1			69.1	
Effective Green, g (s)	37.0	37.0	59.0		18.0	18.0		71.1			71.1	
Actuated g/C Ratio	0.25	0.25	0.39		0.12	0.12		0.47			0.47	
Clearance Time (s)	5.0	5.0	5.0		6.0	6.0		6.0			6.0	
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0		5.0			5.0	
Lane Grp Cap (vph)	393	411	1348		380	171		2376			2337	
v/s Ratio Prot	0.36	c0.36	0.21		c0.12			c0.51			0.45	
v/s Ratio Perm						0.11						
v/c Ratio	1.44	1.44	0.53		0.99	0.94		1.08			0.95	
Uniform Delay, d1	56.5	56.5	34.9		66.0	65.4		39.5			37.7	
Progression Factor	1.00	1.00	1.00		1.00	1.00		1.06			1.42	
Incremental Delay, d2	213.2	212.6	0.4		44.5	49.9		45.9			8.2	
Delay (s)	269.7	269.1	35.3		110.5	115.3		87.8			61.7	
Level of Service	F	F	D		F	F		F			E	
Approach Delay (s)			179.2		111.9			87.8			61.7	
Approach LOS			F		F			F			E	
<b>Intersection Summary</b>												
HCM Average Control Delay			105.0					HCM Level of Service			F	
HCM Volume to Capacity ratio			1.14									
Actuated Cycle Length (s)			150.0					Sum of lost time (s)		16.0		
Intersection Capacity Utilization			108.5%					ICU Level of Service		G		
Analysis Period (min)			15									

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis  
 84: Jones Bridge Rd & Kensington Parkway

6/10/2008



Movement	SWL	SWR	SWR2
Lane Configurations	1	2	
Ideal Flow (vphpl)	1900	1900	1900
Total Lost time (s)	4.0	4.0	
Lane Util. Factor	1.00	1.00	
Frt	1.00	0.85	
Flt Protected	0.95	1.00	
Satd. Flow (prot)	1752	1568	
Flt Permitted	0.95	1.00	
Satd. Flow (perm)	1752	1568	
Volume (vph)	38	36	2
Peak-hour factor, PHF	0.97	0.97	0.97
Adj. Flow (vph)	39	37	2
RTOR Reduction (vph)	0	0	0
Lane Group Flow (vph)	39	39	0
Heavy Vehicles (%)	3%	3%	3%
Turn Type		Prot	
Protected Phases	1	1	
Permitted Phases			
Actuated Green, G (s)	5.9	5.9	
Effective Green, g (s)	7.9	7.9	
Actuated g/C Ratio	0.05	0.05	
Clearance Time (s)	6.0	6.0	
Vehicle Extension (s)	3.0	3.0	
Lane Grp Cap (vph)	92	83	
v/s Ratio Prot	0.02	c0.02	
v/s Ratio Perm			
v/c Ratio	0.42	0.47	
Uniform Delay, d1	68.8	69.0	
Progression Factor	1.00	1.00	
Incremental Delay, d2	3.1	4.2	
Delay (s)	72.0	73.2	
Level of Service	E	E	
Approach Delay (s)	72.6		
Approach LOS	E		
Intersection Summary			



HCM Signalized Intersection Capacity Analysis  
 86: Jones Bridge Rd & Jones Mill Rd

6/10/2008



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00	
Frt	1.00	0.85		1.00	0.95	
Flt Protected	0.95	1.00		0.97	1.00	
Satd. Flow (prot)	1752	1568		1792	1753	
Flt Permitted	0.95	1.00		0.97	1.00	
Satd. Flow (perm)	1752	1568		1792	1753	
Volume (vph)	192	602	556	383	122	70
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	202	634	585	403	128	74
RTOR Reduction (vph)	0	364	0	0	17	0
Lane Group Flow (vph)	202	270	0	988	185	0
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%
Turn Type	custom		Split			
Protected Phases	3	6	2	2	4	
Permitted Phases						
Actuated Green, G (s)	19.3	49.8		49.8	37.4	
Effective Green, g (s)	19.3	51.8		51.8	38.4	
Actuated g/C Ratio	0.16	0.43		0.43	0.32	
Clearance Time (s)	4.0	6.0		6.0	5.0	
Vehicle Extension (s)	3.0	3.0		3.0	4.0	
Lane Grp Cap (vph)	278	668		764	554	
v/s Ratio Prot	c0.12	0.17		c0.55	c0.11	
v/s Ratio Perm						
v/c Ratio	0.73	0.40		1.29	0.33	
Uniform Delay, d1	48.6	24.2		34.9	31.8	
Progression Factor	1.00	1.00		0.20	1.00	
Incremental Delay, d2	9.1	1.8		134.3	0.5	
Delay (s)	57.7	26.0		141.4	32.3	
Level of Service	E	C		F	C	
Approach Delay (s)	33.6			141.4	32.3	
Approach LOS	C			F	C	

Intersection Summary

HCM Average Control Delay	86.1	HCM Level of Service	F
HCM Volume to Capacity ratio	0.86		
Actuated Cycle Length (s)	121.5	Sum of lost time (s)	12.0
Intersection Capacity Utilization	82.3%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis  
 152: Jones Bridge Rd & Manor Rd

6/10/2008

	→	↘	↙	←	↖	↗
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑	↗	↘	↑	↘	↗
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (prot)	1845	1568	1752	1845	1752	1568
Flt Permitted	1.00	1.00	0.15	1.00	0.95	1.00
Satd. Flow (perm)	1845	1568	275	1845	1752	1568
Volume (vph)	713	17	80	450	40	232
Peak-hour factor, PHF	0.86	0.86	0.90	0.90	0.85	0.85
Adj. Flow (vph)	829	20	89	500	47	273
RTOR Reduction (vph)	0	7	0	0	0	0
Lane Group Flow (vph)	829	13	89	500	47	273
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%
Turn Type		Perm pm+pt			pm+ov	
Protected Phases	2		1	6	4	1
Permitted Phases		2	6			4
Actuated Green, G (s)	35.2	35.2	54.4	53.4	4.7	18.9
Effective Green, g (s)	36.2	36.2	54.4	54.4	5.7	19.9
Actuated g/C Ratio	0.53	0.53	0.80	0.80	0.08	0.29
Clearance Time (s)	5.0	5.0	4.0	5.0	5.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	981	834	528	1474	147	550
v/s Ratio Prot	c0.45		0.04	0.27	0.03	c0.10
v/s Ratio Perm		0.01	0.10			0.07
v/c Ratio	0.85	0.02	0.17	0.34	0.32	0.50
Uniform Delay, d1	13.6	7.5	11.6	1.9	29.4	20.0
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	6.8	0.0	0.2	0.1	1.3	0.7
Delay (s)	20.3	7.5	11.8	2.0	30.6	20.7
Level of Service	C	A	B	A	C	C
Approach Delay (s)	20.0			3.5	22.1	
Approach LOS	C			A	C	
<b>Intersection Summary</b>						
HCM Average Control Delay			14.9		HCM Level of Service	B
HCM Volume to Capacity ratio			0.71			
Actuated Cycle Length (s)			68.1		Sum of lost time (s)	8.0
Intersection Capacity Utilization			58.6%		ICU Level of Service	B
Analysis Period (min)			15			
c Critical Lane Group						

HCM Signalized Intersection Capacity Analysis  
 154: Jones Bridge Rd & Platt Ridge Rd

6/10/2008



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑		↵	↑↑	↵	↵
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0		4.0	4.0	4.0	4.0
Lane Util. Factor	0.95		1.00	0.95	1.00	1.00
Frt	1.00		1.00	1.00	1.00	0.85
Flt Protected	1.00		0.95	1.00	0.95	1.00
Satd. Flow (prot)	3503		1752	3505	1787	1599
Flt Permitted	1.00		0.06	1.00	0.95	1.00
Satd. Flow (perm)	3503		112	3505	1787	1599
Volume (vph)	1816	5	5	625	11	14
Peak-hour factor, PHF	0.87	0.87	0.87	0.87	0.61	0.61
Adj. Flow (vph)	2087	6	6	718	18	23
RTOR Reduction (vph)	0	0	0	0	0	22
Lane Group Flow (vph)	2093	0	6	718	18	1
Heavy Vehicles (%)	3%	3%	3%	3%	1%	1%
Turn Type			pm+pt			Perm
Protected Phases	2		1	6	3	
Permitted Phases			6			3
Actuated Green, G (s)	82.0		87.6	87.6	5.0	5.0
Effective Green, g (s)	83.0		88.6	88.6	6.0	6.0
Actuated g/C Ratio	0.81		0.86	0.86	0.06	0.06
Clearance Time (s)	5.0		4.0	5.0	5.0	5.0
Vehicle Extension (s)	3.0		3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	2834		122	3027	105	94
v/s Ratio Prot	c0.60		0.00	c0.20	c0.01	
v/s Ratio Perm			0.04			0.00
v/c Ratio	0.74		0.05	0.24	0.17	0.01
Uniform Delay, d1	4.7		5.8	1.2	45.9	45.5
Progression Factor	1.00		1.00	1.00	1.00	1.00
Incremental Delay, d2	1.0		0.2	0.0	0.8	0.1
Delay (s)	5.7		6.0	1.2	46.7	45.6
Level of Service	A		A	A	D	D
Approach Delay (s)	5.7			1.3	46.1	
Approach LOS	A			A	D	

Intersection Summary

HCM Average Control Delay	5.1	HCM Level of Service	A
HCM Volume to Capacity ratio	0.70		
Actuated Cycle Length (s)	102.6	Sum of lost time (s)	12.0
Intersection Capacity Utilization	60.4%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis  
 156: Jones Bridge Rd & Glenbrook Pkwy

6/10/2008



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↙	↑↑		↙	↑↑			↕			↕	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0			4.0			4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00			1.00	
Frt	1.00	1.00		1.00	0.98			0.95			0.93	
Flt Protected	0.95	1.00		0.95	1.00			0.97			0.98	
Satd. Flow (prot)	1752	3503		1752	3444			1741			1710	
Flt Permitted	0.38	1.00		0.11	1.00			0.88			0.84	
Satd. Flow (perm)	710	3503		195	3444			1571			1470	
Volume (vph)	8	1496	5	5	464	61	4	1	3	100	0	104
Peak-hour factor, PHF	0.87	0.87	0.87	0.87	0.87	0.87	0.71	0.71	0.71	0.90	0.90	0.90
Adj. Flow (vph)	9	1720	6	6	533	70	6	1	4	111	0	116
RTOR Reduction (vph)	0	0	0	0	7	0	0	3	0	0	51	0
Lane Group Flow (vph)	9	1726	0	6	596	0	0	8	0	0	176	0
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%	1%	1%	1%	1%	1%	1%
Turn Type	pm+pt		Perm		Perm		Perm		Perm			
Protected Phases	5	2			6			4			8	
Permitted Phases	2			6			4			8		
Actuated Green, G (s)	66.0	66.0		60.8	60.8			15.0			15.0	
Effective Green, g (s)	67.0	67.0		61.8	61.8			15.0			15.0	
Actuated g/C Ratio	0.74	0.74		0.69	0.69			0.17			0.17	
Clearance Time (s)	4.0	5.0		5.0	5.0			4.0			4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0			3.0	
Lane Grp Cap (vph)	542	2608		134	2365			262			245	
v/s Ratio Prot	0.00	c0.49			0.17							
v/s Ratio Perm	0.01			0.03				0.00			c0.12	
v/c Ratio	0.02	0.66		0.04	0.25			0.03			0.72	
Uniform Delay, d1	3.2	5.8		4.6	5.3			31.4			35.5	
Progression Factor	1.24	1.69		1.00	1.00			1.00			1.00	
Incremental Delay, d2	0.0	0.1		0.6	0.3			0.0			9.7	
Delay (s)	3.9	9.9		5.2	5.6			31.4			45.2	
Level of Service	A	A		A	A			C			D	
Approach Delay (s)		9.9			5.6			31.4			45.2	
Approach LOS		A			A			C			D	

Intersection Summary			
HCM Average Control Delay	12.1	HCM Level of Service	B
HCM Volume to Capacity ratio	0.67		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	63.0%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis  
 160: Jones Bridge Rd & Grier Rd

6/10/2008



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↖	↑↑	↗↗	↑	↙	↘
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0		4.0	4.0
Lane Util. Factor		0.95	0.95		1.00	1.00
Frt		1.00	1.00		1.00	0.85
Flt Protected		1.00	1.00		0.95	1.00
Satd. Flow (prot)		3505	3505		1787	1599
Flt Permitted		1.00	1.00		0.95	1.00
Satd. Flow (perm)		3505	3505		1787	1599
Volume (vph)	0	1646	611	0	129	46
Peak-hour factor, PHF	0.87	0.87	0.87	0.87	0.63	0.63
Adj. Flow (vph)	0	1892	702	0	205	73
RTOR Reduction (vph)	0	0	0	0	0	56
Lane Group Flow (vph)	0	1892	702	0	205	17
Heavy Vehicles (%)	3%	3%	3%	3%	1%	1%
Turn Type	pm+pt			pm+ov		pm+ov
Protected Phases	5	2	6	4	4	5
Permitted Phases	2			6		4
Actuated Green, G (s)		51.6	44.8		13.6	16.4
Effective Green, g (s)		53.6	46.8		15.6	18.4
Actuated g/C Ratio		0.69	0.61		0.20	0.24
Clearance Time (s)		6.0	6.0		6.0	4.0
Vehicle Extension (s)		3.0	3.0		3.0	3.0
Lane Grp Cap (vph)		2434	2125		361	464
v/s Ratio Prot		c0.54	0.20		c0.11	0.00
v/s Ratio Perm						0.01
v/c Ratio		0.78	0.33		0.57	0.04
Uniform Delay, d1		7.8	7.5		27.8	22.6
Progression Factor		1.00	1.00		1.00	1.00
Incremental Delay, d2		1.6	0.1		2.0	0.0
Delay (s)		9.5	7.6		29.8	22.6
Level of Service		A	A		C	C
Approach Delay (s)		9.5	7.6		27.9	
Approach LOS		A	A		C	

Intersection Summary

HCM Average Control Delay	10.8	HCM Level of Service	B
HCM Volume to Capacity ratio	0.73		
Actuated Cycle Length (s)	77.2	Sum of lost time (s)	8.0
Intersection Capacity Utilization	59.3%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

# HCM Signalized Intersection Capacity Analysis

## 15: Harkins Rd & Lanham Dr West

6/11/2008



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕↕		↕	↕↕			↕↕		↕	↕	↕
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0		4.0	4.0			4.0		4.0	4.0	4.0
Lane Util. Factor		0.95		1.00	0.95			1.00		1.00	1.00	1.00
Frt		0.95		1.00	0.95			0.96		1.00	1.00	0.85
Flt Protected		1.00		0.95	1.00			0.98		0.95	1.00	1.00
Satd. Flow (prot)		3396		1787	3389			1767		1787	1881	1599
Flt Permitted		0.95		0.45	1.00			0.89		0.74	1.00	1.00
Satd. Flow (perm)		3219		839	3389			1594		1388	1881	1599
Volume (vph)	5	120	60	60	95	50	5	5	5	160	150	5
Peak-hour factor, PHF	0.91	0.91	0.91	0.95	0.95	0.95	0.48	0.48	0.48	0.92	0.92	0.92
Adj. Flow (vph)	5	132	66	63	100	53	10	10	10	174	163	5
RTOR Reduction (vph)	0	48	0	0	27	0	0	7	0	0	0	4
Lane Group Flow (vph)	0	155	0	63	126	0	0	23	0	174	163	1
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%
Turn Type	Perm			pm+pt			Perm			Perm		Perm
Protected Phases		4		3	8			2			6	
Permitted Phases	4			8			2			6		6
Actuated Green, G (s)		9.0		16.4	16.4			9.4		9.4	9.4	9.4
Effective Green, g (s)		10.0		17.4	17.4			10.4		10.4	10.4	10.4
Actuated g/C Ratio		0.28		0.49	0.49			0.29		0.29	0.29	0.29
Clearance Time (s)		5.0		5.0	5.0			5.0		5.0	5.0	5.0
Vehicle Extension (s)		3.0		3.0	3.0			3.0		3.0	3.0	3.0
Lane Grp Cap (vph)		899		498	1647			463		403	546	465
v/s Ratio Prot				c0.01	0.04						0.09	
v/s Ratio Perm		c0.05		0.05				0.01		c0.13		0.00
v/c Ratio		0.17		0.13	0.08			0.05		0.43	0.30	0.00
Uniform Delay, d1		9.8		5.1	4.9			9.1		10.3	9.9	9.0
Progression Factor		1.00		1.00	1.00			1.00		1.00	1.00	1.00
Incremental Delay, d2		0.1		0.1	0.0			0.0		0.7	0.3	0.0
Delay (s)		9.9		5.3	4.9			9.2		11.0	10.2	9.0
Level of Service		A		A	A			A		B	B	A
Approach Delay (s)		9.9			5.0			9.2			10.6	
Approach LOS		A			A			A			B	

### Intersection Summary

HCM Average Control Delay	8.8	HCM Level of Service	A
HCM Volume to Capacity ratio	0.28		
Actuated Cycle Length (s)	35.8	Sum of lost time (s)	12.0
Intersection Capacity Utilization	42.2%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

# HCM Signalized Intersection Capacity Analysis

## 15: Harkins Rd & Lanham Dr West

6/11/2008



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕↕		↖	↕↕			↕↕		↖	↕	↖
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0		4.0	4.0			4.0		4.0	4.0	4.0
Lane Util. Factor		0.95		1.00	0.95			1.00		1.00	1.00	1.00
Frt		1.00		1.00	0.94			0.97		1.00	1.00	0.85
Flt Protected		1.00		0.95	1.00			0.99		0.95	1.00	1.00
Satd. Flow (prot)		3558		1787	3374			1806		1787	1881	1599
Flt Permitted		0.94		0.42	1.00			0.95		0.59	1.00	1.00
Satd. Flow (perm)		3361		784	3374			1730		1103	1881	1599
Volume (vph)	5	195	5	5	160	95	45	175	70	60	5	5
Peak-hour factor, PHF	0.92	0.92	0.92	0.94	0.94	0.94	0.91	0.91	0.91	0.69	0.69	0.69
Adj. Flow (vph)	5	212	5	5	170	101	49	192	77	87	7	7
RTOR Reduction (vph)	0	2	0	0	56	0	0	15	0	0	0	5
Lane Group Flow (vph)	0	220	0	5	215	0	0	303	0	87	7	2
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%
Turn Type	Perm			pm+pt			Perm			Perm		Perm
Protected Phases		4		3	8			2			6	
Permitted Phases	4			8			2			6		6
Actuated Green, G (s)		7.5		13.2	13.2			8.6		8.6	8.6	8.6
Effective Green, g (s)		8.5		14.2	14.2			9.6		9.6	9.6	9.6
Actuated g/C Ratio		0.27		0.45	0.45			0.30		0.30	0.30	0.30
Clearance Time (s)		5.0		5.0	5.0			5.0		5.0	5.0	5.0
Vehicle Extension (s)		3.0		3.0	3.0			3.0		3.0	3.0	3.0
Lane Grp Cap (vph)		898		404	1507			522		333	568	483
v/s Ratio Prot				0.00	c0.06						0.00	
v/s Ratio Perm		c0.07		0.00				c0.18		0.08		0.00
v/c Ratio		0.24		0.01	0.14			0.58		0.26	0.01	0.00
Uniform Delay, d1		9.1		5.1	5.2			9.4		8.4	7.8	7.8
Progression Factor		1.00		1.00	1.00			1.00		1.00	1.00	1.00
Incremental Delay, d2		0.1		0.0	0.0			1.7		0.4	0.0	0.0
Delay (s)		9.3		5.1	5.2			11.0		8.8	7.8	7.8
Level of Service		A		A	A			B		A	A	A
Approach Delay (s)		9.3			5.2			11.0			8.7	
Approach LOS		A			A			B			A	

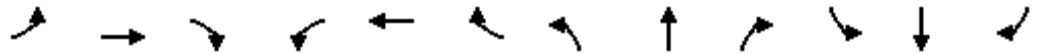
### Intersection Summary

HCM Average Control Delay	8.6	HCM Level of Service	A
HCM Volume to Capacity ratio	0.41		
Actuated Cycle Length (s)	31.8	Sum of lost time (s)	12.0
Intersection Capacity Utilization	38.5%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis  
 18: Chevy Chase Lake Dr & MD 185

6/10/2008



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations				↖	↗		↖	↑↑↑		↖	↑↑↑	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)				4.0	4.0			4.0		4.0	4.0	
Lane Util. Factor				1.00	1.00			0.91		1.00	0.91	
Frt				1.00	0.85			1.00		1.00	1.00	
Flt Protected				0.95	1.00			1.00		0.95	1.00	
Satd. Flow (prot)				1787	1599			4918		1719	4940	
Flt Permitted				0.95	1.00			1.00		0.13	1.00	
Satd. Flow (perm)				1787	1599			4918		235	4940	
Volume (vph)	0	0	0	27	0	31	0	1443	44	68	2483	0
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	0	0	29	0	34	0	1568	48	74	2699	0
RTOR Reduction (vph)	0	0	0	0	32	0	0	1	0	0	0	0
Lane Group Flow (vph)	0	0	0	29	2	0	0	1615	0	74	2699	0
Heavy Vehicles (%)	2%	2%	2%	1%	1%	1%	5%	5%	5%	5%	5%	5%
Turn Type				Perm			Perm			pm+pt		
Protected Phases					8			6		5	2	
Permitted Phases				8			6			2		
Actuated Green, G (s)				6.7	6.7			123.9		133.3	133.3	
Effective Green, g (s)				7.7	7.7			124.9		134.3	134.3	
Actuated g/C Ratio				0.05	0.05			0.83		0.90	0.90	
Clearance Time (s)				5.0	5.0			5.0		5.0	5.0	
Vehicle Extension (s)				3.0	3.0			3.0		3.0	3.0	
Lane Grp Cap (vph)				92	82			4095		264	4423	
v/s Ratio Prot					0.00			0.33		0.01	0.55	
v/s Ratio Perm				0.02						0.24		
v/c Ratio				0.32	0.02			0.39		0.28	0.61	
Uniform Delay, d1				68.6	67.6			3.1		1.6	1.8	
Progression Factor				1.00	1.00			0.93		2.12	0.08	
Incremental Delay, d2				2.0	0.1			0.3		0.3	0.3	
Delay (s)				70.6	67.7			3.2		3.6	0.5	
Level of Service				E	E			A		A	A	
Approach Delay (s)		0.0			69.0			3.2			0.5	
Approach LOS		A			E			A			A	

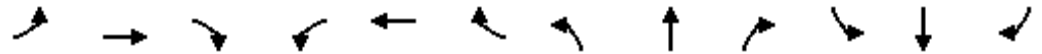
Intersection Summary			
HCM Average Control Delay	2.5	HCM Level of Service	A
HCM Volume to Capacity ratio	0.59		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	66.5%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group



HCM Signalized Intersection Capacity Analysis  
 18: Chevy Chase Lake Dr & MD 185

6/10/2008



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations				↖	↗		↖	↑↑↑		↖	↑↑↑	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)				4.0	4.0			4.0		4.0	4.0	
Lane Util. Factor				1.00	1.00			0.91		1.00	0.91	
Frt				1.00	0.85			1.00		1.00	1.00	
Flt Protected				0.95	1.00			1.00		0.95	1.00	
Satd. Flow (prot)				1787	1599			5027		1752	5036	
Flt Permitted				0.95	1.00			1.00		0.03	1.00	
Satd. Flow (perm)				1787	1599			5027		59	5036	
Volume (vph)	0	0	0	54	0	58	0	2650	30	44	1698	0
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	0	0	59	0	63	0	2880	33	48	1846	0
RTOR Reduction (vph)	0	0	0	0	58	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	0	0	59	5	0	0	2913	0	48	1846	0
Heavy Vehicles (%)	2%	2%	2%	1%	1%	1%	3%	3%	3%	3%	3%	3%
Turn Type				Perm			Perm			pm+pt		
Protected Phases					8			6		5	2	
Permitted Phases				8			6			2		
Actuated Green, G (s)				10.0	10.0			119.5		130.0	130.0	
Effective Green, g (s)				11.0	11.0			120.5		131.0	131.0	
Actuated g/C Ratio				0.07	0.07			0.80		0.87	0.87	
Clearance Time (s)				5.0	5.0			5.0		5.0	5.0	
Vehicle Extension (s)				3.0	3.0			3.0		3.0	3.0	
Lane Grp Cap (vph)				131	117			4038		125	4398	
v/s Ratio Prot					0.00			c0.58		0.02	c0.37	
v/s Ratio Perm				c0.03						0.32		
v/c Ratio				0.45	0.04			0.72		0.38	0.42	
Uniform Delay, d1				66.6	64.6			6.9		14.3	1.9	
Progression Factor				1.00	1.00			0.60		2.05	2.84	
Incremental Delay, d2				2.5	0.1			0.9		1.8	0.3	
Delay (s)				69.1	64.7			5.1		31.2	5.7	
Level of Service				E	E			A		C	A	
Approach Delay (s)		0.0			66.8			5.1			6.3	
Approach LOS		A			E			A			A	

Intersection Summary			
HCM Average Control Delay	7.1	HCM Level of Service	A
HCM Volume to Capacity ratio	0.69		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	62.1%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

# HCM Signalized Intersection Capacity Analysis

## 2: MD 193 & Carroll Ave

6/10/2008



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↙	↑↑↑			↑↑↑		↙	↘		↙	↘	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	2.0	2.0			2.0		2.0	2.0		2.0	2.0	
Lane Util. Factor	1.00	0.91			0.91		1.00	1.00		1.00	1.00	
Frt	1.00	0.98			0.99		1.00	0.98		1.00	0.98	
Flt Protected	0.95	1.00			1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1703	4809			4869		1703	1760		1703	1749	
Flt Permitted	0.07	1.00			1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	131	4809			4869		1703	1760		1703	1749	
Volume (vph)	20	1320	172	0	1512	52	148	116	16	80	432	84
Peak-hour factor, PHF	0.89	0.89	0.89	0.95	0.95	0.95	0.87	0.87	0.87	0.93	0.93	0.93
Adj. Flow (vph)	22	1483	193	0	1592	55	170	133	18	86	465	90
RTOR Reduction (vph)	0	14	0	0	3	0	0	4	0	0	6	0
Lane Group Flow (vph)	22	1662	0	0	1644	0	170	147	0	86	549	0
Heavy Vehicles (%)	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%
Turn Type	Perm						Split			Split		
Protected Phases	6			2			3	3	4		4	
Permitted Phases	6											
Actuated Green, G (s)	56.0	56.0			56.0		28.0	28.0		18.0	18.0	
Effective Green, g (s)	60.0	60.0			60.0		32.0	32.0		22.0	22.0	
Actuated g/C Ratio	0.50	0.50			0.50		0.27	0.27		0.18	0.18	
Clearance Time (s)	6.0	6.0			6.0		6.0	6.0		6.0	6.0	
Vehicle Extension (s)	3.0	3.0			3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	66	2405			2435		454	469		312	321	
v/s Ratio Prot		c0.35			0.34		c0.10	0.08		0.05	c0.31	
v/s Ratio Perm	0.17											
v/c Ratio	0.33	0.69			0.68		0.37	0.31		0.28	1.71	
Uniform Delay, d1	18.0	22.9			22.6		35.8	35.2		42.1	49.0	
Progression Factor	1.23	1.35			1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	8.0	1.0			1.5		2.4	1.7		0.5	333.0	
Delay (s)	30.3	31.9			24.2		38.2	36.9		42.6	382.0	
Level of Service	C	C			C		D	D		D	F	
Approach Delay (s)		31.9			24.2			37.6			336.5	
Approach LOS		C			C			D			F	

### Intersection Summary

HCM Average Control Delay	74.7	HCM Level of Service	E
HCM Volume to Capacity ratio	0.79		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	6.0
Intersection Capacity Utilization	87.4%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

# HCM Signalized Intersection Capacity Analysis

5: MD 193 & MD 320

6/10/2008

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lane Util. Factor	1.00	0.91		1.00	0.91		1.00	0.95		1.00	0.95	
Frt	1.00	0.99		1.00	1.00		1.00	0.94		1.00	0.95	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1703	4833		1703	4886		1703	3212		1703	3219	
Flt Permitted	0.95	1.00		0.95	1.00		0.09	1.00		0.45	1.00	
Satd. Flow (perm)	1703	4833		1703	4886		162	3212		803	3219	
Volume (vph)	196	1292	116	188	1540	16	170	288	176	24	760	436
Peak-hour factor, PHF	0.96	0.96	0.96	0.90	0.90	0.90	0.85	0.85	0.85	0.95	0.95	0.95
Adj. Flow (vph)	204	1346	121	209	1711	18	200	339	207	25	800	459
RTOR Reduction (vph)	0	9	0	0	1	0	0	58	0	0	58	0
Lane Group Flow (vph)	204	1458	0	209	1728	0	200	488	0	25	1201	0
Heavy Vehicles (%)	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%
Turn Type	Prot			Prot			pm+pt			pm+pt		
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases							8			4		
Actuated Green, G (s)	14.8	33.8		14.8	33.8		57.4	50.5		42.1	39.2	
Effective Green, g (s)	16.8	36.8		16.8	36.8		60.4	53.5		47.1	42.2	
Actuated g/C Ratio	0.14	0.31		0.14	0.31		0.50	0.45		0.39	0.35	
Clearance Time (s)	4.0	5.0		4.0	5.0		4.0	5.0		4.0	5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	238	1482		238	1498		290	1432		352	1132	
v/s Ratio Prot	0.12	0.30		c0.12	c0.35		c0.09	0.15		0.00	c0.37	
v/s Ratio Perm							0.25			0.02		
v/c Ratio	0.86	0.98		0.88	1.15		0.69	0.34		0.07	1.06	
Uniform Delay, d1	50.4	41.3		50.6	41.6		50.9	21.7		22.5	38.9	
Progression Factor	1.00	1.00		1.11	0.65		1.00	1.00		1.00	1.00	
Incremental Delay, d2	24.9	19.8		22.7	75.3		6.7	0.6		0.1	44.4	
Delay (s)	75.3	61.1		78.9	102.3		57.6	22.4		22.6	83.3	
Level of Service	E	E		E	F		E	C		C	F	
Approach Delay (s)		62.9			99.8			31.8			82.1	
Approach LOS		E			F			C			F	
<b>Intersection Summary</b>												
HCM Average Control Delay			75.8			HCM Level of Service				E		
HCM Volume to Capacity ratio			0.99									
Actuated Cycle Length (s)			120.0			Sum of lost time (s)				8.0		
Intersection Capacity Utilization			98.7%			ICU Level of Service				F		
Analysis Period (min)			15									
c	Critical Lane Group											

# HCM Signalized Intersection Capacity Analysis

14: MD 193 & MD 193 West SC

6/10/2008

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	2.0	2.0		2.0	2.0			2.0	2.0	2.0	2.0	
Lane Util. Factor	1.00	0.91		1.00	0.91			1.00	1.00	1.00	1.00	
Frt	1.00	1.00		1.00	1.00			1.00	0.85	1.00	0.89	
Flt Protected	0.95	1.00		0.95	1.00			0.96	1.00	0.95	1.00	
Satd. Flow (prot)	1703	4887		1703	4880			1813	1599	1787	1670	
Flt Permitted	0.14	1.00		0.13	1.00			0.81	1.00	0.66	1.00	
Satd. Flow (perm)	257	4887		227	4880			1522	1599	1249	1670	
Volume (vph)	52	1352	12	20	1508	28	36	12	16	12	4	12
Peak-hour factor, PHF	0.90	0.90	0.90	0.95	0.95	0.95	0.80	0.80	0.80	0.80	0.80	0.80
Adj. Flow (vph)	58	1502	13	21	1587	29	45	15	20	15	5	15
RTOR Reduction (vph)	0	1	0	0	1	0	0	0	16	0	12	0
Lane Group Flow (vph)	58	1514	0	21	1615	0	0	60	4	15	8	0
Heavy Vehicles (%)	6%	6%	6%	6%	6%	6%	1%	1%	1%	1%	1%	1%
Turn Type	Perm			pm+pt			Perm		Perm	Perm		
Protected Phases		2		1	6			3				3
Permitted Phases	2			6			3	3	3	3		
Actuated Green, G (s)	99.0	99.0		114.0	114.0			26.0	26.0	26.0	26.0	
Effective Green, g (s)	102.0	102.0		117.0	117.0			29.0	29.0	29.0	29.0	
Actuated g/C Ratio	0.68	0.68		0.78	0.78			0.19	0.19	0.19	0.19	
Clearance Time (s)	5.0	5.0		5.0	5.0			5.0	5.0	5.0	5.0	
Lane Grp Cap (vph)	175	3323		305	3806			294	309	241	323	
v/s Ratio Prot		c0.31		0.01	c0.33							0.00
v/s Ratio Perm	0.23			0.05				c0.04	0.00	0.01		
v/c Ratio	0.33	0.46		0.07	0.42			0.20	0.01	0.06	0.02	
Uniform Delay, d1	9.9	11.1		5.3	5.4			50.8	48.9	49.4	49.0	
Progression Factor	1.00	1.00		0.29	0.21			1.00	1.00	1.00	1.00	
Incremental Delay, d2	5.0	0.5		0.1	0.1			1.6	0.1	0.5	0.1	
Delay (s)	14.9	11.6		1.7	1.3			52.4	49.0	49.9	49.2	
Level of Service	B	B		A	A			D	D	D	D	
Approach Delay (s)		11.7			1.3			51.5			49.5	
Approach LOS		B			A			D			D	
<b>Intersection Summary</b>												
HCM Average Control Delay			7.9			HCM Level of Service				A		
HCM Volume to Capacity ratio			0.40									
Actuated Cycle Length (s)			150.0			Sum of lost time (s)				6.0		
Intersection Capacity Utilization			69.7%			ICU Level of Service				C		
Analysis Period (min)			15									
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis  
 15: MD 193 & MD 193 East SC

6/10/2008



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↖↖↖		↖	↖↖↖		↖	↖		↖	↖	↖
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	2.0
Lane Util. Factor	1.00	0.91		1.00	0.91		1.00	1.00		0.95	0.95	1.00
Frt	1.00	1.00		1.00	1.00		1.00	0.92		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	0.96	1.00
Satd. Flow (prot)	1703	4874		1703	4878		1787	1740		1698	1713	1599
Flt Permitted	0.11	1.00		0.22	1.00		0.71	1.00		0.75	0.81	1.00
Satd. Flow (perm)	193	4874		399	4878		1344	1740		1342	1450	1599
Volume (vph)	24	1052	28	16	1524	32	4	4	4	52	4	12
Peak-hour factor, PHF	0.90	0.90	0.90	0.95	0.95	0.95	0.80	0.80	0.80	0.80	0.80	0.80
Adj. Flow (vph)	27	1169	31	17	1604	34	5	5	5	65	5	15
RTOR Reduction (vph)	0	2	0	0	2	0	0	4	0	0	0	12
Lane Group Flow (vph)	27	1198	0	17	1636	0	5	6	0	33	37	3
Heavy Vehicles (%)	6%	6%	6%	6%	6%	6%	1%	1%	1%	1%	1%	1%
Turn Type	custom			Perm			Perm			Perm		Perm
Protected Phases	1	6			2			3				3
Permitted Phases	6	1	6	2	2		3	3		3		3
Actuated Green, G (s)	114.0	114.0		99.0	99.0		26.0	26.0		26.0	26.0	26.0
Effective Green, g (s)	117.0	117.0		102.0	102.0		29.0	29.0		29.0	29.0	29.0
Actuated g/C Ratio	0.78	0.78		0.68	0.68		0.19	0.19		0.19	0.19	0.19
Clearance Time (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	5.0
Lane Grp Cap (vph)	281	3802		271	3317		260	336		259	280	309
v/s Ratio Prot	0.01	c0.25			c0.34			0.00			c0.03	0.00
v/s Ratio Perm	0.07			0.04			0.00			0.02		0.00
v/c Ratio	0.10	0.32		0.06	0.49		0.02	0.02		0.13	0.13	0.01
Uniform Delay, d1	5.8	4.8		8.0	11.6		49.0	49.0		50.0	50.1	48.9
Progression Factor	0.31	0.25		1.00	1.00		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	0.1	0.0		0.4	0.5		0.1	0.1		1.0	1.0	0.1
Delay (s)	1.9	1.2		8.5	12.1		49.1	49.1		51.0	51.1	48.9
Level of Service	A	A		A	B		D	D		D	D	D
Approach Delay (s)		1.2			12.0			49.1			50.7	
Approach LOS		A			B			D			D	

Intersection Summary

HCM Average Control Delay	8.9	HCM Level of Service	A
HCM Volume to Capacity ratio	0.40		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	6.0
Intersection Capacity Utilization	73.5%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

# HCM Signalized Intersection Capacity Analysis

91: MD 193 & MD 212

6/10/2008

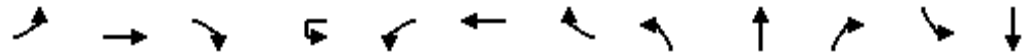
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.91		0.97	1.00	1.00	1.00	0.95	
Frt	1.00	1.00	0.85	1.00	0.99		1.00	1.00	0.85	1.00	0.98	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1703	3406	1524	1703	4825		3303	1792	1524	1703	3322	
Flt Permitted	0.21	1.00	1.00	0.17	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	372	3406	1524	302	4825		3303	1792	1524	1703	3322	
Volume (vph)	64	700	444	576	976	100	624	416	316	124	388	76
Peak-hour factor, PHF	0.91	0.91	0.91	0.93	0.93	0.93	0.94	0.94	0.94	0.96	0.96	0.96
Adj. Flow (vph)	70	769	488	619	1049	108	664	443	336	129	404	79
RTOR Reduction (vph)	0	0	0	0	7	0	0	0	0	0	11	0
Lane Group Flow (vph)	70	769	488	619	1150	0	664	443	336	129	472	0
Heavy Vehicles (%)	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%
Turn Type	pm+pt		Free	pm+pt			Split		Free	Split		
Protected Phases	1	6		5	2		4	4		3	3	
Permitted Phases	6		Free	2					Free			
Actuated Green, G (s)	53.9	47.0	150.0	75.7	63.8		38.3	38.3	150.0	19.0	19.0	
Effective Green, g (s)	59.9	51.0	150.0	79.7	67.8		40.3	40.3	150.0	21.0	21.0	
Actuated g/C Ratio	0.40	0.34	1.00	0.53	0.45		0.27	0.27	1.00	0.14	0.14	
Clearance Time (s)	5.0	7.0		5.0	7.0		5.0	5.0		5.0	5.0	
Vehicle Extension (s)	2.5	5.0		2.5	5.0		2.5	2.5		2.5	2.5	
Lane Grp Cap (vph)	228	1158	1524	401	2181		887	481	1524	238	465	
v/s Ratio Prot	0.02	0.23		c0.26	0.24		0.20	c0.25		0.08	c0.14	
v/s Ratio Perm	0.10		0.32	c0.56					0.22			
v/c Ratio	0.31	0.66	0.32	1.54	0.53		0.75	0.92	0.22	0.54	1.01	
Uniform Delay, d1	28.3	42.2	0.0	36.2	29.6		50.2	53.3	0.0	60.0	64.5	
Progression Factor	1.00	1.00	1.00	0.95	1.20		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	0.6	3.0	0.6	255.8	0.8		3.3	23.1	0.3	2.0	45.5	
Delay (s)	28.9	45.2	0.6	290.3	36.4		53.5	76.4	0.3	62.0	110.0	
Level of Service	C	D	A	F	D		D	E	A	E	F	
Approach Delay (s)		27.9			124.9			48.2			99.9	
Approach LOS		C			F			D			F	
<b>Intersection Summary</b>												
HCM Average Control Delay			75.5			HCM Level of Service			E			
HCM Volume to Capacity ratio			1.28									
Actuated Cycle Length (s)			150.0			Sum of lost time (s)			9.0			
Intersection Capacity Utilization			95.5%			ICU Level of Service			F			
Analysis Period (min)			15									

c Critical Lane Group

# HCM Signalized Intersection Capacity Analysis

105: MD 193 & 23rd Ave

6/10/2008



Movement	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations		↑↑↑			↓	↑↑↑			↑	↑		
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		3.0			3.0	3.0			3.0	3.0		
Lane Util. Factor		0.91			1.00	0.91			1.00	1.00		
Frt		0.98			1.00	1.00			1.00	0.85		
Flt Protected		1.00			0.95	1.00			0.95	1.00		
Satd. Flow (prot)		4817			1703	4879			1796	1599		
Flt Permitted		1.00			0.20	1.00			0.95	1.00		
Satd. Flow (perm)		4817			351	4879			1796	1599		
Volume (vph)	0	960	112	24	84	1540	32	160	8	92	0	0
Peak-hour factor, PHF	0.90	0.90	0.90	0.93	0.93	0.93	0.93	0.81	0.81	0.81	0.50	0.50
Adj. Flow (vph)	0	1067	124	26	90	1656	34	198	10	114	0	0
RTOR Reduction (vph)	0	6	0	0	0	1	0	0	0	95	0	0
Lane Group Flow (vph)	0	1185	0	0	116	1689	0	0	208	19	0	0
Heavy Vehicles (%)	6%	6%	6%	6%	6%	6%	6%	1%	1%	1%	1%	1%
Turn Type					pm+pt			Perm		Perm		
Protected Phases		6			5	2			4			
Permitted Phases		6			2			4		4		
Actuated Green, G (s)		103.3			116.1	116.1			21.9	21.9		
Effective Green, g (s)		106.3			119.1	119.1			24.9	24.9		
Actuated g/C Ratio		0.71			0.79	0.79			0.17	0.17		
Clearance Time (s)		6.0			5.0	6.0			6.0	6.0		
Vehicle Extension (s)		5.0			3.0	5.0			3.0	3.0		
Lane Grp Cap (vph)		3414			367	3874			298	265		
v/s Ratio Prot		0.25			0.02	0.35						
v/s Ratio Perm					0.23				0.12	0.01		
v/c Ratio		0.35			0.32	0.44			0.70	0.07		
Uniform Delay, d1		8.4			4.3	4.9			59.0	52.8		
Progression Factor		0.25			1.00	0.96			1.00	1.00		
Incremental Delay, d2		0.2			0.4	0.3			7.0	0.1		
Delay (s)		2.4			4.7	5.0			66.0	52.9		
Level of Service		A			A	A			E	D		
Approach Delay (s)		2.4				5.0			61.3			6.4
Approach LOS		A				A			E			A

## Intersection Summary

HCM Average Control Delay	9.5	HCM Level of Service	A
HCM Volume to Capacity ratio	0.48		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	6.0
Intersection Capacity Utilization	66.4%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group



<b>Movement</b>	<b>SBR</b>
Lane Configurations	7
Ideal Flow (vphpl)	1900
Total Lost time (s)	3.0
Lane Util. Factor	1.00
Frt	0.86
Flt Protected	1.00
Satd. Flow (prot)	1627
Flt Permitted	1.00
Satd. Flow (perm)	1627
Volume (vph)	4
Peak-hour factor, PHF	0.50
Adj. Flow (vph)	8
RTOR Reduction (vph)	2
Lane Group Flow (vph)	6
Heavy Vehicles (%)	1%
Turn Type	custom
Protected Phases	
Permitted Phases	6
Actuated Green, G (s)	103.3
Effective Green, g (s)	106.3
Actuated g/C Ratio	0.71
Clearance Time (s)	6.0
Vehicle Extension (s)	5.0
Lane Grp Cap (vph)	1153
v/s Ratio Prot	
v/s Ratio Perm	0.00
v/c Ratio	0.00
Uniform Delay, d1	6.4
Progression Factor	1.00
Incremental Delay, d2	0.0
Delay (s)	6.4
Level of Service	A
Approach Delay (s)	
Approach LOS	
<b>Intersection Summary</b>	



HCM Signalized Intersection Capacity Analysis  
 107: MD 193 & West Park Dr.

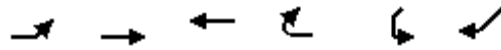
6/10/2008

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations													
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95		1.00	1.00		1.00	1.00		
Frt	1.00	1.00	0.85	1.00	1.00		1.00	0.87		1.00	0.90		
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00		
Satd. Flow (prot)	1703	3406	1524	1703	3398		1787	1631		1787	1699		
Flt Permitted	0.11	1.00	1.00	0.23	1.00		0.75	1.00		0.36	1.00		
Satd. Flow (perm)	191	3406	1524	419	3398		1404	1631		679	1699		
Volume (vph)	20	988	20	40	1656	24	16	8	64	24	4	8	
Peak-hour factor, PHF	0.90	0.90	0.90	0.96	0.96	0.96	0.63	0.63	0.63	0.71	0.71	0.71	
Adj. Flow (vph)	22	1098	22	42	1725	25	25	13	102	34	6	11	
RTOR Reduction (vph)	0	0	4	0	0	0	0	93	0	0	10	0	
Lane Group Flow (vph)	22	1098	18	42	1750	0	25	22	0	34	7	0	
Heavy Vehicles (%)	6%	6%	6%	6%	6%	6%	1%	1%	1%	1%	1%	1%	
Turn Type	pm+pt		Perm	pm+pt		Perm			Perm		Perm		
Protected Phases	1	6		5	2			8			4		
Permitted Phases	6		6	2		8				4			
Actuated Green, G (s)	121.2	117.7	117.7	124.0	119.1		10.4	10.4		10.4	10.4		
Effective Green, g (s)	126.2	120.7	120.7	129.0	122.1		13.4	13.4		13.4	13.4		
Actuated g/C Ratio	0.84	0.80	0.80	0.86	0.81		0.09	0.09		0.09	0.09		
Clearance Time (s)	5.0	6.0	6.0	5.0	6.0		6.0	6.0		6.0	6.0		
Vehicle Extension (s)	3.0	5.0	5.0	3.0	5.0		3.0	3.0		3.0	3.0		
Lane Grp Cap (vph)	216	2741	1226	419	2766		125	146		61	152		
v/s Ratio Prot	0.00	0.32		c0.00	c0.51			0.01			0.00		
v/s Ratio Perm	0.08		0.01	0.08		0.02				c0.05			
v/c Ratio	0.10	0.40	0.01	0.10	0.63		0.20	0.15		0.56	0.05		
Uniform Delay, d1	4.2	4.2	2.9	2.1	5.3		63.3	63.1		65.5	62.5		
Progression Factor	2.47	0.24	0.04	1.00	1.00		1.00	1.00		1.00	1.00		
Incremental Delay, d2	0.2	0.4	0.0	0.1	1.1		0.8	0.5		10.6	0.1		
Delay (s)	10.5	1.4	0.1	2.2	6.5		64.1	63.5		76.0	62.6		
Level of Service	B	A	A	A	A		E	E		E	E		
Approach Delay (s)		1.6			6.4			63.6			71.6		
Approach LOS		A			A			E			E		
<b>Intersection Summary</b>													
HCM Average Control Delay			8.2			HCM Level of Service					A		
HCM Volume to Capacity ratio			0.61										
Actuated Cycle Length (s)			150.0			Sum of lost time (s)					9.0		
Intersection Capacity Utilization			61.2%			ICU Level of Service					B		
Analysis Period (min)			15										

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis  
 109: MD 193 & Campus Dr.

6/10/2008



Movement	EBL	EBT	WBT	WBR	SWL	SWR
Lane Configurations	↔↔	↑	↕↕			↔↔
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0	3.0			3.0
Lane Util. Factor	0.97	1.00	0.95			0.88
Frt	1.00	1.00	1.00			0.85
Flt Protected	0.95	1.00	1.00			1.00
Satd. Flow (prot)	3303	1792	3406			2682
Flt Permitted	0.95	1.00	1.00			1.00
Satd. Flow (perm)	3303	1792	3406			2682
Volume (vph)	764	328	424	0	0	1272
Peak-hour factor, PHF	0.90	0.90	0.95	0.92	0.95	0.95
Adj. Flow (vph)	849	364	446	0	0	1339
RTOR Reduction (vph)	0	0	0	0	0	162
Lane Group Flow (vph)	849	364	446	0	0	1177
Heavy Vehicles (%)	6%	6%	6%	6%	6%	6%
Turn Type	Free					
Protected Phases	1 2 5 6		3 4			1 2 5 6
Permitted Phases	Free					
Actuated Green, G (s)	146.0	248.0	90.0			146.0
Effective Green, g (s)	149.0	248.0	93.0			149.0
Actuated g/C Ratio	0.60	1.00	0.38			0.60
Clearance Time (s)						
Vehicle Extension (s)						
Lane Grp Cap (vph)	1984	1792	1277			1611
v/s Ratio Prot	0.26		c0.13			c0.44
v/s Ratio Perm		0.20				
v/c Ratio	0.43	0.20	0.35			0.73
Uniform Delay, d1	26.6	0.0	55.7			35.2
Progression Factor	1.00	1.00	0.19			0.38
Incremental Delay, d2	0.1	0.3	0.0			0.9
Delay (s)	26.7	0.3	10.9			14.4
Level of Service	C	A	B			B
Approach Delay (s)		18.8	10.9		14.4	
Approach LOS		B	B		B	
<b>Intersection Summary</b>						
HCM Average Control Delay			15.7		HCM Level of Service	B
HCM Volume to Capacity ratio			0.58			
Actuated Cycle Length (s)			248.0		Sum of lost time (s)	6.0
Intersection Capacity Utilization			62.9%		ICU Level of Service	B
Analysis Period (min)			15			

c Critical Lane Group

# HCM Signalized Intersection Capacity Analysis

111: MD 193 & Adelphi Rd.

6/10/2008

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0		3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0
Lane Util. Factor	1.00	0.95		0.97	0.95	1.00		0.91	1.00	1.00	0.91	1.00
Frt	1.00	1.00		1.00	1.00	0.85		1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00		1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1703	3406		3303	3406	1524		4893	1524	1703	4893	1524
Flt Permitted	0.95	1.00		0.95	1.00	1.00		1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1703	3406		3303	3406	1524		4893	1524	1703	4893	1524
Volume (vph)	96	664	0	516	1208	136	0	620	344	192	904	64
Peak-hour factor, PHF	0.88	0.88	0.88	0.88	0.88	0.88	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	109	755	0	586	1373	155	0	667	370	206	972	69
RTOR Reduction (vph)	0	0	0	0	0	65	0	0	0	0	0	43
Lane Group Flow (vph)	109	755	0	586	1373	90	0	667	370	206	972	27
Heavy Vehicles (%)	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%
Turn Type	Prot			Prot		Perm			Free	Prot		Perm
Protected Phases	6	2 6		1	5			4		3	7 8	
Permitted Phases						5		4	Free			7 8
Actuated Green, G (s)	30.0	96.0		45.0	110.0	110.0		60.0	248.0	25.0	92.0	92.0
Effective Green, g (s)	33.0	99.0		47.0	113.0	113.0		63.0	248.0	27.0	93.0	93.0
Actuated g/C Ratio	0.13	0.40		0.19	0.46	0.46		0.25	1.00	0.11	0.38	0.38
Clearance Time (s)	6.0			5.0	6.0	6.0		6.0		5.0		
Vehicle Extension (s)	3.0			3.0	4.0	4.0		3.5		3.0		
Lane Grp Cap (vph)	227	1360		626	1552	694		1243	1524	185	1835	572
v/s Ratio Prot	0.06	c0.22		c0.18	c0.40			c0.14		c0.12	c0.20	
v/s Ratio Perm						0.06			0.24			0.02
v/c Ratio	0.48	0.56		0.94	0.88	0.13		0.54	0.24	1.11	0.53	0.05
Uniform Delay, d1	99.6	57.5		99.0	61.6	39.0		79.9	0.0	110.5	60.4	49.3
Progression Factor	0.74	0.55		1.00	1.00	1.00		0.24	1.00	1.00	1.00	1.00
Incremental Delay, d2	1.5	0.6		21.4	6.6	0.1		0.3	0.2	99.9	0.3	0.0
Delay (s)	74.7	31.9		120.5	68.1	39.2		19.8	0.2	210.4	60.7	49.3
Level of Service	E	C		F	E	D		B	A	F	E	D
Approach Delay (s)		37.3			80.5			12.8			84.8	
Approach LOS		D			F			B			F	

## Intersection Summary













HCM Average Control Delay	61.1	HCM Level of Service	E
HCM Volume to Capacity ratio	0.77		
Actuated Cycle Length (s)	248.0	Sum of lost time (s)	6.0
Intersection Capacity Utilization	74.7%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

# HCM Signalized Intersection Capacity Analysis

113: Campus Dr. & Adelphi Rd.

6/10/2008

													
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations		↑↑		↑	↑	↑	↑	↑↑↑	↑	↑↑	↑↑		
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)		3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		
Lane Util. Factor		0.95		1.00	1.00	1.00	1.00	0.91	1.00	0.97	0.95		
Frt		0.92		1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00		
Flt Protected		1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		
Satd. Flow (prot)		3144		1703	1792	1524	1703	4893	1524	3303	3406		
Flt Permitted		1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		
Satd. Flow (perm)		3144		1703	1792	1524	1703	4893	1524	3303	3406		
Volume (vph)	0	160	168	120	224	80	200	884	124	220	1196	0	
Peak-hour factor, PHF	0.78	0.78	0.78	0.88	0.88	0.88	0.86	0.86	0.86	0.97	0.97	0.97	
Adj. Flow (vph)	0	205	215	136	255	91	233	1028	144	227	1233	0	
RTOR Reduction (vph)	0	76	0	0	0	57	0	0	108	0	0	0	
Lane Group Flow (vph)	0	344	0	136	255	34	233	1028	36	227	1233	0	
Heavy Vehicles (%)	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%	
Turn Type				Split		Perm	Prot		Perm	Prot			
Protected Phases		2		6	6		3	8		1	7	1	
Permitted Phases						6			8				
Actuated Green, G (s)		60.0		30.0	30.0	30.0	25.0	59.2	59.2	75.8	111.0		
Effective Green, g (s)		63.0		33.0	33.0	33.0	27.0	62.2	62.2	77.8	113.0		
Actuated g/C Ratio		0.25		0.13	0.13	0.13	0.11	0.25	0.25	0.31	0.46		
Clearance Time (s)		6.0		6.0	6.0	6.0	5.0	6.0	6.0				
Vehicle Extension (s)		4.0		3.0	3.0	3.0	3.0	3.5	3.5				
Lane Grp Cap (vph)		799		227	238	203	185	1227	382	1036	1552		
v/s Ratio Prot		c0.11		0.08	c0.14		c0.14	c0.21		0.07	c0.36		
v/s Ratio Perm						0.02			0.02				
v/c Ratio		0.43		0.60	1.07	0.17	1.26	0.84	0.09	0.22	0.79		
Uniform Delay, d1		77.5		101.3	107.5	95.3	110.5	88.1	71.3	62.7	57.6		
Progression Factor		1.00		1.00	1.00	1.00	1.00	1.00	1.00	0.45	0.35		
Incremental Delay, d2		0.5		4.2	78.6	0.4	152.8	5.3	0.1	0.1	2.1		
Delay (s)		78.0		105.5	186.1	95.7	263.3	93.4	71.4	28.3	22.1		
Level of Service		E		F	F	F	F	F	E	C	C		
Approach Delay (s)		78.0			146.3			119.3			23.0		
Approach LOS		E			F			F			C		
<b>Intersection Summary</b>													
HCM Average Control Delay			80.8									HCM Level of Service	F
HCM Volume to Capacity ratio			0.79										
Actuated Cycle Length (s)			248.0									Sum of lost time (s)	9.0
Intersection Capacity Utilization			85.0%									ICU Level of Service	E
Analysis Period (min)			15										

c Critical Lane Group

# HCM Signalized Intersection Capacity Analysis

1621: MD 193 & MD 650

6/10/2008



























Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↙	↑↑↑		↙	↑↑↑		↙	↑↑↑		↙	↑↑↑	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lane Util. Factor	1.00	0.91		1.00	0.91		1.00	0.91		1.00	0.91	
Frt	1.00	0.95		1.00	0.98		1.00	0.99		1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1703	4652		1703	4777		1703	4836		1703	4831	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1703	4652		1703	4777		1703	4836		1703	4831	
Volume (vph)	80	872	428	168	1144	216	240	760	64	168	1800	168
Peak-hour factor, PHF	0.90	0.90	0.90	0.99	0.99	0.99	0.94	0.94	0.94	0.96	0.96	0.96
Adj. Flow (vph)	89	969	476	170	1156	218	255	809	68	175	1875	175
RTOR Reduction (vph)	0	59	0	0	19	0	0	6	0	0	7	0
Lane Group Flow (vph)	89	1386	0	170	1355	0	255	871	0	175	2043	0
Heavy Vehicles (%)	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%
Turn Type	Prot			Prot			Prot			Prot		
Protected Phases	7	4		3	8		1	6		5	2	
Permitted Phases												
Actuated Green, G (s)	10.0	31.0		18.0	39.0		22.0	59.5		19.0	56.5	
Effective Green, g (s)	13.0	35.0		21.0	43.0		25.0	64.0		22.0	61.0	
Actuated g/C Ratio	0.09	0.23		0.14	0.29		0.17	0.43		0.15	0.41	
Clearance Time (s)	5.0	6.0		5.0	6.0		5.0	6.5		5.0	6.5	
Vehicle Extension (s)	3.0	5.0		3.0	5.0		3.0	5.0		3.0	5.0	
Lane Grp Cap (vph)	148	1085		238	1369		284	2063		250	1965	
v/s Ratio Prot	0.05	c0.30		c0.10	0.28		c0.15	0.18		0.10	c0.42	
v/s Ratio Perm												
v/c Ratio	0.60	1.28		0.71	0.99		0.90	0.42		0.70	1.04	
Uniform Delay, d1	66.0	57.5		61.6	53.3		61.2	30.1		60.9	44.5	
Progression Factor	1.07	0.80		0.92	0.79		1.40	0.72		1.37	0.82	
Incremental Delay, d2	15.4	131.4		15.2	20.8		31.7	0.6		1.5	19.8	
Delay (s)	85.7	177.6		72.2	62.9		117.4	22.4		84.8	56.3	
Level of Service	F	F		E	E		F	C		F	E	
Approach Delay (s)		172.2			63.9			43.8			58.5	
Approach LOS		F			E			D			E	
<b>Intersection Summary</b>												
HCM Average Control Delay			84.3			HCM Level of Service				F		
HCM Volume to Capacity ratio			1.01									
Actuated Cycle Length (s)			150.0			Sum of lost time (s)				8.0		
Intersection Capacity Utilization			100.9%			ICU Level of Service				G		
Analysis Period (min)			15									

c Critical Lane Group

# HCM Signalized Intersection Capacity Analysis

1629: MD 193 & 15th Ave

6/10/2008

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		  			  							
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	2.0	2.0		3.0	2.0		2.0	3.0		3.0	3.0	
Lane Util. Factor	1.00	0.91		1.00	0.91		1.00	1.00		1.00	1.00	
Frt	1.00	1.00		1.00	0.99		1.00	0.92		1.00	0.85	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1703	4893		1703	4850		1787	1740		1787	1602	
Flt Permitted	0.10	1.00		0.22	1.00		0.66	1.00		0.76	1.00	
Satd. Flow (perm)	175	4893		397	4850		1247	1740		1423	1602	
Volume (vph)	48	1032	0	4	1516	96	1	1	1	176	1	68
Peak-hour factor, PHF	0.90	0.90	0.90	0.95	0.95	0.95	0.80	0.80	0.80	0.85	0.85	0.85
Adj. Flow (vph)	53	1147	0	4	1596	101	1	1	1	207	1	80
RTOR Reduction (vph)	0	0	0	0	4	0	0	1	0	0	64	0
Lane Group Flow (vph)	53	1147	0	4	1693	0	1	1	0	207	17	0
Heavy Vehicles (%)	6%	6%	6%	6%	6%	6%	1%	1%	1%	1%	1%	1%
Turn Type	pm+pt		pm+pt			Perm			Perm			
Protected Phases	5	2		1	6			8			4	
Permitted Phases	2			6			8			4		
Actuated Green, G (s)	85.8	80.4		77.4	76.2		21.4	21.4		21.4	21.4	
Effective Green, g (s)	90.6	84.4		82.4	80.2		25.4	24.4		24.4	24.4	
Actuated g/C Ratio	0.76	0.70		0.69	0.67		0.21	0.20		0.20	0.20	
Clearance Time (s)	5.0	6.0		5.0	6.0		6.0	6.0		6.0	6.0	
Vehicle Extension (s)	3.0	5.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	239	3441		307	3241		264	354		289	326	
v/s Ratio Prot	c0.02	0.23		0.00	c0.35			0.00			0.01	
v/s Ratio Perm	0.15			0.01			0.00			c0.15		
v/c Ratio	0.22	0.33		0.01	0.52		0.00	0.00		0.72	0.05	
Uniform Delay, d1	6.1	6.9		6.0	10.1		37.3	38.1		44.6	38.5	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.5	0.3		0.0	0.6		0.0	0.0		8.2	0.1	
Delay (s)	6.6	7.2		6.0	10.7		37.3	38.1		52.8	38.6	
Level of Service	A	A		A	B		D	D		D	D	
Approach Delay (s)		7.1			10.7			37.8			48.8	
Approach LOS		A			B			D			D	
<b>Intersection Summary</b>												
HCM Average Control Delay			12.8	HCM Level of Service				B				
HCM Volume to Capacity ratio			0.54									
Actuated Cycle Length (s)			120.0	Sum of lost time (s)				7.0				
Intersection Capacity Utilization			62.0%	ICU Level of Service				B				
Analysis Period (min)			15									

c Critical Lane Group

# HCM Signalized Intersection Capacity Analysis

## 2: MD 193 & Carroll Ave

6/10/2008



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↶	↶↶↶			↶↶↶		↶	↶		↶	↶	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	2.0	2.0			2.0		2.0	2.0		2.0	2.0	
Lane Util. Factor	1.00	0.91			0.91		1.00	1.00		1.00	1.00	
Frt	1.00	0.99			0.99		1.00	0.98		1.00	0.98	
Flt Protected	0.95	1.00			1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1736	4920			4941		1736	1789		1736	1795	
Flt Permitted	0.07	1.00			1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	119	4920			4941		1736	1789		1736	1795	
Volume (vph)	32	1764	176	0	1760	116	228	272	44	96	180	24
Peak-hour factor, PHF	0.91	0.91	0.91	0.96	0.96	0.96	0.97	0.97	0.97	0.95	0.95	0.95
Adj. Flow (vph)	35	1938	193	0	1833	121	235	280	45	101	189	25
RTOR Reduction (vph)	0	10	0	0	6	0	0	5	0	0	4	0
Lane Group Flow (vph)	35	2121	0	0	1948	0	235	320	0	101	210	0
Heavy Vehicles (%)	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%
Turn Type	Perm						Split			Split		
Protected Phases	6				2		3	3		4	4	
Permitted Phases	6											
Actuated Green, G (s)	57.5	57.5			57.5		28.0	28.0		16.5	16.5	
Effective Green, g (s)	61.5	61.5			61.5		32.0	32.0		20.5	20.5	
Actuated g/C Ratio	0.51	0.51			0.51		0.27	0.27		0.17	0.17	
Clearance Time (s)	6.0	6.0			6.0		6.0	6.0		6.0	6.0	
Vehicle Extension (s)	3.0	3.0			3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	61	2522			2532		463	477		297	307	
v/s Ratio Prot		c0.43			0.39		0.14	c0.18		0.06	c0.12	
v/s Ratio Perm	0.29											
v/c Ratio	0.57	0.84			0.77		0.51	0.67		0.34	0.68	
Uniform Delay, d1	20.2	25.1			23.5		37.3	39.3		43.8	46.7	
Progression Factor	1.22	1.26			1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	3.5	0.3			2.3		3.9	7.3		0.7	6.2	
Delay (s)	28.1	31.8			25.9		41.3	46.6		44.5	52.9	
Level of Service	C	C			C		D	D		D	D	
Approach Delay (s)		31.8			25.9			44.4			50.2	
Approach LOS		C			C			D			D	

### Intersection Summary

HCM Average Control Delay	32.0	HCM Level of Service	C
HCM Volume to Capacity ratio	0.76		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	6.0
Intersection Capacity Utilization	78.1%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

# HCM Signalized Intersection Capacity Analysis

5: MD 193 & MD 320

6/10/2008

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lane Util. Factor	1.00	0.91		1.00	0.91		1.00	0.95		1.00	0.95	
Frt	1.00	0.98		1.00	1.00		1.00	0.97		1.00	0.96	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1736	4910		1736	4967		1736	3359		1736	3337	
Flt Permitted	0.95	1.00		0.95	1.00		0.16	1.00		0.13	1.00	
Satd. Flow (perm)	1736	4910		1736	4967		290	3359		244	3337	
Volume (vph)	224	1692	196	244	1716	48	280	776	212	60	472	164
Peak-hour factor, PHF	0.98	0.98	0.98	0.97	0.97	0.97	0.93	0.93	0.93	0.90	0.90	0.90
Adj. Flow (vph)	229	1727	200	252	1769	49	301	834	228	67	524	182
RTOR Reduction (vph)	0	12	0	0	3	0	0	17	0	0	27	0
Lane Group Flow (vph)	229	1915	0	252	1815	0	301	1045	0	67	679	0
Heavy Vehicles (%)	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%
Turn Type	Prot		Prot		pm+pt		pm+pt					
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases							8				4	
Actuated Green, G (s)	15.0	35.2		15.0	35.2		55.8	45.0		39.3	32.5	
Effective Green, g (s)	17.0	38.2		17.0	38.2		58.8	48.0		44.3	35.5	
Actuated g/C Ratio	0.14	0.32		0.14	0.32		0.49	0.40		0.37	0.30	
Clearance Time (s)	4.0	5.0		4.0	5.0		4.0	5.0		4.0	5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	246	1563		246	1581		399	1344		199	987	
v/s Ratio Prot	0.13	c0.39		c0.15	0.37		c0.13	c0.31		0.02	0.20	
v/s Ratio Perm							0.24				0.10	
v/c Ratio	0.93	1.23		1.02	1.15		0.75	0.78		0.34	0.69	
Uniform Delay, d1	50.9	40.9		51.5	40.9		23.3	31.4		26.4	37.4	
Progression Factor	1.00	1.00		1.15	0.63		1.00	1.00		1.00	1.00	
Incremental Delay, d2	38.9	107.2		54.3	72.3		7.9	4.5		1.0	3.9	
Delay (s)	89.8	148.1		113.6	98.2		31.2	35.8		27.4	41.3	
Level of Service	F	F		F	F		C	D		C	D	
Approach Delay (s)	141.9				100.1		34.8				40.1	
Approach LOS	F				F		C				D	
<b>Intersection Summary</b>												
HCM Average Control Delay	93.0		HCM Level of Service		F							
HCM Volume to Capacity ratio	0.95											
Actuated Cycle Length (s)	120.0		Sum of lost time (s)		6.0							
Intersection Capacity Utilization	97.7%		ICU Level of Service		F							
Analysis Period (min)	15											

c Critical Lane Group



# HCM Signalized Intersection Capacity Analysis

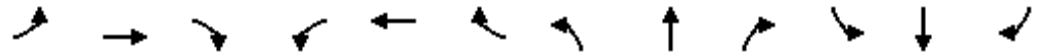
14: MD 193 & MD 193 West SC

6/10/2008

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	2.0	2.0		2.0	2.0			2.0	2.0	2.0	2.0	
Lane Util. Factor	1.00	0.91		1.00	0.91			1.00	1.00	1.00	1.00	
Frt	1.00	1.00		1.00	1.00			1.00	0.85	1.00	0.92	
Flt Protected	0.95	1.00		0.95	1.00			0.98	1.00	0.95	1.00	
Satd. Flow (prot)	1736	4978		1736	4978			1835	1599	1787	1740	
Flt Permitted	0.09	1.00		0.07	1.00			0.86	1.00	0.66	1.00	
Satd. Flow (perm)	167	4978		124	4978			1620	1599	1249	1740	
Volume (vph)	24	1768	24	24	1860	24	24	24	24	24	24	24
Peak-hour factor, PHF	0.91	0.91	0.91	0.95	0.95	0.95	0.80	0.80	0.80	0.80	0.80	0.80
Adj. Flow (vph)	26	1943	26	25	1958	25	30	30	30	30	30	30
RTOR Reduction (vph)	0	1	0	0	1	0	0	0	24	0	24	0
Lane Group Flow (vph)	26	1968	0	25	1982	0	0	60	6	30	36	0
Heavy Vehicles (%)	4%	4%	4%	4%	4%	4%	1%	1%	1%	1%	1%	1%
Turn Type	Perm			pm+pt			Perm		Perm	Perm		
Protected Phases		2		1	6			3				3
Permitted Phases	2			6			3	3	3	3		
Actuated Green, G (s)	99.0	99.0		114.0	114.0			26.0	26.0	26.0	26.0	
Effective Green, g (s)	102.0	102.0		117.0	117.0			29.0	29.0	29.0	29.0	
Actuated g/C Ratio	0.68	0.68		0.78	0.78			0.19	0.19	0.19	0.19	
Clearance Time (s)	5.0	5.0		5.0	5.0			5.0	5.0	5.0	5.0	
Lane Grp Cap (vph)	114	3385		236	3883			313	309	241	336	
v/s Ratio Prot		c0.40		0.01	c0.40							0.02
v/s Ratio Perm	0.16			0.07				c0.04	0.00	0.02		
v/c Ratio	0.23	0.58		0.11	0.51			0.19	0.02	0.12	0.11	
Uniform Delay, d1	9.1	12.7		7.7	6.0			50.7	49.0	50.0	49.8	
Progression Factor	1.00	1.00		1.13	0.89			1.00	1.00	1.00	1.00	
Incremental Delay, d2	4.6	0.7		0.1	0.0			1.4	0.1	1.1	0.6	
Delay (s)	13.7	13.4		8.7	5.4			52.0	49.1	51.1	50.5	
Level of Service	B	B		A	A			D	D	D	D	
Approach Delay (s)		13.4			5.4			51.1			50.7	
Approach LOS		B			A			D			D	
<b>Intersection Summary</b>												
HCM Average Control Delay			11.2			HCM Level of Service			B			
HCM Volume to Capacity ratio			0.49									
Actuated Cycle Length (s)			150.0			Sum of lost time (s)			6.0			
Intersection Capacity Utilization			78.0%			ICU Level of Service			D			
Analysis Period (min)			15									
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis  
 15: MD 193 & MD 193 East SC

6/10/2008



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗↖↗		↖	↗↖↗		↖	↗		↖	↗↖	↗
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	2.0
Lane Util. Factor	1.00	0.91		1.00	0.91		1.00	1.00		0.95	0.95	1.00
Frt	1.00	1.00		1.00	0.99		1.00	0.87		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	0.97	1.00
Satd. Flow (prot)	1736	4977		1736	4949		1787	1637		1698	1731	1599
Flt Permitted	0.07	1.00		0.10	1.00		0.71	1.00		0.58	0.83	1.00
Satd. Flow (perm)	129	4977		178	4949		1344	1637		1036	1475	1599
Volume (vph)	36	1756	24	56	1696	92	76	12	76	44	12	32
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	39	1909	26	61	1843	100	83	13	83	48	13	35
RTOR Reduction (vph)	0	1	0	0	4	0	0	32	0	0	0	28
Lane Group Flow (vph)	39	1934	0	61	1939	0	83	64	0	24	37	7
Heavy Vehicles (%)	4%	4%	4%	4%	4%	4%	1%	1%	1%	1%	1%	1%
Turn Type	custom			Perm			Perm			Perm		Perm
Protected Phases	1	6			2			3				3
Permitted Phases	6 1	6		2	2		3	3		3		3
Actuated Green, G (s)	114.0	114.0		99.0	99.0		26.0	26.0		26.0	26.0	26.0
Effective Green, g (s)	117.0	117.0		102.0	102.0		29.0	29.0		29.0	29.0	29.0
Actuated g/C Ratio	0.78	0.78		0.68	0.68		0.19	0.19		0.19	0.19	0.19
Clearance Time (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	5.0
Lane Grp Cap (vph)	240	3882		121	3365		260	316		200	285	309
v/s Ratio Prot	0.01	c0.39			c0.39			0.04				
v/s Ratio Perm	0.11			0.34			c0.06			0.02	0.03	0.00
v/c Ratio	0.16	0.50		0.50	0.58		0.32	0.20		0.12	0.13	0.02
Uniform Delay, d1	7.9	5.9		11.7	12.6		52.0	50.8		50.0	50.1	49.0
Progression Factor	2.75	1.15		1.00	1.00		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	0.1	0.0		14.2	0.7		3.2	1.4		1.2	0.9	0.1
Delay (s)	21.8	6.9		25.9	13.4		55.2	52.2		51.2	51.0	49.1
Level of Service	C	A		C	B		E	D		D	D	D
Approach Delay (s)		7.2			13.7			53.6			50.4	
Approach LOS		A			B			D			D	

Intersection Summary

HCM Average Control Delay	13.2	HCM Level of Service	B
HCM Volume to Capacity ratio	0.51		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	6.0
Intersection Capacity Utilization	78.1%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

# HCM Signalized Intersection Capacity Analysis

91: MD 193 & MD 212

6/10/2008

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.91		0.97	1.00	1.00	1.00	0.95	
Frt	1.00	1.00	0.85	1.00	0.98		1.00	1.00	0.85	1.00	0.98	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1736	3471	1553	1736	4912		3367	1827	1553	1736	3396	
Flt Permitted	0.10	1.00	1.00	0.07	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	192	3471	1553	135	4912		3367	1827	1553	1736	3396	
Volume (vph)	112	1300	532	536	1240	140	640	508	536	216	383	64
Peak-hour factor, PHF	0.94	0.94	0.94	0.98	0.98	0.98	0.94	0.94	0.94	0.96	0.96	0.96
Adj. Flow (vph)	119	1383	566	547	1265	143	681	540	570	225	399	67
RTOR Reduction (vph)	0	0	0	0	9	0	0	0	0	0	9	0
Lane Group Flow (vph)	119	1383	566	547	1399	0	681	540	570	225	457	0
Heavy Vehicles (%)	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%
Turn Type	pm+pt		Free	pm+pt			Split		Free	Split		
Protected Phases	1	6		5	2		4	4		3	3	
Permitted Phases	6		Free	2					Free			
Actuated Green, G (s)	57.8	47.0	150.0	74.0	58.2		40.0	40.0	150.0	19.0	19.0	
Effective Green, g (s)	63.8	51.0	150.0	78.0	62.2		42.0	42.0	150.0	21.0	21.0	
Actuated g/C Ratio	0.43	0.34	1.00	0.52	0.41		0.28	0.28	1.00	0.14	0.14	
Clearance Time (s)	5.0	7.0		5.0	7.0		5.0	5.0		5.0	5.0	
Vehicle Extension (s)	2.5	5.0		2.5	5.0		2.5	2.5		2.5	2.5	
Lane Grp Cap (vph)	213	1180	1553	326	2037		943	512	1553	243	475	
v/s Ratio Prot	0.05	0.40		c0.27	0.28		0.20	c0.30		0.13	c0.13	
v/s Ratio Perm	0.19		0.36	c0.60					0.37			
v/c Ratio	0.56	1.17	0.36	1.68	0.69		0.72	1.05	0.37	0.93	0.96	
Uniform Delay, d1	28.9	49.5	0.0	65.2	35.9		48.7	54.0	0.0	63.7	64.1	
Progression Factor	1.00	1.00	1.00	0.95	1.11		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	2.5	86.7	0.7	316.6	1.7		2.6	55.0	0.7	37.8	31.4	
Delay (s)	31.5	136.2	0.7	378.3	41.6		51.3	109.0	0.7	101.6	95.5	
Level of Service	C	F	A	F	D		D	F	A	F	F	
Approach Delay (s)		93.1			135.8			52.6			97.5	
Approach LOS		F			F			D			F	
<b>Intersection Summary</b>												
HCM Average Control Delay			95.2			HCM Level of Service			F			
HCM Volume to Capacity ratio			1.38									
Actuated Cycle Length (s)			150.0			Sum of lost time (s)			9.0			
Intersection Capacity Utilization			117.7%			ICU Level of Service			H			
Analysis Period (min)			15									

c Critical Lane Group

# HCM Signalized Intersection Capacity Analysis

105: MD 193 & 23rd Ave

6/10/2008



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑↑		↑	↑↑↑			↑	↑			↑
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		3.0		3.0	3.0			3.0	3.0			3.0
Lane Util. Factor		0.91		1.00	0.91			1.00	1.00			1.00
Frt		0.98		1.00	1.00			1.00	0.85			0.86
Flt Protected		1.00		0.95	1.00			0.95	1.00			1.00
Satd. Flow (prot)		4894		1736	4976			1793	1599			1627
Flt Permitted		1.00		0.04	1.00			0.95	1.00			1.00
Satd. Flow (perm)		4894		78	4976			1793	1599			1627
Volume (vph)	0	1772	252	148	1576	24	320	4	116	0	0	60
Peak-hour factor, PHF	0.92	0.92	0.92	0.91	0.91	0.91	0.98	0.98	0.98	0.92	0.92	0.92
Adj. Flow (vph)	0	1926	274	163	1732	26	327	4	118	0	0	65
RTOR Reduction (vph)	0	10	0	0	1	0	0	0	92	0	0	26
Lane Group Flow (vph)	0	2190	0	163	1757	0	0	331	26	0	0	39
Heavy Vehicles (%)	4%	4%	4%	4%	4%	4%	1%	1%	1%	1%	1%	1%
Turn Type				pm+pt			Perm		Perm			custom
Protected Phases		6		5	2			4				
Permitted Phases		6		2			4		4			6
Actuated Green, G (s)		87.6		107.9	107.9			30.1	30.1			87.6
Effective Green, g (s)		90.6		110.9	110.9			33.1	33.1			90.6
Actuated g/C Ratio		0.60		0.74	0.74			0.22	0.22			0.60
Clearance Time (s)		6.0		5.0	6.0			6.0	6.0			6.0
Vehicle Extension (s)		5.0		3.0	5.0			3.0	3.0			5.0
Lane Grp Cap (vph)		2956		249	3679			396	353			983
v/s Ratio Prot		c0.45		c0.08	0.35							
v/s Ratio Perm				0.41				0.18	0.02			0.02
v/c Ratio		0.74		0.65	0.48			0.84	0.07			0.04
Uniform Delay, d1		21.3		42.9	7.9			55.9	46.3			12.1
Progression Factor		0.64		1.24	1.01			1.00	1.00			1.00
Incremental Delay, d2		0.8		4.9	0.4			14.1	0.1			0.1
Delay (s)		14.5		57.9	8.3			70.0	46.4			12.1
Level of Service		B		E	A			E	D			B
Approach Delay (s)		14.5			12.5			63.8			12.1	
Approach LOS		B			B			E			B	

























## Intersection Summary

HCM Average Control Delay	18.4	HCM Level of Service	B
HCM Volume to Capacity ratio	0.75		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	76.0%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis  
107: MD 193 & West Park Dr.

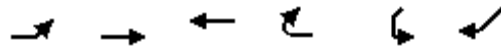
6/10/2008

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		 			 						 	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95		1.00	1.00		1.00	1.00	
Frt	1.00	1.00	0.85	1.00	1.00		1.00	0.86		1.00	0.90	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1736	3471	1553	1736	3454		1787	1614		1787	1693	
Flt Permitted	0.08	1.00	1.00	0.07	1.00		0.74	1.00		0.45	1.00	
Satd. Flow (perm)	144	3471	1553	137	3454		1391	1614		850	1693	
Volume (vph)	20	1788	32	28	1656	55	20	4	76	64	8	16
Peak-hour factor, PHF	0.93	0.93	0.93	0.90	0.90	0.90	0.70	0.70	0.70	0.89	0.89	0.89
Adj. Flow (vph)	22	1923	34	31	1840	61	29	6	109	72	9	18
RTOR Reduction (vph)	0	0	4	0	1	0	0	96	0	0	16	0
Lane Group Flow (vph)	22	1923	30	31	1900	0	29	19	0	72	11	0
Heavy Vehicles (%)	4%	4%	4%	4%	4%	4%	1%	1%	1%	1%	1%	1%
Turn Type	pm+pt		Perm	pm+pt		Perm			Perm		Perm	
Protected Phases	1	6		5	2			8			4	
Permitted Phases	6		6	2		8				4		
Actuated Green, G (s)	117.7	114.4	114.4	118.7	114.9		14.8	14.8		14.8	14.8	
Effective Green, g (s)	122.7	117.4	117.4	123.7	117.9		17.8	17.8		17.8	17.8	
Actuated g/C Ratio	0.82	0.78	0.78	0.82	0.79		0.12	0.12		0.12	0.12	
Clearance Time (s)	5.0	6.0	6.0	5.0	6.0		6.0	6.0		6.0	6.0	
Vehicle Extension (s)	3.0	5.0	5.0	3.0	5.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	174	2717	1215	175	2715		165	192		101	201	
v/s Ratio Prot	0.00	c0.55		c0.01	0.55			0.01			0.01	
v/s Ratio Perm	0.10		0.02	0.14		0.02				c0.08		
v/c Ratio	0.13	0.71	0.02	0.18	0.70		0.18	0.10		0.71	0.06	
Uniform Delay, d1	7.5	7.9	3.6	8.4	7.6		59.5	58.9		63.6	58.6	
Progression Factor	0.74	0.69	0.01	1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.2	1.2	0.0	0.5	1.5		0.5	0.2		21.1	0.1	
Delay (s)	5.8	6.6	0.1	8.9	9.2		60.0	59.2		84.7	58.8	
Level of Service	A	A	A	A	A		E	E		F	E	
Approach Delay (s)		6.5			9.2			59.3			77.6	
Approach LOS		A			A			E			E	
<b>Intersection Summary</b>												
HCM Average Control Delay			11.3			HCM Level of Service				B		
HCM Volume to Capacity ratio			0.69									
Actuated Cycle Length (s)			150.0			Sum of lost time (s)				9.0		
Intersection Capacity Utilization			66.3%			ICU Level of Service				C		
Analysis Period (min)			15									

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis  
 109: MD 193 & Campus Dr.

6/10/2008



Movement	EBL	EBT	WBT	WBR	SWL	SWR
Lane Configurations	↗↘	↑	↗↘			↗↘
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0	3.0			3.0
Lane Util. Factor	0.97	1.00	0.95			0.88
Frt	1.00	1.00	1.00			0.85
Flt Protected	0.95	1.00	1.00			1.00
Satd. Flow (prot)	3367	1827	3471			2733
Flt Permitted	0.95	1.00	1.00			1.00
Satd. Flow (perm)	3367	1827	3471			2733
Volume (vph)	1396	488	652	0	0	1124
Peak-hour factor, PHF	0.88	0.88	0.90	0.90	0.92	0.90
Adj. Flow (vph)	1586	555	724	0	0	1249
RTOR Reduction (vph)	0	0	0	0	0	60
Lane Group Flow (vph)	1586	555	724	0	0	1189
Heavy Vehicles (%)	4%	4%	4%	4%	4%	4%
Turn Type	Free					
Protected Phases	1 2 5 6		3 4			1 2 5 6
Permitted Phases	Free					
Actuated Green, G (s)	139.5	241.5	90.0			139.5
Effective Green, g (s)	142.5	241.5	93.0			142.5
Actuated g/C Ratio	0.59	1.00	0.39			0.59
Clearance Time (s)						
Vehicle Extension (s)						
Lane Grp Cap (vph)	1987	1827	1337			1613
v/s Ratio Prot	c0.47		c0.21			0.43
v/s Ratio Perm		0.30				
v/c Ratio	0.80	0.30	0.54			0.74
Uniform Delay, d1	38.4	0.0	57.7			35.9
Progression Factor	1.00	1.00	0.44			0.32
Incremental Delay, d2	2.3	0.4	0.0			1.4
Delay (s)	40.7	0.4	25.7			12.8
Level of Service	D	A	C			B
Approach Delay (s)		30.2	25.7		12.8	
Approach LOS		C	C		B	

Intersection Summary

HCM Average Control Delay	24.1	HCM Level of Service	C
HCM Volume to Capacity ratio	0.70		
Actuated Cycle Length (s)	241.5	Sum of lost time (s)	6.0
Intersection Capacity Utilization	64.5%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

# HCM Signalized Intersection Capacity Analysis

111: MD 193 & Adelphi Rd.

6/10/2008



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↘	↑↑		↘↘	↑↑	↗		↑↑↑	↗	↘	↑↑↑	↗
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0		3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0
Lane Util. Factor	1.00	0.95		0.97	0.95	1.00		0.91	1.00	1.00	0.91	1.00
Frt	1.00	1.00		1.00	1.00	0.85		1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00		1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1736	3471		3367	3471	1553		4988	1553	1736	4988	1553
Flt Permitted	0.95	1.00		0.95	1.00	1.00		1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1736	3471		3367	3471	1553		4988	1553	1736	4988	1553
Volume (vph)	100	1296	0	376	972	292	0	1172	596	108	884	156
Peak-hour factor, PHF	0.80	0.80	0.80	0.90	0.90	0.90	0.93	0.93	0.93	0.85	0.85	0.85
Adj. Flow (vph)	125	1620	0	418	1080	324	0	1260	641	127	1040	184
RTOR Reduction (vph)	0	0	0	0	0	178	0	0	0	0	0	103
Lane Group Flow (vph)	125	1620	0	418	1080	146	0	1260	641	127	1040	81
Heavy Vehicles (%)	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%
Turn Type	Prot			Prot		Perm			Free	Prot		Perm
Protected Phases	6	2 6		1	5			4		3	7 8	
Permitted Phases						5		4	Free			7 8
Actuated Green, G (s)	30.0	96.0		38.5	103.5	103.5		60.0	241.5	25.0	92.0	92.0
Effective Green, g (s)	33.0	99.0		40.5	106.5	106.5		63.0	241.5	27.0	93.0	93.0
Actuated g/C Ratio	0.14	0.41		0.17	0.44	0.44		0.26	1.00	0.11	0.39	0.39
Clearance Time (s)	6.0			5.0	6.0	6.0		6.0		5.0		
Vehicle Extension (s)	3.0			3.0	4.0	4.0		3.5		3.0		
Lane Grp Cap (vph)	237	1423		565	1531	685		1301	1553	194	1921	598
v/s Ratio Prot	0.07	c0.47		c0.12	0.31			c0.25		c0.07	0.21	
v/s Ratio Perm						0.09			0.41			0.05
v/c Ratio	0.53	1.14		0.74	0.71	0.21		0.97	0.41	0.65	0.54	0.13
Uniform Delay, d1	97.0	71.2		95.5	54.8	41.6		88.3	0.0	102.8	57.7	48.2
Progression Factor	0.64	0.51		1.00	1.00	1.00		0.38	1.00	1.00	1.00	1.00
Incremental Delay, d2	1.4	68.6		5.1	1.6	0.2		3.0	0.1	7.7	0.3	0.1
Delay (s)	63.3	104.7		100.5	56.4	41.9		36.5	0.1	110.5	58.0	48.3
Level of Service	E	F		F	E	D		D	A	F	E	D
Approach Delay (s)		101.7			63.9			24.2			61.6	
Approach LOS		F			E			C			E	

## Intersection Summary













HCM Average Control Delay	62.1	HCM Level of Service	E
HCM Volume to Capacity ratio	0.96		
Actuated Cycle Length (s)	241.5	Sum of lost time (s)	12.0
Intersection Capacity Utilization	90.3%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

# HCM Signalized Intersection Capacity Analysis

113: Campus Dr. & Adelphi Rd.

6/10/2008

													
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations		↑↑	↑	↑	↑	↑	↑	↑↑↑	↑	↑↑	↑↑		
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		
Lane Util. Factor		0.95	1.00	1.00	1.00	1.00	1.00	0.91	1.00	0.97	0.95		
Frt		1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00		
Flt Protected		1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		
Satd. Flow (prot)		3471	1553	1736	1827	1553	1736	4988	1553	3367	3471		
Flt Permitted		1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		
Satd. Flow (perm)		3471	1553	1736	1827	1553	1736	4988	1553	3367	3471		
Volume (vph)	0	196	292	180	452	356	200	1412	200	220	1036	0	
Peak-hour factor, PHF	0.87	0.87	0.87	0.96	0.96	0.96	0.92	0.92	0.92	0.89	0.89	0.89	
Adj. Flow (vph)	0	225	336	188	471	371	217	1535	217	247	1164	0	
RTOR Reduction (vph)	0	0	172	0	0	125	0	0	117	0	0	0	
Lane Group Flow (vph)	0	225	164	188	471	246	217	1535	100	247	1164	0	
Heavy Vehicles (%)	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	
Turn Type			Perm	Split		Perm	Prot		Perm	Prot			
Protected Phases		2		6	6		3	8			1	7	
Permitted Phases			2			6			8				
Actuated Green, G (s)		60.0	60.0	30.0	30.0	30.0	25.0	60.0	60.0	68.5	104.5		
Effective Green, g (s)		63.0	63.0	33.0	33.0	33.0	27.0	63.0	63.0	70.5	106.5		
Actuated g/C Ratio		0.26	0.26	0.14	0.14	0.14	0.11	0.26	0.26	0.29	0.44		
Clearance Time (s)		6.0	6.0	6.0	6.0	6.0	5.0	6.0	6.0				
Vehicle Extension (s)		4.0	4.0	3.0	3.0	3.0	3.0	3.5	3.5				
Lane Grp Cap (vph)		905	405	237	250	212	194	1301	405	983	1531		
v/s Ratio Prot		0.06		0.11	c0.26		0.13	c0.31		0.07	c0.34		
v/s Ratio Perm			c0.11			0.16			0.06				
v/c Ratio		0.25	0.40	0.79	1.88	1.16	1.12	1.18	0.25	0.25	0.76		
Uniform Delay, d1		70.5	73.7	100.9	104.2	104.2	107.2	89.3	70.5	65.3	56.8		
Progression Factor		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.42	0.32		
Incremental Delay, d2		0.2	0.9	16.5	412.6	111.5	100.0	89.2	0.4	0.1	1.9		
Delay (s)		70.7	74.6	117.4	516.8	215.8	207.3	178.4	70.9	27.8	19.8		
Level of Service		E	E	F	F	F	F	F	E	C	B		
Approach Delay (s)		73.1			335.5			169.8			21.2		
Approach LOS		E			F			F			C		
<b>Intersection Summary</b>													
HCM Average Control Delay			151.0									HCM Level of Service	F
HCM Volume to Capacity ratio			0.94										
Actuated Cycle Length (s)			241.5									Sum of lost time (s)	9.0
Intersection Capacity Utilization			83.9%									ICU Level of Service	E
Analysis Period (min)			15										






















c Critical Lane Group



# HCM Signalized Intersection Capacity Analysis

1621: MD 193 & MD 650

6/10/2008

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lane Util. Factor	1.00	0.91		1.00	0.91		1.00	0.91		1.00	0.91	
Frt	1.00	0.97		1.00	0.98		1.00	0.99		1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1736	4840		1736	4897		1736	4917		1736	4938	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1736	4840		1736	4897		1736	4917		1736	4938	
Volume (vph)	108	1372	336	212	1416	196	428	1696	176	288	1016	72
Peak-hour factor, PHF	0.98	0.98	0.98	0.97	0.97	0.97	0.97	0.97	0.97	0.93	0.93	0.93
Adj. Flow (vph)	110	1400	343	219	1460	202	441	1748	181	310	1092	77
RTOR Reduction (vph)	0	28	0	0	12	0	0	8	0	0	5	0
Lane Group Flow (vph)	110	1715	0	219	1650	0	441	1921	0	310	1164	0
Heavy Vehicles (%)	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%
Turn Type	Prot			Prot			Prot			Prot		
Protected Phases	7	4		3	8		1	6		5	2	
Permitted Phases												
Actuated Green, G (s)	13.0	35.0		19.0	41.0		40.0	48.5		25.0	33.5	
Effective Green, g (s)	16.0	39.0		22.0	45.0		43.0	53.0		28.0	38.0	
Actuated g/C Ratio	0.11	0.26		0.15	0.30		0.29	0.35		0.19	0.25	
Clearance Time (s)	5.0	6.0		5.0	6.0		5.0	6.5		5.0	6.5	
Vehicle Extension (s)	3.0	5.0		3.0	5.0		3.0	5.0		3.0	5.0	
Lane Grp Cap (vph)	185	1258		255	1469		498	1737		324	1251	
v/s Ratio Prot	0.06	c0.35		c0.13	0.34		0.25	c0.39		c0.18	0.24	
v/s Ratio Perm												
v/c Ratio	0.59	1.36		0.86	1.12		0.89	1.11		0.96	0.93	
Uniform Delay, d1	63.9	55.5		62.5	52.5		51.1	48.5		60.4	54.7	
Progression Factor	0.82	0.78		0.82	0.82		1.13	0.72		0.79	0.81	
Incremental Delay, d2	11.2	167.8		25.8	63.7		15.2	54.3		38.2	12.6	
Delay (s)	63.5	211.3		76.9	106.6		72.9	89.3		86.0	56.9	
Level of Service	E	F		E	F		E	F		F	E	
Approach Delay (s)		202.5			103.1			86.3			63.0	
Approach LOS		F			F			F			E	
<b>Intersection Summary</b>												
HCM Average Control Delay			114.3			HCM Level of Service			F			
HCM Volume to Capacity ratio			1.09									
Actuated Cycle Length (s)			150.0			Sum of lost time (s)			8.0			
Intersection Capacity Utilization			111.7%			ICU Level of Service			H			
Analysis Period (min)			15									

c Critical Lane Group

# HCM Signalized Intersection Capacity Analysis

1629: MD 193 & 15th Ave

6/10/2008



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↙	↑↑↑		↙	↑↑↑		↙	↘		↙	↘	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	2.0	2.0			2.0		2.0	3.0		3.0	3.0	
Lane Util. Factor	1.00	0.91			0.91		1.00	1.00		1.00	1.00	
Frt	1.00	1.00			0.98		1.00	0.92		1.00	0.85	
Flt Protected	0.95	1.00			1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1736	4988			4903		1787	1740		1787	1602	
Flt Permitted	0.06	1.00			1.00		0.67	1.00		0.76	1.00	
Satd. Flow (perm)	111	4988			4903		1263	1740		1423	1602	
Volume (vph)	180	1684	0	0	1756	224	1	1	1	300	1	76
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.75	0.75	0.75	0.85	0.85	0.85
Adj. Flow (vph)	189	1773	0	0	1848	236	1	1	1	353	1	89
RTOR Reduction (vph)	0	0	0	0	13	0	0	1	0	0	63	0
Lane Group Flow (vph)	189	1773	0	0	2071	0	1	1	0	353	27	0
Heavy Vehicles (%)	4%	4%	4%	4%	4%	4%	1%	1%	1%	1%	1%	1%
Turn Type	pm+pt		pm+pt			Perm			Perm			
Protected Phases	5	2		1	6			8			4	
Permitted Phases	2			6			8			4		
Actuated Green, G (s)	75.3	75.3			59.7		32.7	32.7		32.7	32.7	
Effective Green, g (s)	79.3	79.3			63.7		36.7	35.7		35.7	35.7	
Actuated g/C Ratio	0.66	0.66			0.53		0.31	0.30		0.30	0.30	
Clearance Time (s)	5.0	6.0			6.0		6.0	6.0		6.0	6.0	
Vehicle Extension (s)	3.0	5.0			3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	258	3296			2603		386	518		423	477	
v/s Ratio Prot	c0.08	0.36			c0.42			0.00			0.02	
v/s Ratio Perm	0.40						0.00			c0.25		
v/c Ratio	0.73	0.54			0.80		0.00	0.00		0.83	0.06	
Uniform Delay, d1	32.5	10.7			22.9		28.9	29.6		39.4	30.1	
Progression Factor	1.00	1.00			1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	10.2	0.6			2.6		0.0	0.0		13.3	0.1	
Delay (s)	42.7	11.3			25.5		28.9	29.6		52.7	30.2	
Level of Service	D	B			C		C	C		D	C	
Approach Delay (s)		14.4			25.5			29.4			48.1	
Approach LOS		B			C			C			D	

## Intersection Summary























HCM Average Control Delay	22.9	HCM Level of Service	C
HCM Volume to Capacity ratio	0.79		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	7.0
Intersection Capacity Utilization	82.2%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

# HCM Signalized Intersection Capacity Analysis

## 3: River Rd. & MD 201






















6/11/2008

													
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations													
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)	3.0	3.0	3.0		3.0		3.0	3.0	3.0		3.0	3.0	
Lane Util. Factor	0.95	0.95	1.00		1.00		1.00	0.95	1.00		0.91	1.00	
Frt	1.00	1.00	0.85		0.95		1.00	1.00	0.85		1.00	0.85	
Flt Protected	0.95	0.96	1.00		0.98		0.95	1.00	1.00		1.00	1.00	
Satd. Flow (prot)	1618	1631	1524		1767		1703	3406	1524		4893	1524	
Flt Permitted	0.95	0.96	1.00		0.98		0.07	1.00	1.00		0.94	1.00	
Satd. Flow (perm)	1618	1631	1524		1767		118	3406	1524		4583	1524	
Volume (vph)	70	5	100	5	5	5	345	1090	5	5	1705	365	
Peak-hour factor, PHF	0.78	0.78	0.78	0.42	0.42	0.42	0.98	0.98	0.98	0.92	0.92	0.92	
Adj. Flow (vph)	90	6	128	12	12	12	352	1112	5	5	1853	397	
RTOR Reduction (vph)	0	0	119	0	10	0	0	0	1	0	0	64	
Lane Group Flow (vph)	47	49	9	0	26	0	352	1112	4	0	1858	333	
Heavy Vehicles (%)	6%	6%	6%	1%	1%	1%	6%	6%	6%	6%	6%	6%	
Turn Type	Split		Perm	Split			pm+pt		Perm	Perm		Perm	
Protected Phases	4	4		3	3		1	6			2		
Permitted Phases			4				6		6	2		2	
Actuated Green, G (s)	10.6	10.6	10.6		7.0		145.4	145.4	145.4		103.7	103.7	
Effective Green, g (s)	13.1	13.1	13.1		9.5		148.4	148.4	148.4		106.7	106.7	
Actuated g/C Ratio	0.07	0.07	0.07		0.05		0.82	0.82	0.82		0.59	0.59	
Clearance Time (s)	5.5	5.5	5.5		5.5		5.0	6.0	6.0		6.0	6.0	
Vehicle Extension (s)	3.0	3.0	3.0		3.0		3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	118	119	111		93		438	2808	1256		2717	903	
v/s Ratio Prot	0.03	c0.03			c0.01		c0.17	0.33					
v/s Ratio Perm			0.01				c0.49		0.00		0.41	0.22	
v/c Ratio	0.40	0.41	0.08		0.28		0.80	0.40	0.00		0.68	0.37	
Uniform Delay, d1	79.7	79.8	77.9		81.9		50.3	4.1	2.8		25.1	19.1	
Progression Factor	1.00	1.00	1.00		1.00		0.75	1.68	2.05		0.60	0.50	
Incremental Delay, d2	2.2	2.3	0.3		1.6		9.2	0.4	0.0		1.3	1.1	
Delay (s)	81.9	82.1	78.2		83.5		47.2	7.3	5.7		16.3	10.7	
Level of Service	F	F	E		F		D	A	A		B	B	
Approach Delay (s)		79.8			83.5			16.8			15.3		
Approach LOS		E			F			B			B		
<b>Intersection Summary</b>													
HCM Average Control Delay			20.1				HCM Level of Service				C		
HCM Volume to Capacity ratio			0.74										
Actuated Cycle Length (s)			180.0				Sum of lost time (s)				9.0		
Intersection Capacity Utilization			78.4%				ICU Level of Service				D		
Analysis Period (min)			15										

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis  
4: Shopping Center & MD 201

6/11/2008































												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		3.0	3.0		3.0		3.0	3.0	3.0	3.0	3.0	
Lane Util. Factor		1.00	1.00		1.00		1.00	0.95	1.00	1.00	0.91	
Frt		1.00	0.85		0.91		1.00	1.00	0.85	1.00	1.00	
Flt Protected		0.97	1.00		0.99		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)		1819	1599		1692		1703	3406	1524	1703	4892	
Flt Permitted		0.66	1.00		0.93		0.09	1.00	1.00	0.16	1.00	
Satd. Flow (perm)		1242	1599		1591		156	3406	1524	293	4892	
Volume (vph)	10	5	10	10	5	30	20	1400	10	10	1795	5
Peak-hour factor, PHF	0.79	0.79	0.79	0.70	0.70	0.70	0.96	0.96	0.96	0.91	0.91	0.91
Adj. Flow (vph)	13	6	13	14	7	43	21	1458	10	11	1973	5
RTOR Reduction (vph)	0	0	12	0	40	0	0	0	1	0	0	0
Lane Group Flow (vph)	0	19	1	0	24	0	21	1458	9	11	1978	0
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	6%	6%	6%	6%	6%	6%
Turn Type	Perm		Perm	Perm			pm+pt		Perm	pm+pt		
Protected Phases		8			4		5	2			1	6
Permitted Phases	8		8	4			2		2		6	
Actuated Green, G (s)		9.3	9.3		9.3		154.3	151.0	151.0	152.1	149.9	
Effective Green, g (s)		12.3	12.3		12.3		159.8	154.5	154.5	157.6	153.4	
Actuated g/C Ratio		0.07	0.07		0.07		0.89	0.86	0.86	0.88	0.85	
Clearance Time (s)		6.0	6.0		6.0		5.0	6.5	6.5	5.0	6.5	
Vehicle Extension (s)		3.0	3.0		3.0		3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)		85	109		109		184	2923	1308	289	4169	
v/s Ratio Prot							c0.00	c0.43		0.00	0.40	
v/s Ratio Perm		c0.02	0.00		0.02		0.10		0.01	0.03		
v/c Ratio		0.22	0.01		0.22		0.11	0.50	0.01	0.04	0.47	
Uniform Delay, d1		79.3	78.2		79.3		2.0	3.2	1.8	2.0	3.3	
Progression Factor		1.00	1.00		1.00		0.30	0.40	0.12	0.04	0.14	
Incremental Delay, d2		1.3	0.0		1.0		0.2	0.5	0.0	0.0	0.3	
Delay (s)		80.7	78.2		80.3		0.8	1.8	0.2	0.1	0.7	
Level of Service		F	E		F		A	A	A	A	A	
Approach Delay (s)		79.7			80.3			1.8			0.7	
Approach LOS		E			F			A			A	
<b>Intersection Summary</b>												
HCM Average Control Delay			3.3				HCM Level of Service				A	
HCM Volume to Capacity ratio			0.47									
Actuated Cycle Length (s)			180.0				Sum of lost time (s)				9.0	
Intersection Capacity Utilization			58.1%				ICU Level of Service				B	
Analysis Period (min)			15									

c Critical Lane Group

# HCM Signalized Intersection Capacity Analysis

5: MD 410 & MD 201

6/11/2008

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	 	 			 		 	 			 	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Util. Factor	0.97	0.95	1.00	1.00	0.95	1.00	0.97	0.95	1.00	1.00	0.95	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3303	3406	1524	1703	3406	1524	3303	3406	1524	1703	3406	1524
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3303	3406	1524	1703	3406	1524	3303	3406	1524	1703	3406	1524
Volume (vph)	275	765	290	40	1340	440	325	715	30	100	1450	265
Peak-hour factor, PHF	0.84	0.84	0.84	0.94	0.94	0.94	0.95	0.95	0.95	0.94	0.94	0.94
Adj. Flow (vph)	327	911	345	43	1426	468	342	753	32	106	1543	282
RTOR Reduction (vph)	0	0	193	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	327	911	152	43	1426	468	342	753	32	106	1543	282
Heavy Vehicles (%)	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%
Turn Type	Prot		Perm	Prot		Free	Prot		Free	Prot		Free
Protected Phases	3	8		7	4		5	2		1	6	
Permitted Phases			8			Free			Free			Free
Actuated Green, G (s)	18.0	60.3	60.3	8.7	51.0	180.0	18.0	73.8	180.0	15.2	71.0	180.0
Effective Green, g (s)	20.0	63.3	63.3	10.7	54.0	180.0	20.0	76.8	180.0	17.2	74.0	180.0
Actuated g/C Ratio	0.11	0.35	0.35	0.06	0.30	1.00	0.11	0.43	1.00	0.10	0.41	1.00
Clearance Time (s)	5.0	6.0	6.0	5.0	6.0		5.0	6.0		5.0	6.0	
Vehicle Extension (s)	3.0	5.0	5.0	3.0	5.0		3.0	5.0		3.0	5.0	
Lane Grp Cap (vph)	367	1198	536	101	1022	1524	367	1453	1524	163	1400	1524
v/s Ratio Prot	c0.10	0.27		0.03	c0.42		c0.10	0.22		0.06	c0.45	
v/s Ratio Perm			0.10			c0.31			0.02			0.19
v/c Ratio	0.89	0.76	0.28	0.43	1.40	0.31	0.93	0.52	0.02	0.65	1.10	0.19
Uniform Delay, d1	78.9	51.6	42.0	81.7	63.0	0.0	79.3	38.0	0.0	78.5	53.0	0.0
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.89	0.74	1.00	1.37	0.63	1.00
Incremental Delay, d2	22.6	4.6	1.3	2.9	183.9	0.5	29.4	1.3	0.0	8.1	56.2	0.2
Delay (s)	101.5	56.2	43.4	84.6	246.9	0.5	100.0	29.2	0.0	115.5	89.5	0.2
Level of Service	F	E	D	F	F	A	F	C	A	F	F	A
Approach Delay (s)		62.8			183.8			49.9			77.9	
Approach LOS		E			F			D			E	
<b>Intersection Summary</b>												
HCM Average Control Delay			100.6			HCM Level of Service			F			
HCM Volume to Capacity ratio			1.14									
Actuated Cycle Length (s)			180.0	Sum of lost time (s)			12.0					
Intersection Capacity Utilization			107.6%	ICU Level of Service			G					
Analysis Period (min)			15									

c Critical Lane Group

# HCM Signalized Intersection Capacity Analysis

## 3: River Rd. & MD 201






















6/11/2008

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0	3.0		3.0		3.0	3.0	3.0		3.0	3.0
Lane Util. Factor	0.95	0.95	1.00		1.00		1.00	0.95	1.00		0.91	1.00
Frt	1.00	1.00	0.85		0.91		1.00	1.00	0.85		1.00	0.85
Flt Protected	0.95	0.96	1.00		0.99		0.95	1.00	1.00		1.00	1.00
Satd. Flow (prot)	1665	1674	1568		1698		1752	3505	1568		5035	1568
Flt Permitted	0.95	0.96	1.00		0.99		0.13	1.00	1.00		0.94	1.00
Satd. Flow (perm)	1665	1674	1568		1698		241	3505	1568		4714	1568
Volume (vph)	320	11	400	2	2	8	142	1620	3	3	1425	62
Peak-hour factor, PHF	0.85	0.85	0.85	0.50	0.50	0.50	0.95	0.95	0.95	0.97	0.97	0.97
Adj. Flow (vph)	376	13	471	4	4	16	149	1705	3	3	1469	64
RTOR Reduction (vph)	0	0	255	0	15	0	0	0	0	0	0	12
Lane Group Flow (vph)	190	199	216	0	9	0	149	1705	3	0	1472	52
Heavy Vehicles (%)	3%	3%	3%	1%	1%	1%	3%	3%	3%	3%	3%	3%
Turn Type	Split		Perm	Split			pm+pt		Perm	Perm		Perm
Protected Phases	4	4		3	3		1	6			2	
Permitted Phases			4				6		6	2		2
Actuated Green, G (s)	28.4	28.4	28.4		4.6		130.0	130.0	130.0		115.3	115.3
Effective Green, g (s)	30.9	30.9	30.9		7.1		133.0	133.0	133.0		118.3	118.3
Actuated g/C Ratio	0.17	0.17	0.17		0.04		0.74	0.74	0.74		0.66	0.66
Clearance Time (s)	5.5	5.5	5.5		5.5		5.0	6.0	6.0		6.0	6.0
Vehicle Extension (s)	3.0	3.0	3.0		3.0		3.0	3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	286	287	269		67		276	2590	1159		3098	1031
v/s Ratio Prot	0.11	0.12			c0.01		0.04	c0.49				
v/s Ratio Perm			c0.14				0.36		0.00		0.31	0.03
v/c Ratio	0.66	0.69	0.80		0.13		0.54	0.66	0.00		0.48	0.05
Uniform Delay, d1	69.7	70.1	71.6		83.5		10.5	11.9	6.1		15.4	10.9
Progression Factor	1.00	1.00	1.00		1.00		3.01	0.11	0.14		0.73	0.61
Incremental Delay, d2	5.7	7.1	15.7		0.9		1.6	1.0	0.0		0.5	0.1
Delay (s)	75.4	77.2	87.3		84.3		33.0	2.4	0.9		11.8	6.8
Level of Service	E	E	F		F		C	A	A		B	A
Approach Delay (s)		82.3			84.3			4.8			11.6	
Approach LOS		F			F			A			B	
<b>Intersection Summary</b>												
HCM Average Control Delay			23.3	HCM Level of Service				C				
HCM Volume to Capacity ratio			0.66									
Actuated Cycle Length (s)			180.0	Sum of lost time (s)				9.0				
Intersection Capacity Utilization			98.2%	ICU Level of Service				F				
Analysis Period (min)			15									

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis  
 4: Shopping Center & MD 201

6/11/2008

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		3.0	3.0		3.0		3.0	3.0	3.0	3.0	3.0	
Lane Util. Factor		1.00	1.00		1.00		1.00	0.95	1.00	1.00	0.91	
Frt		1.00	0.85		0.91		1.00	1.00	0.85	1.00	1.00	
Flt Protected		0.96	1.00		0.99		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)		1802	1599		1686		1752	3505	1568	1752	5033	
Flt Permitted		0.54	1.00		0.93		0.11	1.00	1.00	0.09	1.00	
Satd. Flow (perm)		1008	1599		1590		198	3505	1568	174	5033	
Volume (vph)	35	5	30	10	5	35	65	1725	25	80	1580	5
Peak-hour factor, PHF	0.72	0.72	0.72	0.77	0.77	0.77	0.96	0.96	0.96	0.88	0.88	0.88
Adj. Flow (vph)	49	7	42	13	6	45	68	1797	26	91	1795	6
RTOR Reduction (vph)	0	0	38	0	41	0	0	0	1	0	0	0
Lane Group Flow (vph)	0	56	4	0	23	0	68	1797	25	91	1801	0
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	3%	3%	3%	3%	3%	3%
Turn Type	Perm		Perm	Perm			pm+pt		Perm	pm+pt		
Protected Phases		8			4		5	2		1	6	
Permitted Phases	8		8	4			2		2	6		
Actuated Green, G (s)		12.4	12.4		12.4		146.8	141.2	141.2	153.4	144.5	
Effective Green, g (s)		15.4	15.4		15.4		152.3	144.7	144.7	158.6	148.0	
Actuated g/C Ratio		0.09	0.09		0.09		0.85	0.80	0.80	0.88	0.82	
Clearance Time (s)		6.0	6.0		6.0		5.0	6.5	6.5	5.0	6.5	
Vehicle Extension (s)		3.0	3.0		3.0		3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)		86	137		136		233	2818	1260	249	4138	
v/s Ratio Prot							0.01	c0.51		c0.02	0.36	
v/s Ratio Perm		c0.06	0.00		0.01		0.23		0.02	0.30		
v/c Ratio		0.65	0.03		0.17		0.29	0.64	0.02	0.37	0.44	
Uniform Delay, d1		79.7	75.4		76.4		2.8	7.1	3.5	8.2	4.4	
Progression Factor		1.00	1.00		1.00		4.13	0.43	0.00	1.66	0.48	
Incremental Delay, d2		16.3	0.1		0.6		0.3	0.4	0.0	0.8	0.3	
Delay (s)		96.0	75.5		76.9		11.9	3.4	0.0	14.5	2.4	
Level of Service		F	E		E		B	A	A	B	A	
Approach Delay (s)		87.2			76.9			3.7			3.0	
Approach LOS		F			E			A			A	
<b>Intersection Summary</b>												
HCM Average Control Delay			6.6				HCM Level of Service				A	
HCM Volume to Capacity ratio			0.62									
Actuated Cycle Length (s)			180.0				Sum of lost time (s)				9.0	
Intersection Capacity Utilization			71.8%				ICU Level of Service				C	
Analysis Period (min)			15									

c Critical Lane Group

# HCM Signalized Intersection Capacity Analysis

5: MD 410 & MD 201

6/11/2008

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations													
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Lane Width	11	11	11	11	11	11	11	11	11	11	11	11	
Total Lost time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Lane Util. Factor	0.97	0.95	1.00	1.00	0.95	1.00	0.97	0.95	1.00	1.00	0.95	1.00	
Fr <sub>t</sub>	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	
Fl <sub>t</sub> Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	
Satd. Flow (prot)	3286	3388	1516	1694	3388	1516	3286	3388	1516	1694	3388	1516	
Fl <sub>t</sub> Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	
Satd. Flow (perm)	3286	3388	1516	1694	3388	1516	3286	3388	1516	1694	3388	1516	
Volume (vph)	530	1275	395	125	1305	240	365	1045	45	330	1145	145	
Peak-hour factor, PHF	0.92	0.92	0.92	0.95	0.95	0.95	0.99	0.99	0.99	0.88	0.88	0.88	
Adj. Flow (vph)	576	1386	429	132	1374	253	369	1056	45	375	1301	165	
RTOR Reduction (vph)	0	0	208	0	0	0	0	0	0	0	0	0	
Lane Group Flow (vph)	576	1386	221	132	1374	253	369	1056	45	375	1301	165	
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	
Turn Type	Prot		Perm	Prot		Free	Prot		Free	Prot		Free	
Protected Phases	3	8		7	4		5	2		1	6		
Permitted Phases			8			Free			Free			Free	
Actuated Green, G (s)	28.0	67.3	67.3	14.7	54.0	180.0	24.8	51.0	180.0	25.0	51.2	180.0	
Effective Green, g (s)	30.0	70.3	70.3	16.7	57.0	180.0	26.8	54.0	180.0	27.0	54.2	180.0	
Actuated g/C Ratio	0.17	0.39	0.39	0.09	0.32	1.00	0.15	0.30	1.00	0.15	0.30	1.00	
Clearance Time (s)	5.0	6.0	6.0	5.0	6.0		5.0	6.0		5.0	6.0		
Vehicle Extension (s)	3.0	3.5	3.5	3.0	3.5		3.0	5.0		3.0	5.0		
Lane Grp Cap (vph)	548	1323	592	157	1073	1516	489	1016	1516	254	1020	1516	
v/s Ratio Prot	c0.18	0.41		0.08	c0.41		0.11	0.31		c0.22	c0.38		
v/s Ratio Perm			0.15			c0.17			0.03			0.11	
v/c Ratio	1.05	1.05	0.37	0.84	1.28	0.17	0.75	1.04	0.03	1.48	1.28	0.11	
Uniform Delay, d <sub>1</sub>	75.0	54.9	39.1	80.3	61.5	0.0	73.4	63.0	0.0	76.5	62.9	0.0	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.02	0.68	1.00	0.83	0.99	1.00	
Incremental Delay, d <sub>2</sub>	52.6	38.2	0.5	31.3	133.5	0.2	5.8	37.3	0.0	233.0	131.1	0.1	
Delay (s)	127.6	93.1	39.6	111.7	195.0	0.2	80.4	80.4	0.0	296.4	193.6	0.1	
Level of Service	F	F	D	F	F	A	F	F	A	F	F	A	
Approach Delay (s)		91.8			160.7			78.0			197.2		
Approach LOS		F			F			E			F		
<b>Intersection Summary</b>													
HCM Average Control Delay	131.3		HCM Level of Service					F					
HCM Volume to Capacity ratio	1.25												
Actuated Cycle Length (s)	180.0					Sum of lost time (s)			9.0				
Intersection Capacity Utilization	111.7%					ICU Level of Service			H				
Analysis Period (min)	15												
c Critical Lane Group													



# HCM Signalized Intersection Capacity Analysis

1601: MD 410 & 62nd Pl.

6/10/2008

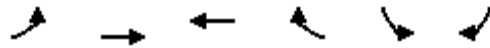
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0			4.0			4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00			1.00	
Frt	1.00	1.00		1.00	1.00			0.94			0.98	
Flt Protected	0.95	1.00		0.95	1.00			0.97			0.96	
Satd. Flow (prot)	1703	3403		1703	3399			1725			1763	
Flt Permitted	0.07	1.00		0.22	1.00			0.97			0.96	
Satd. Flow (perm)	134	3403		391	3399			1725			1763	
Volume (vph)	25	1100	5	5	1770	25	50	0	35	45	0	10
Peak-hour factor, PHF	0.96	0.96	0.96	0.95	0.95	0.95	0.86	0.86	0.86	0.59	0.59	0.59
Adj. Flow (vph)	26	1146	5	5	1863	26	58	0	41	76	0	17
RTOR Reduction (vph)	0	0	0	0	1	0	0	26	0	0	8	0
Lane Group Flow (vph)	26	1151	0	5	1888	0	0	73	0	0	85	0
Heavy Vehicles (%)	6%	6%	6%	6%	6%	6%	1%	1%	1%	1%	1%	1%
Turn Type	Perm		Perm		Split		Split					
Protected Phases	6		2		3		3		4		4	
Permitted Phases	6		2									
Actuated Green, G (s)	73.0	73.0		73.0	73.0			5.6			5.4	
Effective Green, g (s)	75.0	75.0		75.0	75.0			6.6			6.4	
Actuated g/C Ratio	0.75	0.75		0.75	0.75			0.07			0.06	
Clearance Time (s)	6.0	6.0		6.0	6.0			5.0			5.0	
Vehicle Extension (s)	6.0	6.0		6.0	6.0			3.0			3.0	
Lane Grp Cap (vph)	101	2552		293	2549			114			113	
v/s Ratio Prot		0.34			c0.56			c0.04			c0.05	
v/s Ratio Perm	0.19			0.01								
v/c Ratio	0.26	0.45		0.02	0.74			0.64			0.75	
Uniform Delay, d1	3.9	4.7		3.2	7.0			45.5			46.0	
Progression Factor	1.00	1.00		0.24	0.25			1.00			1.00	
Incremental Delay, d2	6.1	0.6		0.1	1.5			11.2			23.4	
Delay (s)	9.9	5.3		0.8	3.2			56.7			69.4	
Level of Service	A	A		A	A			E			E	
Approach Delay (s)		5.4			3.2			56.7			69.4	
Approach LOS		A			A			E			E	
<b>Intersection Summary</b>												
HCM Average Control Delay			7.5	HCM Level of Service				A				
HCM Volume to Capacity ratio			0.73									
Actuated Cycle Length (s)			100.0	Sum of lost time (s)				12.0				
Intersection Capacity Utilization			61.3%	ICU Level of Service				B				
Analysis Period (min)			15									

c Critical Lane Group

# HCM Signalized Intersection Capacity Analysis

1602: MD 410 & 64th Ave.

6/10/2008



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↖	↗↗	↖↗		↘	↘
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0		4.0	4.0
Lane Util. Factor	1.00	0.95	0.95		1.00	1.00
Frt	1.00	1.00	0.99		1.00	0.85
Flt Protected	0.95	1.00	1.00		0.95	1.00
Satd. Flow (prot)	1703	3406	3384		1787	1599
Flt Permitted	0.09	1.00	1.00		0.95	1.00
Satd. Flow (perm)	168	3406	3384		1787	1599
Volume (vph)	25	1155	1720	75	80	75
Peak-hour factor, PHF	0.91	0.91	0.97	0.97	0.87	0.87
Adj. Flow (vph)	27	1269	1773	77	92	86
RTOR Reduction (vph)	0	0	3	0	0	48
Lane Group Flow (vph)	27	1269	1847	0	92	38
Heavy Vehicles (%)	6%	6%	6%	6%	1%	1%
Turn Type	Perm					Perm
Protected Phases		6	2		4	
Permitted Phases	6					4
Actuated Green, G (s)	80.1	80.1	80.1		9.9	9.9
Effective Green, g (s)	81.1	81.1	81.1		10.9	10.9
Actuated g/C Ratio	0.81	0.81	0.81		0.11	0.11
Clearance Time (s)	5.0	5.0	5.0		5.0	5.0
Vehicle Extension (s)	6.0	6.0	6.0		3.0	3.0
Lane Grp Cap (vph)	136	2762	2744		195	174
v/s Ratio Prot		0.37	c0.55		c0.05	
v/s Ratio Perm	0.16					0.02
v/c Ratio	0.20	0.46	0.67		0.47	0.22
Uniform Delay, d1	2.1	2.8	3.9		41.8	40.7
Progression Factor	0.85	0.84	0.30		1.00	1.00
Incremental Delay, d2	2.9	0.5	0.9		1.8	0.6
Delay (s)	4.7	2.9	2.1		43.6	41.3
Level of Service	A	A	A		D	D
Approach Delay (s)		2.9	2.1		42.5	
Approach LOS		A	A		D	

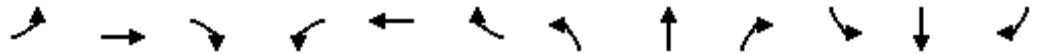
## Intersection Summary

HCM Average Control Delay	4.6	HCM Level of Service	A
HCM Volume to Capacity ratio	0.65		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	61.2%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis  
 1603: MD 410 & BW Parkway S/B Ramps

6/10/2008



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑↑	↑	↑	↑↑					↑↑		↑
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0	4.0	4.0					4.0		4.0
Lane Util. Factor		0.91	1.00	1.00	0.95					0.97		1.00
Frt		1.00	0.85	1.00	1.00					1.00		0.85
Flt Protected		1.00	1.00	0.95	1.00					0.95		1.00
Satd. Flow (prot)		4893	1524	1703	3406					3303		1524
Flt Permitted		1.00	1.00	0.16	1.00					0.95		1.00
Satd. Flow (perm)		4893	1524	293	3406					3303		1524
Volume (vph)	0	1080	155	255	1540	0	0	0	0	85	0	255
Peak-hour factor, PHF	0.90	0.90	0.90	0.87	0.87	0.87	0.92	0.92	0.92	0.91	0.91	0.91
Adj. Flow (vph)	0	1200	172	293	1770	0	0	0	0	93	0	280
RTOR Reduction (vph)	0	0	81	0	0	0	0	0	0	0	0	23
Lane Group Flow (vph)	0	1200	91	293	1770	0	0	0	0	93	0	257
Heavy Vehicles (%)	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%
Turn Type			Perm pm+pt							custom		custom
Protected Phases		6		5	2							
Permitted Phases			6	2						4		4
Actuated Green, G (s)		52.0	52.0	69.6	69.6					20.4		20.4
Effective Green, g (s)		53.0	53.0	70.6	70.6					21.4		21.4
Actuated g/C Ratio		0.53	0.53	0.71	0.71					0.21		0.21
Clearance Time (s)		5.0	5.0	4.0	5.0					5.0		5.0
Vehicle Extension (s)		6.0	6.0	3.0	6.0					3.0		3.0
Lane Grp Cap (vph)		2593	808	399	2405					707		326
v/s Ratio Prot		0.25		0.10	c0.52							
v/s Ratio Perm			0.06	0.42						0.03		c0.17
v/c Ratio		0.46	0.11	0.73	0.74					0.13		0.79
Uniform Delay, d1		14.6	11.7	9.6	9.0					31.8		37.2
Progression Factor		0.75	0.57	1.20	0.26					1.00		1.00
Incremental Delay, d2		0.5	0.3	5.6	1.6					0.1		12.0
Delay (s)		11.5	6.9	17.1	4.0					31.9		49.1
Level of Service		B	A	B	A					C		D
Approach Delay (s)		10.9			5.8			0.0			44.8	
Approach LOS		B			A			A			D	

Intersection Summary			
HCM Average Control Delay	11.5	HCM Level of Service	B
HCM Volume to Capacity ratio	0.75		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	65.0%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis  
 1604: MD 410 & BW Parkway N/B Ramps

6/10/2008

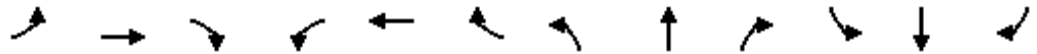
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations													
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)	4.0	4.0			4.0	4.0	4.0		4.0				
Lane Util. Factor	1.00	0.95			0.91	1.00	0.97		1.00				
Frt	1.00	1.00			1.00	0.85	1.00		0.85				
Flt Protected	0.95	1.00			1.00	1.00	0.95		1.00				
Satd. Flow (prot)	1703	3406			4893	1524	3303		1524				
Flt Permitted	0.08	1.00			1.00	1.00	0.95		1.00				
Satd. Flow (perm)	144	3406			4893	1524	3303		1524				
Volume (vph)	250	910	0	0	1500	250	295	0	55	0	0	0	
Peak-hour factor, PHF	0.86	0.86	0.86	0.90	0.90	0.90	0.86	0.86	0.86	0.92	0.92	0.92	
Adj. Flow (vph)	291	1058	0	0	1667	278	343	0	64	0	0	0	
RTOR Reduction (vph)	0	0	0	0	0	128	0	0	54	0	0	0	
Lane Group Flow (vph)	291	1058	0	0	1667	150	343	0	10	0	0	0	
Heavy Vehicles (%)	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%	
Turn Type	pm+pt				Perm				custom				
Protected Phases	1	6			2								
Permitted Phases	6					2	4		4				
Actuated Green, G (s)	76.0	76.0			53.0	53.0	14.0		14.0				
Effective Green, g (s)	77.0	77.0			54.0	54.0	15.0		15.0				
Actuated g/C Ratio	0.77	0.77			0.54	0.54	0.15		0.15				
Clearance Time (s)	4.0	5.0			5.0	5.0	5.0		5.0				
Vehicle Extension (s)	3.0	6.0			6.0	6.0	3.0		3.0				
Lane Grp Cap (vph)	407	2623			2642	823	495		229				
v/s Ratio Prot	c0.14	0.31			0.34								
v/s Ratio Perm	c0.41					0.10	c0.10		0.01				
v/c Ratio	0.71	0.40			0.63	0.18	0.69		0.04				
Uniform Delay, d1	24.1	3.8			16.0	11.7	40.3		36.4				
Progression Factor	1.22	2.31			0.75	0.69	1.00		1.00				
Incremental Delay, d2	5.4	0.4			0.9	0.4	4.2		0.1				
Delay (s)	34.9	9.3			12.9	8.4	44.5		36.4				
Level of Service	C	A			B	A	D		D				
Approach Delay (s)		14.8			12.2			43.2			0.0		
Approach LOS		B			B			D			A		
<b>Intersection Summary</b>													
HCM Average Control Delay			16.6									HCM Level of Service	B
HCM Volume to Capacity ratio			0.70										
Actuated Cycle Length (s)			100.0									Sum of lost time (s)	8.0
Intersection Capacity Utilization			65.0%									ICU Level of Service	C
Analysis Period (min)			15										

c Critical Lane Group

# HCM Signalized Intersection Capacity Analysis

1605: MD 410 & 67th. Ave.

6/10/2008



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔		↔	↔			↔	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0		4.0	4.0			4.0	
Lane Util. Factor		0.95			0.95		1.00	1.00			1.00	
Frt		1.00			1.00		1.00	0.86			0.95	
Flt Protected		1.00			1.00		0.95	1.00			0.98	
Satd. Flow (prot)		3399			3403		1787	1625			1746	
Flt Permitted		0.94			0.95		0.80	1.00			0.89	
Satd. Flow (perm)		3212			3224		1512	1625			1578	
Volume (vph)	5	950	10	10	1600	5	140	5	50	10	5	10
Peak-hour factor, PHF	0.86	0.86	0.86	0.96	0.96	0.96	0.71	0.71	0.71	0.58	0.58	0.58
Adj. Flow (vph)	6	1105	12	10	1667	5	197	7	70	17	9	17
RTOR Reduction (vph)	0	1	0	0	0	0	0	59	0	0	14	0
Lane Group Flow (vph)	0	1122	0	0	1682	0	197	18	0	0	29	0
Heavy Vehicles (%)	6%	6%	6%	6%	6%	6%	1%	1%	1%	1%	1%	1%
Turn Type	Perm			Perm			Perm				Perm	
Protected Phases		6			2			8				4
Permitted Phases	6			2			8				4	
Actuated Green, G (s)		74.8			74.8		15.2	15.2			15.2	
Effective Green, g (s)		75.8			75.8		16.2	16.2			16.2	
Actuated g/C Ratio		0.76			0.76		0.16	0.16			0.16	
Clearance Time (s)		5.0			5.0		5.0	5.0			5.0	
Vehicle Extension (s)		6.0			6.0		3.0	3.0			3.0	
Lane Grp Cap (vph)		2435			2444		245	263			256	
v/s Ratio Prot								0.01				
v/s Ratio Perm		0.35			c0.52		c0.13				0.02	
v/c Ratio		0.46			0.69		0.80	0.07			0.11	
Uniform Delay, d1		4.5			6.1		40.4	35.5			35.8	
Progression Factor		1.57			0.31		1.00	1.00			1.00	
Incremental Delay, d2		0.6			1.1		17.2	0.1			0.2	
Delay (s)		7.7			3.0		57.5	35.6			36.0	
Level of Service		A			A		E	D			D	
Approach Delay (s)		7.7			3.0			51.4			36.0	
Approach LOS		A			A			D			D	

## Intersection Summary

HCM Average Control Delay	9.4	HCM Level of Service	A
HCM Volume to Capacity ratio	0.71		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	72.5%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis  
 1606: MD 410 & Riverdale Rd.

6/10/2008



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑		↵	↑↑	↵↵	↵
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0		4.0	4.0	4.0	4.0
Lane Util. Factor	0.95		1.00	0.95	0.97	1.00
Frt	0.91		1.00	1.00	1.00	0.85
Flt Protected	1.00		0.95	1.00	0.95	1.00
Satd. Flow (prot)	3113		1703	3406	3303	1524
Flt Permitted	1.00		0.09	1.00	0.95	1.00
Satd. Flow (perm)	3113		166	3406	3303	1524
Volume (vph)	495	665	275	760	890	250
Peak-hour factor, PHF	0.89	0.89	0.80	0.80	0.91	0.91
Adj. Flow (vph)	556	747	344	950	978	275
RTOR Reduction (vph)	241	0	0	0	0	188
Lane Group Flow (vph)	1062	0	344	950	978	87
Heavy Vehicles (%)	6%	6%	6%	6%	6%	6%
Turn Type			pm+pt			Perm
Protected Phases	6		5	2	4	
Permitted Phases			2			4
Actuated Green, G (s)	38.3		59.3	59.3	30.7	30.7
Effective Green, g (s)	39.3		60.3	60.3	31.7	31.7
Actuated g/C Ratio	0.39		0.60	0.60	0.32	0.32
Clearance Time (s)	5.0		5.0	5.0	5.0	5.0
Vehicle Extension (s)	6.0		3.0	6.0	3.0	3.0
Lane Grp Cap (vph)	1223		361	2054	1047	483
v/s Ratio Prot	0.34		c0.16	0.28	c0.30	
v/s Ratio Perm			c0.41			0.06
v/c Ratio	0.87		0.95	0.46	0.93	0.18
Uniform Delay, d1	28.0		35.3	10.9	33.1	24.7
Progression Factor	1.08		1.00	1.00	1.00	1.00
Incremental Delay, d2	8.0		35.0	0.8	14.5	0.2
Delay (s)	38.1		70.3	11.7	47.7	24.9
Level of Service	D		E	B	D	C
Approach Delay (s)	38.1			27.3	42.7	
Approach LOS	D			C	D	

Intersection Summary























HCM Average Control Delay	35.9	HCM Level of Service	D
HCM Volume to Capacity ratio	0.92		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	85.7%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

# HCM Signalized Intersection Capacity Analysis

1601: MD 410 & 62nd Pl.

6/10/2008

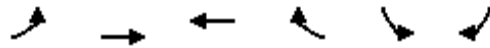
												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		 			 			 			 	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0			4.0			4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00			1.00	
Frt	1.00	0.99		1.00	1.00			0.98			0.96	
Flt Protected	0.95	1.00		0.95	1.00			0.96			0.97	
Satd. Flow (prot)	1752	3484		1752	3496			1763			1741	
Flt Permitted	0.06	1.00		0.06	1.00			0.96			0.97	
Satd. Flow (perm)	105	3484		105	3496			1763			1741	
Volume (vph)	25	1825	75	20	1750	30	65	0	15	95	0	45
Peak-hour factor, PHF	0.91	0.91	0.91	0.88	0.88	0.88	0.92	0.92	0.92	0.75	0.75	0.75
Adj. Flow (vph)	27	2005	82	23	1989	34	71	0	16	127	0	60
RTOR Reduction (vph)	0	3	0	0	1	0	0	8	0	0	17	0
Lane Group Flow (vph)	27	2084	0	23	2022	0	0	79	0	0	170	0
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%	1%	1%	1%	1%	1%	1%
Turn Type	Perm		Perm		Split		Split					
Protected Phases	6		2		3		3		4		4	
Permitted Phases	6		2									
Actuated Green, G (s)	68.3	68.3		68.3	68.3			4.8			10.9	
Effective Green, g (s)	70.3	70.3		70.3	70.3			5.8			11.9	
Actuated g/C Ratio	0.70	0.70		0.70	0.70			0.06			0.12	
Clearance Time (s)	6.0	6.0		6.0	6.0			5.0			5.0	
Vehicle Extension (s)	6.0	6.0		6.0	6.0			3.0			3.0	
Lane Grp Cap (vph)	74	2449		74	2458			102			207	
v/s Ratio Prot		c0.60			0.58			c0.04			c0.10	
v/s Ratio Perm	0.26			0.22								
v/c Ratio	0.36	0.85		0.31	0.82			0.77			0.82	
Uniform Delay, d1	5.9	11.0		5.6	10.5			46.4			43.0	
Progression Factor	1.00	1.00		0.96	0.77			1.00			1.00	
Incremental Delay, d2	13.3	4.0		8.9	2.7			28.8			22.4	
Delay (s)	19.3	14.9		14.3	10.7			75.3			65.4	
Level of Service	B	B		B	B			E			E	
Approach Delay (s)		15.0			10.8			75.3			65.4	
Approach LOS		B			B			E			E	
<b>Intersection Summary</b>												
HCM Average Control Delay			16.4	HCM Level of Service				B				
HCM Volume to Capacity ratio			0.84									
Actuated Cycle Length (s)			100.0	Sum of lost time (s)				12.0				
Intersection Capacity Utilization			67.7%	ICU Level of Service				C				
Analysis Period (min)			15									

c Critical Lane Group

# HCM Signalized Intersection Capacity Analysis

1602: MD 410 & 64th Ave.

6/10/2008



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↖	↑↑	↗	→	↙	↘
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0		4.0	4.0
Lane Util. Factor	1.00	0.95	0.95		1.00	1.00
Frt	1.00	1.00	0.99		1.00	0.85
Flt Protected	0.95	1.00	1.00		0.95	1.00
Satd. Flow (prot)	1752	3505	3479		1787	1599
Flt Permitted	0.10	1.00	1.00		0.95	1.00
Satd. Flow (perm)	179	3505	3479		1787	1599
Volume (vph)	80	1855	1735	90	65	65
Peak-hour factor, PHF	0.92	0.92	0.96	0.96	0.95	0.95
Adj. Flow (vph)	87	2016	1807	94	68	68
RTOR Reduction (vph)	0	0	3	0	0	60
Lane Group Flow (vph)	87	2016	1898	0	68	8
Heavy Vehicles (%)	3%	3%	3%	3%	1%	1%
Turn Type	Perm			Perm		
Protected Phases		6	2		4	
Permitted Phases	6					4
Actuated Green, G (s)	85.2	85.2	85.2		4.8	4.8
Effective Green, g (s)	86.2	86.2	86.2		5.8	5.8
Actuated g/C Ratio	0.86	0.86	0.86		0.06	0.06
Clearance Time (s)	5.0	5.0	5.0		5.0	5.0
Vehicle Extension (s)	6.0	6.0	6.0		3.0	3.0
Lane Grp Cap (vph)	154	3021	2999		104	93
v/s Ratio Prot		c0.58	0.55		c0.04	
v/s Ratio Perm	0.48					0.00
v/c Ratio	0.56	0.67	0.63		0.65	0.08
Uniform Delay, d1	1.9	2.2	2.1		46.1	44.6
Progression Factor	0.62	0.03	0.47		1.00	1.00
Incremental Delay, d2	7.6	0.6	0.8		13.8	0.4
Delay (s)	8.7	0.7	1.7		59.9	45.0
Level of Service	A	A	A		E	D
Approach Delay (s)		1.0	1.7		52.4	
Approach LOS		A	A		D	

## Intersection Summary

HCM Average Control Delay	3.0	HCM Level of Service	A
HCM Volume to Capacity ratio	0.67		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	77.3%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group



HCM Signalized Intersection Capacity Analysis  
 1603: MD 410 & BW Parkway S/B Ramps

6/10/2008



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑↑	↑	↑	↑↑					↑↑		↑
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0	4.0	4.0					4.0		4.0
Lane Util. Factor		0.91	1.00	1.00	0.95					0.97		1.00
Frt		1.00	0.85	1.00	1.00					1.00		0.85
Flt Protected		1.00	1.00	0.95	1.00					0.95		1.00
Satd. Flow (prot)		5036	1568	1752	3505					3400		1568
Flt Permitted		1.00	1.00	0.08	1.00					0.95		1.00
Satd. Flow (perm)		5036	1568	142	3505					3400		1568
Volume (vph)	0	1610	310	275	1510	0	0	0	0	180	0	315
Peak-hour factor, PHF	0.92	0.92	0.92	0.96	0.96	0.96	0.92	0.92	0.92	0.93	0.93	0.93
Adj. Flow (vph)	0	1750	337	286	1573	0	0	0	0	194	0	339
RTOR Reduction (vph)	0	0	175	0	0	0	0	0	0	0	0	32
Lane Group Flow (vph)	0	1750	162	286	1573	0	0	0	0	194	0	307
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%
Turn Type			Perm pm+pt							custom		custom
Protected Phases		6		5	2							
Permitted Phases			6	2						4		4
Actuated Green, G (s)		47.0	47.0	67.5	67.5					22.5		22.5
Effective Green, g (s)		48.0	48.0	68.5	68.5					23.5		23.5
Actuated g/C Ratio		0.48	0.48	0.68	0.68					0.24		0.24
Clearance Time (s)		5.0	5.0	4.0	5.0					5.0		5.0
Vehicle Extension (s)		6.0	6.0	3.0	6.0					3.0		3.0
Lane Grp Cap (vph)		2417	753	363	2401					799		368
v/s Ratio Prot		0.35		c0.13	0.45							
v/s Ratio Perm			0.10	c0.41						0.06		c0.20
v/c Ratio		0.72	0.21	0.79	0.66					0.24		0.83
Uniform Delay, d1		20.7	15.1	27.0	9.0					31.0		36.4
Progression Factor		0.79	0.83	1.84	1.21					1.00		1.00
Incremental Delay, d2		1.5	0.5	9.3	1.2					0.2		14.9
Delay (s)		17.8	12.9	59.1	12.1					31.2		51.3
Level of Service		B	B	E	B					C		D
Approach Delay (s)		17.0			19.4			0.0			44.0	
Approach LOS		B			B			A			D	

Intersection Summary

HCM Average Control Delay	21.2	HCM Level of Service	C
HCM Volume to Capacity ratio	0.79		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	67.9%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis  
 1604: MD 410 & BW Parkway N/B Ramps

6/10/2008

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0			4.0	4.0	4.0		4.0			
Lane Util. Factor	1.00	0.95			0.91	1.00	0.97		1.00			
Frt	1.00	1.00			1.00	0.85	1.00		0.85			
Flt Protected	0.95	1.00			1.00	1.00	0.95		1.00			
Satd. Flow (prot)	1752	3505			5036	1568	3400		1568			
Flt Permitted	0.10	1.00			1.00	1.00	0.95		1.00			
Satd. Flow (perm)	192	3505			5036	1568	3400		1568			
Volume (vph)	160	1630	0	0	1480	135	305	0	220	0	0	0
Peak-hour factor, PHF	0.94	0.94	0.94	0.95	0.95	0.95	0.91	0.91	0.91	0.92	0.92	0.92
Adj. Flow (vph)	170	1734	0	0	1558	142	335	0	242	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	60	0	0	25	0	0	0
Lane Group Flow (vph)	170	1734	0	0	1558	82	335	0	217	0	0	0
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%
Turn Type	pm+pt						Perm		custom		custom	
Protected Phases	1	6					2					
Permitted Phases	6						2		4		4	
Actuated Green, G (s)	71.7	71.7					56.9	56.9	18.3			18.3
Effective Green, g (s)	72.7	72.7					57.9	57.9	19.3			19.3
Actuated g/C Ratio	0.73	0.73					0.58	0.58	0.19			0.19
Clearance Time (s)	4.0	5.0					5.0	5.0	5.0			5.0
Vehicle Extension (s)	3.0	6.0					6.0	6.0	3.0			3.0
Lane Grp Cap (vph)	308	2548					2916	908	656			303
v/s Ratio Prot	0.06	c0.49					0.31					
v/s Ratio Perm	0.34						0.05		0.10			c0.14
v/c Ratio	0.55	0.68					0.53	0.09	0.51			0.72
Uniform Delay, d1	9.0	7.4					12.8	9.4	36.1			37.8
Progression Factor	2.86	0.86					0.50	0.18	1.00			1.00
Incremental Delay, d2	1.5	1.1					0.6	0.2	0.7			7.8
Delay (s)	27.1	7.4					7.0	1.8	36.8			45.6
Level of Service	C	A					A	A	D			D
Approach Delay (s)	9.2						6.6		40.5		0.0	
Approach LOS	A						A		D		A	
<b>Intersection Summary</b>												
HCM Average Control Delay	12.5		HCM Level of Service				B					
HCM Volume to Capacity ratio	0.69											
Actuated Cycle Length (s)	100.0		Sum of lost time (s)				8.0					
Intersection Capacity Utilization	67.9%		ICU Level of Service				C					
Analysis Period (min)	15											

c Critical Lane Group

# HCM Signalized Intersection Capacity Analysis

1605: MD 410 & 67th. Ave.

6/10/2008



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕↕			↕↕		↖	↗			↕↕	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0		4.0	4.0			4.0	
Lane Util. Factor		0.95			0.95		1.00	1.00			1.00	
Frt		1.00			1.00		1.00	0.86			0.96	
Flt Protected		1.00			1.00		0.95	1.00			0.98	
Satd. Flow (prot)		3499			3496		1787	1612			1767	
Flt Permitted		0.95			0.90		0.74	1.00			0.91	
Satd. Flow (perm)		3327			3140		1395	1612			1634	
Volume (vph)	5	1825	20	20	1470	20	140	5	100	5	5	5
Peak-hour factor, PHF	0.97	0.97	0.97	0.98	0.98	0.98	0.94	0.94	0.94	0.63	0.63	0.63
Adj. Flow (vph)	5	1881	21	20	1500	20	149	5	106	8	8	8
RTOR Reduction (vph)	0	1	0	0	1	0	0	29	0	0	7	0
Lane Group Flow (vph)	0	1906	0	0	1539	0	149	82	0	0	17	0
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%	1%	1%	1%	1%	1%	1%
Turn Type	Perm			Perm			Perm				Perm	
Protected Phases		6			2			8				4
Permitted Phases	6			2			8				4	
Actuated Green, G (s)		75.3			75.3		14.7	14.7			14.7	
Effective Green, g (s)		76.3			76.3		15.7	15.7			15.7	
Actuated g/C Ratio		0.76			0.76		0.16	0.16			0.16	
Clearance Time (s)		5.0			5.0		5.0	5.0			5.0	
Vehicle Extension (s)		6.0			6.0		3.0	3.0			3.0	
Lane Grp Cap (vph)		2539			2396		219	253			257	
v/s Ratio Prot								0.05				
v/s Ratio Perm		c0.57			0.49		c0.11				0.01	
v/c Ratio		0.75			0.64		0.68	0.33			0.07	
Uniform Delay, d1		6.6			5.5		39.8	37.4			35.9	
Progression Factor		0.37			0.55		1.00	1.00			1.00	
Incremental Delay, d2		1.6			1.1		8.4	0.8			0.1	
Delay (s)		4.0			4.1		48.2	38.2			36.0	
Level of Service		A			A		D	D			D	
Approach Delay (s)		4.0			4.1			43.9			36.0	
Approach LOS		A			A			D			D	

## Intersection Summary

HCM Average Control Delay	7.0	HCM Level of Service	A
HCM Volume to Capacity ratio	0.74		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	76.5%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis  
 1606: MD 410 & Riverdale Rd.

6/10/2008

	→	↘	↙	←	↖	↗
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑		↘	↑↑	↘↙	↗
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0		4.0	4.0	4.0	4.0
Lane Util. Factor	0.95		1.00	0.95	0.97	1.00
Frt	0.92		1.00	1.00	1.00	0.85
Flt Protected	1.00		0.95	1.00	0.95	1.00
Satd. Flow (prot)	3231		1752	3505	3400	1568
Flt Permitted	1.00		0.07	1.00	0.95	1.00
Satd. Flow (perm)	3231		121	3505	3400	1568
Volume (vph)	885	960	235	715	675	230
Peak-hour factor, PHF	0.97	0.97	0.95	0.95	0.95	0.95
Adj. Flow (vph)	912	990	247	753	711	242
RTOR Reduction (vph)	196	0	0	0	0	191
Lane Group Flow (vph)	1706	0	247	753	711	51
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%
Turn Type			pm+pt			Perm
Protected Phases	6		5	2	4	
Permitted Phases			2			4
Actuated Green, G (s)	56.0		70.0	70.0	20.0	20.0
Effective Green, g (s)	57.0		71.0	71.0	21.0	21.0
Actuated g/C Ratio	0.57		0.71	0.71	0.21	0.21
Clearance Time (s)	5.0		5.0	5.0	5.0	5.0
Vehicle Extension (s)	6.0		3.0	6.0	3.0	3.0
Lane Grp Cap (vph)	1842		249	2489	714	329
v/s Ratio Prot	0.53		c0.10	0.21	c0.21	
v/s Ratio Perm			c0.61			0.03
v/c Ratio	0.93		0.99	0.30	1.00	0.15
Uniform Delay, d1	19.6		38.5	5.4	39.5	32.3
Progression Factor	0.77		1.00	1.00	1.00	1.00
Incremental Delay, d2	6.8		54.6	0.3	32.4	0.2
Delay (s)	21.9		93.1	5.7	71.9	32.5
Level of Service	C		F	A	E	C
Approach Delay (s)	21.9			27.3	61.9	
Approach LOS	C			C	E	
<b>Intersection Summary</b>						
HCM Average Control Delay			33.2		HCM Level of Service	C
HCM Volume to Capacity ratio			0.97			
Actuated Cycle Length (s)			100.0		Sum of lost time (s)	8.0
Intersection Capacity Utilization			97.6%		ICU Level of Service	F
Analysis Period (min)			15			
c Critical Lane Group						

# HCM Signalized Intersection Capacity Analysis

7: MD 450 & Finns La.

6/11/2008



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↕↕↕		↖	↕↕↕		↖	↕	↖		↕↕	↖
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0		4.0	4.0
Lane Util. Factor	1.00	0.91		1.00	0.91		1.00	1.00	1.00		1.00	1.00
Frt	1.00	0.99		1.00	1.00		1.00	1.00	0.85		1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00		0.97	1.00
Satd. Flow (prot)	1703	4823		1703	4880		1787	1881	1599		1827	1599
Flt Permitted	0.07	1.00		0.23	1.00		0.54	1.00	1.00		0.79	1.00
Satd. Flow (perm)	124	4823		417	4880		1023	1881	1599		1489	1599
Volume (vph)	85	855	90	60	1960	35	55	35	15	50	35	130
Peak-hour factor, PHF	0.82	0.82	0.82	0.98	0.98	0.98	0.74	0.74	0.74	0.89	0.89	0.89
Adj. Flow (vph)	104	1043	110	61	2000	36	74	47	20	56	39	146
RTOR Reduction (vph)	0	4	0	0	1	0	0	0	18	0	0	3
Lane Group Flow (vph)	104	1149	0	61	2035	0	74	47	2	0	95	143
Heavy Vehicles (%)	6%	6%	6%	6%	6%	6%	1%	1%	1%	1%	1%	1%
Turn Type	pm+pt			pm+pt			Perm		Perm	Perm		pm+ov
Protected Phases	1	6		5	2			8			4	1
Permitted Phases	6			2			8		8	4		4
Actuated Green, G (s)	124.1	114.6		113.3	108.8		13.9	13.9	13.9		13.9	24.2
Effective Green, g (s)	126.1	116.6		116.3	110.8		15.9	15.9	15.9		15.9	27.2
Actuated g/C Ratio	0.84	0.78		0.78	0.74		0.11	0.11	0.11		0.11	0.18
Clearance Time (s)	5.0	6.0		5.0	6.0		6.0	6.0	6.0		6.0	5.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	223	3749		370	3605		108	199	169		158	333
v/s Ratio Prot	c0.04	0.24		0.01	c0.42			0.02				c0.03
v/s Ratio Perm	0.36			0.12			c0.07		0.00		0.06	0.06
v/c Ratio	0.47	0.31		0.16	0.56		0.69	0.24	0.01		0.60	0.43
Uniform Delay, d1	9.1	4.9		3.9	8.8		64.6	61.5	60.0		64.0	54.5
Progression Factor	1.08	1.02		0.17	0.15		1.00	1.00	1.00		1.00	1.00
Incremental Delay, d2	1.5	0.2		0.1	0.4		16.5	0.6	0.0		6.3	0.9
Delay (s)	11.3	5.2		0.8	1.7		81.1	62.1	60.1		70.3	55.4
Level of Service	B	A		A	A		F	E	E		E	E
Approach Delay (s)		5.7			1.7			71.8			61.3	
Approach LOS		A			A			E			E	

## Intersection Summary

























HCM Average Control Delay	9.5	HCM Level of Service	A
HCM Volume to Capacity ratio	0.56		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	64.6%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

# HCM Signalized Intersection Capacity Analysis

9: MD 450 & MD 410

6/11/2008

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	0.91	1.00	0.97	0.91	1.00	1.00	0.95	1.00	0.97	0.95	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1703	4893	1524	3303	4893	1524	1703	3406	1524	3303	3406	1524
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1703	4893	1524	3303	4893	1524	1703	3406	1524	3303	3406	1524
Volume (vph)	225	535	365	375	1670	100	615	850	350	145	595	200
Peak-hour factor, PHF	0.90	0.90	0.90	0.96	0.96	0.96	0.98	0.98	0.98	0.88	0.88	0.88
Adj. Flow (vph)	250	594	406	391	1740	104	628	867	357	165	676	227
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	226	0	0	160
Lane Group Flow (vph)	250	594	406	391	1740	104	628	867	131	165	676	67
Heavy Vehicles (%)	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%
Turn Type	Prot		Free	Prot		Free	Prot		Perm	Prot		Perm
Protected Phases	1	6		5	2		3	8		7	4	
Permitted Phases			Free			Free			8			4
Actuated Green, G (s)	16.0	47.0	150.0	16.0	47.0	150.0	43.0	52.9	52.9	12.1	22.0	22.0
Effective Green, g (s)	17.0	49.0	150.0	17.0	49.0	150.0	44.0	54.9	54.9	13.1	24.0	24.0
Actuated g/C Ratio	0.11	0.33	1.00	0.11	0.33	1.00	0.29	0.37	0.37	0.09	0.16	0.16
Clearance Time (s)	5.0	6.0		5.0	6.0		5.0	6.0	6.0	5.0	6.0	6.0
Vehicle Extension (s)	3.0	6.0		3.0	6.0		3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	193	1598	1524	374	1598	1524	500	1247	558	288	545	244
v/s Ratio Prot	c0.15	0.12		0.12	c0.36		c0.37	0.25		0.05	c0.20	
v/s Ratio Perm			0.27			0.07			0.09			0.04
v/c Ratio	1.30	0.37	0.27	1.05	1.09	0.07	1.26	0.70	0.23	0.57	1.24	0.28
Uniform Delay, d1	66.5	38.7	0.0	66.5	50.5	0.0	53.0	40.4	33.0	65.8	63.0	55.4
Progression Factor	1.11	0.78	1.00	1.15	0.73	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	164.9	0.6	0.4	56.7	50.0	0.1	130.8	1.7	0.2	2.7	123.1	0.6
Delay (s)	238.5	30.7	0.4	132.9	87.1	0.1	183.8	42.1	33.2	68.5	186.1	56.0
Level of Service	F	C	A	F	F	A	F	D	C	E	F	E
Approach Delay (s)		62.4			91.1			88.4			140.3	
Approach LOS		E			F			F			F	
<b>Intersection Summary</b>												
HCM Average Control Delay			92.9			HCM Level of Service			F			
HCM Volume to Capacity ratio			1.20									
Actuated Cycle Length (s)			150.0			Sum of lost time (s)			16.0			
Intersection Capacity Utilization			108.6%			ICU Level of Service			G			
Analysis Period (min)			15									

c Critical Lane Group

# HCM Signalized Intersection Capacity Analysis

7: MD 450 & Finns La.

6/11/2008

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations													
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	0.91		1.00	0.91		1.00	1.00	1.00		1.00	1.00	
Frt	1.00	0.99		1.00	0.99		1.00	1.00	0.85		1.00	0.85	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00		0.97	1.00	
Satd. Flow (prot)	1752	5008		1752	5000		1787	1881	1599		1828	1599	
Flt Permitted	0.16	1.00		0.11	1.00		0.58	1.00	1.00		0.77	1.00	
Satd. Flow (perm)	293	5008		201	5000		1098	1881	1599		1442	1599	
Volume (vph)	160	1535	60	105	1190	60	120	60	30	55	40	130	
Peak-hour factor, PHF	0.96	0.96	0.96	0.92	0.92	0.92	0.78	0.78	0.78	0.89	0.89	0.89	
Adj. Flow (vph)	167	1599	62	114	1293	65	154	77	38	62	45	146	
RTOR Reduction (vph)	0	2	0	0	2	0	0	0	32	0	0	20	
Lane Group Flow (vph)	167	1659	0	114	1356	0	154	77	6	0	107	126	
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%	1%	1%	1%	1%	1%	1%	
Turn Type	pm+pt			pm+pt			Perm		Perm	Perm		pm+ov	
Protected Phases	1	6		5	2			8				4	1
Permitted Phases	6			2			8		8	4			4
Actuated Green, G (s)	110.3	98.9		108.7	98.1		23.5	23.5	23.5		23.5	34.9	
Effective Green, g (s)	113.3	100.9		111.7	100.1		25.5	25.5	25.5		25.5	37.9	
Actuated g/C Ratio	0.76	0.67		0.74	0.67		0.17	0.17	0.17		0.17	0.25	
Clearance Time (s)	5.0	6.0		5.0	6.0		6.0	6.0	6.0		6.0	5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	342	3369		270	3337		187	320	272		245	447	
v/s Ratio Prot	c0.04	c0.33		0.03	0.27			0.04				0.02	
v/s Ratio Perm	0.33			0.28			c0.14		0.00		0.07	0.06	
v/c Ratio	0.49	0.49		0.42	0.41		0.82	0.24	0.02		0.44	0.28	
Uniform Delay, d1	6.6	12.0		7.7	11.4		60.1	53.9	51.9		55.8	45.1	
Progression Factor	4.02	0.46		0.76	2.29		1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	1.0	0.5		0.7	0.2		24.5	0.4	0.0		1.2	0.3	
Delay (s)	27.5	6.0		6.5	26.3		84.5	54.3	51.9		57.1	45.4	
Level of Service	C	A		A	C		F	D	D		E	D	
Approach Delay (s)		8.0			24.8			71.3			50.4		
Approach LOS		A			C			E			D		
<b>Intersection Summary</b>													
HCM Average Control Delay			21.7			HCM Level of Service			C				
HCM Volume to Capacity ratio			0.54										
Actuated Cycle Length (s)			150.0			Sum of lost time (s)			8.0				
Intersection Capacity Utilization			60.1%			ICU Level of Service			B				
Analysis Period (min)			15										

c Critical Lane Group

# HCM Signalized Intersection Capacity Analysis

9: MD 450 & MD 410

6/11/2008

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	0.91	1.00	0.97	0.91	1.00	1.00	0.95	1.00	0.97	0.95	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1752	5036	1568	3400	5036	1568	1752	3505	1568	3400	3505	1568
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1752	5036	1568	3400	5036	1568	1752	3505	1568	3400	3505	1568
Volume (vph)	155	1390	530	225	1085	130	445	620	210	155	820	220
Peak-hour factor, PHF	0.92	0.92	0.92	0.93	0.93	0.93	0.96	0.96	0.96	0.91	0.91	0.91
Adj. Flow (vph)	168	1511	576	242	1167	140	464	646	219	170	901	242
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	155	0	0	161
Lane Group Flow (vph)	168	1511	576	242	1167	140	464	646	64	170	901	81
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%
Turn Type	Prot		Free	Prot		Free	Prot		Perm	Prot		Perm
Protected Phases	1	6		5	2		3	8		7	4	
Permitted Phases			Free			Free			8			4
Actuated Green, G (s)	15.6	59.2	150.0	14.8	58.4	150.0	30.0	41.6	41.6	12.4	24.0	24.0
Effective Green, g (s)	16.6	61.2	150.0	15.8	60.4	150.0	31.0	43.6	43.6	13.4	26.0	26.0
Actuated g/C Ratio	0.11	0.41	1.00	0.11	0.40	1.00	0.21	0.29	0.29	0.09	0.17	0.17
Clearance Time (s)	5.0	6.0		5.0	6.0		5.0	6.0	6.0	5.0	6.0	6.0
Vehicle Extension (s)	3.0	6.0		3.0	6.0		3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	194	2055	1568	358	2028	1568	362	1019	456	304	608	272
v/s Ratio Prot	c0.10	c0.30		0.07	0.23		c0.26	0.18		0.05	c0.26	
v/s Ratio Perm			c0.37			0.09			0.04			0.05
v/c Ratio	0.87	0.74	0.37	0.68	0.58	0.09	1.28	0.63	0.14	0.56	1.48	0.30
Uniform Delay, d1	65.6	37.5	0.0	64.6	34.8	0.0	59.5	46.3	39.3	65.5	62.0	54.0
Progression Factor	1.28	0.65	1.00	1.09	0.57	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	26.0	1.9	0.5	4.8	1.2	0.1	146.4	1.3	0.1	2.2	225.6	0.6
Delay (s)	110.0	26.4	0.5	75.1	21.0	0.1	205.9	47.6	39.5	67.7	287.6	54.6
Level of Service	F	C	A	E	C	A	F	D	D	E	F	D
Approach Delay (s)		26.0			27.5			101.5			216.2	
Approach LOS		C			C			F			F	
<b>Intersection Summary</b>												
HCM Average Control Delay			80.7			HCM Level of Service			F			
HCM Volume to Capacity ratio			1.00									
Actuated Cycle Length (s)			150.0			Sum of lost time (s)			12.0			
Intersection Capacity Utilization			93.9%			ICU Level of Service			F			
Analysis Period (min)			15									

c Critical Lane Group



# HCM Signalized Intersection Capacity Analysis

## 9: Battery Lane & Woodmont Ave

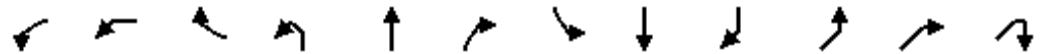
6/10/2008

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor		0.95			0.95		1.00	0.95		1.00	0.95	
Frt		0.96			0.99		1.00	0.97		1.00	0.98	
Flt Protected		0.99			0.98		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		3272			3326		1719	3331		1719	3371	
Flt Permitted		0.87			0.58		0.19	1.00		0.61	1.00	
Satd. Flow (perm)		2856			1989		349	3331		1104	3371	
Volume (vph)	67	218	104	47	51	8	29	153	40	58	996	150
Peak-hour factor, PHF	0.89	0.89	0.89	0.86	0.86	0.86	0.85	0.85	0.85	0.92	0.92	0.92
Adj. Flow (vph)	75	245	117	55	59	9	34	180	47	63	1083	163
RTOR Reduction (vph)	0	32	0	0	7	0	0	11	0	0	5	0
Lane Group Flow (vph)	0	405	0	0	116	0	34	216	0	63	1241	0
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%
Turn Type	Perm			pm+pt			Perm			Perm		
Protected Phases		4		3	8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)		21.2			21.2		90.8	90.8		90.8	90.8	
Effective Green, g (s)		21.2			21.2		90.8	90.8		90.8	90.8	
Actuated g/C Ratio		0.18			0.18		0.76	0.76		0.76	0.76	
Clearance Time (s)		4.0			4.0		4.0	4.0		4.0	4.0	
Vehicle Extension (s)		3.0			3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		505			351		264	2520		835	2551	
v/s Ratio Prot								0.06			c0.37	
v/s Ratio Perm		c0.14			0.06		0.10			0.06		
v/c Ratio		0.80			0.33		0.13	0.09		0.08	0.49	
Uniform Delay, d1		47.4			43.2		3.9	3.8		3.8	5.6	
Progression Factor		1.00			1.00		0.74	0.60		1.00	1.00	
Incremental Delay, d2		8.9			0.6		1.0	0.1		0.2	0.7	
Delay (s)		56.3			43.8		3.9	2.3		3.9	6.3	
Level of Service		E			D		A	A		A	A	
Approach Delay (s)		56.3			43.8			2.5			6.2	
Approach LOS		E			D			A			A	
<b>Intersection Summary</b>												
HCM Average Control Delay			18.2				HCM Level of Service				B	
HCM Volume to Capacity ratio			0.55									
Actuated Cycle Length (s)			120.0				Sum of lost time (s)				8.0	
Intersection Capacity Utilization			63.6%				ICU Level of Service				B	
Analysis Period (min)			15									
c Critical Lane Group												

# HCM Signalized Intersection Capacity Analysis

## 11: Cordell Ave & Woodmont Ave

6/10/2008



Movement	WBL2	WBL	WBR	NBL	NBT	NBR	SBL	SBT	SBR	NEL	NER	NER2
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0		4.0
Lane Util. Factor	1.00	1.00		1.00	0.95		1.00	0.95		1.00		1.00
Frt	1.00	0.85		1.00	0.97		1.00	0.99		1.00		0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95		1.00
Satd. Flow (prot)	1787	1599		1719	3345		1719	3399		1787		1599
Flt Permitted	0.95	1.00		0.22	1.00		0.60	1.00		0.95		1.00
Satd. Flow (perm)	1787	1599		407	3345		1085	3399		1787		1599
Volume (vph)	23	0	26	4	177	39	56	1008	83	19	0	21
Peak-hour factor, PHF	0.88	0.88	0.88	0.88	0.88	0.88	0.95	0.95	0.95	0.87	0.87	0.87
Adj. Flow (vph)	26	0	30	5	201	44	59	1061	87	22	0	24
RTOR Reduction (vph)	0	26	0	0	9	0	0	3	0	0	0	21
Lane Group Flow (vph)	26	4	0	5	236	0	59	1145	0	22	0	3
Heavy Vehicles (%)	1%	1%	1%	5%	5%	5%	5%	5%	5%	1%	1%	1%
Turn Type	Perm			Perm			Perm			custom		custom
Protected Phases		8			2			6				
Permitted Phases	8			2			6			4		4
Actuated Green, G (s)	16.0	16.0		94.0	94.0		94.0	94.0		16.0		16.0
Effective Green, g (s)	17.0	17.0		95.0	95.0		95.0	95.0		17.0		17.0
Actuated g/C Ratio	0.14	0.14		0.79	0.79		0.79	0.79		0.14		0.14
Clearance Time (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0		5.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0		3.0
Lane Grp Cap (vph)	253	227		322	2648		859	2691		253		227
v/s Ratio Prot		0.00			0.07			c0.34				
v/s Ratio Perm	c0.01			0.01			0.05			0.01		0.00
v/c Ratio	0.10	0.02		0.02	0.09		0.07	0.43		0.09		0.01
Uniform Delay, d1	44.9	44.3		2.6	2.8		2.8	3.9		44.8		44.3
Progression Factor	1.00	1.00		0.44	0.37		0.63	0.59		1.00		1.00
Incremental Delay, d2	0.2	0.0		0.1	0.1		0.1	0.4		0.1		0.0
Delay (s)	45.0	44.4		1.2	1.1		1.9	2.7		44.9		44.3
Level of Service	D	D		A	A		A	A		D		D
Approach Delay (s)		44.7			1.1			2.7		44.6		
Approach LOS		D			A			A		D		

### Intersection Summary

HCM Average Control Delay	5.2	HCM Level of Service	A
HCM Volume to Capacity ratio	0.38		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	53.8%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

# HCM Signalized Intersection Capacity Analysis

## 14: St. Elmo Ave & Woodmont Ave

6/10/2008



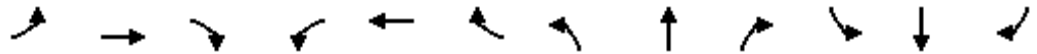
Movement	WBL	WBR	NBL	NBT	NBR	SBL	SBT	SBR	NEL	NER	NER2
Lane Configurations			↶	↷		↶	↷		↶		↷
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)			4.0	4.0			4.0		4.0		4.0
Lane Util. Factor			1.00	0.95			0.95		1.00		0.95
Frt			1.00	1.00			0.96		1.00		0.85
Flt Protected			0.95	1.00			1.00		0.95		1.00
Satd. Flow (prot)			1719	3438			3316		1787		1519
Flt Permitted			0.22	1.00			1.00		0.95		1.00
Satd. Flow (perm)			404	3438			3316		1787		1519
Volume (vph)	0	0	16	123	0	0	805	249	97	0	35
Peak-hour factor, PHF	0.92	0.92	0.71	0.71	0.71	0.92	0.92	0.92	0.77	0.77	0.77
Adj. Flow (vph)	0	0	23	173	0	0	875	271	126	0	45
RTOR Reduction (vph)	0	0	0	0	0	0	15	0	0	0	38
Lane Group Flow (vph)	0	0	23	173	0	0	1131	0	126	0	7
Heavy Vehicles (%)	1%	1%	5%	5%	5%	5%	5%	5%	1%	1%	1%
Turn Type			Perm			Perm			Prot		custom
Protected Phases				2			6		4		
Permitted Phases			2			6					4
Actuated Green, G (s)			92.8	92.8			92.8		17.2		17.2
Effective Green, g (s)			93.8	93.8			93.8		18.2		18.2
Actuated g/C Ratio			0.78	0.78			0.78		0.15		0.15
Clearance Time (s)			5.0	5.0			5.0		5.0		5.0
Vehicle Extension (s)			3.0	3.0			3.0		3.0		3.0
Lane Grp Cap (vph)			316	2687			2592		271		230
v/s Ratio Prot				0.05			c0.34		c0.07		
v/s Ratio Perm			0.06								0.00
v/c Ratio			0.07	0.06			0.44		0.46		0.03
Uniform Delay, d1			3.0	3.0			4.3		46.5		43.4
Progression Factor			0.69	0.71			0.35		1.00		1.00
Incremental Delay, d2			0.4	0.0			0.5		1.3		0.1
Delay (s)			2.5	2.2			2.0		47.7		43.4
Level of Service			A	A			A		D		D
Approach Delay (s)	0.0			2.2			2.0		46.6		
Approach LOS	A			A			A		D		
<b>Intersection Summary</b>											
HCM Average Control Delay			7.1				HCM Level of Service		A		
HCM Volume to Capacity ratio			0.44								
Actuated Cycle Length (s)			120.0				Sum of lost time (s)		8.0		
Intersection Capacity Utilization			43.0%				ICU Level of Service		A		
Analysis Period (min)			15								

c Critical Lane Group

# HCM Signalized Intersection Capacity Analysis

## 17: Norfolk Ave & Woodmont Ave

6/10/2008



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗		↖	↗		↖	↕		↖	↗	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95		1.00	0.95	
Frt	1.00	0.92		1.00	0.96		1.00	0.94		1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1787	1735		1787	1810		1719	3219		1719	3413	
Flt Permitted	0.65	1.00		0.55	1.00		0.31	1.00		0.64	1.00	
Satd. Flow (perm)	1228	1735		1035	1810		569	3219		1151	3413	
Volume (vph)	23	92	98	79	93	31	15	85	62	67	735	38
Peak-hour factor, PHF	0.89	0.89	0.89	0.80	0.80	0.80	0.80	0.80	0.80	0.96	0.96	0.96
Adj. Flow (vph)	26	103	110	99	116	39	19	106	78	70	766	40
RTOR Reduction (vph)	0	78	0	0	25	0	0	31	0	0	5	0
Lane Group Flow (vph)	26	135	0	99	130	0	19	153	0	70	801	0
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	5%	5%	5%	5%	5%	5%
Parking (#/hr)			0									
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	15.0	15.0		15.0	15.0		35.0	35.0		35.0	35.0	
Effective Green, g (s)	16.0	16.0		16.0	16.0		36.0	36.0		36.0	36.0	
Actuated g/C Ratio	0.27	0.27		0.27	0.27		0.60	0.60		0.60	0.60	
Clearance Time (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	327	463		276	483		341	1931		691	2048	
v/s Ratio Prot		0.08			0.07			0.05			c0.23	
v/s Ratio Perm	0.02			c0.10			0.03			0.06		
v/c Ratio	0.08	0.29		0.36	0.27		0.06	0.08		0.10	0.39	
Uniform Delay, d1	16.5	17.5		17.8	17.4		5.0	5.0		5.1	6.3	
Progression Factor	1.00	1.00		1.00	1.00		0.68	0.76		0.54	0.62	
Incremental Delay, d2	0.1	0.3		0.8	0.3		0.3	0.1		0.3	0.5	
Delay (s)	16.6	17.8		18.6	17.7		3.7	3.9		3.0	4.4	
Level of Service	B	B		B	B		A	A		A	A	
Approach Delay (s)		17.7			18.1			3.9			4.3	
Approach LOS		B			B			A			A	
<b>Intersection Summary</b>												
HCM Average Control Delay			8.5				HCM Level of Service				A	
HCM Volume to Capacity ratio			0.38									
Actuated Cycle Length (s)			60.0				Sum of lost time (s)			8.0		
Intersection Capacity Utilization			53.4%				ICU Level of Service			A		
Analysis Period (min)			15									
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis  
 20: Old Georgetown Rd & Woodmont Ave

6/10/2008



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰		↰↰	↰	↰↰						↰↰	↰
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0		4.0	4.0	4.0						4.0	4.0
Lane Util. Factor	1.00		0.88	1.00	0.95						0.95	1.00
Frt	1.00		0.85	1.00	0.97						1.00	0.85
Flt Protected	0.95		1.00	0.95	1.00						1.00	1.00
Satd. Flow (prot)	1719		2707	1719	3346						3438	1538
Flt Permitted	0.95		1.00	0.95	1.00						1.00	1.00
Satd. Flow (perm)	1719		2707	1719	3346						3438	1538
Volume (vph)	140	0	1233	105	694	151	0	0	0	0	471	40
Peak-hour factor, PHF	0.94	0.94	0.94	0.97	0.97	0.97	0.69	0.69	0.69	0.90	0.90	0.90
Adj. Flow (vph)	149	0	1312	108	715	156	0	0	0	0	523	44
RTOR Reduction (vph)	0	0	26	34	14	0	0	0	0	0	0	35
Lane Group Flow (vph)	149	0	1286	74	857	0	0	0	0	0	523	9
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%
Turn Type	Prot		custom		Perm							Perm
Protected Phases	7					8						6
Permitted Phases			4	8								6
Actuated Green, G (s)	20.0		86.2	61.2	61.2						23.8	23.8
Effective Green, g (s)	21.0		87.2	62.2	62.2						24.8	24.8
Actuated g/C Ratio	0.18		0.73	0.52	0.52						0.21	0.21
Clearance Time (s)	5.0		5.0	5.0	5.0						5.0	5.0
Vehicle Extension (s)	3.0		3.0	3.0	3.0						3.0	3.0
Lane Grp Cap (vph)	301		1967	891	1734						711	318
v/s Ratio Prot	0.09				0.26						c0.15	
v/s Ratio Perm			c0.48	0.04								0.01
v/c Ratio	0.50		0.65	0.08	0.49						0.74	0.03
Uniform Delay, d1	44.7		8.5	14.5	18.7						44.5	38.0
Progression Factor	1.00		1.00	0.18	0.23						0.79	0.68
Incremental Delay, d2	1.3		1.7	0.2	1.0						3.8	0.0
Delay (s)	46.0		10.2	2.7	5.2						39.0	25.8
Level of Service	D		B	A	A						D	C
Approach Delay (s)		13.9			4.9			0.0			38.0	
Approach LOS		B			A			A			D	

Intersection Summary

HCM Average Control Delay	15.5	HCM Level of Service	B
HCM Volume to Capacity ratio	0.67		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	72.0%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

# HCM Signalized Intersection Capacity Analysis

## 25: Edgemoor Lane & Woodmont Ave

6/10/2008



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑			↑↑						↑↑↑↑	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0						4.0	
Lane Util. Factor		0.95			0.95						0.86	
Frt		0.85			1.00						1.00	
Flt Protected		1.00			0.95						1.00	
Satd. Flow (prot)		2922			3266						6200	
Flt Permitted		1.00			0.58						1.00	
Satd. Flow (perm)		2922			1985						6200	
Volume (vph)	0	0	168	49	0	0	0	0	0	95	1696	16
Peak-hour factor, PHF	0.92	0.92	0.93	0.87	0.92	0.92	0.92	0.92	0.92	0.95	0.95	0.95
Adj. Flow (vph)	0	0	181	56	0	0	0	0	0	100	1785	17
RTOR Reduction (vph)	0	17	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	164	0	0	56	0	0	0	0	0	1902	0
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%	2%	2%	2%	5%	5%	5%
Turn Type					Perm						Perm	
Protected Phases		4			8						6	
Permitted Phases				8						6		
Actuated Green, G (s)		17.0			17.0						93.0	
Effective Green, g (s)		18.0			18.0						94.0	
Actuated g/C Ratio		0.15			0.15						0.78	
Clearance Time (s)		5.0			5.0						5.0	
Vehicle Extension (s)		3.0			3.0						3.0	
Lane Grp Cap (vph)		438			298						4857	
v/s Ratio Prot		c0.06										
v/s Ratio Perm					0.03						0.31	
v/c Ratio		0.37			0.19						0.39	
Uniform Delay, d1		45.9			44.6						4.1	
Progression Factor		1.00			0.81						0.76	
Incremental Delay, d2		0.5			0.3						0.2	
Delay (s)		46.5			36.4						3.3	
Level of Service		D			D						A	
Approach Delay (s)		46.5			36.4			0.0			3.3	
Approach LOS		D			D			A			A	
<b>Intersection Summary</b>												
HCM Average Control Delay			7.8			HCM Level of Service					A	
HCM Volume to Capacity ratio			0.39									
Actuated Cycle Length (s)			120.0			Sum of lost time (s)				8.0		
Intersection Capacity Utilization			45.1%			ICU Level of Service				A		
Analysis Period (min)			15									

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis  
 33: Old Georgetown Rd & Edgemoor Lane

6/10/2008



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations					←←←		←	↑			↑	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					4.0		4.0	4.0			4.0	
Lane Util. Factor					0.91		1.00	1.00			1.00	
Frt					1.00		1.00	1.00			0.94	
Flt Protected					0.99		0.95	1.00			1.00	
Satd. Flow (prot)					4891		1719	1810			1696	
Flt Permitted					0.99		0.53	1.00			1.00	
Satd. Flow (perm)					4891		956	1810			1696	
Volume (vph)	0	0	0	116	808	24	85	28	0	0	65	57
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	0	0	126	878	26	92	30	0	0	71	62
RTOR Reduction (vph)	0	0	0	0	1	0	0	0	0	0	37	0
Lane Group Flow (vph)	0	0	0	0	1029	0	92	30	0	0	96	0
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%
Turn Type					Perm		Perm					
Protected Phases						8		2			6	
Permitted Phases					8		2					
Actuated Green, G (s)						92.0		19.0	19.0			19.0
Effective Green, g (s)						93.0		19.0	19.0			19.0
Actuated g/C Ratio						0.78		0.16	0.16			0.16
Clearance Time (s)						5.0		4.0	4.0			4.0
Vehicle Extension (s)						3.0		3.0	3.0			3.0
Lane Grp Cap (vph)						3791		151	287			269
v/s Ratio Prot								0.02				0.06
v/s Ratio Perm						0.21		c0.10				
v/c Ratio						0.27		0.61	0.10			0.36
Uniform Delay, d1						3.8		47.0	43.2			45.0
Progression Factor						0.05		1.06	1.04			1.00
Incremental Delay, d2						0.1		6.6	0.2			0.8
Delay (s)						0.3		56.2	45.3			45.9
Level of Service						A		E	D			D
Approach Delay (s)		0.0				0.3		53.5				45.9
Approach LOS		A				A		D				D
<b>Intersection Summary</b>												
HCM Average Control Delay			10.1			HCM Level of Service					B	
HCM Volume to Capacity ratio			0.33									
Actuated Cycle Length (s)			120.0			Sum of lost time (s)					8.0	
Intersection Capacity Utilization			40.1%			ICU Level of Service					A	
Analysis Period (min)			15									

c Critical Lane Group

# HCM Signalized Intersection Capacity Analysis

## 9: Battery Lane & Woodmont Ave

6/10/2008



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕↕			↕↕		↕	↕↕		↕	↕↕	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor		0.95			0.95		1.00	0.95		1.00	0.95	
Frt		0.97			0.99		1.00	0.98		1.00	0.97	
Flt Protected		0.99			0.98		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		3350			3426		1752	3436		1752	3399	
Flt Permitted		0.81			0.70		0.31	1.00		0.38	1.00	
Satd. Flow (perm)		2757			2444		579	3436		695	3399	
Volume (vph)	72	134	53	48	86	5	55	541	82	40	638	161
Peak-hour factor, PHF	0.86	0.86	0.86	0.86	0.86	0.86	0.90	0.90	0.90	0.94	0.94	0.94
Adj. Flow (vph)	84	156	62	56	100	6	61	601	91	43	679	171
RTOR Reduction (vph)	0	24	0	0	4	0	0	6	0	0	11	0
Lane Group Flow (vph)	0	278	0	0	158	0	61	686	0	43	839	0
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%
Turn Type	Perm			pm+pt			Perm			Perm		
Protected Phases		4		3	8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)		16.9			16.9		75.1	75.1		75.1	75.1	
Effective Green, g (s)		16.9			16.9		75.1	75.1		75.1	75.1	
Actuated g/C Ratio		0.17			0.17		0.75	0.75		0.75	0.75	
Clearance Time (s)		4.0			4.0		4.0	4.0		4.0	4.0	
Vehicle Extension (s)		3.0			3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		466			413		435	2580		522	2553	
v/s Ratio Prot								0.20			c0.25	
v/s Ratio Perm		c0.10			0.06		0.11			0.06		
v/c Ratio		0.60			0.38		0.14	0.27		0.08	0.33	
Uniform Delay, d1		38.4			36.9		3.5	3.9		3.3	4.1	
Progression Factor		1.00			1.00		0.62	0.62		1.00	1.00	
Incremental Delay, d2		2.1			0.6		0.7	0.3		0.3	0.3	
Delay (s)		40.5			37.5		2.8	2.6		3.6	4.5	
Level of Service		D			D		A	A		A	A	
Approach Delay (s)		40.5			37.5			2.7			4.4	
Approach LOS		D			D			A			A	

### Intersection Summary

HCM Average Control Delay	11.5	HCM Level of Service	B
HCM Volume to Capacity ratio	0.38		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	50.9%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group



# HCM Signalized Intersection Capacity Analysis

## 11: Cordell Ave & Woodmont Ave

6/10/2008



Movement	WBL2	WBL	WBR	NBL	NBT	NBR	SBL	SBT	SBR	NEL	NER	NER2
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0		4.0
Lane Util. Factor	1.00	1.00		1.00	0.95		1.00	0.95		1.00		1.00
Frt	1.00	0.85		1.00	0.96		1.00	0.97		1.00		0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95		1.00
Satd. Flow (prot)	1787	1599		1752	3377		1752	3401		1787		1599
Flt Permitted	0.95	1.00		0.36	1.00		0.46	1.00		0.95		1.00
Satd. Flow (perm)	1787	1599		659	3377		849	3401		1787		1599
Volume (vph)	17	0	33	23	372	120	53	550	136	69	0	55
Peak-hour factor, PHF	0.76	0.76	0.76	0.96	0.96	0.96	0.93	0.93	0.93	0.80	0.80	0.80
Adj. Flow (vph)	22	0	43	24	388	125	57	591	146	86	0	69
RTOR Reduction (vph)	0	36	0	0	17	0	0	12	0	0	0	57
Lane Group Flow (vph)	22	7	0	24	496	0	57	725	0	86	0	12
Heavy Vehicles (%)	1%	1%	1%	3%	3%	3%	3%	3%	3%	1%	1%	1%
Turn Type	Perm			Perm			Perm			custom		custom
Protected Phases		8			2			6				
Permitted Phases	8			2			6			4		4
Actuated Green, G (s)	16.0	16.0		74.0	74.0		74.0	74.0		16.0		16.0
Effective Green, g (s)	17.0	17.0		75.0	75.0		75.0	75.0		17.0		17.0
Actuated g/C Ratio	0.17	0.17		0.75	0.75		0.75	0.75		0.17		0.17
Clearance Time (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0		5.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0		3.0
Lane Grp Cap (vph)	304	272		494	2533		637	2551		304		272
v/s Ratio Prot		0.00			0.15			c0.21				
v/s Ratio Perm	0.01			0.04			0.07			c0.05		0.01
v/c Ratio	0.07	0.03		0.05	0.20		0.09	0.28		0.28		0.04
Uniform Delay, d1	34.9	34.6		3.2	3.7		3.3	4.0		36.2		34.7
Progression Factor	1.00	1.00		0.43	0.46		0.77	0.73		1.00		1.00
Incremental Delay, d2	0.1	0.0		0.2	0.2		0.3	0.3		0.5		0.1
Delay (s)	35.0	34.6		1.6	1.8		2.8	3.2		36.7		34.8
Level of Service	C	C		A	A		A	A		D		C
Approach Delay (s)		34.8			1.8			3.2		35.8		
Approach LOS		C			A			A		D		

### Intersection Summary

HCM Average Control Delay	7.3	HCM Level of Service	A
HCM Volume to Capacity ratio	0.28		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	43.4%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

# HCM Signalized Intersection Capacity Analysis

## 14: St. Elmo Ave & Woodmont Ave

6/10/2008



Movement	WBL	WBR	NBL	NBT	NBR	SBL	SBT	SBR	NEL	NER	NER2
Lane Configurations											
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)			4.0	4.0			4.0		4.0		4.0
Lane Util. Factor			1.00	1.00			0.95		1.00		0.95
Frt			1.00	1.00			0.95		1.00		0.85
Flt Protected			0.95	1.00			1.00		0.95		1.00
Satd. Flow (prot)			1752	1845			3328		1787		1519
Flt Permitted			0.36	1.00			1.00		0.95		1.00
Satd. Flow (perm)			671	1845			3328		1787		1519
Volume (vph)	0	0	36	280	0	0	413	209	235	0	40
Peak-hour factor, PHF	0.92	0.92	0.90	0.90	0.90	0.88	0.88	0.88	0.87	0.87	0.87
Adj. Flow (vph)	0	0	40	311	0	0	469	238	270	0	46
RTOR Reduction (vph)	0	0	0	0	0	0	35	0	0	0	36
Lane Group Flow (vph)	0	0	40	311	0	0	672	0	270	0	10
Heavy Vehicles (%)	2%	2%	3%	3%	3%	3%	3%	3%	1%	1%	1%
Turn Type			Perm			Perm			Prot		custom
Protected Phases				2			6		4		
Permitted Phases			2			6					4
Actuated Green, G (s)			70.2	70.2			70.2		19.8		19.8
Effective Green, g (s)			71.2	71.2			71.2		20.8		20.8
Actuated g/C Ratio			0.71	0.71			0.71		0.21		0.21
Clearance Time (s)			5.0	5.0			5.0		5.0		5.0
Vehicle Extension (s)			3.0	3.0			3.0		3.0		3.0
Lane Grp Cap (vph)			478	1314			2370		372		316
v/s Ratio Prot				0.17			c0.20		c0.15		
v/s Ratio Perm			0.06								0.01
v/c Ratio			0.08	0.24			0.28		0.73		0.03
Uniform Delay, d1			4.4	5.0			5.2		36.9		31.6
Progression Factor			0.58	0.60			0.58		1.00		1.00
Incremental Delay, d2			0.3	0.4			0.3		6.9		0.0
Delay (s)			2.9	3.4			3.3		43.8		31.6
Level of Service			A	A			A		D		C
Approach Delay (s)	0.0			3.4			3.3		42.1		
Approach LOS	A			A			A		D		
<b>Intersection Summary</b>											
HCM Average Control Delay			12.2				HCM Level of Service		B		
HCM Volume to Capacity ratio			0.38								
Actuated Cycle Length (s)			100.0				Sum of lost time (s)		8.0		
Intersection Capacity Utilization			45.3%				ICU Level of Service		A		
Analysis Period (min)			15								

c Critical Lane Group

# HCM Signalized Intersection Capacity Analysis

## 17: Norfolk Ave & Woodmont Ave

6/10/2008



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗		↖	↗		↖	↗		↖	↗	↖
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	0.95	
Frt	1.00	0.92		1.00	0.95		1.00	0.95		1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1787	1732		1787	1790		1752	1761		1752	3455	
Flt Permitted	0.64	1.00		0.58	1.00		0.50	1.00		0.51	1.00	
Satd. Flow (perm)	1212	1732		1086	1790		930	1761		942	3455	
Volume (vph)	37	96	109	53	93	45	49	234	102	62	354	37
Peak-hour factor, PHF	0.89	0.89	0.89	0.77	0.77	0.77	0.95	0.95	0.95	0.92	0.92	0.92
Adj. Flow (vph)	42	108	122	69	121	58	52	246	107	67	385	40
RTOR Reduction (vph)	0	83	0	0	39	0	0	27	0	0	13	0
Lane Group Flow (vph)	42	147	0	69	140	0	52	326	0	67	412	0
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	3%	3%	3%	3%	3%	3%
Parking (#/hr)			0									
Turn Type	Perm		Perm		Perm		Perm		Perm		Perm	
Protected Phases	4		8		8		2		2		6	
Permitted Phases	4		8		8		2		2		6	
Actuated Green, G (s)	15.0	15.0		15.0	15.0		25.0	25.0		25.0	25.0	
Effective Green, g (s)	16.0	16.0		16.0	16.0		26.0	26.0		26.0	26.0	
Actuated g/C Ratio	0.32	0.32		0.32	0.32		0.52	0.52		0.52	0.52	
Clearance Time (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	388	554		348	573		484	916		490	1797	
v/s Ratio Prot	c0.08		0.08		0.08		c0.19		c0.19		0.12	
v/s Ratio Perm	0.03		0.06		0.06		0.06		0.06		0.07	
v/c Ratio	0.11	0.27		0.20	0.24		0.11	0.36		0.14	0.23	
Uniform Delay, d1	12.0	12.6		12.3	12.5		6.1	7.1		6.2	6.5	
Progression Factor	1.00	1.00		1.00	1.00		0.69	0.67		0.82	0.93	
Incremental Delay, d2	0.1	0.3		0.3	0.2		0.4	1.0		0.6	0.3	
Delay (s)	12.1	12.9		12.6	12.8		4.6	5.7		5.7	6.4	
Level of Service	B	B		B	B		A	A		A	A	
Approach Delay (s)	12.8		12.7		12.7		5.6		5.6		6.3	
Approach LOS	B		B		B		A		A		A	
<b>Intersection Summary</b>												
HCM Average Control Delay	8.5		8.5		8.5		HCM Level of Service		A		A	
HCM Volume to Capacity ratio	0.32		0.32		0.32		0.32		0.32		0.32	
Actuated Cycle Length (s)	50.0		50.0		50.0		Sum of lost time (s)		8.0		8.0	
Intersection Capacity Utilization	50.4%		50.4%		50.4%		ICU Level of Service		A		A	
Analysis Period (min)	15		15		15		15		15		15	
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis  
 20: Old Georgetown Rd & Woodmont Ave

6/10/2008



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔		↔↔	↔	↔↔						↕↕	↔↔
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0		4.0	4.0	4.0						4.0	4.0
Lane Util. Factor	1.00		0.88	1.00	0.95						0.95	1.00
Frt	1.00		0.85	1.00	0.97						1.00	0.85
Flt Protected	0.95		1.00	0.95	1.00						1.00	1.00
Satd. Flow (prot)	1752		2760	1752	3404						3505	1568
Flt Permitted	0.95		1.00	0.95	1.00						1.00	1.00
Satd. Flow (perm)	1752		2760	1752	3404						3505	1568
Volume (vph)	141	0	723	122	725	172	0	0	0	0	430	109
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.92	0.92	0.92	0.98	0.98	0.98
Adj. Flow (vph)	152	0	777	131	780	185	0	0	0	0	439	111
RTOR Reduction (vph)	0	0	52	65	18	0	0	0	0	0	0	85
Lane Group Flow (vph)	152	0	725	66	947	0	0	0	0	0	439	26
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%
Turn Type	Prot		custom	Perm								Perm
Protected Phases	7				8						6	
Permitted Phases			4	8								6
Actuated Green, G (s)	13.7		68.0	49.3	49.3						22.0	22.0
Effective Green, g (s)	14.7		69.0	50.3	50.3						23.0	23.0
Actuated g/C Ratio	0.15		0.69	0.50	0.50						0.23	0.23
Clearance Time (s)	5.0		5.0	5.0	5.0						5.0	5.0
Vehicle Extension (s)	3.0		3.0	3.0	3.0						3.0	3.0
Lane Grp Cap (vph)	258		1904	881	1712						806	361
v/s Ratio Prot	c0.09				c0.28						c0.13	
v/s Ratio Perm			0.26	0.04								0.02
v/c Ratio	0.59		0.38	0.07	0.55						0.54	0.07
Uniform Delay, d1	39.8		6.5	12.8	17.1						33.9	30.1
Progression Factor	1.00		1.00	0.43	0.66						0.80	0.67
Incremental Delay, d2	3.4		0.6	0.2	1.3						0.7	0.1
Delay (s)	43.2		7.1	5.7	12.6						27.7	20.3
Level of Service	D		A	A	B						C	C
Approach Delay (s)		13.0			11.8			0.0			26.2	
Approach LOS		B			B			A			C	

Intersection Summary

HCM Average Control Delay	15.3	HCM Level of Service	B
HCM Volume to Capacity ratio	0.56		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	55.2%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis  
 25: Edgemoor Lane & Woodmont Ave

6/10/2008



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑			↑↑						↑↑↑↑	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0						4.0	
Lane Util. Factor		0.95			0.95						0.86	
Frt		0.85			1.00						0.99	
Flt Protected		1.00			0.95						1.00	
Satd. Flow (prot)		2979			3330						6266	
Flt Permitted		1.00			0.68						1.00	
Satd. Flow (perm)		2979			2392						6266	
Volume (vph)	0	0	86	116	0	0	0	0	0	66	1124	85
Peak-hour factor, PHF	0.92	0.92	0.78	0.84	0.92	0.92	0.92	0.92	0.92	0.94	0.94	0.94
Adj. Flow (vph)	0	0	110	138	0	0	0	0	0	70	1196	90
RTOR Reduction (vph)	0	43	0	0	0	0	0	0	0	0	6	0
Lane Group Flow (vph)	0	67	0	0	138	0	0	0	0	0	1350	0
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%
Turn Type					Perm						Perm	
Protected Phases		4			8						6	
Permitted Phases				8						6		
Actuated Green, G (s)		17.0			17.0						73.0	
Effective Green, g (s)		18.0			18.0						74.0	
Actuated g/C Ratio		0.18			0.18						0.74	
Clearance Time (s)		5.0			5.0						5.0	
Vehicle Extension (s)		3.0			3.0						3.0	
Lane Grp Cap (vph)		536			431						4637	
v/s Ratio Prot		0.02										
v/s Ratio Perm					c0.06						0.22	
v/c Ratio		0.12			0.32						0.29	
Uniform Delay, d1		34.4			35.7						4.3	
Progression Factor		1.00			0.83						0.81	
Incremental Delay, d2		0.1			0.4						0.1	
Delay (s)		34.5			30.2						3.6	
Level of Service		C			C						A	
Approach Delay (s)		34.5			30.2			0.0			3.6	
Approach LOS		C			C			A			A	

Intersection Summary			
HCM Average Control Delay	8.0	HCM Level of Service	A
HCM Volume to Capacity ratio	0.30		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	38.5%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis  
 33: Old Georgetown Rd & Edgemoor Lane

6/10/2008



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations					←←←		←	↑			↑	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					4.0		4.0	4.0			4.0	
Lane Util. Factor					0.91		1.00	1.00			1.00	
Frt					0.99		1.00	1.00			0.90	
Flt Protected					1.00		0.95	1.00			1.00	
Satd. Flow (prot)					4970		1752	1845			1652	
Flt Permitted					1.00		0.68	1.00			1.00	
Satd. Flow (perm)					4970		1262	1845			1652	
Volume (vph)	0	0	0	90	889	61	65	24	0	0	19	65
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	0	0	98	966	66	71	26	0	0	21	71
RTOR Reduction (vph)	0	0	0	0	4	0	0	0	0	0	58	0
Lane Group Flow (vph)	0	0	0	0	1126	0	71	26	0	0	34	0
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%
Turn Type					Perm		Perm					
Protected Phases						8		2			6	
Permitted Phases					8		2					
Actuated Green, G (s)					72.0		19.0	19.0			19.0	
Effective Green, g (s)					73.0		19.0	19.0			19.0	
Actuated g/C Ratio					0.73		0.19	0.19			0.19	
Clearance Time (s)					5.0		4.0	4.0			4.0	
Vehicle Extension (s)					3.0		3.0	3.0			3.0	
Lane Grp Cap (vph)					3628		240	351			314	
v/s Ratio Prot								0.01			0.02	
v/s Ratio Perm					0.23		c0.06					
v/c Ratio					0.31		0.30	0.07			0.11	
Uniform Delay, d1					4.7		34.8	33.3			33.5	
Progression Factor					0.04		0.88	0.89			1.00	
Incremental Delay, d2					0.1		0.7	0.1			0.2	
Delay (s)					0.3		31.3	29.7			33.7	
Level of Service					A		C	C			C	
Approach Delay (s)		0.0			0.3			30.9			33.7	
Approach LOS		A			A			C			C	
<b>Intersection Summary</b>												
HCM Average Control Delay			4.9				HCM Level of Service				A	
HCM Volume to Capacity ratio			0.31									
Actuated Cycle Length (s)			100.0				Sum of lost time (s)			8.0		
Intersection Capacity Utilization			37.3%				ICU Level of Service			A		
Analysis Period (min)			15									

c Critical Lane Group













HCM Signalized Intersection Capacity Analysis  
801: Campus Drive & Adelphi Rd.

Purple Line (UMD)  
7/30/2008

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑	↑	↘	↑	↗	↘	↑↑↑	↗	↘↘	↑↑	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Lane Util. Factor		0.95	1.00	1.00	1.00	1.00	1.00	0.91	1.00	0.97	0.95	
Frbp, ped/bikes		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Flpb, ped/bikes		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Frt		1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	
Flt Protected		1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)		3539	1583	1770	1863	1583	1770	5085	1583	3433	3539	
Flt Permitted		1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)		3539	1583	1770	1863	1583	1770	5085	1583	3433	3539	
Volume (vph)	0	188	198	91	223	59	199	841	324	321	1170	0
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	0	209	220	101	248	66	221	934	360	357	1300	0
RTOR Reduction (vph)	0	0	162	0	0	42	0	0	267	0	0	0
Lane Group Flow (vph)	0	209	58	101	248	24	221	934	93	357	1300	0
Confl. Peds. (#/hr)	49			3			2					
Turn Type			Perm	Split		Perm	Prot		Perm	Prot		
Protected Phases		2		6	6		3	8		17	14	
Permitted Phases			2			6			8			
Actuated Green, G (s)		61.8	61.8	30.0	30.0	30.0	30.0	60.0	60.0	69.9	100.9	
Effective Green, g (s)		64.8	64.8	33.0	33.0	33.0	32.0	63.0	63.0	71.9	102.9	
Actuated g/C Ratio		0.26	0.26	0.13	0.13	0.13	0.13	0.26	0.26	0.29	0.42	
Clearance Time (s)		6.0	6.0	6.0	6.0	6.0	5.0	6.0	6.0			
Vehicle Extension (s)		4.0	4.0	3.0	3.0	3.0	3.0	3.5	3.5			
Lane Grp Cap (vph)		937	419	239	251	213	231	1309	408	1009	1488	
v/s Ratio Prot		c0.06		0.06	c0.13		c0.12	0.18		0.10	c0.37	
v/s Ratio Perm			0.04			0.01			0.06			
v/c Ratio		0.22	0.14	0.42	0.99	0.11	0.96	0.71	0.23	0.35	0.87	
Uniform Delay, d1		70.3	68.7	97.1	105.7	93.0	105.7	82.6	71.7	68.1	64.9	
Progression Factor		0.56	0.74	1.00	1.00	1.00	1.00	1.00	1.00	0.40	0.35	
Incremental Delay, d2		0.1	0.2	1.2	52.9	0.2	46.7	1.9	0.3	0.2	4.8	
Delay (s)		39.2	50.9	98.3	158.6	93.2	152.3	84.6	72.0	27.2	27.5	
Level of Service		D	D	F	F	F	F	F	E	C	C	
Approach Delay (s)		45.2			133.5			91.5			27.4	
Approach LOS		D			F			F			C	
Intersection Summary												
HCM Average Control Delay			64.5		HCM Level of Service					E		
HCM Volume to Capacity ratio			0.72									
Actuated Cycle Length (s)			244.7		Sum of lost time (s)					12.0		
Intersection Capacity Utilization			82.6%		ICU Level of Service					E		
Analysis Period (min)			15									
c Critical Lane Group												

HCM Unsignalized Intersection Capacity Analysis  
 810: Campus Drive & Regents Drive

























Purple Line (UMD)  
 7/30/2008

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Right Turn Channelized			Yes			Yes			Yes			Yes
Volume (veh/h)	33	133	39	50	390	120	20	55	37	50	55	50
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	36	145	42	54	424	130	22	60	40	54	60	54
Approach Volume (veh/h)		180			478			82			114	
Crossing Volume (veh/h)		168			117			235			500	
High Capacity (veh/h)		1214			1263			1152			933	
High v/c (veh/h)		0.15			0.38			0.07			0.12	
Low Capacity (veh/h)		1006			1051			950			754	
Low v/c (veh/h)		0.18			0.46			0.09			0.15	
Intersection Summary												
Maximum v/c High			0.38									
Maximum v/c Low			0.46									
Intersection Capacity Utilization			73.7%			ICU Level of Service					D	























HCM Signalized Intersection Capacity Analysis  
812: Campus Drive & US 1

Purple Line (UMD)  
11/5/2007

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Util. Factor	0.95	0.95	1.00	0.91	0.91	0.88	0.97	0.95	1.00	0.97	0.95	1.00
Flt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	0.85	1.00	1.00	0.85
Satd. Flow (prot)	1681	1770	1583	1610	3373	2787	3433	3539	1583	3433	3539	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1681	1770	1583	1610	3373	2787	3433	3539	1583	3433	3539	1583
Volume (vph)	72	144	69	300	470	217	158	616	111	403	1355	557
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	80	160	77	333	522	241	176	684	123	448	1506	619
RTOR Reduction (vph)	0	0	68	0	0	150	0	0	71	0	0	174
Lane Group Flow (vph)	80	160	9	275	580	91	176	684	52	448	1506	445
Turn Type	Split		Perm	Split		pt+ov	Prot		Perm	Prot		Perm
Protected Phases	4	4		3	3	3 5	1	6		5	2	
Permitted Phases			4						6			2
Actuated Green, G (s)	15.2	15.2	15.2	28.8	28.8	52.0	13.1	60.8	60.8	23.2	70.9	70.9
Effective Green, g (s)	17.7	17.7	17.7	31.3	31.3	56.5	15.1	63.8	63.8	25.2	73.9	73.9
Actuated g/C Ratio	0.12	0.12	0.12	0.21	0.21	0.38	0.10	0.43	0.43	0.17	0.49	0.49
Clearance Time (s)	5.5	5.5	5.5	5.5	5.5		5.0	6.0	6.0	5.0	6.0	6.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	5.0	5.0	3.0	5.0	5.0
Lane Grp Cap (vph)	198	209	187	336	704	1050	346	1505	673	577	1744	780
v/s Ratio Prot	0.05	c0.09		0.17	c0.17	0.03	0.05	0.19		c0.13	c0.43	
v/s Ratio Perm			0.01						0.03			0.28
v/c Ratio	0.40	0.77	0.05	0.82	0.82	0.09	0.51	0.45	0.08	0.78	0.86	0.57
Uniform Delay, d1	61.3	64.1	58.7	56.6	56.7	30.1	63.9	30.7	25.6	59.7	33.6	26.9
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.16	0.86	1.16	1.18	0.72	0.42
Incremental Delay, d2	1.3	15.3	0.1	14.3	7.8	0.0	1.1	0.9	0.2	2.9	2.7	1.3
Delay (s)	62.6	79.5	58.8	70.9	64.5	30.2	75.4	27.3	29.8	73.3	26.8	12.6
Level of Service	E	E	E	E	E	C	E	C	C	E	C	B
Approach Delay (s)		70.2			58.6			36.3			31.5	
Approach LOS		E			E			D			C	
Intersection Summary												
HCM Average Control Delay			40.9			HCM Level of Service				D		
HCM Volume to Capacity ratio			0.82									
Actuated Cycle Length (s)			150.0			Sum of lost time (s)				9.0		
Intersection Capacity Utilization			77.3%			ICU Level of Service				D		
Analysis Period (min)			15									
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis  
212: Rossborough Rd. & US 1

Purple Line (UMD)  
7/30/2008

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0			3.0	3.0	3.0	3.0		3.0	3.0	
Lane Util. Factor	1.00	1.00			1.00	1.00	1.00	0.95		1.00	0.95	
Frt	1.00	0.93			1.00	0.85	1.00	1.00		1.00	0.98	
Flt Protected	0.95	1.00			0.96	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1723			1791	1583	1770	3531		1770	3462	
Flt Permitted	0.74	1.00			0.80	1.00	0.12	1.00		0.30	1.00	
Satd. Flow (perm)	1386	1723			1489	1583	221	3531		556	3462	
Volume (vph)	15	2	2	14	4	130	8	775	13	125	1325	225
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	17	2	2	16	4	144	9	861	14	139	1472	250
RTOR Reduction (vph)	0	2	0	0	0	133	0	0	0	0	4	0
Lane Group Flow (vph)	17	2	0	0	20	11	9	875	0	139	1718	0
Turn Type	Perm			Perm		Perm	pm+pt			pm+pt		
Protected Phases		4			8		1	6		5	2	
Permitted Phases	4			8		8	6			2		
Actuated Green, G (s)	9.0	9.0			9.0	9.0	120.3	118.0		129.5	122.7	
Effective Green, g (s)	11.5	11.5			11.5	11.5	124.8	121.0		132.5	125.7	
Actuated g/C Ratio	0.08	0.08			0.08	0.08	0.83	0.81		0.88	0.84	
Clearance Time (s)	5.5	5.5			5.5	5.5	4.5	6.0		4.5	6.0	
Vehicle Extension (s)	3.0	3.0			3.0	3.0	3.0	5.0		3.0	5.0	
Lane Grp Cap (vph)	106	132			114	121	223	2848		560	2901	
v/s Ratio Prot		0.00					0.00	0.25		c0.01	c0.50	
v/s Ratio Perm	0.01				c0.01	0.01	0.03			0.21		
v/c Ratio	0.16	0.02			0.18	0.09	0.04	0.31		0.25	0.59	
Uniform Delay, d1	64.7	64.0			64.8	64.4	3.1	3.7		1.5	3.9	
Progression Factor	1.00	1.00			1.00	1.00	0.76	0.52		0.99	0.78	
Incremental Delay, d2	0.7	0.0			0.7	0.3	0.1	0.3		0.1	0.5	
Delay (s)	65.4	64.1			65.6	64.7	2.4	2.2		1.7	3.5	
Level of Service	E	E			E	E	A	A		A	A	
Approach Delay (s)		65.2			64.8			2.2			3.4	
Approach LOS		E			E			A			A	
<b>Intersection Summary</b>												
HCM Average Control Delay			6.9				HCM Level of Service			A		
HCM Volume to Capacity ratio			0.55									
Actuated Cycle Length (s)			150.0				Sum of lost time (s)			9.0		
Intersection Capacity Utilization			65.6%				ICU Level of Service			C		
Analysis Period (min)			15									
c Critical Lane Group												













HCM Signalized Intersection Capacity Analysis  
813: Paint Branch Pkwy & Fire Academy

Purple Line (UMD)  
7/30/2008

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	2.0	2.0		2.0	2.0			2.0			2.0	
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00			1.00	
Frt	1.00	0.97		1.00	0.99			0.98			0.92	
Flt Protected	0.95	1.00		0.95	1.00			0.97			0.99	
Satd. Flow (prot)	1770	3442		1770	3504			1762			1695	
Flt Permitted	0.18	1.00		0.48	1.00			0.89			0.96	
Satd. Flow (perm)	335	3442		891	3504			1613			1643	
Volume (vph)	175	335	75	40	990	70	20	5	5	10	5	20
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	175	335	75	40	990	70	20	5	5	10	5	20
RTOR Reduction (vph)	0	28	0	0	7	0	0	3	0	0	12	0
Lane Group Flow (vph)	175	382	0	40	1053	0	0	27	0	0	23	0
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	35.2	35.2		35.2	35.2			25.8			25.8	
Effective Green, g (s)	38.2	38.2		38.2	38.2			28.8			28.8	
Actuated g/C Ratio	0.54	0.54		0.54	0.54			0.41			0.41	
Clearance Time (s)	5.0	5.0		5.0	5.0			5.0			5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0			3.0	
Lane Grp Cap (vph)	180	1852		479	1885			654			666	
v/s Ratio Prot		0.11			0.30							
v/s Ratio Perm	c0.52			0.04				c0.02			0.01	
v/c Ratio	0.97	0.21		0.08	0.56			0.04			0.03	
Uniform Delay, d1	15.9	8.5		7.9	10.8			12.8			12.7	
Progression Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Incremental Delay, d2	58.6	0.1		0.1	0.4			0.1			0.1	
Delay (s)	74.5	8.6		8.0	11.2			12.9			12.8	
Level of Service	E	A		A	B			B			B	
Approach Delay (s)		28.3			11.1			12.9			12.8	
Approach LOS		C			B			B			B	
Intersection Summary												
HCM Average Control Delay			16.9			HCM Level of Service					B	
HCM Volume to Capacity ratio			0.56									
Actuated Cycle Length (s)			71.0			Sum of lost time (s)					4.0	
Intersection Capacity Utilization			53.5%			ICU Level of Service					A	
Analysis Period (min)			15									
c Critical Lane Group												







HCM Signalized Intersection Capacity Analysis  
 814: Paint Branch Pkwy & Metro Parking Garage

Purple Line (UMD)  
 7/30/2008

						
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0			4.0		
Lane Util. Factor	0.95			0.95		
Frt	1.00			1.00		
Flt Protected	1.00			1.00		
Satd. Flow (prot)	3539			3539		
Flt Permitted	1.00			1.00		
Satd. Flow (perm)	3539			3539		
Volume (vph)	350	0	0	1100	0	0
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	380	0	0	1196	0	0
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	380	0	0	1196	0	0
Turn Type		Perm	pm+pt			pm+ov
Protected Phases	2		1	6	8	1
Permitted Phases		2	6			8
Actuated Green, G (s)	32.8			32.8		
Effective Green, g (s)	32.8			32.8		
Actuated g/C Ratio	0.46			0.46		
Clearance Time (s)	4.0			4.0		
Vehicle Extension (s)	3.0			3.0		
Lane Grp Cap (vph)	1637			1637		
v/s Ratio Prot	0.11			c0.34		
v/s Ratio Perm						
v/c Ratio	0.23			0.73		
Uniform Delay, d1	11.5			15.5		
Progression Factor	1.00			1.00		
Incremental Delay, d2	0.3			1.7		
Delay (s)	11.8			17.2		
Level of Service	B			B		
Approach Delay (s)	11.8			17.2	0.0	
Approach LOS	B			B	A	
<b>Intersection Summary</b>						
HCM Average Control Delay		15.9			HCM Level of Service	B
HCM Volume to Capacity ratio		0.73				
Actuated Cycle Length (s)		70.9			Sum of lost time (s)	38.1
Intersection Capacity Utilization		33.7%			ICU Level of Service	A
Analysis Period (min)		15				
c Critical Lane Group						













HCM Signalized Intersection Capacity Analysis  
 815: Paint Branch Pkwy & River Road

Purple Line (UMD)  
 7/30/2008

						
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑	↑	↑↑	↑↑	↑↑	↑
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	2.0	2.0	2.0	2.0	2.0	2.0
Lane Util. Factor	0.95	1.00	0.97	0.95	0.97	1.00
Frpb, ped/bikes	1.00	0.97	1.00	1.00	1.00	0.98
Flpb, ped/bikes	1.00	1.00	0.99	1.00	1.00	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (prot)	3539	1535	3396	3539	3420	1553
Flt Permitted	1.00	1.00	0.52	1.00	0.95	1.00
Satd. Flow (perm)	3539	1535	1870	3539	3420	1553
Volume (vph)	208	171	158	988	69	214
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	208	171	158	988	69	214
RTOR Reduction (vph)	0	125	0	0	0	107
Lane Group Flow (vph)	208	46	158	988	69	107
Confl. Peds. (#/hr)		25	25		5	10
Turn Type		Perm	pm+pt			custom
Protected Phases	4		3	8		
Permitted Phases		4	8		2	2
Actuated Green, G (s)	14.1	14.1	25.5	25.5	30.2	30.2
Effective Green, g (s)	18.1	18.1	29.5	29.5	33.7	33.7
Actuated g/C Ratio	0.27	0.27	0.44	0.44	0.50	0.50
Clearance Time (s)	6.0	6.0	5.5	6.0	5.5	5.5
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	953	413	1034	1554	1715	779
v/s Ratio Prot	0.06		0.02	c0.28		
v/s Ratio Perm		0.03	0.05		0.02	c0.07
v/c Ratio	0.22	0.11	0.15	0.64	0.04	0.14
Uniform Delay, d1	19.1	18.5	11.2	14.7	8.5	9.0
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.1	0.1	0.1	0.9	0.0	0.4
Delay (s)	19.2	18.6	11.2	15.5	8.6	9.3
Level of Service	B	B	B	B	A	A
Approach Delay (s)	18.9			14.9	9.2	
Approach LOS	B			B	A	
<b>Intersection Summary</b>						
HCM Average Control Delay			14.9		HCM Level of Service	B
HCM Volume to Capacity ratio			0.36			
Actuated Cycle Length (s)			67.2		Sum of lost time (s)	4.0
Intersection Capacity Utilization			56.5%		ICU Level of Service	B
Analysis Period (min)			15			
c Critical Lane Group						













HCM Signalized Intersection Capacity Analysis  
801: Campus Drive & Adelphi Rd.

Purple Line (UMD)  
7/30/2008

													
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations		↑↑	↑	↘	↑	↗	↘	↑↑↑	↗	↘↘	↑↑		
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		
Lane Util. Factor		0.95	1.00	1.00	1.00	1.00	1.00	0.91	1.00	0.97	0.95		
Frbp, ped/bikes		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		
Flpb, ped/bikes		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		
Frt		1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00		
Flt Protected		1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		
Satd. Flow (prot)		3539	1583	1770	1863	1583	1770	5085	1583	3433	3539		
Flt Permitted		1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		
Satd. Flow (perm)		3539	1583	1770	1863	1583	1770	5085	1583	3433	3539		
Volume (vph)	0	187	201	177	212	364	212	1236	182	211	876	0	
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	
Adj. Flow (vph)	0	208	223	197	236	404	236	1373	202	234	973	0	
RTOR Reduction (vph)	0	0	166	0	0	273	0	0	122	0	0	0	
Lane Group Flow (vph)	0	208	57	197	236	131	236	1373	80	234	973	0	
Confl. Peds. (#/hr)	17			20			9			3			
Turn Type			Perm	Split		Perm	Prot		Perm	Prot			
Protected Phases		2		6	6		3	8		17	14		
Permitted Phases			2			6			8				
Actuated Green, G (s)		60.1	60.1	30.0	30.0	30.0	25.0	60.0	60.0	71.9	107.9		
Effective Green, g (s)		63.1	63.1	33.0	33.0	33.0	27.0	63.0	63.0	73.9	109.9		
Actuated g/C Ratio		0.26	0.26	0.13	0.13	0.13	0.11	0.26	0.26	0.30	0.45		
Clearance Time (s)		6.0	6.0	6.0	6.0	6.0	5.0	6.0	6.0				
Vehicle Extension (s)		4.0	4.0	3.0	3.0	3.0	3.0	3.5	3.5				
Lane Grp Cap (vph)		911	408	238	251	213	195	1308	407	1036	1587		
v/s Ratio Prot		c0.06		0.11	c0.13		c0.13	c0.27		0.07	c0.27		
v/s Ratio Perm			0.04			0.08			0.05				
v/c Ratio		0.23	0.14	0.83	0.94	0.62	1.21	1.05	0.20	0.23	0.61		
Uniform Delay, d1		71.7	70.1	103.2	105.0	100.0	109.0	91.0	71.2	64.1	51.4		
Progression Factor		0.69	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.50	0.38		
Incremental Delay, d2		0.1	0.1	20.5	40.6	5.2	132.5	39.0	0.3	0.1	0.6		
Delay (s)		49.4	70.4	123.7	145.6	105.3	241.5	130.0	71.5	32.1	20.3		
Level of Service		D	E	F	F	F	F	F	E	C	C		
Approach Delay (s)		60.3			121.0			138.0			22.6		
Approach LOS		E			F			F			C		
Intersection Summary													
HCM Average Control Delay			94.4		HCM Level of Service					F			
HCM Volume to Capacity ratio			0.69										
Actuated Cycle Length (s)			245.0		Sum of lost time (s)					9.0			
Intersection Capacity Utilization			79.5%		ICU Level of Service					D			
Analysis Period (min)			15										
c Critical Lane Group													

























HCM Unsignalized Intersection Capacity Analysis  
 810: Campus Drive & Regents Drive

Purple Line (UMD)  
 7/30/2008

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Right Turn Channelized			Yes			Yes			Yes			Yes
Volume (veh/h)	34	245	31	129	226	120	67	115	50	290	5	57
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	37	266	34	140	246	130	73	125	54	315	5	62
Approach Volume (veh/h)		303			386			198			321	
Crossing Volume (veh/h)		461			235			618			459	
High Capacity (veh/h)		963			1152			849			965	
High v/c (veh/h)		0.31			0.33			0.23			0.33	
Low Capacity (veh/h)		781			950			680			782	
Low v/c (veh/h)		0.39			0.41			0.29			0.41	
Intersection Summary												
Maximum v/c High			0.33									
Maximum v/c Low			0.41									
Intersection Capacity Utilization			92.3%			ICU Level of Service					F	

HCM Signalized Intersection Capacity Analysis  
812: Campus Drive & US 1





















Purple Line (UMD)  
11/5/2007

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Util. Factor	0.95	0.95	1.00	0.91	0.91	0.88	0.97	0.95	1.00	0.97	0.95	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	1.00
Flt Protected	0.95	1.00	1.00	0.95	0.99	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1681	1770	1583	1610	3368	2787	3433	3539	1583	3433	3539	1583
Flt Permitted	0.95	1.00	1.00	0.95	0.99	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1681	1770	1583	1610	3368	2787	3433	3539	1583	3433	3539	1583
Volume (vph)	307	315	136	156	222	398	150	1152	389	374	1011	323
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	341	350	151	173	247	442	167	1280	432	416	1123	359
RTOR Reduction (vph)	0	0	115	0	0	110	0	0	164	0	0	134
Lane Group Flow (vph)	341	350	36	135	285	332	167	1280	268	416	1123	225
Turn Type	Split		Perm	Split		pt+ov	Prot		Perm	Prot		Perm
Protected Phases	4	4		3	3	3 5	1	6		5	2	
Permitted Phases			4						6			2
Actuated Green, G (s)	32.8	32.8	32.8	13.5	13.5	33.5	12.4	61.7	61.7	20.0	69.3	69.3
Effective Green, g (s)	35.3	35.3	35.3	16.0	16.0	38.0	14.4	64.7	64.7	22.0	72.3	72.3
Actuated g/C Ratio	0.24	0.24	0.24	0.11	0.11	0.25	0.10	0.43	0.43	0.15	0.48	0.48
Clearance Time (s)	5.5	5.5	5.5	5.5	5.5		5.0	6.0	6.0	5.0	6.0	6.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	5.0	5.0	3.0	5.0	5.0
Lane Grp Cap (vph)	396	417	373	172	359	706	330	1526	683	504	1706	763
v/s Ratio Prot	c0.20	0.20		0.08	c0.08	0.12	0.05	c0.36		c0.12	0.32	
v/s Ratio Perm			0.02						0.17			0.14
v/c Ratio	0.86	0.84	0.10	0.78	0.79	0.47	0.51	0.84	0.39	0.83	0.66	0.29
Uniform Delay, d1	55.0	54.6	44.9	65.3	65.4	47.5	64.4	38.0	29.2	62.1	29.5	23.5
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.14	0.76	0.67	1.35	0.78	0.91
Incremental Delay, d2	17.2	13.8	0.1	20.5	11.4	0.5	0.9	4.4	1.3	6.2	1.1	0.5
Delay (s)	72.2	68.4	45.0	85.9	76.8	48.0	74.3	33.4	20.8	90.2	24.0	21.9
Level of Service	E	E	D	F	E	D	E	C	C	F	C	C
Approach Delay (s)		65.7			63.4			34.1			38.1	
Approach LOS		E			E			C			D	
Intersection Summary												
HCM Average Control Delay	45.0			HCM Level of Service				D				
HCM Volume to Capacity ratio	0.84											
Actuated Cycle Length (s)	150.0			Sum of lost time (s)				12.0				
Intersection Capacity Utilization	79.7%			ICU Level of Service				D				
Analysis Period (min)	15											
c Critical Lane Group												



HCM Signalized Intersection Capacity Analysis  
 212: Rossborough Rd. & US 1

Purple Line (UMD)  
 7/30/2008

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0			3.0	3.0	3.0	3.0		3.0	3.0	
Lane Util. Factor	1.00	1.00			1.00	1.00	1.00	0.95		1.00	0.95	
Frt	1.00	0.88			1.00	0.85	1.00	0.99		1.00	1.00	
Flt Protected	0.95	1.00			0.97	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1643			1804	1583	1770	3520		1770	3533	
Flt Permitted	0.52	1.00			0.79	1.00	0.20	1.00		0.11	1.00	
Satd. Flow (perm)	973	1643			1469	1583	374	3520		199	3533	
Volume (vph)	64	5	20	55	30	313	43	1400	54	104	1125	13
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	71	6	22	61	33	348	48	1556	60	116	1250	14
RTOR Reduction (vph)	0	19	0	0	0	263	0	1	0	0	0	0
Lane Group Flow (vph)	71	9	0	0	94	85	48	1615	0	116	1264	0
Turn Type	Perm			Perm		Perm	pm+pt			pm+pt		
Protected Phases		4			8		1	6		5	2	
Permitted Phases	4			8		8	6			2		
Actuated Green, G (s)	14.8	14.8			14.8	14.8	112.8	108.1		123.7	114.5	
Effective Green, g (s)	17.3	17.3			17.3	17.3	117.3	111.1		126.7	117.5	
Actuated g/C Ratio	0.12	0.12			0.12	0.12	0.78	0.74		0.84	0.78	
Clearance Time (s)	5.5	5.5			5.5	5.5	4.5	6.0		4.5	6.0	
Vehicle Extension (s)	3.0	3.0			3.0	3.0	3.0	5.0		3.0	5.0	
Lane Grp Cap (vph)	112	189			169	183	350	2607		300	2768	
v/s Ratio Prot		0.01					0.01	c0.46		c0.03	0.36	
v/s Ratio Perm	c0.07				0.06	0.05	0.10			0.29		
v/c Ratio	0.63	0.05			0.56	0.47	0.14	0.62		0.39	0.46	
Uniform Delay, d1	63.3	59.0			62.7	62.0	4.0	9.3		8.7	5.5	
Progression Factor	1.00	1.00			1.00	1.00	0.45	0.27		1.93	0.62	
Incremental Delay, d2	11.2	0.1			3.9	1.9	0.2	0.9		0.7	0.4	
Delay (s)	74.5	59.1			66.6	63.9	1.9	3.5		17.5	3.8	
Level of Service	E	E			E	E	A	A		B	A	
Approach Delay (s)		70.1			64.5			3.4			5.0	
Approach LOS		E			E			A			A	
<b>Intersection Summary</b>												
HCM Average Control Delay			13.4				HCM Level of Service			B		
HCM Volume to Capacity ratio			0.60									
Actuated Cycle Length (s)			150.0				Sum of lost time (s)			9.0		
Intersection Capacity Utilization			76.5%				ICU Level of Service			D		
Analysis Period (min)			15									
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis  
 813: Paint Branch Pkwy & Fire Academy







Purple Line (UMD)  
 11/5/2007

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	2.0	2.0		2.0	2.0			2.0			2.0	2.0
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00			1.00	1.00
Flt Protected	0.95	1.00		0.95	1.00			0.96			0.96	0.96
Satd. Flow (prot)	1770	3537		1770	3531			1750			1750	1750
Flt Permitted	0.30	1.00		0.16	1.00			0.96			0.96	0.96
Satd. Flow (perm)	550	3537		298	3531			1712			1712	1712
Volume (vph)	10	1010	5	5	677	10	5	5	5	5	5	5
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	10	1010	5	5	677	10	5	5	5	5	5	5
RTOR Reduction (vph)	0	1	0	0	2	0	0	3	0	0	3	0
Lane Group Flow (vph)	10	1014	0	5	685	0	0	12	0	0	12	0
Turn Type	Perm			Perm			Perm			Perm		0
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	22.0	22.0		22.0	22.0			25.2			25.2	
Effective Green, g (s)	25.0	25.0		25.0	25.0			28.2			28.2	
Actuated g/C Ratio	0.44	0.44		0.44	0.44			0.49			0.49	
Clearance Time (s)	5.0	5.0		5.0	5.0			5.0			5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0			3.0	
Lane Grp Cap (vph)	240	1546		130	1543			844			844	
v/s Ratio Prot		c0.29			0.19							
v/s Ratio Perm	0.02			0.02				c0.01			0.01	
v/c Ratio	0.04	0.66		0.04	0.44			0.01			0.01	
Uniform Delay, d1	9.2	12.7		9.2	11.2			7.4			7.4	
Progression Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Incremental Delay, d2	0.1	1.0		0.1	0.2			0.0			0.0	
Delay (s)	9.3	13.7		9.3	11.5			7.4			7.4	
Level of Service	A	B		A	B			A			A	
Approach Delay (s)		13.7			11.4			7.4			7.4	
Approach LOS		B			B			A			A	
Intersection Summary												
HCM Average Control Delay			12.7									
HCM Volume to Capacity ratio			0.31									
Actuated Cycle Length (s)			57.2									
Intersection Capacity Utilization			38.9%						4.0			
Analysis Period (min)			15						A			
c Critical Lane Group												

Existing PM Peak







HCM Signalized Intersection Capacity Analysis  
 814: Paint Branch Pkwy & Metro Parking Garage

Purple Line (UMD)  
 7/30/2008

						
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑	↑	↓	↑↑	↓	↑
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0			4.0		
Lane Util. Factor	0.95			0.95		
Frt	1.00			1.00		
Flt Protected	1.00			1.00		
Satd. Flow (prot)	3539			3539		
Flt Permitted	1.00			1.00		
Satd. Flow (perm)	3539			3539		
Volume (vph)	1020	0	0	675	0	0
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	1109	0	0	734	0	0
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	1109	0	0	734	0	0
Turn Type		Perm	pm+pt			pm+ov
Protected Phases	2		1	6	8	1
Permitted Phases		2	6			8
Actuated Green, G (s)	120.0			120.0		
Effective Green, g (s)	120.0			120.0		
Actuated g/C Ratio	1.00			1.00		
Clearance Time (s)	4.0			4.0		
Vehicle Extension (s)	3.0			3.0		
Lane Grp Cap (vph)	3539			3539		
v/s Ratio Prot	c0.31			0.21		
v/s Ratio Perm						
v/c Ratio	0.31			0.21		
Uniform Delay, d1	0.0			0.0		
Progression Factor	1.00			1.00		
Incremental Delay, d2	0.2			0.1		
Delay (s)	0.2			0.1		
Level of Service	A			A		
Approach Delay (s)	0.2			0.1	0.0	
Approach LOS	A			A	A	
<b>Intersection Summary</b>						
HCM Average Control Delay		0.2			HCM Level of Service	A
HCM Volume to Capacity ratio		0.31				
Actuated Cycle Length (s)		120.0			Sum of lost time (s)	0.0
Intersection Capacity Utilization		31.5%			ICU Level of Service	A
Analysis Period (min)		15				
c Critical Lane Group						

HCM Signalized Intersection Capacity Analysis  
815: Paint Branch Pkwy & River Road

Purple Line (UMD)  
11/5/2007

						
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑	↑	↑↑	↑↑	↑↑	↑
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	2.0	2.0	2.0	2.0	2.0	2.0
Lane Util. Factor	0.95	1.00	0.97	0.95	0.97	1.00
Frbp, ped/bikes	1.00	0.98	1.00	1.00	1.00	0.98
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (prot)	3539	1549	3431	3539	3430	1549
Flt Permitted	1.00	1.00	0.17	1.00	0.95	1.00
Satd. Flow (perm)	3539	1549	628	3539	3430	1549
Volume (vph)	787	242	40	452	148	220
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	787	242	40	452	148	220
RTOR Reduction (vph)	0	157	0	0	0	116
Lane Group Flow (vph)	787	85	40	452	148	104
Confl. Peds. (#/hr)		12	12		1	12
Turn Type		Perm	pm+pt			custom
Protected Phases	4		3	8		
Permitted Phases		4	8		2	2
Actuated Green, G (s)	21.8	21.8	30.6	30.6	31.0	31.0
Effective Green, g (s)	25.8	25.8	34.6	34.6	34.5	34.5
Actuated g/C Ratio	0.35	0.35	0.47	0.47	0.47	0.47
Clearance Time (s)	6.0	6.0	5.5	6.0	5.5	5.5
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	1249	547	558	1675	1619	731
v/s Ratio Prot	c0.22		0.01	c0.13		
v/s Ratio Perm		0.06	0.03		0.04	c0.07
v/c Ratio	0.63	0.16	0.07	0.27	0.09	0.14
Uniform Delay, d1	19.7	16.2	11.7	11.6	10.7	10.9
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	1.0	0.1	0.1	0.1	0.1	0.4
Delay (s)	20.7	16.3	11.7	11.7	10.8	11.3
Level of Service	C	B	B	B	B	B
Approach Delay (s)	19.7			11.7	11.1	
Approach LOS	B			B	B	
<b>Intersection Summary</b>						
HCM Average Control Delay			15.9		HCM Level of Service	B
HCM Volume to Capacity ratio			0.33			
Actuated Cycle Length (s)			73.1		Sum of lost time (s)	6.0
Intersection Capacity Utilization		51.2%			ICU Level of Service	A
Analysis Period (min)			15			
c Critical Lane Group						

Existing PM Peak

2030 No-Build / TSM

HCS Results

HCM Signalized Intersection Capacity Analysis  
 1: 2nd Avenue & MD 384 (Colesville Rd.)

6/10/2008



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations	↘	↑↑	↗	↘	↔			↑↑↑	↗	↘	↑↑↑	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	2.0	2.0	2.0	2.0	2.0			2.0	2.0	2.0	2.0	
Lane Util. Factor	1.00	0.95	1.00	0.91	0.91			0.91	1.00	1.00	0.91	
Frbp, ped/bikes	1.00	1.00	0.72	1.00	0.91			1.00	1.00	1.00	0.97	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00			1.00	1.00	1.00	1.00	
Frt	1.00	1.00	0.85	1.00	0.94			1.00	0.85	1.00	0.99	
Flt Protected	0.95	1.00	1.00	0.95	0.99			1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1687	3374	1088	1535	2724			4848	1509	1687	4668	
Flt Permitted	0.95	1.00	1.00	0.95	0.99			1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1687	3374	1088	1535	2724			4848	1509	1687	4668	
Volume (vph)	70	115	115	310	185	180	0	655	260	30	1610	145
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	74	121	121	326	195	189	0	689	274	32	1695	153
RTOR Reduction (vph)	0	0	54	0	69	0	0	0	159	0	7	0
Lane Group Flow (vph)	74	121	67	245	396	0	0	689	115	32	1841	0
Confl. Peds. (#/hr)			188			155			128			158
Heavy Vehicles (%)	7%	7%	7%	7%	7%	7%	7%	7%	7%	7%	7%	7%
Turn Type	Split		Perm	Split					Prot		Prot	
Protected Phases	3	3		4	4			6	6	5	2	
Permitted Phases			3									
Actuated Green, G (s)	31.0	31.0	31.0	32.6	32.6			58.8	58.8	3.6	68.4	
Effective Green, g (s)	35.0	35.0	35.0	36.6	36.6			62.8	62.8	7.6	72.4	
Actuated g/C Ratio	0.23	0.23	0.23	0.24	0.24			0.42	0.42	0.05	0.48	
Clearance Time (s)	6.0	6.0	6.0	6.0	6.0			6.0	6.0	6.0	6.0	
Vehicle Extension (s)	4.0	4.0	4.0	4.0	4.0			3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	394	787	254	375	665			2030	632	85	2253	
v/s Ratio Prot	0.04	0.04		c0.16	0.15			0.14	0.08	0.02	c0.39	
v/s Ratio Perm			c0.06									
v/c Ratio	0.19	0.15	0.27	0.65	0.60			0.34	0.18	0.38	0.82	
Uniform Delay, d1	46.1	45.7	47.0	51.0	50.2			29.5	27.4	68.9	33.1	
Progression Factor	1.00	1.00	1.00	1.00	1.00			0.39	0.18	1.00	1.00	
Incremental Delay, d2	0.3	0.1	0.8	4.5	1.7			0.4	0.6	2.8	3.4	
Delay (s)	46.4	45.8	47.8	55.5	51.8			11.9	5.6	71.7	36.6	
Level of Service	D	D	D	E	D			B	A	E	D	
Approach Delay (s)		46.7			53.1			10.1			37.2	
Approach LOS		D			D			B			D	
<b>Intersection Summary</b>												
HCM Average Control Delay			34.1			HCM Level of Service			C			
HCM Volume to Capacity ratio			0.64									
Actuated Cycle Length (s)			150.0			Sum of lost time (s)			6.0			
Intersection Capacity Utilization			96.6%			ICU Level of Service			F			
Analysis Period (min)			15									
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis  
2: Wayne Ave. #1 & Ramsey Rd

6/10/2008



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕↕			↕↕↕		↕	↕			↕↕	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		2.0			2.0		2.0	2.0			2.0	
Lane Util. Factor		0.95			0.91		1.00	1.00			1.00	
Frbp, ped/bikes		1.00			1.00		1.00	1.00			1.00	
Flpb, ped/bikes		1.00			1.00		0.75	1.00			0.93	
Frt		0.96			0.96		1.00	0.87			1.00	
Flt Protected		1.00			0.99		0.95	1.00			0.95	
Satd. Flow (prot)		3253			4604		1265	1537			1658	
Flt Permitted		1.00			0.73		0.75	1.00			0.66	
Satd. Flow (perm)		3253			3390		1005	1537			1148	
Volume (vph)	0	365	115	110	460	235	220	10	90	5	0	0
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	384	121	116	484	247	232	11	95	5	0	0
RTOR Reduction (vph)	0	20	0	0	50	0	0	51	0	0	0	0
Lane Group Flow (vph)	0	485	0	0	797	0	232	55	0	0	5	0
Confl. Peds. (#/hr)	233			137			123			44		
Heavy Vehicles (%)	7%	7%	7%	7%	7%	7%	7%	7%	7%	1%	1%	1%
Turn Type	Perm			pm+pt			Perm			Perm		
Protected Phases		2		1	6			4			8	
Permitted Phases	2			6			4			8		
Actuated Green, G (s)		47.0			74.0		66.0	66.0			66.0	
Effective Green, g (s)		50.0			77.0		69.0	69.0			69.0	
Actuated g/C Ratio		0.33			0.51		0.46	0.46			0.46	
Clearance Time (s)		5.0			5.0		5.0	5.0			5.0	
Vehicle Extension (s)		0.2			0.2		4.0	4.0			4.0	
Lane Grp Cap (vph)		1084			1943		462	707			528	
v/s Ratio Prot		c0.15			c0.07			0.04				
v/s Ratio Perm					0.14		c0.23				0.00	
v/c Ratio		0.45			0.41		0.50	0.08			0.01	
Uniform Delay, d1		39.2			22.5		28.4	22.7			22.0	
Progression Factor		1.00			1.00		1.00	1.00			1.00	
Incremental Delay, d2		0.1			0.6		3.9	0.2			0.0	
Delay (s)		39.3			23.1		32.3	22.9			22.0	
Level of Service		D			C		C	C			C	
Approach Delay (s)		39.3			23.1			29.4			22.0	
Approach LOS		D			C			C			C	
<b>Intersection Summary</b>												
HCM Average Control Delay			29.2				HCM Level of Service				C	
HCM Volume to Capacity ratio			0.46									
Actuated Cycle Length (s)			150.0				Sum of lost time (s)			6.0		
Intersection Capacity Utilization			51.6%				ICU Level of Service			A		
Analysis Period (min)			15									
c Critical Lane Group												

# HCM Signalized Intersection Capacity Analysis

## 3: Wayne Ave. #1 & Georgia Ave

6/10/2008



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↶	↶↷		↶	↶↷		↶	↶↷↸		↶	↶↷↸	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	0.91		1.00	0.91	
Frbp, ped/bikes	1.00	0.99		1.00	0.99		1.00	0.99		1.00	0.99	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.98		1.00	0.98		1.00	0.99		1.00	0.98	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1687	3257		1687	3269		1687	4791		1687	4720	
Flt Permitted	0.15	1.00		0.36	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	263	3257		643	3269		1687	4791		1687	4720	
Volume (vph)	75	325	50	95	690	85	110	1430	65	85	2290	285
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	79	342	53	100	726	89	116	1505	68	89	2411	300
RTOR Reduction (vph)	0	10	0	0	8	0	0	4	0	0	13	0
Lane Group Flow (vph)	79	385	0	100	807	0	116	1569	0	89	2698	0
Confl. Peds. (#/hr)			67			84			66			46
Heavy Vehicles (%)	7%	7%	7%	7%	7%	7%	7%	7%	7%	7%	7%	7%
Turn Type	pm+pt			pm+pt			Prot			Prot		
Protected Phases	7	4		3	8		1	5		6	2	
Permitted Phases	4			8								
Actuated Green, G (s)	29.0	25.0		29.0	25.0		8.0	49.8		19.2	63.0	
Effective Green, g (s)	31.0	27.0		31.0	27.0		8.0	51.8		21.2	65.0	
Actuated g/C Ratio	0.26	0.22		0.26	0.22		0.07	0.43		0.18	0.54	
Clearance Time (s)	4.0	6.0		4.0	6.0		4.0	6.0		6.0	6.0	
Vehicle Extension (s)	3.0	4.0		3.0	4.0		3.0	0.2		3.0	0.2	
Lane Grp Cap (vph)	115	733		201	736		112	2068		298	2557	
v/s Ratio Prot	c0.02	0.12		0.02	c0.25		c0.07	0.33		0.05	c0.57	
v/s Ratio Perm	0.15			0.11								
v/c Ratio	0.69	0.53		0.50	1.10		1.04	0.76		0.30	1.06	
Uniform Delay, d1	38.9	40.9		37.5	46.5		56.0	28.8		42.9	27.5	
Progression Factor	1.00	1.00		1.00	1.00		1.38	0.46		0.68	0.43	
Incremental Delay, d2	15.7	2.7		1.9	62.8		92.6	2.5		0.4	32.3	
Delay (s)	54.6	43.5		39.4	109.3		170.1	15.9		29.5	44.1	
Level of Service	D	D		D	F		F	B		C	D	
Approach Delay (s)		45.4			101.7			26.5			43.6	
Approach LOS		D			F			C			D	

### Intersection Summary

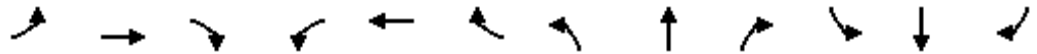
HCM Average Control Delay	47.9	HCM Level of Service	D
HCM Volume to Capacity ratio	1.05		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	97.0%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			



# HCM Signalized Intersection Capacity Analysis

65: Wayne Ave. #1 & Dixon Rd

6/10/2008



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕↕↕			↕↕↕			↕	↗		↕	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		2.0			2.0			2.0	2.0		2.0	
Lane Util. Factor		0.91			0.91			0.95	0.95		1.00	
Frt		0.97			1.00			0.95	0.85		0.92	
Flt Protected		1.00			0.99			0.97	1.00		0.99	
Satd. Flow (prot)		4692			4773			1643	1519		1708	
Flt Permitted		0.91			0.71			0.86	1.00		0.97	
Satd. Flow (perm)		4264			3451			1453	1519		1671	
Volume (vph)	10	355	95	305	765	10	25	0	55	5	5	15
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	11	374	100	321	805	11	26	0	58	5	5	16
RTOR Reduction (vph)	0	18	0	0	1	0	0	10	33	0	12	0
Lane Group Flow (vph)	0	467	0	0	1136	0	0	29	12	0	14	0
Heavy Vehicles (%)	7%	7%	7%	7%	7%	7%	1%	1%	1%	1%	1%	1%
Turn Type	Perm			pm+pt			Perm		Perm	Perm		
Protected Phases		6		5	2			4				8
Permitted Phases	6			2			4		4	8		
Actuated Green, G (s)		81.0			81.0			27.0	27.0			27.0
Effective Green, g (s)		85.0			85.0			31.0	31.0			31.0
Actuated g/C Ratio		0.71			0.71			0.26	0.26			0.26
Clearance Time (s)		6.0			6.0			6.0	6.0			6.0
Vehicle Extension (s)		3.0			3.0			3.0	3.0			3.0
Lane Grp Cap (vph)		3020			2444			375	392			432
v/s Ratio Prot												
v/s Ratio Perm		0.11			c0.33			c0.02	0.01			0.01
v/c Ratio		0.15			0.46			0.08	0.03			0.03
Uniform Delay, d1		5.7			7.6			33.7	33.3			33.3
Progression Factor		1.00			1.00			1.08	1.19			1.00
Incremental Delay, d2		0.1			0.1			0.1	0.0			0.0
Delay (s)		5.8			7.8			36.3	39.5			33.3
Level of Service		A			A			D	D			C
Approach Delay (s)		5.8			7.8			38.0				33.3
Approach LOS		A			A			D				C

## Intersection Summary

HCM Average Control Delay	9.1	HCM Level of Service	A
HCM Volume to Capacity ratio	0.36		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	4.0
Intersection Capacity Utilization	48.7%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

# HCM Signalized Intersection Capacity Analysis

## 84: Apple Ave & 2nd Avenue

6/10/2008



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕	↗	↖	↕			↕	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		2.0			2.0	2.0	2.0	2.0			2.0	
Lane Util. Factor		1.00			1.00	1.00	1.00	0.95			0.95	
Frt		0.93			1.00	0.85	1.00	0.94			0.99	
Flt Protected		0.99			0.96	1.00	0.95	1.00			0.99	
Satd. Flow (prot)		1744			1800	1599	1687	3179			3309	
Flt Permitted		0.97			0.83	1.00	0.45	1.00			0.81	
Satd. Flow (perm)		1693			1560	1599	797	3179			2720	
Volume (vph)	5	15	20	100	10	80	10	135	85	135	345	20
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	5	16	21	105	11	84	11	142	89	142	363	21
RTOR Reduction (vph)	0	17	0	0	0	68	0	23	0	0	2	0
Lane Group Flow (vph)	0	25	0	0	116	16	11	208	0	0	524	0
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	7%	7%	7%	7%	7%	7%
Turn Type	Perm			Perm		Perm	Perm				Perm	
Protected Phases		2			6			8				4
Permitted Phases	2			6		6	8				4	
Actuated Green, G (s)		8.3			8.3	8.3	41.7	41.7			41.7	
Effective Green, g (s)		11.3			11.3	11.3	44.7	44.7			44.7	
Actuated g/C Ratio		0.19			0.19	0.19	0.75	0.75			0.75	
Clearance Time (s)		5.0			5.0	5.0	5.0	5.0			5.0	
Vehicle Extension (s)		3.0			3.0	3.0	3.0	3.0			3.0	
Lane Grp Cap (vph)		319			294	301	594	2368			2026	
v/s Ratio Prot								0.07				
v/s Ratio Perm		0.01			c0.07	0.01	0.01				c0.19	
v/c Ratio		0.08			0.39	0.05	0.02	0.09			0.26	
Uniform Delay, d1		20.1			21.4	20.0	2.0	2.1			2.4	
Progression Factor		1.00			1.00	1.00	1.00	1.00			0.91	
Incremental Delay, d2		0.1			0.9	0.1	0.1	0.1			0.3	
Delay (s)		20.2			22.2	20.0	2.0	2.2			2.5	
Level of Service		C			C	C	A	A			A	
Approach Delay (s)		20.2			21.3			2.2			2.5	
Approach LOS		C			C			A			A	















### Intersection Summary

HCM Average Control Delay	6.9	HCM Level of Service	A
HCM Volume to Capacity ratio	0.28		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	4.0
Intersection Capacity Utilization	43.3%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group




















HCM Signalized Intersection Capacity Analysis  
 132: Thayer Ave. & Georgia Ave

7/28/2008

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations			  			  
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0		4.0		4.0	4.0
Lane Util. Factor	1.00		0.91		1.00	0.91
Frt	0.89		1.00		1.00	1.00
Flt Protected	0.99		1.00		0.95	1.00
Satd. Flow (prot)	1645		5078		1770	5085
Flt Permitted	0.99		1.00		0.10	1.00
Satd. Flow (perm)	1645		5078		184	5085
Volume (vph)	35	140	1540	15	55	2255
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	37	147	1621	16	58	2374
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	184	0	1637	0	58	2374
Turn Type					pm+pt	
Protected Phases	4		5		6	2
Permitted Phases					2	
Actuated Green, G (s)	20.3		67.9		89.7	89.7
Effective Green, g (s)	21.3		68.9		90.7	90.7
Actuated g/C Ratio	0.18		0.57		0.76	0.76
Clearance Time (s)	5.0		5.0		5.0	5.0
Vehicle Extension (s)	3.0		3.0		3.0	3.0
Lane Grp Cap (vph)	292		2916		374	3843
v/s Ratio Prot	c0.11		0.32		0.02	c0.47
v/s Ratio Perm					0.09	
v/c Ratio	0.63		0.56		0.16	0.62
Uniform Delay, d1	45.7		16.1		13.8	6.7
Progression Factor	1.00		1.00		0.14	0.06
Incremental Delay, d2	4.4		0.8		0.1	0.6
Delay (s)	50.1		16.8		2.0	0.9
Level of Service	D		B		A	A
Approach Delay (s)	50.1		16.8			1.0
Approach LOS	D		B			A
<b>Intersection Summary</b>						
HCM Average Control Delay			9.2		HCM Level of Service	A
HCM Volume to Capacity ratio			0.62			
Actuated Cycle Length (s)			120.0		Sum of lost time (s)	8.0
Intersection Capacity Utilization			60.8%		ICU Level of Service	B
Analysis Period (min)			15			
c Critical Lane Group						

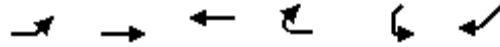
HCM Signalized Intersection Capacity Analysis  
 131: Bonifant Street & Georgia Ave

7/28/2008

													
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations													
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)		2.0		2.0		2.0	2.0	2.0		2.0	2.0		
Lane Util. Factor		1.00		1.00		1.00	1.00	0.91		1.00	0.91		
Frt		0.92		1.00		0.85	1.00	1.00		1.00	0.99		
Flt Protected		0.98		0.95		1.00	0.95	1.00		0.95	1.00		
Satd. Flow (prot)		1680		1770		1583	1770	5075		1770	5020		
Flt Permitted		0.98		0.49		1.00	0.05	1.00		0.13	1.00		
Satd. Flow (perm)		1680		906		1583	86	5075		248	5020		
Volume (vph)	45	0	65	45	0	85	185	1475	20	35	2200	205	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	
Adj. Flow (vph)	47	0	68	47	0	89	195	1553	21	37	2316	216	
RTOR Reduction (vph)	0	51	0	0	0	80	0	1	0	0	6	0	
Lane Group Flow (vph)	0	64	0	47	0	9	195	1573	0	37	2526	0	
Turn Type	Perm		custom		custom	pm+pt			pm+pt				
Protected Phases		4				5		2		1		6	
Permitted Phases	4			8		8	2			6			
Actuated Green, G (s)		9.7		9.7		9.7	100.3	92.9		84.1		81.7	
Effective Green, g (s)		12.7		12.7		12.7	103.3	95.9		90.1		84.7	
Actuated g/C Ratio		0.11		0.11		0.11	0.86	0.80		0.75		0.71	
Clearance Time (s)		5.0		5.0		5.0	5.0	5.0		5.0		5.0	
Vehicle Extension (s)		3.0		3.0		3.0	3.0	3.0		3.0		3.0	
Lane Grp Cap (vph)		178		96		168	307	4056		255		3543	
v/s Ratio Prot						c0.09		0.31		0.01		c0.50	
v/s Ratio Perm		0.04		c0.05		0.01	0.46			0.10			
v/c Ratio		0.36		0.49		0.06	0.64	0.39		0.15		0.71	
Uniform Delay, d1		49.9		50.6		48.3	24.9	3.5		7.4		10.4	
Progression Factor		1.00		0.82		0.63	1.42	0.34		0.44		0.40	
Incremental Delay, d2		1.2		3.9		0.1	3.6	0.2		0.0		0.1	
Delay (s)		51.1		45.6		30.3	39.1	1.4		3.3		4.3	
Level of Service		D		D		C	D	A		A		A	
Approach Delay (s)		51.1			35.6			5.6				4.3	
Approach LOS		D			D			A				A	
<b>Intersection Summary</b>													
HCM Average Control Delay			6.9									HCM Level of Service	A
HCM Volume to Capacity ratio			0.66										
Actuated Cycle Length (s)			120.0									Sum of lost time (s)	4.0
Intersection Capacity Utilization			80.5%									ICU Level of Service	D
Analysis Period (min)			15										
c	Critical Lane Group												

HCM Signalized Intersection Capacity Analysis  
 98: 2nd Avenue & Fenwick Ave

6/10/2008



Movement	EBL	EBT	WBT	WBR	SWL	SWR
Lane Configurations		↔↑	↑	↔	↔	↔
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)		2.0	2.0	2.0	2.0	2.0
Lane Util. Factor		0.95	1.00	1.00	1.00	1.00
Frt		1.00	1.00	0.85	1.00	0.85
Flt Protected		0.99	1.00	1.00	0.95	1.00
Satd. Flow (prot)		3352	1776	1509	1787	1599
Flt Permitted		0.90	1.00	1.00	0.95	1.00
Satd. Flow (perm)		3035	1776	1509	1787	1599
Volume (vph)	65	435	175	50	65	40
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	68	458	184	53	68	42
RTOR Reduction (vph)	0	0	0	11	0	36
Lane Group Flow (vph)	0	526	184	42	68	6
Heavy Vehicles (%)	7%	7%	7%	7%	1%	1%
Turn Type	Perm			Perm		Perm
Protected Phases		4	8		6	
Permitted Phases	4			8		6
Actuated Green, G (s)		45.0	45.0	45.0	5.0	5.0
Effective Green, g (s)		48.0	48.0	48.0	8.0	8.0
Actuated g/C Ratio		0.80	0.80	0.80	0.13	0.13
Clearance Time (s)		5.0	5.0	5.0	5.0	5.0
Vehicle Extension (s)		3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)		2428	1421	1207	238	213
v/s Ratio Prot			0.10		c0.04	
v/s Ratio Perm		c0.17		0.03		0.00
v/c Ratio		0.22	0.13	0.04	0.29	0.03
Uniform Delay, d1		1.5	1.3	1.2	23.4	22.6
Progression Factor		1.22	0.84	0.66	1.00	1.00
Incremental Delay, d2		0.2	0.2	0.1	0.7	0.1
Delay (s)		1.9	1.3	0.9	24.1	22.7
Level of Service		A	A	A	C	C
Approach Delay (s)		1.9	1.2		23.5	
Approach LOS		A	A		C	




















Intersection Summary

HCM Average Control Delay	4.5	HCM Level of Service	A
HCM Volume to Capacity ratio	0.22		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	4.0
Intersection Capacity Utilization	36.7%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis  
 100: 2nd Avenue & Spring Street

6/10/2008

												
Movement	NBL	NBT	NBR	SBL	SBT	SBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	2.0	2.0			2.0		2.0	2.0		2.0	2.0	
Lane Util. Factor	1.00	1.00			1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.91			0.96		1.00	0.92		1.00	0.99	
Flt Protected	0.95	1.00			1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1687	1617			1796		1687	1640		1687	1764	
Flt Permitted	0.49	1.00			0.97		0.45	1.00		0.34	1.00	
Satd. Flow (perm)	864	1617			1750		794	1640		598	1764	
Volume (vph)	135	30	45	5	30	15	35	310	320	155	420	20
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	142	32	47	5	32	16	37	326	337	163	442	21
RTOR Reduction (vph)	0	36	0	0	15	0	0	19	0	0	1	0
Lane Group Flow (vph)	142	43	0	0	38	0	37	644	0	163	462	0
Heavy Vehicles (%)	7%	7%	7%	1%	1%	1%	7%	7%	7%	7%	7%	7%
Turn Type	pm+pt			Perm			Perm			Perm		
Protected Phases	3	8			4			2			6	
Permitted Phases	8			4			2			6		
Actuated Green, G (s)	24.4	24.4			6.8		85.6	85.6		85.6	85.6	
Effective Green, g (s)	27.4	27.4			9.8		88.6	88.6		88.6	88.6	
Actuated g/C Ratio	0.23	0.23			0.08		0.74	0.74		0.74	0.74	
Clearance Time (s)	5.0	5.0			5.0		5.0	5.0		5.0	5.0	
Vehicle Extension (s)	3.0	3.0			3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	304	369			143		586	1211		442	1302	
v/s Ratio Prot	c0.06	0.03						c0.39			0.26	
v/s Ratio Perm	0.05				0.02		0.05			0.27		
v/c Ratio	0.47	0.12			0.27		0.06	0.53		0.37	0.36	
Uniform Delay, d1	39.2	36.7			51.7		4.3	6.8		5.6	5.6	
Progression Factor	1.07	1.21			1.00		0.11	0.12		1.00	1.00	
Incremental Delay, d2	1.1	0.1			1.0		0.2	1.4		2.4	0.8	
Delay (s)	43.1	44.6			52.7		0.7	2.2		8.0	6.3	
Level of Service	D	D			D		A	A		A	A	
Approach Delay (s)		43.7			52.7			2.1			6.8	
Approach LOS		D			D			A			A	
<b>Intersection Summary</b>												
HCM Average Control Delay			11.4				HCM Level of Service			B		
HCM Volume to Capacity ratio			0.49									
Actuated Cycle Length (s)			120.0				Sum of lost time (s)			4.0		
Intersection Capacity Utilization			68.6%				ICU Level of Service			C		
Analysis Period (min)			15									

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis  
 1: 2nd Avenue & MD 384 (Colesville Rd.)

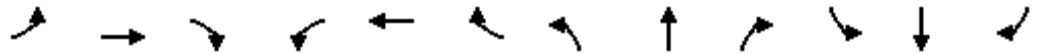
6/10/2008



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations	↘	↑↑	↗	↘	↔			↑↑↑	↗	↘	↑↑↑	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	2.0	2.0	2.0	2.0	2.0			2.0	2.0	2.0	2.0	
Lane Util. Factor	1.00	0.95	1.00	0.91	0.91			0.91	1.00	1.00	0.91	
Frbp, ped/bikes	1.00	1.00	0.81	1.00	0.92			1.00	1.00	1.00	0.97	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00			1.00	1.00	1.00	1.00	
Frt	1.00	1.00	0.85	1.00	0.96			1.00	0.85	1.00	0.98	
Flt Protected	0.95	1.00	1.00	0.95	0.99			1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1719	3438	1253	1564	2870			4940	1538	1719	4711	
Flt Permitted	0.95	1.00	1.00	0.95	0.99			1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1719	3438	1253	1564	2870			4940	1538	1719	4711	
Volume (vph)	110	170	195	395	290	140	0	1555	395	25	575	70
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	116	179	205	416	305	147	0	1637	416	26	605	74
RTOR Reduction (vph)	0	0	78	0	22	0	0	0	175	0	10	0
Lane Group Flow (vph)	116	179	127	305	541	0	0	1637	241	26	669	0
Confl. Peds. (#/hr)			122			261			113			146
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%
Turn Type	Split		Perm	Split					Prot		Prot	
Protected Phases	3	3		4	4			6	6	5	2	
Permitted Phases			3									
Actuated Green, G (s)	31.0	31.0	31.0	34.7	34.7			57.9	57.9	2.4	66.3	
Effective Green, g (s)	35.0	35.0	35.0	38.7	38.7			61.9	61.9	6.4	70.3	
Actuated g/C Ratio	0.23	0.23	0.23	0.26	0.26			0.41	0.41	0.04	0.47	
Clearance Time (s)	6.0	6.0	6.0	6.0	6.0			6.0	6.0	6.0	6.0	
Vehicle Extension (s)	4.0	4.0	4.0	4.0	4.0			3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	401	802	292	404	740			2039	635	73	2208	
v/s Ratio Prot	0.07	0.05		c0.19	0.19			c0.33	0.16	0.02	c0.14	
v/s Ratio Perm			c0.10									
v/c Ratio	0.29	0.22	0.43	0.75	0.73			0.80	0.38	0.36	0.30	
Uniform Delay, d1	47.3	46.5	49.1	51.3	50.9			38.7	30.7	69.8	24.7	
Progression Factor	1.00	1.00	1.00	1.00	1.00			0.35	0.11	1.00	1.00	
Incremental Delay, d2	0.5	0.2	1.4	8.3	4.0			2.7	1.3	3.0	0.4	
Delay (s)	47.8	46.7	50.5	59.6	54.9			16.4	4.8	72.8	25.0	
Level of Service	D	D	D	E	D			B	A	E	C	
Approach Delay (s)		48.5			56.5			14.0			26.8	
Approach LOS		D			E			B			C	
<b>Intersection Summary</b>												
HCM Average Control Delay			29.3			HCM Level of Service				C		
HCM Volume to Capacity ratio			0.66									
Actuated Cycle Length (s)			150.0			Sum of lost time (s)			6.0			
Intersection Capacity Utilization			91.7%			ICU Level of Service			F			
Analysis Period (min)			15									
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis  
 2: Wayne Ave. #1 & Ramsey Rd

6/10/2008



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕↕			↕↕↕		↕	↕			↕↕	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		2.0			2.0		2.0	2.0			2.0	
Lane Util. Factor		0.95			0.91		1.00	1.00			1.00	
Frbp, ped/bikes		1.00			1.00		1.00	1.00			1.00	
Flpb, ped/bikes		1.00			1.00		0.90	1.00			0.97	
Frt		0.98			1.00		1.00	0.86			0.94	
Flt Protected		1.00			0.99		0.95	1.00			0.98	
Satd. Flow (prot)		3355			4881		1542	1550			1690	
Flt Permitted		0.95			0.69		0.54	1.00			0.82	
Satd. Flow (perm)		3180			3416		869	1550			1413	
Volume (vph)	5	410	70	145	575	10	130	5	105	120	50	120
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	5	432	74	153	605	11	137	5	111	126	53	126
RTOR Reduction (vph)	0	9	0	0	1	0	0	62	0	0	17	0
Lane Group Flow (vph)	0	502	0	0	768	0	137	54	0	0	288	0
Confl. Peds. (#/hr)	233			137			123			44		
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%	5%	5%	5%	1%	1%	1%
Turn Type	Perm			pm+pt			Perm			Perm		
Protected Phases		2		1	6			4			8	
Permitted Phases	2			6			4			8		
Actuated Green, G (s)		48.0			77.0		63.0	63.0			63.0	
Effective Green, g (s)		51.0			80.0		66.0	66.0			66.0	
Actuated g/C Ratio		0.34			0.53		0.44	0.44			0.44	
Clearance Time (s)		5.0			5.0		5.0	5.0			5.0	
Vehicle Extension (s)		0.2			0.2		4.0	4.0			4.0	
Lane Grp Cap (vph)		1081			2086		382	682			622	
v/s Ratio Prot					c0.07			0.03				
v/s Ratio Perm		c0.16			0.13		0.16				c0.20	
v/c Ratio		0.46			0.37		0.36	0.08			0.46	
Uniform Delay, d1		38.8			20.3		27.9	24.4			29.5	
Progression Factor		1.00			1.00		1.00	1.00			1.00	
Incremental Delay, d2		0.1			0.5		2.6	0.2			2.5	
Delay (s)		38.9			20.8		30.5	24.6			32.0	
Level of Service		D			C		C	C			C	
Approach Delay (s)		38.9			20.8			27.8			32.0	
Approach LOS		D			C			C			C	
<b>Intersection Summary</b>												
HCM Average Control Delay			28.7				HCM Level of Service				C	
HCM Volume to Capacity ratio			0.44									
Actuated Cycle Length (s)			150.0				Sum of lost time (s)			6.0		
Intersection Capacity Utilization			61.3%				ICU Level of Service			B		
Analysis Period (min)			15									
c Critical Lane Group												



# HCM Signalized Intersection Capacity Analysis

## 3: Wayne Ave. #1 & Georgia Ave

6/10/2008



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗		↖	↗		↖	↗		↖	↗	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	0.91		1.00	0.91	
Frbp, ped/bikes	1.00	0.97		1.00	0.93		1.00	0.98		1.00	0.98	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.97		1.00	0.94		1.00	0.99		1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1719	3228		1719	3004		1719	4806		1719	4798	
Flt Permitted	0.14	1.00		0.17	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	245	3228		301	3004		1719	4806		1719	4798	
Volume (vph)	235	570	130	135	380	245	180	1865	120	105	1530	150
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	247	600	137	142	400	258	189	1963	126	111	1611	158
RTOR Reduction (vph)	0	16	0	0	88	0	0	6	0	0	9	0
Lane Group Flow (vph)	247	721	0	142	570	0	189	2083	0	111	1760	0
Confl. Peds. (#/hr)			117			116			173			97
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%
Turn Type	pm+pt			pm+pt			Prot			Prot		
Protected Phases	7	4		3	8		1	5		6	2	
Permitted Phases	4			8								
Actuated Green, G (s)	42.6	29.7		32.5	23.6		14.2	52.4		7.0	47.2	
Effective Green, g (s)	44.6	31.7		34.5	25.6		14.2	54.4		9.0	49.2	
Actuated g/C Ratio	0.37	0.26		0.29	0.21		0.12	0.45		0.08	0.41	
Clearance Time (s)	4.0	6.0		4.0	6.0		4.0	6.0		6.0	6.0	
Vehicle Extension (s)	3.0	4.0		3.0	4.0		3.0	0.2		3.0	0.2	
Lane Grp Cap (vph)	275	853		192	641		203	2179		129	1967	
v/s Ratio Prot	c0.11	0.22		0.05	0.19		0.11	c0.43		0.06	c0.37	
v/s Ratio Perm	c0.22			0.16								
v/c Ratio	0.90	0.85		0.74	0.89		0.93	0.96		0.86	0.89	
Uniform Delay, d1	30.7	41.8		34.3	45.8		52.4	31.6		54.9	33.0	
Progression Factor	1.00	1.00		1.00	1.00		1.18	0.52		0.70	0.50	
Incremental Delay, d2	29.1	8.0		13.9	14.5		36.0	9.0		45.2	6.2	
Delay (s)	59.8	49.8		48.1	60.3		97.7	25.5		83.5	22.8	
Level of Service	E	D		D	E		F	C		F	C	
Approach Delay (s)		52.3			58.2			31.5			26.4	
Approach LOS		D			E			C			C	

### Intersection Summary

HCM Average Control Delay	36.9	HCM Level of Service	D
HCM Volume to Capacity ratio	0.90		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	92.2%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

# HCM Signalized Intersection Capacity Analysis

65: Wayne Ave. #1 & Dixon Rd

6/10/2008



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑↑			↑↑↑			↑	↑		↑	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		2.0			2.0			2.0	2.0		2.0	
Lane Util. Factor		0.91			0.91			0.95	0.95		1.00	
Frt		0.99			1.00			0.96	0.85		0.93	
Flt Protected		1.00			0.99			0.97	1.00		0.98	
Satd. Flow (prot)		4877			4897			1652	1519		1725	
Flt Permitted		0.92			0.79			0.79	1.00		0.91	
Satd. Flow (perm)		4515			3877			1355	1519		1593	
Volume (vph)	10	575	50	80	615	15	100	5	245	10	5	15
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	11	605	53	84	647	16	105	5	258	11	5	16
RTOR Reduction (vph)	0	4	0	0	1	0	0	16	157	0	12	0
Lane Group Flow (vph)	0	665	0	0	746	0	0	140	55	0	20	0
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%	1%	1%	1%	1%	1%	1%
Turn Type	Perm			pm+pt			Perm		Perm	Perm		
Protected Phases		6		5	2			4				8
Permitted Phases	6			2			4		4	8		
Actuated Green, G (s)		81.0			81.0			27.0	27.0			27.0
Effective Green, g (s)		85.0			85.0			31.0	31.0			31.0
Actuated g/C Ratio		0.71			0.71			0.26	0.26			0.26
Clearance Time (s)		6.0			6.0			6.0	6.0			6.0
Vehicle Extension (s)		3.0			3.0			3.0	3.0			3.0
Lane Grp Cap (vph)		3198			2746			350	392			412
v/s Ratio Prot												
v/s Ratio Perm		0.15			c0.19			c0.10	0.04			0.01
v/c Ratio		0.21			0.27			0.40	0.14			0.05
Uniform Delay, d1		6.0			6.3			36.8	34.2			33.4
Progression Factor		1.00			1.00			0.96	0.88			1.00
Incremental Delay, d2		0.1			0.1			0.8	0.2			0.0
Delay (s)		6.1			6.4			36.2	30.4			33.5
Level of Service		A			A			D	C			C
Approach Delay (s)		6.1			6.4			32.9				33.5
Approach LOS		A			A			C				C




















## Intersection Summary

HCM Average Control Delay	12.1	HCM Level of Service	B
HCM Volume to Capacity ratio	0.30		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	4.0
Intersection Capacity Utilization	53.7%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis  
 131: Bonifant Street & Georgia Ave

7/28/2008

													
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations													
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)		2.0		2.0		2.0	2.0	2.0		2.0	2.0		
Lane Util. Factor		1.00		1.00		1.00	1.00	0.91		1.00	0.91		
Frt		0.93		1.00		0.85	1.00	0.99		1.00	1.00		
Flt Protected		0.98		0.95		1.00	0.95	1.00		0.95	1.00		
Satd. Flow (prot)		1695		1770		1583	1770	5040		1770	5067		
Flt Permitted		0.98		0.52		1.00	0.08	1.00		0.06	1.00		
Satd. Flow (perm)		1695		969		1583	141	5040		115	5067		
Volume (vph)	135	0	135	10	0	65	85	1965	125	90	1660	40	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	
Adj. Flow (vph)	142	0	142	11	0	68	89	2068	132	95	1747	42	
RTOR Reduction (vph)	0	33	0	0	0	54	0	5	0	0	2	0	
Lane Group Flow (vph)	0	251	0	11	0	14	89	2195	0	95	1787	0	
Turn Type	Perm		custom		custom	pm+pt			pm+pt				
Protected Phases		4				5	2			1	6		
Permitted Phases	4			8		8	2			6			
Actuated Green, G (s)		22.1		22.1		22.1	71.9	71.9		75.7	75.7		
Effective Green, g (s)		25.1		25.1		25.1	74.9	74.9		78.7	78.7		
Actuated g/C Ratio		0.21		0.21		0.21	0.62	0.62		0.66	0.66		
Clearance Time (s)		5.0		5.0		5.0	5.0	5.0		5.0	5.0		
Vehicle Extension (s)		3.0		3.0		3.0	3.0	3.0		3.0	3.0		
Lane Grp Cap (vph)		355		203		331	226	3146		269	3323		
v/s Ratio Prot							0.03	c0.44		0.04	c0.35		
v/s Ratio Perm		0.15		0.01		0.01	0.21			0.19			
v/c Ratio		0.71		0.05		0.04	0.39	0.70		0.35	0.54		
Uniform Delay, d1		44.0		38.0		37.9	12.8	15.0		28.5	11.0		
Progression Factor		1.00		0.96		1.25	1.67	0.08		0.37	0.29		
Incremental Delay, d2		6.3		0.1		0.1	0.7	0.8		0.4	0.3		
Delay (s)		50.3		36.6		47.5	22.1	2.0		10.9	3.5		
Level of Service		D		D		D	C	A		B	A		
Approach Delay (s)		50.3			46.0			2.8			3.8		
Approach LOS		D			D			A			A		
<b>Intersection Summary</b>													
HCM Average Control Delay			7.0									HCM Level of Service	A
HCM Volume to Capacity ratio			0.67										
Actuated Cycle Length (s)			120.0									Sum of lost time (s)	4.0
Intersection Capacity Utilization			78.2%									ICU Level of Service	D
Analysis Period (min)			15										
c	Critical Lane Group												

HCM Signalized Intersection Capacity Analysis  
 132: Thayer Ave. & Georgia Ave

7/28/2008



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↔		↑↑↑		↗	↑↑↑
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0		4.0		4.0	4.0
Lane Util. Factor	1.00		0.91		1.00	0.91
Frt	0.91		0.99		1.00	1.00
Flt Protected	0.98		1.00		0.95	1.00
Satd. Flow (prot)	1664		5048		1770	5085
Flt Permitted	0.98		1.00		0.05	1.00
Satd. Flow (perm)	1664		5048		100	5085
Volume (vph)	55	120	2050	105	140	1660
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	58	126	2158	111	147	1747
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	184	0	2269	0	147	1747
Turn Type					pm+pt	
Protected Phases	4		5		6	2
Permitted Phases					2	
Actuated Green, G (s)	20.3		69.7		89.7	89.7
Effective Green, g (s)	21.3		70.7		90.7	90.7
Actuated g/C Ratio	0.18		0.59		0.76	0.76
Clearance Time (s)	5.0		5.0		5.0	5.0
Vehicle Extension (s)	3.0		3.0		3.0	3.0
Lane Grp Cap (vph)	295		2974		298	3843
v/s Ratio Prot	c0.11		c0.45		0.07	c0.34
v/s Ratio Perm					0.31	
v/c Ratio	0.62		0.76		0.49	0.45
Uniform Delay, d1	45.6		18.4		30.5	5.4
Progression Factor	1.00		1.00		0.40	0.34
Incremental Delay, d2	4.1		1.9		1.1	0.3
Delay (s)	49.7		20.3		13.4	2.2
Level of Service	D		C		B	A
Approach Delay (s)	49.7		20.3			3.1
Approach LOS	D		C			A




















Intersection Summary

HCM Average Control Delay	14.0	HCM Level of Service	B
HCM Volume to Capacity ratio	0.68		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	70.1%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

# HCM Signalized Intersection Capacity Analysis

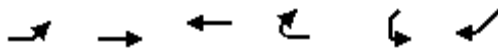
## 84: Apple Ave & 2nd Avenue

6/10/2008

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		2.0			2.0	2.0	2.0	2.0			2.0	
Lane Util. Factor		1.00			1.00	1.00	1.00	0.95			0.95	
Frt		0.97			1.00	0.85	1.00	0.97			0.99	
Flt Protected		0.98			0.96	1.00	0.95	1.00			0.98	
Satd. Flow (prot)		1773			1810	1599	1719	3340			3355	
Flt Permitted		0.84			0.81	1.00	0.49	1.00			0.76	
Satd. Flow (perm)		1533			1528	1599	894	3340			2600	
Volume (vph)	20	10	10	110	30	110	25	275	65	130	260	25
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	21	11	11	116	32	116	26	289	68	137	274	26
RTOR Reduction (vph)	0	9	0	0	0	92	0	17	0	0	4	0
Lane Group Flow (vph)	0	34	0	0	148	24	26	340	0	0	433	0
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	5%	5%	5%	5%	5%	5%
Turn Type	Perm			Perm		Perm	Perm				Perm	
Protected Phases		2			6			8				4
Permitted Phases	2			6		6	8				4	
Actuated Green, G (s)		9.2			9.2	9.2	40.8	40.8			40.8	
Effective Green, g (s)		12.2			12.2	12.2	43.8	43.8			43.8	
Actuated g/C Ratio		0.20			0.20	0.20	0.73	0.73			0.73	
Clearance Time (s)		5.0			5.0	5.0	5.0	5.0			5.0	
Vehicle Extension (s)		3.0			3.0	3.0	3.0	3.0			3.0	
Lane Grp Cap (vph)		312			311	325	653	2438			1898	
v/s Ratio Prot								0.10				
v/s Ratio Perm		0.02			c0.10	0.01	0.03				c0.17	
v/c Ratio		0.11			0.48	0.07	0.04	0.14			0.23	
Uniform Delay, d1		19.5			21.1	19.3	2.3	2.4			2.6	
Progression Factor		1.00			1.00	1.00	1.00	1.00			1.14	
Incremental Delay, d2		0.2			1.2	0.1	0.1	0.1			0.3	
Delay (s)		19.6			22.2	19.4	2.4	2.6			3.3	
Level of Service		B			C	B	A	A			A	
Approach Delay (s)		19.6			21.0			2.5			3.3	
Approach LOS		B			C			A			A	
<b>Intersection Summary</b>												
HCM Average Control Delay			7.8				HCM Level of Service				A	
HCM Volume to Capacity ratio			0.28									
Actuated Cycle Length (s)			60.0				Sum of lost time (s)			4.0		
Intersection Capacity Utilization			43.2%				ICU Level of Service			A		
Analysis Period (min)			15									
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis  
 98: 2nd Avenue & Fenwick Ave

6/10/2008



Movement	EBL	EBT	WBT	WBR	SWL	SWR
Lane Configurations		↕↕	↕	↕	↕	↕
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)		2.0	2.0	2.0	2.0	2.0
Lane Util. Factor		0.95	1.00	1.00	1.00	1.00
Frt		1.00	1.00	0.85	1.00	0.85
Flt Protected		0.99	1.00	1.00	0.95	1.00
Satd. Flow (prot)		3400	1810	1538	1787	1599
Flt Permitted		0.82	1.00	1.00	0.95	1.00
Satd. Flow (perm)		2816	1810	1538	1787	1599
Volume (vph)	95	330	335	65	85	145
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	100	347	353	68	89	153
RTOR Reduction (vph)	0	0	0	16	0	128
Lane Group Flow (vph)	0	447	353	52	89	25
Heavy Vehicles (%)	5%	5%	5%	5%	1%	1%
Turn Type	Perm			Perm		Perm
Protected Phases		4	8		6	
Permitted Phases	4			8		6
Actuated Green, G (s)		43.2	43.2	43.2	6.8	6.8
Effective Green, g (s)		46.2	46.2	46.2	9.8	9.8
Actuated g/C Ratio		0.77	0.77	0.77	0.16	0.16
Clearance Time (s)		5.0	5.0	5.0	5.0	5.0
Vehicle Extension (s)		3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)		2168	1394	1184	292	261
v/s Ratio Prot			c0.20		c0.05	
v/s Ratio Perm		0.16		0.03		0.02
v/c Ratio		0.21	0.25	0.04	0.30	0.10
Uniform Delay, d1		1.9	2.0	1.6	22.1	21.3
Progression Factor		1.07	0.84	1.01	1.00	1.00
Incremental Delay, d2		0.2	0.4	0.1	0.6	0.2
Delay (s)		2.2	2.1	1.7	22.7	21.5
Level of Service		A	A	A	C	C
Approach Delay (s)		2.2	2.0		21.9	
Approach LOS		A	A		C	

Intersection Summary

HCM Average Control Delay	6.4	HCM Level of Service	A
HCM Volume to Capacity ratio	0.26		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	4.0
Intersection Capacity Utilization	44.2%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

# HCM Signalized Intersection Capacity Analysis

100: 2nd Avenue & Spring Street

6/10/2008

Movement	NBL	NBT	NBR	SBL	SBT	SBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	2.0	2.0			2.0		2.0	2.0		2.0	2.0	
Lane Util. Factor	1.00	1.00			1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.87			0.99		1.00	0.95		1.00	1.00	
Flt Protected	0.95	1.00			0.99		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1719	1566			1835		1719	1716		1719	1806	
Flt Permitted	0.43	1.00			0.91		0.47	1.00		0.19	1.00	
Satd. Flow (perm)	783	1566			1698		859	1716		340	1806	
Volume (vph)	385	10	90	25	70	10	15	505	265	90	340	5
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	405	11	95	26	74	11	16	532	279	95	358	5
RTOR Reduction (vph)	0	62	0	0	3	0	0	14	0	0	0	0
Lane Group Flow (vph)	405	44	0	0	108	0	16	797	0	95	363	0
Heavy Vehicles (%)	5%	5%	5%	1%	1%	1%	5%	5%	5%	5%	5%	5%
Turn Type	pm+pt		Perm			Perm			Perm			
Protected Phases	3	8			4			2			6	
Permitted Phases	8			4			2			6		
Actuated Green, G (s)	38.7	38.7			12.7		71.3	71.3		71.3	71.3	
Effective Green, g (s)	41.7	41.7			15.7		74.3	74.3		74.3	74.3	
Actuated g/C Ratio	0.35	0.35			0.13		0.62	0.62		0.62	0.62	
Clearance Time (s)	5.0	5.0			5.0		5.0	5.0		5.0	5.0	
Vehicle Extension (s)	3.0	3.0			3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	459	544			222		532	1062		211	1118	
v/s Ratio Prot	c0.18	0.03						c0.46			0.20	
v/s Ratio Perm	0.13				c0.06		0.02			0.28		
v/c Ratio	0.88	0.08			0.48		0.03	0.75		0.45	0.32	
Uniform Delay, d1	34.1	26.3			48.4		8.9	16.3		12.1	10.9	
Progression Factor	0.94	0.92			1.00		1.27	0.91		1.00	1.00	
Incremental Delay, d2	17.6	0.1			1.7		0.1	2.5		6.8	0.8	
Delay (s)	49.7	24.3			50.1		11.3	17.2		18.9	11.7	
Level of Service	D	C			D		B	B		B	B	
Approach Delay (s)		44.4			50.1			17.1			13.2	
Approach LOS		D			D			B			B	
<b>Intersection Summary</b>												
HCM Average Control Delay			25.4	HCM Level of Service				C				
HCM Volume to Capacity ratio			0.73									
Actuated Cycle Length (s)			120.0	Sum of lost time (s)				6.0				
Intersection Capacity Utilization			89.1%	ICU Level of Service				E				
Analysis Period (min)			15									
c Critical Lane Group												

# HCM Signalized Intersection Capacity Analysis

9: Ellin Rd. & MD 410

6/11/2008



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↖↗	↖	↕	↗	↖	↕↕↕
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	0.97	1.00	0.95	1.00	1.00	0.91
Frt	1.00	0.85	1.00	0.85	1.00	1.00
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	3303	1524	3406	1524	1703	4893
Flt Permitted	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	3303	1524	3406	1524	1703	4893
Volume (vph)	400	125	2150	740	200	1470
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Growth Factor (vph)	100%	100%	100%	100%	100%	100%
Adj. Flow (vph)	421	132	2263	779	211	1547
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	421	132	2263	779	211	1547
Heavy Vehicles (%)	6%	6%	6%	6%	6%	6%
Turn Type		Free		Free	Prot	
Protected Phases	4		2		1	6
Permitted Phases		Free		Free		
Actuated Green, G (s)	11.0	100.0	63.0	100.0	11.0	79.0
Effective Green, g (s)	12.0	100.0	64.0	100.0	12.0	80.0
Actuated g/C Ratio	0.12	1.00	0.64	1.00	0.12	0.80
Clearance Time (s)	5.0		5.0		5.0	5.0
Vehicle Extension (s)	3.0		6.0		3.0	6.0
Lane Grp Cap (vph)	396	1524	2180	1524	204	3914
v/s Ratio Prot	c0.13		c0.66		c0.12	0.32
v/s Ratio Perm		0.09		0.51		
v/c Ratio	1.06	0.09	1.04	0.51	1.03	0.40
Uniform Delay, d1	44.0	0.0	18.0	0.0	44.0	2.9
Progression Factor	1.00	1.00	0.59	1.00	1.00	1.00
Incremental Delay, d2	63.0	0.1	24.4	0.6	72.3	0.3
Delay (s)	107.0	0.1	35.1	0.6	116.3	3.2
Level of Service	F	A	D	A	F	A
Approach Delay (s)	81.4		26.2			16.8
Approach LOS	F		C			B

## Intersection Summary

HCM Average Control Delay	28.8	HCM Level of Service	C
HCM Volume to Capacity ratio	1.04		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	91.9%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			



# HCM Signalized Intersection Capacity Analysis

9: Ellin Rd. & MD 410

6/11/2008



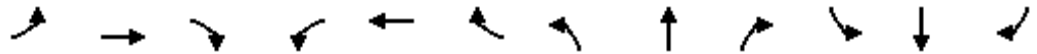
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↔↔	↔	↕↕	↔	↔	↕↕↕
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	0.97	1.00	0.95	1.00	1.00	0.91
Frt	1.00	0.85	1.00	0.85	1.00	1.00
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	3400	1568	3505	1568	1752	5036
Flt Permitted	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	3400	1568	3505	1568	1752	5036
Volume (vph)	745	80	1515	295	105	1865
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Growth Factor (vph)	100%	100%	100%	100%	100%	100%
Adj. Flow (vph)	784	84	1595	311	111	1963
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	784	84	1595	311	111	1963
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%
Turn Type		Free		Free	Prot	
Protected Phases	4		2		1	6
Permitted Phases		Free		Free		
Actuated Green, G (s)	22.4	90.0	45.6	90.0	7.0	57.6
Effective Green, g (s)	23.4	90.0	46.6	90.0	8.0	58.6
Actuated g/C Ratio	0.26	1.00	0.52	1.00	0.09	0.65
Clearance Time (s)	5.0		5.0		5.0	5.0
Vehicle Extension (s)	3.0		6.0		3.0	6.0
Lane Grp Cap (vph)	884	1568	1815	1568	156	3279
v/s Ratio Prot	c0.23		c0.46		0.06	c0.39
v/s Ratio Perm		0.05		0.20		
v/c Ratio	0.89	0.05	0.88	0.20	0.71	0.60
Uniform Delay, d1	32.0	0.0	19.2	0.0	39.9	9.0
Progression Factor	1.00	1.00	0.42	1.00	1.00	1.00
Incremental Delay, d2	10.7	0.1	6.1	0.3	14.2	0.8
Delay (s)	42.7	0.1	14.2	0.3	54.1	9.8
Level of Service	D	A	B	A	D	A
Approach Delay (s)	38.6		11.9			12.2
Approach LOS	D		B			B

Intersection Summary			
HCM Average Control Delay	16.8	HCM Level of Service	B
HCM Volume to Capacity ratio	0.83		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	78.9%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

# HCM Signalized Intersection Capacity Analysis

## 4: Wayne Ave. & Fenton St

6/10/2008



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗		↖	↗		↖	↗	↖	↗	↖	↗
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	2.0	2.0		2.0	2.0		2.0	2.0	2.0	2.0	2.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00	1.00	1.00	1.00	
Frbp, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Flpb, ped/bikes	0.98	1.00		0.99	1.00		1.00	1.00	1.00	0.98	1.00	
Frt	1.00	0.96		1.00	0.99		1.00	1.00	0.85	1.00	0.97	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1654	3247		1677	3328		1687	1776	1509	1658	1716	
Flt Permitted	0.32	1.00		0.22	1.00		0.33	1.00	1.00	0.49	1.00	
Satd. Flow (perm)	553	3247		390	3328		594	1776	1509	856	1716	
Volume (vph)	50	300	100	375	750	75	125	275	200	25	350	100
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	54	326	109	408	815	82	136	299	217	27	380	109
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	54	435	0	408	897	0	136	299	217	27	489	0
Conf. Peds. (#/hr)	19			29			34			17		
Turn Type	Perm			pm+pt			Perm		Perm	Perm		
Protected Phases		4		3	8			2				6
Permitted Phases	4			8			2		2		6	
Actuated Green, G (s)	20.3	20.3		50.4	50.4		59.6	59.6	59.6	59.6	59.6	
Effective Green, g (s)	23.3	23.3		53.4	53.4		62.6	62.6	62.6	62.6	62.6	
Actuated g/C Ratio	0.19	0.19		0.44	0.44		0.52	0.52	0.52	0.52	0.52	
Clearance Time (s)	5.0	5.0		4.0	5.0		5.0	5.0	5.0	5.0	5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	107	630		475	1481		310	926	787	447	895	
v/s Ratio Prot		c0.13		c0.20	0.27			0.17			c0.28	
v/s Ratio Perm	0.10			0.18			0.23		0.14	0.03		
v/c Ratio	0.50	0.69		0.86	0.61		0.44	0.32	0.28	0.06	0.55	
Uniform Delay, d1	43.2	45.0		26.8	25.3		17.8	16.5	16.0	14.2	19.2	
Progression Factor	1.00	1.00		0.87	0.62		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	3.7	3.3		12.7	0.6		4.5	0.9	0.9	0.3	2.4	
Delay (s)	46.9	48.3		36.1	16.3		22.3	17.4	16.9	14.4	21.6	
Level of Service	D	D		D	B		C	B	B	B	C	
Approach Delay (s)		48.1			22.5			18.3			21.2	
Approach LOS		D			C			B			C	

### Intersection Summary


















HCM Average Control Delay	25.6	HCM Level of Service	C
HCM Volume to Capacity ratio	0.64		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	6.0
Intersection Capacity Utilization	77.0%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

# HCM Signalized Intersection Capacity Analysis

## 5: Cedar Ave & Wayne Ave.

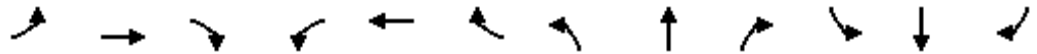
6/10/2008

												
Movement	NBL	NBT	NBR	SBL	SBT	SBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		2.0		2.0		2.0		2.0			2.0	
Lane Util. Factor		1.00		1.00		1.00		0.95			0.95	
Frbp, ped/bikes		0.99		1.00		0.91		1.00			0.99	
Flpb, ped/bikes		0.99		1.00		1.00		1.00			1.00	
Frt		0.97		1.00		0.85		1.00			0.97	
Flt Protected		0.99		0.95		1.00		0.99			1.00	
Satd. Flow (prot)		1680		1680		1378		3347			3214	
Flt Permitted		0.99		0.32		1.00		0.62			1.00	
Satd. Flow (perm)		1680		567		1378		2080			3214	
Volume (vph)	25	125	50	125	0	100	75	400	0	0	1025	300
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	27	136	54	136	0	109	82	435	0	0	1114	326
RTOR Reduction (vph)	0	12	0	0	0	74	0	0	0	0	0	0
Lane Group Flow (vph)	0	205	0	136	0	35	0	517	0	0	1440	0
Confl. Peds. (#/hr)	36		5	5		36	12		6	6		12
Turn Type	Perm		custom		custom		Perm					
Protected Phases		8						2			6	
Permitted Phases	8		4		4		2					
Actuated Green, G (s)		19.7		19.7		19.7		90.3			90.3	
Effective Green, g (s)		22.7		22.7		22.7		93.3			93.3	
Actuated g/C Ratio		0.19		0.19		0.19		0.78			0.78	
Clearance Time (s)		5.0		5.0		5.0		5.0			5.0	
Vehicle Extension (s)		0.2		0.2		0.2		0.2			0.2	
Lane Grp Cap (vph)		318		107		261		1617			2499	
v/s Ratio Prot											c0.45	
v/s Ratio Perm		0.12		c0.24		0.03		0.25				
v/c Ratio		0.64		1.27		0.13		0.32			0.58	
Uniform Delay, d1		44.9		48.6		40.5		4.0			5.4	
Progression Factor		1.00		1.00		1.00		3.36			0.31	
Incremental Delay, d2		3.3		176.5		0.1		0.5			0.5	
Delay (s)		48.3		225.1		40.6		13.8			2.2	
Level of Service		D		F		D		B			A	
Approach Delay (s)		48.3			143.0			13.8			2.2	
Approach LOS		D			F			B			A	
<b>Intersection Summary</b>												
HCM Average Control Delay			23.0				HCM Level of Service				C	
HCM Volume to Capacity ratio			0.70									
Actuated Cycle Length (s)			120.0				Sum of lost time (s)			4.0		
Intersection Capacity Utilization			88.7%				ICU Level of Service				E	
Analysis Period (min)			15									
c	Critical Lane Group											

# HCM Signalized Intersection Capacity Analysis

## 6: Wayne Ave. & Dale Dr

6/10/2008



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕↕			↕↕		↕	↕		↕	↕	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		2.0			2.0		2.0	2.0		2.0	2.0	
Lane Util. Factor		0.95			0.95		1.00	1.00		1.00	1.00	
Frbp, ped/bikes		0.98			0.98		1.00	0.99		1.00	0.97	
Flpb, ped/bikes		1.00			1.00		1.00	1.00		1.00	1.00	
Frt		0.98			0.99		1.00	0.98		1.00	0.94	
Flt Protected		0.99			1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		3204			3258		1687	1730		1687	1615	
Flt Permitted		0.58			0.83		0.16	1.00		0.19	1.00	
Satd. Flow (perm)		1857			2711		284	1730		339	1615	
Volume (vph)	75	325	75	100	1075	100	50	350	50	100	275	175
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	82	353	82	109	1168	109	54	380	54	109	299	190
RTOR Reduction (vph)	0	12	0	0	0	0	0	5	0	0	20	0
Lane Group Flow (vph)	0	505	0	0	1386	0	54	429	0	109	469	0
Conf. Peds. (#/hr)	52		30	30		52	41		25	25		41
Turn Type	Perm			Perm			pm+pt			pm+pt		
Protected Phases		6			2		3	8		7	4	
Permitted Phases	6			2			8			4		
Actuated Green, G (s)		65.1			65.1		38.3	35.9		41.5	37.5	
Effective Green, g (s)		68.1			68.1		44.3	38.9		47.5	40.5	
Actuated g/C Ratio		0.57			0.57		0.37	0.32		0.40	0.34	
Clearance Time (s)		5.0			5.0		5.0	5.0		5.0	5.0	
Vehicle Extension (s)		3.0			3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		1054			1538		168	561		213	545	
v/s Ratio Prot							0.01	0.25		c0.03	c0.29	
v/s Ratio Perm		0.27			c0.51		0.10			0.17		
v/c Ratio		0.48			0.90		0.32	0.77		0.51	0.86	
Uniform Delay, d1		15.4			23.0		27.7	36.4		26.5	37.1	
Progression Factor		0.61			0.56		1.00	1.00		1.00	1.00	
Incremental Delay, d2		1.5			7.3		1.1	6.2		2.1	13.1	
Delay (s)		10.8			20.2		28.8	42.6		28.5	50.2	
Level of Service		B			C		C	D		C	D	
Approach Delay (s)		10.8			20.2			41.1			46.3	
Approach LOS		B			C			D			D	

### Intersection Summary

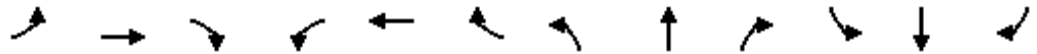
HCM Average Control Delay	27.2	HCM Level of Service	C
HCM Volume to Capacity ratio	0.87		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	6.0
Intersection Capacity Utilization	93.4%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

# HCM Signalized Intersection Capacity Analysis

## 7: Wayne Ave. & Mansfield

6/10/2008



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑			↑↑			↑↓				
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		2.0			2.0			2.0				
Lane Util. Factor		0.95			0.95			1.00				
Frbp, ped/bikes		1.00			1.00			1.00				
Flpb, ped/bikes		1.00			1.00			1.00				
Frt		1.00			1.00			0.93				
Flt Protected		1.00			1.00			0.98				
Satd. Flow (prot)		3367			3372			1615				
Flt Permitted		1.00			0.95			0.98				
Satd. Flow (perm)		3367			3208			1615				
Volume (vph)	0	400	5	10	1325	0	5	0	5	0	0	0
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	435	5	11	1440	0	5	0	5	0	0	0
RTOR Reduction (vph)	0	1	0	0	0	0	0	4	0	0	0	0
Lane Group Flow (vph)	0	439	0	0	1451	0	0	6	0	0	0	0
Conf. Peds. (#/hr)	1		22	22			11			5		
Turn Type					Perm			Split				
Protected Phases		2				6		4	4			
Permitted Phases					6							
Actuated Green, G (s)		85.0			85.0			24.0				
Effective Green, g (s)		89.0			89.0			27.0				
Actuated g/C Ratio		0.74			0.74			0.22				
Clearance Time (s)		6.0			6.0			5.0				
Vehicle Extension (s)		0.2			3.0			0.2				
Lane Grp Cap (vph)		2497			2379			363				
v/s Ratio Prot		0.13						c0.00				
v/s Ratio Perm					c0.45							
v/c Ratio		0.18			0.61			0.02				
Uniform Delay, d1		4.6			7.3			36.2				
Progression Factor		1.22			0.98			1.00				
Incremental Delay, d2		0.1			0.4			0.0				
Delay (s)		5.8			7.5			36.2				
Level of Service		A			A			D				
Approach Delay (s)		5.8			7.5			36.2			0.0	
Approach LOS		A			A			D			A	

### Intersection Summary

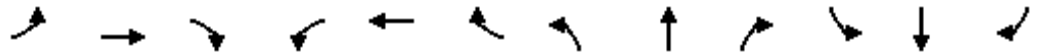
HCM Average Control Delay	7.2	HCM Level of Service	A
HCM Volume to Capacity ratio	0.47		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	4.0
Intersection Capacity Utilization	53.6%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

# HCM Signalized Intersection Capacity Analysis

## 8: Wayne Ave. & Sligo Creek Pkwy

6/10/2008



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗		↖	↗		↖	↗			↖	↗
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	2.0	2.0		2.0	2.0		2.0	2.0			2.0	2.0
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00			1.00	1.00
Frbp, ped/bikes	1.00	0.99		1.00	1.00		1.00	1.00			1.00	1.00
Flpb, ped/bikes	1.00	1.00		0.99	1.00		1.00	1.00			1.00	1.00
Frt	1.00	0.98		1.00	0.99		1.00	0.99			1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00			0.99	1.00
Satd. Flow (prot)	1687	1722		1665	1757		1687	1756			1762	1509
Flt Permitted	0.05	1.00		0.48	1.00		0.12	1.00			0.76	1.00
Satd. Flow (perm)	95	1722		848	1757		209	1756			1342	1509
Volume (vph)	50	275	50	20	975	50	175	350	20	50	350	175
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	54	299	54	22	1060	54	190	380	22	54	380	190
RTOR Reduction (vph)	0	5	0	0	2	0	0	2	0	0	0	0
Lane Group Flow (vph)	54	348	0	22	1113	0	190	400	0	0	434	190
Conf. Peds. (#/hr)	14		8	8		14	2		11	11		2
Turn Type	Perm		Perm		pm+pt		Perm		Prot			
Protected Phases	2		6		7		4		8		8	
Permitted Phases	2		6		4		8					
Actuated Green, G (s)	72.0	72.0		72.0	72.0		38.0	38.0			29.0	29.0
Effective Green, g (s)	75.0	75.0		75.0	75.0		41.0	41.0			32.0	32.0
Actuated g/C Ratio	0.62	0.62		0.62	0.62		0.34	0.34			0.27	0.27
Clearance Time (s)	5.0	5.0		5.0	5.0		5.0	5.0			5.0	5.0
Vehicle Extension (s)	0.2	0.2		0.2	0.2		3.0	3.0			0.2	0.2
Lane Grp Cap (vph)	59	1076		530	1098		158	600			358	402
v/s Ratio Prot		0.20			c0.63		c0.07	0.23				0.13
v/s Ratio Perm	0.57			0.03			0.34				c0.32	
v/c Ratio	0.92	0.32		0.04	1.01		1.20	0.67			1.21	0.47
Uniform Delay, d1	19.7	10.6		8.7	22.5		35.5	33.7			44.0	36.9
Progression Factor	1.17	0.95		0.76	0.96		1.00	1.00			1.00	1.00
Incremental Delay, d2	94.2	0.8		0.1	28.9		136.4	2.8			118.6	0.3
Delay (s)	117.3	10.8		6.7	50.4		171.9	36.5			162.6	37.2
Level of Service	F	B		A	D		F	D			F	D
Approach Delay (s)		24.9			49.6			79.9			124.5	
Approach LOS		C			D			E			F	

### Intersection Summary

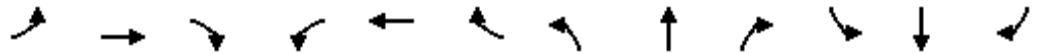
HCM Average Control Delay	69.4	HCM Level of Service	E
HCM Volume to Capacity ratio	1.07		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	6.0
Intersection Capacity Utilization	105.3%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group

# HCM Signalized Intersection Capacity Analysis

## 9: Wayne Ave. & Flower Ave

6/10/2008



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕	↗		↕		↖	↖			↕	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		2.0	2.0		2.0		2.0	2.0			2.0	
Lane Util. Factor		1.00	1.00		1.00		1.00	1.00			1.00	
Frbp, ped/bikes		1.00	1.00		0.99		1.00	1.00			0.99	
Flpb, ped/bikes		0.98	1.00		1.00		1.00	1.00			1.00	
Frt		1.00	0.85		0.97		1.00	1.00			0.95	
Flt Protected		0.96	1.00		0.99		0.95	1.00			1.00	
Satd. Flow (prot)		1665	1509		1681		1687	1772			1672	
Flt Permitted		0.73	1.00		0.97		0.39	1.00			0.99	
Satd. Flow (perm)		1275	1509		1643		687	1772			1656	
Volume (vph)	75	10	175	5	25	10	575	450	5	10	300	175
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	82	11	190	5	27	11	625	489	5	11	326	190
RTOR Reduction (vph)	0	0	0	0	9	0	0	0	0	0	12	0
Lane Group Flow (vph)	0	93	190	0	34	0	625	494	0	0	515	0
Conf. Peds. (#/hr)	6		2	2		6	1		4	4		1
Turn Type	Perm		pt+ov	Perm			pm+pt				Perm	
Protected Phases		4	4 5		8		5	2				6
Permitted Phases	4			8			2				6	
Actuated Green, G (s)		13.4	43.7		13.4		96.6	96.6			67.3	
Effective Green, g (s)		16.4	45.7		16.4		99.6	99.6			70.3	
Actuated g/C Ratio		0.14	0.38		0.14		0.83	0.83			0.59	
Clearance Time (s)		5.0			5.0		4.0	5.0			5.0	
Vehicle Extension (s)		3.0			3.0		3.0	3.0			3.0	
Lane Grp Cap (vph)		174	575		225		798	1471			970	
v/s Ratio Prot			0.13				c0.18	0.28				
v/s Ratio Perm		c0.07			0.02		0.47				c0.31	
v/c Ratio		0.53	0.33		0.15		0.78	0.34			0.53	
Uniform Delay, d1		48.2	26.3		45.6		6.8	2.4			14.9	
Progression Factor		0.67	0.57		1.00		1.00	1.00			1.00	
Incremental Delay, d2		2.8	0.3		0.3		5.1	0.6			2.1	
Delay (s)		35.3	15.2		46.0		11.8	3.0			17.0	
Level of Service		D	B		D		B	A			B	
Approach Delay (s)		21.8			46.0			7.9			17.0	
Approach LOS		C			D			A			B	

### Intersection Summary

HCM Average Control Delay	13.2	HCM Level of Service	B
HCM Volume to Capacity ratio	0.58		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	6.0
Intersection Capacity Utilization	80.3%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

# HCM Signalized Intersection Capacity Analysis

## 12: Piney Branch Rd. & Arliss

6/10/2008



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↶	↷		↶	↷			↷		↶	↷	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	2.0	2.0		2.0	2.0			2.0		2.0	2.0	
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00		0.95	0.95	
Frbp, ped/bikes	1.00	1.00		1.00	1.00			1.00		1.00	1.00	
Flpb, ped/bikes	1.00	1.00		0.99	1.00			1.00		1.00	1.00	
Frt	1.00	1.00		1.00	0.96			0.93		1.00	0.96	
Flt Protected	0.95	1.00		0.95	1.00			0.99		0.95	0.97	
Satd. Flow (prot)	1687	3370		1674	3230			1728		1603	1568	
Flt Permitted	0.09	1.00		0.41	1.00			0.99		0.95	0.97	
Satd. Flow (perm)	157	3370		716	3230			1728		1603	1568	
Volume (vph)	15	550	5	10	1200	475	5	5	10	175	5	25
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	16	598	5	11	1304	516	5	5	11	190	5	27
RTOR Reduction (vph)	0	0	0	0	16	0	0	10	0	0	9	0
Lane Group Flow (vph)	16	603	0	11	1804	0	0	11	0	114	99	0
Confl. Peds. (#/hr)	4			5			17			10		
Heavy Vehicles (%)	7%	7%	7%	7%	7%	7%	1%	1%	1%	7%	7%	7%
Turn Type	Perm		Perm		Split		Split					
Protected Phases	6		2		3		3		4		4	
Permitted Phases	6		2									
Actuated Green, G (s)	114.9	114.9		114.9	114.9			4.5		15.6	15.6	
Effective Green, g (s)	117.9	117.9		117.9	117.9			7.5		18.6	18.6	
Actuated g/C Ratio	0.79	0.79		0.79	0.79			0.05		0.12	0.12	
Clearance Time (s)	5.0	5.0		5.0	5.0			5.0		5.0	5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0		3.0	3.0	
Lane Grp Cap (vph)	123	2649		563	2539			86		199	194	
v/s Ratio Prot		0.18			c0.56			c0.01		c0.07	0.06	
v/s Ratio Perm	0.10			0.02								
v/c Ratio	0.13	0.23		0.02	0.71			0.12		0.57	0.51	
Uniform Delay, d1	3.8	4.2		3.5	7.8			68.1		62.0	61.5	
Progression Factor	0.91	0.79		1.04	0.69			1.00		1.00	1.00	
Incremental Delay, d2	2.2	0.2		0.0	1.2			0.6		3.9	2.3	
Delay (s)	5.6	3.5		3.7	6.6			68.7		65.9	63.7	
Level of Service	A	A		A	A			E		E	E	
Approach Delay (s)		3.6			6.6			68.7			64.8	
Approach LOS		A			A			E			E	
<b>Intersection Summary</b>												
HCM Average Control Delay			11.2	HCM Level of Service				B				
HCM Volume to Capacity ratio			0.66									
Actuated Cycle Length (s)			150.0	Sum of lost time (s)				6.0				
Intersection Capacity Utilization			67.4%	ICU Level of Service				C				
Analysis Period (min)			15									
c Critical Lane Group												



# HCM Signalized Intersection Capacity Analysis

## 13: Piney Branch Rd. & Barron St

6/10/2008



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑			↑↑			↑	↑		↑↑	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		2.0			2.0			2.0	2.0		2.0	
Lane Util. Factor		0.95			0.95			1.00	1.00		1.00	
Frt		0.99			1.00			1.00	0.85		0.97	
Flt Protected		1.00			1.00			0.95	1.00		0.96	
Satd. Flow (prot)		3322			3365			1795	1599		1754	
Flt Permitted		0.94			0.88			0.74	1.00		0.72	
Satd. Flow (perm)		3134			2956			1391	1599		1309	
Volume (vph)	5	675	75	50	1450	10	225	10	75	15	0	5
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	5	734	82	54	1576	11	245	11	82	16	0	5
RTOR Reduction (vph)	0	4	0	0	0	0	0	0	63	0	4	0
Lane Group Flow (vph)	0	817	0	0	1641	0	0	256	19	0	17	0
Heavy Vehicles (%)	7%	7%	7%	7%	7%	7%	1%	1%	1%	1%	1%	1%
Turn Type	Perm			Perm			Perm		Perm	Perm		
Protected Phases		2			6			8			4	
Permitted Phases	2			6			8		8	4		
Actuated Green, G (s)		107.8			107.8			31.2	31.2		31.2	
Effective Green, g (s)		111.8			111.8			34.2	34.2		34.2	
Actuated g/C Ratio		0.75			0.75			0.23	0.23		0.23	
Clearance Time (s)		6.0			6.0			5.0	5.0		5.0	
Vehicle Extension (s)		3.0			3.0			3.0	3.0		3.0	
Lane Grp Cap (vph)		2336			2203			317	365		298	
v/s Ratio Prot												
v/s Ratio Perm		0.26			0.55			0.18	0.01		0.01	
v/c Ratio		0.35			0.74			0.81	0.05		0.06	
Uniform Delay, d1		6.6			10.9			54.8	45.2		45.3	
Progression Factor		0.99			1.00			1.00	1.00		1.00	
Incremental Delay, d2		0.4			2.3			14.0	0.1		0.1	
Delay (s)		6.9			13.3			68.7	45.3		45.4	
Level of Service		A			B			E	D		D	
Approach Delay (s)		6.9			13.3			63.1			45.4	
Approach LOS		A			B			E			D	

### Intersection Summary

HCM Average Control Delay	17.6	HCM Level of Service	B
HCM Volume to Capacity ratio	0.75		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	4.0
Intersection Capacity Utilization	92.5%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

# HCM Signalized Intersection Capacity Analysis

## 4: Wayne Ave. & Fenton St


















6/10/2008

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	2.0	2.0		2.0	2.0		2.0	2.0	2.0	2.0	2.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00	1.00	1.00	1.00	
Frbp, ped/bikes	1.00	0.96		1.00	0.98		1.00	1.00	1.00	1.00	0.98	
Flpb, ped/bikes	0.89	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.97		1.00	0.99		1.00	1.00	0.85	1.00	0.98	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1538	3200		1719	3316		1719	1810	1538	1719	1732	
Flt Permitted	0.41	1.00		0.10	1.00		0.34	1.00	1.00	0.22	1.00	
Satd. Flow (perm)	672	3200		181	3316		607	1810	1538	392	1732	
Volume (vph)	50	700	175	300	525	50	75	525	300	75	350	50
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	54	761	190	326	571	54	82	571	326	82	380	54
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	54	951	0	326	625	0	82	571	326	82	434	0
Conf. Peds. (#/hr)	71		53	53		71	90		112	112		90
Turn Type	Perm			pm+pt			Perm		Prot	Perm		
Protected Phases		4		3	8			2	2			6
Permitted Phases	4			8			2				6	
Actuated Green, G (s)	35.1	35.1		58.3	58.3		51.7	51.7	51.7	51.7	51.7	
Effective Green, g (s)	38.1	38.1		61.3	61.3		54.7	54.7	54.7	54.7	54.7	
Actuated g/C Ratio	0.32	0.32		0.51	0.51		0.46	0.46	0.46	0.46	0.46	
Clearance Time (s)	5.0	5.0		4.0	5.0		5.0	5.0	5.0	5.0	5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	213	1016		364	1694		277	825	701	179	790	
v/s Ratio Prot		c0.30		c0.16	0.19			c0.32	0.21		0.25	
v/s Ratio Perm	0.08			0.30			0.14			0.21		
v/c Ratio	0.25	0.94		0.90	0.37		0.30	0.69	0.47	0.46	0.55	
Uniform Delay, d1	30.4	39.8		34.7	17.7		20.5	26.0	22.5	22.5	23.7	
Progression Factor	1.00	1.00		0.80	0.74		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	0.6	15.1		21.7	0.1		2.7	4.7	2.2	8.2	2.7	
Delay (s)	31.0	54.9		49.4	13.1		23.2	30.7	24.8	30.7	26.4	
Level of Service	C	D		D	B		C	C	C	C	C	
Approach Delay (s)		53.6			25.6			28.1			27.1	
Approach LOS		D			C			C			C	
<b>Intersection Summary</b>												
HCM Average Control Delay			34.7			HCM Level of Service			C			
HCM Volume to Capacity ratio			0.80									
Actuated Cycle Length (s)			120.0			Sum of lost time (s)			6.0			
Intersection Capacity Utilization			89.2%			ICU Level of Service			E			
Analysis Period (min)			15									
c	Critical Lane Group											

# HCM Signalized Intersection Capacity Analysis

## 5: Cedar Ave & Wayne Ave.

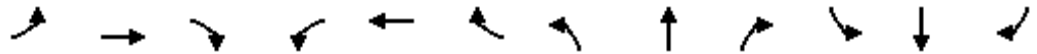
6/10/2008

												
Movement	NBL	NBT	NBR	SBL	SBT	SBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		2.0		2.0		2.0		2.0			2.0	
Lane Util. Factor		1.00		1.00		1.00		0.95			0.95	
Frbp, ped/bikes		0.99		1.00		1.00		1.00			1.00	
Flpb, ped/bikes		1.00		1.00		1.00		1.00			1.00	
Frt		0.96		1.00		0.85		1.00			0.97	
Flt Protected		0.99		0.95		1.00		0.99			1.00	
Satd. Flow (prot)		1711		1719		1538		3395			3316	
Flt Permitted		0.99		0.34		1.00		0.55			1.00	
Satd. Flow (perm)		1711		612		1538		1898			3316	
Volume (vph)	75	225	125	250	0	200	250	750	0	0	675	175
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	82	245	136	272	0	217	272	815	0	0	734	190
RTOR Reduction (vph)	0	12	0	0	0	139	0	0	0	0	0	0
Lane Group Flow (vph)	0	451	0	272	0	78	0	1087	0	0	924	0
Conf. Peds. (#/hr)			5	5			1					1
Turn Type	Perm		custom		custom		Perm					
Protected Phases		8						2			6	
Permitted Phases	8		4		4		2					
Actuated Green, G (s)		40.0		40.0		40.0		70.0			70.0	
Effective Green, g (s)		43.0		43.0		43.0		73.0			73.0	
Actuated g/C Ratio		0.36		0.36		0.36		0.61			0.61	
Clearance Time (s)		5.0		5.0		5.0		5.0			5.0	
Vehicle Extension (s)		3.0		3.0		3.0		0.2			0.2	
Lane Grp Cap (vph)		613		219		551		1155			2017	
v/s Ratio Prot											0.28	
v/s Ratio Perm		0.26		c0.44		0.05		c0.57				
v/c Ratio		0.74		1.24		0.14		1.01dl			0.46	
Uniform Delay, d1		33.5		38.5		26.0		21.5			12.8	
Progression Factor		1.00		1.00		1.00		1.93			0.77	
Incremental Delay, d2		4.6		141.4		0.1		10.8			0.4	
Delay (s)		38.1		179.9		26.1		52.3			10.2	
Level of Service		D		F		C		D			B	
Approach Delay (s)		38.1			111.7			52.3			10.2	
Approach LOS		D			F			D			B	
<b>Intersection Summary</b>												
HCM Average Control Delay			46.8				HCM Level of Service				D	
HCM Volume to Capacity ratio			1.04									
Actuated Cycle Length (s)			120.0				Sum of lost time (s)			4.0		
Intersection Capacity Utilization			103.2%				ICU Level of Service			G		
Analysis Period (min)			15									
dl Defacto Left Lane. Recode with 1 though lane as a left lane.												
c Critical Lane Group												

# HCM Signalized Intersection Capacity Analysis

## 6: Wayne Ave. & Dale Dr

6/10/2008



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕↕			↕↕		↖	↗		↖	↗	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		2.0			2.0		2.0	2.0		2.0	2.0	
Lane Util. Factor		0.95			0.95		1.00	1.00		1.00	1.00	
Frbp, ped/bikes		1.00			1.00		1.00	0.99		1.00	1.00	
Flpb, ped/bikes		1.00			1.00		1.00	1.00		1.00	1.00	
Frt		0.98			0.97		1.00	0.95		1.00	0.98	
Flt Protected		0.99			0.99		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		3344			3321		1719	1716		1719	1764	
Flt Permitted		0.56			0.56		0.13	1.00		0.12	1.00	
Satd. Flow (perm)		1881			1865		228	1716		214	1764	
Volume (vph)	200	825	150	125	650	175	75	350	150	200	425	75
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	217	897	163	136	707	190	82	380	163	217	462	82
RTOR Reduction (vph)	0	10	0	0	0	0	0	12	0	0	5	0
Lane Group Flow (vph)	0	1267	0	0	1033	0	82	531	0	217	539	0
Conf. Peds. (#/hr)							2		6	6		2
Turn Type	Perm			Perm			pm+pt			pm+pt		
Protected Phases		2			2		3	8		7	4	
Permitted Phases	2			2			8			4		
Actuated Green, G (s)		70.2			70.2		32.0	28.8		38.6	32.6	
Effective Green, g (s)		73.2			73.2		37.0	31.8		42.8	35.6	
Actuated g/C Ratio		0.61			0.61		0.31	0.26		0.36	0.30	
Clearance Time (s)		5.0			5.0		4.0	5.0		5.0	5.0	
Vehicle Extension (s)		3.0			3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		1147			1138		135	455		189	523	
v/s Ratio Prot							0.03	c0.31		c0.09	0.31	
v/s Ratio Perm		c0.67			0.55		0.16			0.32		
v/c Ratio		1.10			0.91		0.61	1.17		1.15	1.03	
Uniform Delay, d1		23.4			20.4		34.1	44.1		57.7	42.2	
Progression Factor		1.08			0.91		1.00	1.00		1.00	1.00	
Incremental Delay, d2		52.2			11.6		7.5	96.2		111.0	47.5	
Delay (s)		77.4			30.1		41.6	140.3		168.7	89.7	
Level of Service		E			C		D	F		F	F	
Approach Delay (s)		77.4			30.1			127.4			112.2	
Approach LOS		E			C			F			F	

### Intersection Summary

HCM Average Control Delay	79.8	HCM Level of Service	E
HCM Volume to Capacity ratio	1.11		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	6.0
Intersection Capacity Utilization	112.7%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

# HCM Signalized Intersection Capacity Analysis

## 7: Wayne Ave. & Mansfield

6/10/2008



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑			↑↑			↑↓				
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		2.0			2.0			2.0				
Lane Util. Factor		0.95			0.95			1.00				
Frbp, ped/bikes		1.00			1.00			0.99				
Flpb, ped/bikes		1.00			1.00			1.00				
Frt		1.00			1.00			0.93				
Flt Protected		1.00			1.00			0.98				
Satd. Flow (prot)		3427			3435			1630				
Flt Permitted		1.00			0.91			0.98				
Satd. Flow (perm)		3427			3143			1630				
Volume (vph)	0	1250	25	15	850	0	5	0	5	0	0	0
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	1359	27	16	924	0	5	0	5	0	0	0
RTOR Reduction (vph)	0	1	0	0	0	0	0	4	0	0	0	0
Lane Group Flow (vph)	0	1385	0	0	940	0	0	6	0	0	0	0
Conf. Peds. (#/hr)			2	2					5			
Turn Type				Perm			Perm					
Protected Phases		6			2			4				
Permitted Phases				2			4					
Actuated Green, G (s)		85.0			85.0			24.0				
Effective Green, g (s)		89.0			89.0			27.0				
Actuated g/C Ratio		0.74			0.74			0.22				
Clearance Time (s)		6.0			6.0			5.0				
Vehicle Extension (s)		0.2			0.2			3.0				
Lane Grp Cap (vph)		2542			2331			367				
v/s Ratio Prot		c0.40										
v/s Ratio Perm					0.30			0.00				
v/c Ratio		0.54			0.40			0.02				
Uniform Delay, d1		6.7			5.7			36.2				
Progression Factor		1.12			0.65			1.00				
Incremental Delay, d2		0.1			0.4			0.0				
Delay (s)		7.6			4.2			36.2				
Level of Service		A			A			D				
Approach Delay (s)		7.6			4.2			36.2			0.0	
Approach LOS		A			A			D			A	

### Intersection Summary

HCM Average Control Delay	6.3	HCM Level of Service	A
HCM Volume to Capacity ratio	0.42		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	4.0
Intersection Capacity Utilization	62.0%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

# HCM Signalized Intersection Capacity Analysis

## 8: Wayne Ave. & Sligo Creek Pkwy

6/10/2008



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗		↖	↗		↖	↗			↖	↗
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	2.0	2.0		2.0	2.0		2.0	2.0			2.0	2.0
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00			1.00	1.00
Frbp, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00			1.00	1.00
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00			1.00	1.00
Frt	1.00	0.98		1.00	0.99		1.00	0.99			1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00			0.99	1.00
Satd. Flow (prot)	1719	1769		1719	1798		1719	1790			1786	1538
Flt Permitted	0.27	1.00		0.06	1.00		0.11	1.00			0.70	1.00
Satd. Flow (perm)	480	1769		102	1798		196	1790			1263	1538
Volume (vph)	300	850	150	25	575	25	100	325	25	100	350	175
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	326	924	163	27	625	27	109	353	27	109	380	190
RTOR Reduction (vph)	0	5	0	0	1	0	0	3	0	0	0	0
Lane Group Flow (vph)	326	1082	0	27	651	0	109	378	0	0	489	190
Confl. Peds. (#/hr)	11			10			10			7		
Turn Type	Perm			Perm			pm+pt			Perm		Prot
Protected Phases		2			6		7	4			8	8
Permitted Phases	2			6			4			8		
Actuated Green, G (s)	68.0	68.0		68.0	68.0		42.0	42.0			32.0	32.0
Effective Green, g (s)	71.0	71.0		71.0	71.0		45.0	45.0			35.0	35.0
Actuated g/C Ratio	0.59	0.59		0.59	0.59		0.38	0.38			0.29	0.29
Clearance Time (s)	5.0	5.0		5.0	5.0		5.0	5.0			5.0	5.0
Vehicle Extension (s)	0.2	0.2		0.2	0.2		3.0	3.0			3.0	3.0
Lane Grp Cap (vph)	284	1047		60	1064		175	671			368	449
v/s Ratio Prot		0.61			0.36		c0.04	0.21				0.12
v/s Ratio Perm	c0.68			0.26			0.19				c0.39	
v/c Ratio	1.15	1.03		0.45	0.61		0.62	0.56			1.33	0.42
Uniform Delay, d1	24.5	24.5		13.6	15.7		29.6	29.7			42.5	34.3
Progression Factor	0.66	0.65		0.72	0.71		1.00	1.00			1.00	1.00
Incremental Delay, d2	96.0	34.7		16.5	1.9		6.7	1.1			165.6	0.6
Delay (s)	112.1	50.7		26.3	13.0		36.3	30.8			208.1	35.0
Level of Service	F	D		C	B		D	C			F	C
Approach Delay (s)		64.8			13.5			32.0			159.7	
Approach LOS		E			B			C			F	

### Intersection Summary

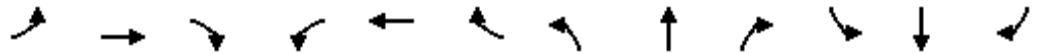
HCM Average Control Delay	69.0	HCM Level of Service	E
HCM Volume to Capacity ratio	1.15		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	6.0
Intersection Capacity Utilization	115.6%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

# HCM Signalized Intersection Capacity Analysis

## 9: Wayne Ave. & Flower Ave

6/10/2008



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕	↗		↕		↖	↖			↕	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		2.0	2.0		2.0		2.0	2.0			2.0	
Lane Util. Factor		1.00	1.00		1.00		1.00	1.00			1.00	
Frbp, ped/bikes		1.00	0.99		0.99		1.00	1.00			0.98	
Flpb, ped/bikes		0.99	1.00		1.00		1.00	1.00			1.00	
Frt		1.00	0.85		0.94		1.00	1.00			0.96	
Flt Protected		0.96	1.00		0.99		0.95	1.00			1.00	
Satd. Flow (prot)		1729	1515		1662		1719	1804			1705	
Flt Permitted		0.71	1.00		0.93		0.27	1.00			1.00	
Satd. Flow (perm)		1270	1515		1566		496	1804			1700	
Volume (vph)	200	50	450	10	20	25	350	575	10	5	475	225
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	217	54	489	11	22	27	380	625	11	5	516	245
RTOR Reduction (vph)	0	0	0	0	20	0	0	1	0	0	13	0
Lane Group Flow (vph)	0	271	489	0	40	0	380	635	0	0	753	0
Conf. Peds. (#/hr)	2		4	4		2	6		4	4		6
Turn Type	Perm		pm+ov	Perm		pm+pt				Perm		
Protected Phases		4	5		8		5	2			6	
Permitted Phases	4		4	8		2				6		
Actuated Green, G (s)		25.9	41.4		25.9		84.1	84.1			64.6	
Effective Green, g (s)		28.9	46.4		28.9		87.1	87.1			67.6	
Actuated g/C Ratio		0.24	0.39		0.24		0.73	0.73			0.56	
Clearance Time (s)		5.0	4.0		5.0		4.0	5.0			5.0	
Vehicle Extension (s)		3.0	3.0		3.0		3.0	3.0			3.0	
Lane Grp Cap (vph)		306	611		377		538	1309			958	
v/s Ratio Prot			c0.12				0.10	0.35				
v/s Ratio Perm		c0.21	0.21		0.03		0.41				c0.44	
v/c Ratio		0.89	0.80		0.10		0.71	0.49			0.79	
Uniform Delay, d1		44.0	32.7		35.5		10.7	7.0			20.5	
Progression Factor		1.16	0.90		1.00		1.00	1.00			1.00	
Incremental Delay, d2		3.1	0.7		0.1		4.2	1.3			6.5	
Delay (s)		53.9	30.3		35.6		14.9	8.3			27.0	
Level of Service		D	C		D		B	A			C	
Approach Delay (s)		38.7			35.6			10.7			27.0	
Approach LOS		D			D			B			C	

### Intersection Summary

HCM Average Control Delay	24.3	HCM Level of Service	C
HCM Volume to Capacity ratio	0.81		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	4.0
Intersection Capacity Utilization	100.4%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group

# HCM Signalized Intersection Capacity Analysis

## 12: Piney Branch Rd. & Arliss

6/10/2008



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↗	↕		↖	↕			↕		↗	↕	↘
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	2.0	2.0		2.0	2.0			2.0		2.0	2.0	
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00		0.95	0.95	
Frbp, ped/bikes	1.00	1.00		1.00	1.00			1.00		1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00			1.00		1.00	1.00	
Frt	1.00	1.00		1.00	0.97			0.90		1.00	0.97	
Flt Protected	0.95	1.00		0.95	1.00			0.99		0.95	0.97	
Satd. Flow (prot)	1715	3432		1715	3330			1684		1633	1611	
Flt Permitted	0.17	1.00		0.13	1.00			0.99		0.95	0.97	
Satd. Flow (perm)	307	3432		237	3330			1684		1633	1611	
Volume (vph)	50	1200	15	25	850	225	5	5	25	425	25	50
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor (vph)	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Adj. Flow (vph)	54	1304	16	27	924	245	5	5	27	462	27	54
RTOR Reduction (vph)	0	1	0	0	19	0	0	25	0	0	12	0
Lane Group Flow (vph)	54	1319	0	27	1150	0	0	12	0	275	256	0
Confl. Peds. (#/hr)	10			12			24			40		
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%	1%	1%	1%	5%	5%	5%
Turn Type	Perm		Perm		Split		Split					
Protected Phases	6		2		3		3		4		4	
Permitted Phases	6		2									
Actuated Green, G (s)	45.4	45.4		45.4	45.4			3.0		16.6	16.6	
Effective Green, g (s)	48.4	48.4		48.4	48.4			6.0		19.6	19.6	
Actuated g/C Ratio	0.60	0.60		0.60	0.60			0.08		0.25	0.25	
Clearance Time (s)	5.0	5.0		5.0	5.0			5.0		5.0	5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0		3.0	3.0	
Lane Grp Cap (vph)	186	2076		143	2015			126		400	395	
v/s Ratio Prot		c0.38			0.35			c0.01		c0.17	0.16	
v/s Ratio Perm	0.18			0.11								
v/c Ratio	0.29	0.64		0.19	0.57			0.10		0.69	0.65	
Uniform Delay, d1	7.6	10.1		7.0	9.5			34.5		27.4	27.1	
Progression Factor	0.68	0.62		0.72	0.64			1.00		1.00	1.00	
Incremental Delay, d2	3.2	1.2		2.6	1.0			0.3		4.9	3.6	
Delay (s)	8.4	7.5		7.6	7.1			34.8		32.3	30.7	
Level of Service	A	A		A	A			C		C	C	
Approach Delay (s)		7.5			7.1			34.8			31.5	
Approach LOS		A			A			C			C	

### Intersection Summary

HCM Average Control Delay	11.8	HCM Level of Service	B
HCM Volume to Capacity ratio	0.60		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	6.0
Intersection Capacity Utilization	68.8%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group



# HCM Signalized Intersection Capacity Analysis

## 13: Piney Branch Rd. & Barron St

6/10/2008

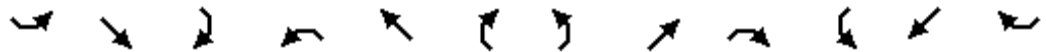


Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↕		↖	↕			↕	↖		↕	↖
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	2.0	2.0		2.0	2.0			2.0	2.0		2.0	
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00	1.00		1.00	
Frt	1.00	0.98		1.00	1.00			1.00	0.85		0.98	
Flt Protected	0.95	1.00		0.95	1.00			0.95	1.00		0.96	
Satd. Flow (prot)	1719	3378		1719	3426			1794	1599		1782	
Flt Permitted	0.95	1.00		0.95	1.00			0.74	1.00		0.78	
Satd. Flow (perm)	1719	3378		1719	3426			1399	1599		1443	
Volume (vph)	10	1500	200	20	1075	25	175	5	100	25	5	5
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor (vph)	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Adj. Flow (vph)	11	1630	217	22	1168	27	190	5	109	27	5	5
RTOR Reduction (vph)	0	10	0	0	1	0	0	0	83	0	4	0
Lane Group Flow (vph)	11	1837	0	22	1194	0	0	195	26	0	33	0
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%	1%	1%	1%	1%	1%	1%
Turn Type	Prot		Prot		Perm		Perm		Perm			
Protected Phases	5	2		1	6			8			4	
Permitted Phases							8		8		4	
Actuated Green, G (s)	1.3	45.4		2.5	46.6			16.1	16.1		16.1	
Effective Green, g (s)	4.3	49.4		5.5	50.6			19.1	19.1		19.1	
Actuated g/C Ratio	0.05	0.62		0.07	0.63			0.24	0.24		0.24	
Clearance Time (s)	5.0	6.0		5.0	6.0			5.0	5.0		5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0	3.0		3.0	
Lane Grp Cap (vph)	92	2086		118	2167			334	382		345	
v/s Ratio Prot	0.01	c0.54		0.01	c0.35							
v/s Ratio Perm								c0.14	0.02		0.02	
v/c Ratio	0.12	0.88		0.19	0.55			0.58	0.07		0.10	
Uniform Delay, d1	36.0	12.8		35.1	8.3			26.9	23.6		23.7	
Progression Factor	1.02	1.09		1.00	1.00			1.00	1.00		1.00	
Incremental Delay, d2	0.5	4.8		0.8	1.0			2.6	0.1		0.1	
Delay (s)	37.1	18.8		35.9	9.3			29.5	23.6		23.8	
Level of Service	D	B		D	A			C	C		C	
Approach Delay (s)		18.9			9.8			27.4			23.8	
Approach LOS		B			A			C			C	
<b>Intersection Summary</b>												
HCM Average Control Delay			16.5	HCM Level of Service				B				
HCM Volume to Capacity ratio			0.77									
Actuated Cycle Length (s)			80.0	Sum of lost time (s)				6.0				
Intersection Capacity Utilization			67.4%	ICU Level of Service				C				
Analysis Period (min)			15									
c Critical Lane Group												

# HCM Signalized Intersection Capacity Analysis

20: Harkins Rd & Ellin Rd

6/11/2008



Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00		0.97	1.00		1.00	0.95	
Frt	1.00	1.00	0.85	1.00	0.92		1.00	0.97		1.00	0.95	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1703	1792	1524	1703	1658		3303	1738		1703	3251	
Flt Permitted	0.75	1.00	1.00	0.72	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1346	1792	1524	1295	1658		3303	1738		1703	3251	
Volume (vph)	20	50	125	5	5	5	730	315	80	250	345	150
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	21	53	132	5	5	5	768	332	84	263	363	158
RTOR Reduction (vph)	0	0	116	0	4	0	0	9	0	0	52	0
Lane Group Flow (vph)	21	53	16	5	6	0	768	407	0	263	469	0
Heavy Vehicles (%)	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%
Turn Type	Perm		Perm	Perm			Prot			Prot		
Protected Phases		8			4		5	2		1	6	
Permitted Phases	8		8	4								
Actuated Green, G (s)	5.7	5.7	5.7	5.7	5.7		18.0	23.7		11.0	16.7	
Effective Green, g (s)	6.7	6.7	6.7	6.7	6.7		19.0	24.7		12.0	17.7	
Actuated g/C Ratio	0.12	0.12	0.12	0.12	0.12		0.34	0.45		0.22	0.32	
Clearance Time (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0		5.0	5.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	163	217	184	157	201		1133	775		369	1039	
v/s Ratio Prot		c0.03			0.00		c0.23	c0.23		0.15	0.14	
v/s Ratio Perm	0.02		0.01	0.00								
v/c Ratio	0.13	0.24	0.09	0.03	0.03		0.68	0.53		0.71	0.45	
Uniform Delay, d1	21.7	22.1	21.6	21.5	21.5		15.6	11.1		20.1	15.0	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.4	0.6	0.2	0.1	0.1		1.6	0.6		6.4	0.3	
Delay (s)	22.1	22.6	21.8	21.6	21.5		17.2	11.8		26.5	15.3	
Level of Service	C	C	C	C	C		B	B		C	B	
Approach Delay (s)		22.1			21.5			15.3			19.1	
Approach LOS		C			C			B			B	

## Intersection Summary

HCM Average Control Delay	17.3	HCM Level of Service	B
HCM Volume to Capacity ratio	0.53		
Actuated Cycle Length (s)	55.4	Sum of lost time (s)	8.0
Intersection Capacity Utilization	53.1%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

# HCM Signalized Intersection Capacity Analysis

20: Harkins Rd & Ellin Rd

6/11/2008



Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00		0.97	1.00		1.00	0.95	
Frt	1.00	1.00	0.85	1.00	0.92		1.00	1.00		1.00	0.99	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1752	1845	1568	1787	1721		3400	1842		1752	3486	
Flt Permitted	0.39	1.00	1.00	0.75	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	715	1845	1568	1419	1721		3400	1842		1752	3486	
Volume (vph)	165	5	575	65	145	190	240	475	5	5	405	15
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	174	5	605	68	153	200	253	500	5	5	426	16
RTOR Reduction (vph)	0	0	226	0	60	0	0	1	0	0	3	0
Lane Group Flow (vph)	174	5	379	68	293	0	253	504	0	5	439	0
Heavy Vehicles (%)	3%	3%	3%	1%	1%	1%	3%	3%	3%	3%	3%	3%
Turn Type	Perm		Perm	Perm			Prot			Prot		
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4		4	8								
Actuated Green, G (s)	18.0	18.0	18.0	18.0	18.0		6.8	24.8		0.6	18.6	
Effective Green, g (s)	19.0	19.0	19.0	19.0	19.0		7.8	25.8		1.6	19.6	
Actuated g/C Ratio	0.33	0.33	0.33	0.33	0.33		0.13	0.44		0.03	0.34	
Clearance Time (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0		5.0	5.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	233	600	510	462	560		454	814		48	1170	
v/s Ratio Prot		0.00			0.17		c0.07	c0.27		0.00	0.13	
v/s Ratio Perm	c0.24		0.24	0.05								
v/c Ratio	0.75	0.01	0.74	0.15	0.52		0.56	0.62		0.10	0.38	
Uniform Delay, d1	17.6	13.3	17.5	14.0	16.0		23.7	12.5		27.7	14.7	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	12.3	0.0	5.8	0.1	0.9		1.5	1.4		1.0	0.2	
Delay (s)	29.8	13.3	23.3	14.1	16.9		25.2	13.9		28.7	15.0	
Level of Service	C	B	C	B	B		C	B		C	B	
Approach Delay (s)		24.7			16.5			17.7			15.1	
Approach LOS		C			B			B			B	

## Intersection Summary

HCM Average Control Delay	19.3	HCM Level of Service	B
HCM Volume to Capacity ratio	0.64		
Actuated Cycle Length (s)	58.4	Sum of lost time (s)	8.0
Intersection Capacity Utilization	71.2%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

# HCM Signalized Intersection Capacity Analysis

## 21: Jones Bridge Rd & MD 355

6/10/2008



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕↕	↗	↖	↕↕	↗	↖	↕↕↕	↗	↖	↕↕↕	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	2000	1900
Total Lost time (s)		4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	
Lane Util. Factor		0.95	1.00	0.91	0.91	1.00	1.00	0.91	1.00	1.00	0.91	
Frbp, ped/bikes		1.00	0.80	1.00	1.00	0.98	1.00	1.00	0.96	1.00	1.00	
Flpb, ped/bikes		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Frt		1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.99	
Flt Protected		0.98	1.00	0.95	0.97	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)		3354	1232	1564	3207	1508	1719	4940	1479	1719	5152	
Flt Permitted		0.98	1.00	0.95	0.97	1.00	0.95	1.00	1.00	0.09	1.00	
Satd. Flow (perm)		3354	1232	1564	3207	1508	1719	4940	1479	162	5152	
Volume (vph)	30	30	30	850	360	245	105	1325	340	260	2695	155
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	32	32	32	895	379	258	111	1395	358	274	2837	163
RTOR Reduction (vph)	0	0	30	0	0	102	0	0	128	0	3	0
Lane Group Flow (vph)	0	64	2	448	826	156	111	1395	230	274	2997	0
Confl. Peds. (#/hr)			92			6			36			3
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%
Turn Type	Split		Perm	Split		Perm	Prot		Perm	pm+pt		
Protected Phases	3	3		4	4		1	5		6	2	
Permitted Phases			3			4			5		2	
Actuated Green, G (s)		8.7	8.7	41.0	41.0	41.0	9.0	71.3	71.3	115.3	101.3	
Effective Green, g (s)		9.7	9.7	42.0	42.0	42.0	10.0	72.3	72.3	116.3	102.3	
Actuated g/C Ratio		0.05	0.05	0.23	0.23	0.23	0.06	0.40	0.40	0.65	0.57	
Clearance Time (s)		5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	
Vehicle Extension (s)		3.0	3.0	3.0	3.0	3.0	3.0	8.0	8.0	3.0	8.0	
Lane Grp Cap (vph)		181	66	365	748	352	96	1984	594	451	2928	
v/s Ratio Prot		c0.02		c0.29	0.26		c0.06	0.28		0.14	c0.58	
v/s Ratio Perm			0.00			0.10			0.16	0.26		
v/c Ratio		0.35	0.03	1.23	1.17dl	0.44	1.16	0.70	0.39	0.61	1.02	
Uniform Delay, d1		82.1	80.7	69.0	69.0	59.0	85.0	44.9	38.2	44.7	38.8	
Progression Factor		1.00	1.00	1.00	1.01	1.06	1.07	0.93	0.75	1.00	1.00	
Incremental Delay, d2		1.2	0.2	121.0	62.7	0.7	134.6	1.9	1.7	2.3	22.9	
Delay (s)		83.3	80.8	190.3	132.1	63.4	225.5	43.9	30.2	47.0	61.8	
Level of Service		F	F	F	F	E	F	D	C	D	E	
Approach Delay (s)		82.5			137.6			52.1			60.6	
Approach LOS		F			F			D			E	

### Intersection Summary

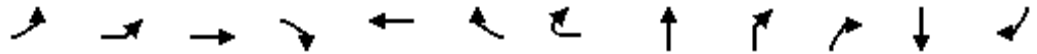
HCM Average Control Delay	76.0	HCM Level of Service	E
HCM Volume to Capacity ratio	1.04		
Actuated Cycle Length (s)	180.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	107.3%	ICU Level of Service	G
Analysis Period (min)	15		

dl Defacto Left Lane. Recode with 1 though lane as a left lane.

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis  
 84: Jones Bridge Rd & Kensington Parkway

6/10/2008



Movement	EBL2	EBL	EBT	EBR	WBT	WBR	WBR2	NBT	NBR	NBR2	SBT	SBR
Lane Configurations	↖	↗	↕		↕	↗		↕	↗	↖	↕	↗
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0		4.0	4.0		4.0			4.0	
Lane Util. Factor	0.91	0.95	0.95		0.91	0.91		0.91			0.91	
Frt	1.00	1.00	0.95		0.99	0.85		0.99			0.97	
Flt Protected	0.95	0.95	1.00		1.00	1.00		1.00			1.00	
Satd. Flow (prot)	1564	1633	3272		3272	1400		4908			4782	
Flt Permitted	0.95	0.95	1.00		1.00	1.00		1.00			1.00	
Satd. Flow (perm)	1564	1633	3272		3272	1400		4908			4782	
Volume (vph)	335	10	325	155	570	275	5	1785	30	50	3570	970
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	353	11	342	163	600	289	5	1879	32	53	3758	1021
RTOR Reduction (vph)	0	0	3	0	0	0	0	0	0	0	33	0
Lane Group Flow (vph)	178	186	502	0	627	267	0	1964	0	0	4746	0
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%
Turn Type	Prot	Prot										Perm
Protected Phases	3	3	8		4			2				2
Permitted Phases						4						2
Actuated Green, G (s)	10.0	10.0	35.0		19.0	19.0		89.0				89.0
Effective Green, g (s)	11.0	11.0	36.0		21.0	21.0		91.0				91.0
Actuated g/C Ratio	0.07	0.07	0.24		0.14	0.14		0.61				0.61
Clearance Time (s)	5.0	5.0	5.0		6.0	6.0		6.0				6.0
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0		5.0				5.0
Lane Grp Cap (vph)	115	120	785		458	196		2978				2901
v/s Ratio Prot	0.11	c0.11	0.15		c0.19			0.40				c0.99
v/s Ratio Perm						0.19						
v/c Ratio	1.55	1.55	0.64		1.37	1.36		0.66				1.64
Uniform Delay, d1	69.5	69.5	51.2		64.5	64.5		19.3				29.5
Progression Factor	1.00	1.00	1.00		1.00	1.00		1.00				1.00
Incremental Delay, d2	284.8	284.3	1.7		179.5	192.3		1.2				287.8
Delay (s)	354.3	353.8	52.9		244.0	256.8		20.5				317.3
Level of Service	F	F	D		F	F		C				F
Approach Delay (s)			179.0		247.8			20.5				317.3
Approach LOS			F		F			C				F

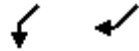
Intersection Summary

HCM Average Control Delay	228.2	HCM Level of Service	F
HCM Volume to Capacity ratio	1.57		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	141.9%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis  
 84: Jones Bridge Rd & Kensington Parkway

6/10/2008



Movement	SWL	SWR
Lane Configurations	7	8
Ideal Flow (vphpl)	1900	1900
Total Lost time (s)	4.0	4.0
Lane Util. Factor	1.00	1.00
Frt	1.00	0.85
Flt Protected	0.95	1.00
Satd. Flow (prot)	1719	1538
Flt Permitted	0.95	1.00
Satd. Flow (perm)	1719	1538
Volume (vph)	175	105
Peak-hour factor, PHF	0.95	0.95
Adj. Flow (vph)	184	111
RTOR Reduction (vph)	0	0
Lane Group Flow (vph)	184	111
Heavy Vehicles (%)	5%	5%
Turn Type		Prot
Protected Phases	1	1
Permitted Phases		
Actuated Green, G (s)	9.0	9.0
Effective Green, g (s)	11.0	11.0
Actuated g/C Ratio	0.07	0.07
Clearance Time (s)	6.0	6.0
Vehicle Extension (s)	3.0	3.0
Lane Grp Cap (vph)	126	113
v/s Ratio Prot	0.11	0.07
v/s Ratio Perm		
v/c Ratio	1.46	0.98
Uniform Delay, d1	69.5	69.4
Progression Factor	1.00	1.00
Incremental Delay, d2	245.4	78.7
Delay (s)	314.9	148.1
Level of Service	F	F
Approach Delay (s)	252.1	
Approach LOS	F	
Intersection Summary		

HCM Signalized Intersection Capacity Analysis  
 86: Jones Bridge Rd & Jones Mill Rd

6/10/2008



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00	
Frt	1.00	0.85		1.00	0.97	
Flt Protected	0.95	1.00		0.96	1.00	
Satd. Flow (prot)	1719	1538		1734	1757	
Flt Permitted	0.95	1.00		0.96	1.00	
Satd. Flow (perm)	1719	1538		1734	1757	
Volume (vph)	50	550	890	125	615	170
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	53	579	937	132	647	179
RTOR Reduction (vph)	0	193	0	0	6	0
Lane Group Flow (vph)	53	386	0	1069	820	0
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%
Turn Type	custom		Split			
Protected Phases	3	6	2	2	4	
Permitted Phases						
Actuated Green, G (s)	12.6	65.3		65.3	51.2	
Effective Green, g (s)	12.6	67.3		67.3	52.2	
Actuated g/C Ratio	0.09	0.47		0.47	0.36	
Clearance Time (s)	4.0	6.0		6.0	5.0	
Vehicle Extension (s)	3.0	3.0		3.0	4.0	
Lane Grp Cap (vph)	150	718		810	636	
v/s Ratio Prot	c0.03	0.25		c0.62	c0.47	
v/s Ratio Perm						
v/c Ratio	0.35	0.54		1.32	1.29	
Uniform Delay, d1	61.9	27.3		38.4	45.9	
Progression Factor	1.00	1.00		0.30	1.00	
Incremental Delay, d2	1.4	2.9		149.2	141.5	
Delay (s)	63.3	30.2		160.5	187.5	
Level of Service	E	C		F	F	
Approach Delay (s)	33.0			160.5	187.5	
Approach LOS	C			F	F	

Intersection Summary

HCM Average Control Delay	137.4	HCM Level of Service	F
HCM Volume to Capacity ratio	1.21		
Actuated Cycle Length (s)	144.1	Sum of lost time (s)	12.0
Intersection Capacity Utilization	111.9%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis  
 152: Jones Bridge Rd & Manor Rd

6/10/2008

	→	↘	↙	←	↖	↗
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑	↗	↘	↑	↘	↗
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (prot)	1810	1538	1719	1810	1719	1538
Flt Permitted	1.00	1.00	0.51	1.00	0.95	1.00
Satd. Flow (perm)	1810	1538	932	1810	1719	1538
Volume (vph)	290	20	320	785	75	240
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	305	21	337	826	79	253
RTOR Reduction (vph)	0	14	0	0	0	0
Lane Group Flow (vph)	305	7	337	826	79	253
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%
Turn Type		Perm pm+pt			pm+ov	
Protected Phases	2		1	6	4	1
Permitted Phases		2	6			4
Actuated Green, G (s)	13.7	13.7	30.5	29.5	4.3	16.1
Effective Green, g (s)	14.7	14.7	30.5	30.5	5.3	17.1
Actuated g/C Ratio	0.34	0.34	0.70	0.70	0.12	0.39
Clearance Time (s)	5.0	5.0	4.0	5.0	5.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	607	516	861	1260	208	741
v/s Ratio Prot	0.17		0.11	c0.46	0.05	c0.09
v/s Ratio Perm		0.00	0.17			0.07
v/c Ratio	0.50	0.01	0.39	0.66	0.38	0.34
Uniform Delay, d1	11.6	9.7	3.9	3.7	17.7	9.4
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.7	0.0	0.3	1.2	1.2	0.3
Delay (s)	12.3	9.7	4.2	5.0	18.9	9.7
Level of Service	B	A	A	A	B	A
Approach Delay (s)	12.1			4.7	11.9	
Approach LOS	B			A	B	

**Intersection Summary**

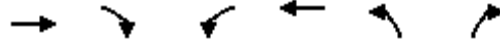
HCM Average Control Delay	7.4	HCM Level of Service	A
HCM Volume to Capacity ratio	0.57		
Actuated Cycle Length (s)	43.8	Sum of lost time (s)	4.0
Intersection Capacity Utilization	52.1%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group



HCM Signalized Intersection Capacity Analysis  
 154: Jones Bridge Rd & Platt Ridge Rd

6/10/2008



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑		↵	↑↑	↵	↵
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0		4.0	4.0	4.0	
Lane Util. Factor	0.95		1.00	0.95	1.00	
Frt	0.99		1.00	1.00	1.00	
Flt Protected	1.00		0.95	1.00	0.95	
Satd. Flow (prot)	3413		1719	3438	1787	
Flt Permitted	1.00		0.29	1.00	0.95	
Satd. Flow (perm)	3413		528	3438	1787	
Volume (vph)	780	40	50	1605	5	0
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	821	42	53	1689	5	0
RTOR Reduction (vph)	3	0	0	0	0	0
Lane Group Flow (vph)	860	0	53	1689	5	0
Heavy Vehicles (%)	5%	5%	5%	5%	1%	1%
Turn Type			pm+pt			Perm
Protected Phases	2		1	6	3	
Permitted Phases			6			3
Actuated Green, G (s)	57.6		67.6	67.6	1.5	
Effective Green, g (s)	58.6		68.6	68.6	2.5	
Actuated g/C Ratio	0.74		0.87	0.87	0.03	
Clearance Time (s)	5.0		4.0	5.0	5.0	
Vehicle Extension (s)	3.0		3.0	3.0	3.0	
Lane Grp Cap (vph)	2528		548	2982	56	
v/s Ratio Prot	0.25		0.01	c0.49	c0.00	
v/s Ratio Perm			0.08			
v/c Ratio	0.34		0.10	0.57	0.09	
Uniform Delay, d1	3.6		1.1	1.4	37.2	
Progression Factor	1.00		1.00	1.00	1.00	
Incremental Delay, d2	0.1		0.1	0.2	0.7	
Delay (s)	3.6		1.1	1.6	37.9	
Level of Service	A		A	A	D	
Approach Delay (s)	3.6			1.6	37.9	
Approach LOS	A			A	D	























Intersection Summary

HCM Average Control Delay	2.3	HCM Level of Service	A
HCM Volume to Capacity ratio	0.55		
Actuated Cycle Length (s)	79.1	Sum of lost time (s)	8.0
Intersection Capacity Utilization	54.4%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis  
 156: Jones Bridge Rd & Glenbrook Pkwy

6/10/2008

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		 			 			 			 	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0			4.0			4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00			1.00	
Frt	1.00	1.00		1.00	0.99			0.93			0.94	
Flt Protected	0.95	1.00		0.95	1.00			0.98			0.97	
Satd. Flow (prot)	1719	3438		1719	3396			1711			1723	
Flt Permitted	0.11	1.00		0.38	1.00			0.85			0.81	
Satd. Flow (perm)	207	3438		694	3396			1491			1437	
Volume (vph)	15	670	0	5	1400	125	10	0	10	60	0	45
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	16	705	0	5	1474	132	11	0	11	63	0	47
RTOR Reduction (vph)	0	0	0	0	4	0	0	10	0	0	37	0
Lane Group Flow (vph)	16	705	0	5	1602	0	0	12	0	0	73	0
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%	1%	1%	1%	1%	1%	1%
Turn Type	pm+pt			Perm			Perm			Perm		
Protected Phases	5	2			6			4			8	
Permitted Phases	2			6			4			8		
Actuated Green, G (s)	72.6	72.6		67.3	67.3			8.4			8.4	
Effective Green, g (s)	73.6	73.6		68.3	68.3			8.4			8.4	
Actuated g/C Ratio	0.82	0.82		0.76	0.76			0.09			0.09	
Clearance Time (s)	4.0	5.0		5.0	5.0			4.0			4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0			3.0	
Lane Grp Cap (vph)	191	2812		527	2577			139			134	
v/s Ratio Prot	0.00	c0.21			c0.47							
v/s Ratio Perm	0.07			0.01				0.01			c0.05	
v/c Ratio	0.08	0.25		0.01	0.62			0.09			0.54	
Uniform Delay, d1	3.7	1.9		2.6	5.0			37.3			39.0	
Progression Factor	1.60	2.14		1.00	1.00			1.00			1.00	
Incremental Delay, d2	0.2	0.2		0.0	1.1			0.3			4.4	
Delay (s)	6.1	4.2		2.7	6.1			37.6			43.4	
Level of Service	A	A		A	A			D			D	
Approach Delay (s)		4.2			6.1			37.6			43.4	
Approach LOS		A			A			D			D	
<b>Intersection Summary</b>												
HCM Average Control Delay			7.5			HCM Level of Service					A	
HCM Volume to Capacity ratio			0.61									
Actuated Cycle Length (s)			90.0			Sum of lost time (s)			12.0			
Intersection Capacity Utilization			57.4%			ICU Level of Service					B	
Analysis Period (min)			15									
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis  
 160: Jones Bridge Rd & Grier Rd

6/10/2008



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↖	↑↑	↗↗	↑	↙	↘
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0			
Lane Util. Factor		0.95	0.95			
Frt		1.00	1.00			
Flt Protected		1.00	1.00			
Satd. Flow (prot)		3438	3438			
Flt Permitted		1.00	1.00			
Satd. Flow (perm)		3438	3438			
Volume (vph)	0	795	1620	0	0	0
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	837	1705	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	0	837	1705	0	0	0
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%
Turn Type	pm+pt			pm+ov		pm+ov
Protected Phases	5	2	6	4	4	5
Permitted Phases	2			6		4
Actuated Green, G (s)		120.0	120.0			
Effective Green, g (s)		120.0	120.0			
Actuated g/C Ratio		1.00	1.00			
Clearance Time (s)		6.0	6.0			
Vehicle Extension (s)		3.0	3.0			
Lane Grp Cap (vph)		3438	3438			
v/s Ratio Prot		0.24	c0.50			
v/s Ratio Perm						
v/c Ratio		0.24	0.50			
Uniform Delay, d1		0.0	0.0			
Progression Factor		1.00	1.00			
Incremental Delay, d2		0.0	0.1			
Delay (s)		0.0	0.1			
Level of Service		A	A			
Approach Delay (s)		0.0	0.1		0.0	
Approach LOS		A	A		A	

**Intersection Summary**

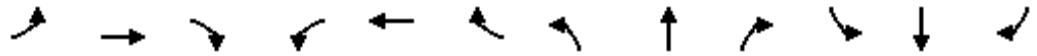
HCM Average Control Delay	0.1	HCM Level of Service	A
HCM Volume to Capacity ratio	0.50		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	0.0
Intersection Capacity Utilization	48.1%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

# HCM Signalized Intersection Capacity Analysis

21: Jones Bridge Rd & MD 355

6/10/2008



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕↕	↗	↖	↕↕	↗	↖	↕↕↕	↗	↖	↕↕↕	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	2000	1900
Total Lost time (s)		4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	
Lane Util. Factor		0.95	1.00	0.91	0.91	1.00	1.00	0.91	1.00	1.00	0.91	
Frbp, ped/bikes		1.00	0.80	1.00	1.00	0.97	1.00	1.00	0.96	1.00	1.00	
Flpb, ped/bikes		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Frt		1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	
Flt Protected		0.98	1.00	0.95	0.96	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)		3433	1256	1595	3211	1523	1752	5036	1503	1752	5288	
Flt Permitted		0.98	1.00	0.95	0.96	1.00	0.95	1.00	1.00	0.06	1.00	
Satd. Flow (perm)		3433	1256	1595	3211	1523	1752	5036	1503	119	5288	
Volume (vph)	275	385	85	410	20	290	10	2450	875	630	2085	30
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	289	405	89	432	21	305	11	2579	921	663	2195	32
RTOR Reduction (vph)	0	0	16	0	0	273	0	0	150	0	1	0
Lane Group Flow (vph)	0	694	73	216	237	32	11	2579	771	663	2226	0
Confl. Peds. (#/hr)			92			6			36			3
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%
Turn Type	Split		Perm	Split		Perm	Prot		Perm	pm+pt		
Protected Phases	3	3		4	4		1	5		6	2	
Permitted Phases			3			4			5		2	
Actuated Green, G (s)		31.0	31.0	18.0	18.0	18.0	2.0	64.0	64.0	109.0	109.0	
Effective Green, g (s)		32.0	32.0	19.0	19.0	19.0	3.0	65.0	65.0	110.0	110.0	
Actuated g/C Ratio		0.18	0.18	0.11	0.11	0.11	0.02	0.36	0.36	0.61	0.61	
Clearance Time (s)		5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	
Vehicle Extension (s)		3.0	3.0	3.0	3.0	3.0	3.0	8.0	8.0	3.0	8.0	
Lane Grp Cap (vph)		610	223	168	339	161	29	1819	543	508	3232	
v/s Ratio Prot		c0.20		c0.14	0.07		0.01	0.51		c0.35	0.42	
v/s Ratio Perm			0.06			0.02			c0.51	0.45		
v/c Ratio		1.14	0.33	1.29	1.23dl	0.20	0.38	1.42	1.42	1.31	0.69	
Uniform Delay, d1		74.0	64.6	80.5	77.7	73.6	87.6	57.5	57.5	62.6	23.5	
Progression Factor		1.00	1.00	0.95	0.94	1.35	1.07	0.84	0.76	1.00	1.00	
Incremental Delay, d2		80.7	0.9	164.6	5.9	0.6	3.7	189.5	193.7	151.1	1.2	
Delay (s)		154.7	65.4	241.1	79.1	100.0	97.4	237.9	237.7	213.7	24.7	
Level of Service		F	E	F	E	F	F	F	F	F	C	
Approach Delay (s)		144.5			133.7			237.4			68.1	
Approach LOS		F			F			F			E	

## Intersection Summary

HCM Average Control Delay	156.7	HCM Level of Service	F
HCM Volume to Capacity ratio	1.29		
Actuated Cycle Length (s)	180.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	128.8%	ICU Level of Service	H
Analysis Period (min)	15		

dl Defacto Left Lane. Recode with 1 though lane as a left lane.

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis  
 84: Jones Bridge Rd & Kensington Parkway

6/10/2008



Movement	EBL2	EBL	EBT	EBR	WBT	WBR	WBR2	NBT	NBR	NBR2	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0		4.0	4.0		4.0			4.0	
Lane Util. Factor	0.91	0.95	0.95		0.91	0.91		0.91			0.91	
Frt	1.00	1.00	0.98		0.94	0.85		1.00			0.98	
Flt Protected	0.95	0.95	1.00		1.00	1.00		1.00			1.00	
Satd. Flow (prot)	1595	1665	3427		3168	1427		5012			4930	
Flt Permitted	0.95	0.95	1.00		1.00	1.00		1.00			1.00	
Satd. Flow (perm)	1595	1665	3427		3168	1427		5012			4930	
Volume (vph)	1330	80	750	130	285	350	15	3025	20	80	2330	380
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	1400	84	789	137	300	368	16	3184	21	84	2453	400
RTOR Reduction (vph)	0	0	3	0	0	0	0	0	0	0	15	0
Lane Group Flow (vph)	726	758	923	0	480	204	0	3289	0	0	2838	0
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%
Turn Type	Prot	Prot						Perm				
Protected Phases	3	3	8		4			2			2	
Permitted Phases					4						2	
Actuated Green, G (s)	44.0	44.0	66.0		16.0	16.0		64.0			64.0	
Effective Green, g (s)	45.0	45.0	67.0		18.0	18.0		66.0			66.0	
Actuated g/C Ratio	0.30	0.30	0.45		0.12	0.12		0.44			0.44	
Clearance Time (s)	5.0	5.0	5.0		6.0	6.0		6.0			6.0	
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0		5.0			5.0	
Lane Grp Cap (vph)	479	500	1531		380	171		2205			2169	
v/s Ratio Prot	0.46	c0.46	0.27		c0.15			c0.66			0.58	
v/s Ratio Perm						0.14						
v/c Ratio	1.52	1.52	0.60		1.26	1.19		1.49			1.31	
Uniform Delay, d1	52.5	52.5	31.4		66.0	66.0		42.0			42.0	
Progression Factor	1.00	1.00	1.00		1.00	1.00		1.00			1.00	
Incremental Delay, d2	242.6	242.3	0.7		137.9	130.2		223.7			142.2	
Delay (s)	295.1	294.8	32.1		203.9	196.2		265.7			184.2	
Level of Service	F	F	C		F	F		F			F	
Approach Delay (s)			194.0		201.6			265.7			184.2	
Approach LOS			F		F			F			F	
<b>Intersection Summary</b>												
HCM Average Control Delay			216.6					HCM Level of Service			F	
HCM Volume to Capacity ratio			1.45									
Actuated Cycle Length (s)			150.0					Sum of lost time (s)		16.0		
Intersection Capacity Utilization			131.5%					ICU Level of Service		H		
Analysis Period (min)			15									

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis  
 84: Jones Bridge Rd & Kensington Parkway

6/10/2008



Movement	SWL	SWR	SWR2
Lane Configurations	↙	↘	
Ideal Flow (vphpl)	1900	1900	1900
Total Lost time (s)	4.0	4.0	
Lane Util. Factor	1.00	1.00	
Frt	1.00	0.85	
Flt Protected	0.95	1.00	
Satd. Flow (prot)	1752	1568	
Flt Permitted	0.95	1.00	
Satd. Flow (perm)	1752	1568	
Volume (vph)	50	45	5
Peak-hour factor, PHF	0.95	0.95	0.95
Adj. Flow (vph)	53	47	5
RTOR Reduction (vph)	0	0	0
Lane Group Flow (vph)	53	52	0
Heavy Vehicles (%)	3%	3%	3%
Turn Type		Prot	
Protected Phases	1	1	
Permitted Phases			
Actuated Green, G (s)	3.0	3.0	
Effective Green, g (s)	5.0	5.0	
Actuated g/C Ratio	0.03	0.03	
Clearance Time (s)	6.0	6.0	
Vehicle Extension (s)	3.0	3.0	
Lane Grp Cap (vph)	58	52	
v/s Ratio Prot	0.03	c0.03	
v/s Ratio Perm			
v/c Ratio	0.91	1.00	
Uniform Delay, d1	72.3	72.5	
Progression Factor	1.00	1.00	
Incremental Delay, d2	86.9	124.8	
Delay (s)	159.2	197.3	
Level of Service	F	F	
Approach Delay (s)	178.1		
Approach LOS	F		
Intersection Summary			

HCM Signalized Intersection Capacity Analysis  
 86: Jones Bridge Rd & Jones Mill Rd

6/10/2008



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00	
Frt	1.00	0.85		1.00	0.95	
Flt Protected	0.95	1.00		0.97	1.00	
Satd. Flow (prot)	1752	1568		1792	1753	
Flt Permitted	0.95	1.00		0.97	1.00	
Satd. Flow (perm)	1752	1568		1792	1753	
Volume (vph)	240	755	695	480	155	90
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	253	795	732	505	163	95
RTOR Reduction (vph)	0	302	0	0	16	0
Lane Group Flow (vph)	253	493	0	1237	242	0
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%
Turn Type	custom		Split			
Protected Phases	3	6	2	2	4	
Permitted Phases						
Actuated Green, G (s)	21.7	73.0		73.0	18.0	
Effective Green, g (s)	21.7	75.0		75.0	19.0	
Actuated g/C Ratio	0.17	0.59		0.59	0.15	
Clearance Time (s)	4.0	6.0		6.0	5.0	
Vehicle Extension (s)	3.0	3.0		3.0	4.0	
Lane Grp Cap (vph)	298	921		1052	261	
v/s Ratio Prot	c0.14	0.31		c0.69	c0.14	
v/s Ratio Perm						
v/c Ratio	0.85	0.53		1.18	0.93	
Uniform Delay, d1	51.4	15.9		26.4	53.7	
Progression Factor	1.00	1.00		0.44	1.00	
Incremental Delay, d2	19.6	2.2		87.9	36.6	
Delay (s)	71.0	18.1		99.6	90.3	
Level of Service	E	B		F	F	
Approach Delay (s)	30.9			99.6	90.3	
Approach LOS	C			F	F	

Intersection Summary

HCM Average Control Delay	70.3	HCM Level of Service	E
HCM Volume to Capacity ratio	1.07		
Actuated Cycle Length (s)	127.7	Sum of lost time (s)	12.0
Intersection Capacity Utilization	100.7%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis  
 152: Jones Bridge Rd & Manor Rd

6/10/2008

	→	↘	↙	←	↖	↗
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑	↗	↘	↑	↘	↗
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (prot)	1845	1568	1752	1845	1752	1568
Flt Permitted	1.00	1.00	0.15	1.00	0.95	1.00
Satd. Flow (perm)	1845	1568	274	1845	1752	1568
Volume (vph)	890	20	100	565	50	290
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	937	21	105	595	53	305
RTOR Reduction (vph)	0	8	0	0	0	0
Lane Group Flow (vph)	937	13	105	595	53	305
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%
Turn Type		Perm pm+pt			pm+ov	
Protected Phases	2		1	6	4	1
Permitted Phases		2	6			4
Actuated Green, G (s)	39.4	39.4	52.6	51.6	4.4	12.6
Effective Green, g (s)	40.4	40.4	52.6	52.6	5.4	13.6
Actuated g/C Ratio	0.61	0.61	0.80	0.80	0.08	0.21
Clearance Time (s)	5.0	5.0	4.0	5.0	5.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	1129	960	402	1470	143	418
v/s Ratio Prot	c0.51		0.03	0.32	0.03	c0.09
v/s Ratio Perm		0.01	0.18			0.10
v/c Ratio	0.83	0.01	0.26	0.40	0.37	0.73
Uniform Delay, d1	10.1	5.0	12.8	2.0	28.7	24.5
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	5.2	0.0	0.3	0.2	1.6	6.3
Delay (s)	15.3	5.0	13.1	2.2	30.3	30.8
Level of Service	B	A	B	A	C	C
Approach Delay (s)	15.1			3.8	30.7	
Approach LOS	B			A	C	
<b>Intersection Summary</b>						
HCM Average Control Delay			13.9		HCM Level of Service	B
HCM Volume to Capacity ratio			0.80			
Actuated Cycle Length (s)			66.0		Sum of lost time (s)	8.0
Intersection Capacity Utilization			71.5%		ICU Level of Service	C
Analysis Period (min)			15			
c Critical Lane Group						



HCM Signalized Intersection Capacity Analysis  
 154: Jones Bridge Rd & Platt Ridge Rd

6/10/2008



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑		↵	↑↑	↵	↵
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0		4.0	4.0	4.0	4.0
Lane Util. Factor	0.95		1.00	0.95	1.00	1.00
Frt	1.00		1.00	1.00	1.00	0.85
Flt Protected	1.00		0.95	1.00	0.95	1.00
Satd. Flow (prot)	3504		1752	3505	1787	1599
Flt Permitted	1.00		0.04	1.00	0.95	1.00
Satd. Flow (perm)	3504		79	3505	1787	1599
Volume (vph)	2270	5	5	720	15	20
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	2389	5	5	758	16	21
RTOR Reduction (vph)	0	0	0	0	0	20
Lane Group Flow (vph)	2394	0	5	758	16	1
Heavy Vehicles (%)	3%	3%	3%	3%	1%	1%
Turn Type			pm+pt			Perm
Protected Phases	2		1	6	3	
Permitted Phases			6			3
Actuated Green, G (s)	97.6		102.6	102.6	2.6	2.6
Effective Green, g (s)	98.6		103.6	103.6	3.6	3.6
Actuated g/C Ratio	0.86		0.90	0.90	0.03	0.03
Clearance Time (s)	5.0		4.0	5.0	5.0	5.0
Vehicle Extension (s)	3.0		3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	2999		86	3152	56	50
v/s Ratio Prot	c0.68		0.00	c0.22	c0.01	
v/s Ratio Perm			0.05			0.00
v/c Ratio	0.80		0.06	0.24	0.29	0.01
Uniform Delay, d1	3.8		7.4	0.7	54.5	54.1
Progression Factor	1.00		1.00	1.00	1.00	1.00
Incremental Delay, d2	1.6		0.3	0.0	2.8	0.1
Delay (s)	5.3		7.6	0.8	57.3	54.2
Level of Service	A		A	A	E	D
Approach Delay (s)	5.3			0.8	55.6	
Approach LOS	A			A	E	























Intersection Summary

HCM Average Control Delay	4.8	HCM Level of Service	A
HCM Volume to Capacity ratio	0.78		
Actuated Cycle Length (s)	115.2	Sum of lost time (s)	12.0
Intersection Capacity Utilization	72.9%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis  
 156: Jones Bridge Rd & Glenbrook Pkwy

6/10/2008

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		 			 			 			 	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0			4.0			4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00			1.00	
Frt	1.00	1.00		1.00	0.98			0.94			0.93	
Flt Protected	0.95	1.00		0.95	1.00			0.98			0.98	
Satd. Flow (prot)	1752	3504		1752	3445			1727			1710	
Flt Permitted	0.34	1.00		0.07	1.00			0.91			0.84	
Satd. Flow (perm)	631	3504		124	3445			1605			1470	
Volume (vph)	10	1870	5	5	580	75	5	1	5	125	0	130
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	11	1968	5	5	611	79	5	1	5	132	0	137
RTOR Reduction (vph)	0	0	0	0	8	0	0	4	0	0	46	0
Lane Group Flow (vph)	11	1973	0	5	682	0	0	7	0	0	223	0
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%	1%	1%	1%	1%	1%	1%
Turn Type	pm+pt			Perm			Perm			Perm		
Protected Phases	5	2			6			4			8	
Permitted Phases	2			6			4			8		
Actuated Green, G (s)	63.4	63.4		58.6	58.6			17.6			17.6	
Effective Green, g (s)	64.4	64.4		59.6	59.6			17.6			17.6	
Actuated g/C Ratio	0.72	0.72		0.66	0.66			0.20			0.20	
Clearance Time (s)	4.0	5.0		5.0	5.0			4.0			4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0			3.0	
Lane Grp Cap (vph)	461	2507		82	2281			314			287	
v/s Ratio Prot	0.00	c0.56			0.20							
v/s Ratio Perm	0.02			0.04				0.00			c0.15	
v/c Ratio	0.02	0.79		0.06	0.30			0.02			0.78	
Uniform Delay, d1	4.0	8.3		5.4	6.4			29.2			34.3	
Progression Factor	0.89	1.23		1.00	1.00			1.00			1.00	
Incremental Delay, d2	0.0	0.2		1.4	0.3			0.0			12.4	
Delay (s)	3.5	10.5		6.8	6.7			29.3			46.8	
Level of Service	A	B		A	A			C			D	
Approach Delay (s)		10.4			6.7			29.3			46.8	
Approach LOS		B			A			C			D	
<b>Intersection Summary</b>												
HCM Average Control Delay			12.9			HCM Level of Service					B	
HCM Volume to Capacity ratio			0.78									
Actuated Cycle Length (s)			90.0			Sum of lost time (s)				8.0		
Intersection Capacity Utilization			78.0%			ICU Level of Service					D	
Analysis Period (min)			15									

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis  
 160: Jones Bridge Rd & Grier Rd

6/10/2008



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↖	↑↑	↗↗	↑	↙	↘
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0		4.0	4.0
Lane Util. Factor		0.95	0.95		1.00	1.00
Frt		1.00	1.00		1.00	0.85
Flt Protected		1.00	1.00		0.95	1.00
Satd. Flow (prot)		3505	3505		1787	1599
Flt Permitted		1.00	1.00		0.95	1.00
Satd. Flow (perm)		3505	3505		1787	1599
Volume (vph)	0	2060	765	0	160	60
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	2168	805	0	168	63
RTOR Reduction (vph)	0	0	0	0	0	49
Lane Group Flow (vph)	0	2168	805	0	168	14
Heavy Vehicles (%)	3%	3%	3%	3%	1%	1%
Turn Type	pm+pt			pm+ov		pm+ov
Protected Phases	5	2	6	4	4	5
Permitted Phases	2			6		4
Actuated Green, G (s)		59.3	51.9		13.2	16.6
Effective Green, g (s)		61.3	53.9		15.2	18.6
Actuated g/C Ratio		0.73	0.64		0.18	0.22
Clearance Time (s)		6.0	6.0		6.0	4.0
Vehicle Extension (s)		3.0	3.0		3.0	3.0
Lane Grp Cap (vph)		2543	2236		321	428
v/s Ratio Prot		c0.62	0.23		c0.09	0.00
v/s Ratio Perm						0.01
v/c Ratio		0.85	0.36		0.52	0.03
Uniform Delay, d1		8.3	7.2		31.4	25.9
Progression Factor		1.00	1.00		1.00	1.00
Incremental Delay, d2		3.0	0.1		1.5	0.0
Delay (s)		11.3	7.3		32.9	25.9
Level of Service		B	A		C	C
Approach Delay (s)		11.3	7.3		31.0	
Approach LOS		B	A		C	

Intersection Summary




















HCM Average Control Delay	11.7	HCM Level of Service	B
HCM Volume to Capacity ratio	0.79		
Actuated Cycle Length (s)	84.5	Sum of lost time (s)	8.0
Intersection Capacity Utilization	72.5%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

# HCM Signalized Intersection Capacity Analysis

## 15: Harkins Rd & Lanham Dr West

6/11/2008




















												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0		4.0	4.0			4.0		4.0	4.0	4.0
Lane Util. Factor		0.95		1.00	0.95			1.00		1.00	1.00	1.00
Frt		0.95		1.00	0.95			0.96		1.00	1.00	0.85
Flt Protected		1.00		0.95	1.00			0.98		0.95	1.00	1.00
Satd. Flow (prot)		3388		1787	3392			1767		1787	1881	1599
Flt Permitted		0.95		0.41	1.00			0.89		0.75	1.00	1.00
Satd. Flow (perm)		3210		768	3392			1593		1407	1881	1599
Volume (vph)	5	150	80	75	125	65	5	5	5	200	190	5
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	5	158	84	79	132	68	5	5	5	211	200	5
RTOR Reduction (vph)	0	64	0	0	35	0	0	4	0	0	0	4
Lane Group Flow (vph)	0	183	0	79	165	0	0	11	0	211	200	1
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%
Turn Type	Perm			pm+pt			Perm			Perm		Perm
Protected Phases		4		3	8			2			6	
Permitted Phases	4			8			2			6		6
Actuated Green, G (s)		7.6		16.1	16.1			9.2		9.2	9.2	9.2
Effective Green, g (s)		8.6		17.1	17.1			10.2		10.2	10.2	10.2
Actuated g/C Ratio		0.24		0.48	0.48			0.29		0.29	0.29	0.29
Clearance Time (s)		5.0		5.0	5.0			5.0		5.0	5.0	5.0
Vehicle Extension (s)		3.0		3.0	3.0			3.0		3.0	3.0	3.0
Lane Grp Cap (vph)		782		502	1643			460		407	544	462
v/s Ratio Prot				c0.02	0.05						0.11	
v/s Ratio Perm		c0.06		0.06				0.01		c0.15		0.00
v/c Ratio		0.23		0.16	0.10			0.02		0.52	0.37	0.00
Uniform Delay, d1		10.7		5.2	4.9			9.0		10.5	10.0	8.9
Progression Factor		1.00		1.00	1.00			1.00		1.00	1.00	1.00
Incremental Delay, d2		0.2		0.1	0.0			0.0		1.1	0.4	0.0
Delay (s)		10.9		5.3	5.0			9.0		11.6	10.4	8.9
Level of Service		B		A	A			A		B	B	A
Approach Delay (s)		10.9			5.1			9.0			11.0	
Approach LOS		B			A			A			B	
<b>Intersection Summary</b>												
HCM Average Control Delay			9.2			HCM Level of Service				A		
HCM Volume to Capacity ratio			0.35									
Actuated Cycle Length (s)			35.3			Sum of lost time (s)			12.0			
Intersection Capacity Utilization			44.4%			ICU Level of Service				A		
Analysis Period (min)			15									

c Critical Lane Group

# HCM Signalized Intersection Capacity Analysis

## 15: Harkins Rd & Lanham Dr West

6/11/2008

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0		4.0	4.0			4.0		4.0	4.0	4.0
Lane Util. Factor		0.95		1.00	0.95			1.00		1.00	1.00	1.00
Frt		1.00		1.00	0.94			0.97		1.00	1.00	0.85
Flt Protected		1.00		0.95	1.00			0.99		0.95	1.00	1.00
Satd. Flow (prot)		3561		1787	3377			1805		1787	1881	1599
Flt Permitted		0.94		0.40	1.00			0.95		0.52	1.00	1.00
Satd. Flow (perm)		3364		750	3377			1733		970	1881	1599
Volume (vph)	5	245	5	5	205	120	55	220	90	75	5	5
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	5	258	5	5	216	126	58	232	95	79	5	5
RTOR Reduction (vph)	0	1	0	0	72	0	0	16	0	0	0	3
Lane Group Flow (vph)	0	267	0	5	270	0	0	369	0	79	5	2
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%
Turn Type	Perm			pm+pt			Perm			Perm		Perm
Protected Phases		4		3	8			2			6	
Permitted Phases	4			8			2			6		6
Actuated Green, G (s)		7.5		13.2	13.2			9.7		9.7	9.7	9.7
Effective Green, g (s)		8.5		14.2	14.2			10.7		10.7	10.7	10.7
Actuated g/C Ratio		0.26		0.43	0.43			0.33		0.33	0.33	0.33
Clearance Time (s)		5.0		5.0	5.0			5.0		5.0	5.0	5.0
Vehicle Extension (s)		3.0		3.0	3.0			3.0		3.0	3.0	3.0
Lane Grp Cap (vph)		869		377	1458			564		315	612	520
v/s Ratio Prot				0.00	c0.08						0.00	
v/s Ratio Perm		c0.08		0.01				c0.21		0.08		0.00
v/c Ratio		0.31		0.01	0.19			0.66		0.25	0.01	0.00
Uniform Delay, d1		9.8		5.6	5.8			9.5		8.2	7.5	7.5
Progression Factor		1.00		1.00	1.00			1.00		1.00	1.00	1.00
Incremental Delay, d2		0.2		0.0	0.1			2.7		0.4	0.0	0.0
Delay (s)		10.0		5.6	5.8			12.3		8.6	7.5	7.5
Level of Service		B		A	A			B		A	A	A
Approach Delay (s)		10.0			5.8			12.3			8.5	
Approach LOS		B			A			B			A	
<b>Intersection Summary</b>												
HCM Average Control Delay			9.4			HCM Level of Service				A		
HCM Volume to Capacity ratio			0.49									
Actuated Cycle Length (s)			32.9			Sum of lost time (s)			12.0			
Intersection Capacity Utilization			43.9%			ICU Level of Service				A		
Analysis Period (min)			15									

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis  
 18: Chevy Chase Lake Dr & MD 185

6/10/2008



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations				↔	↔		↔	↑↑↑		↔	↑↑↑	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)				4.0	4.0			4.0		4.0	4.0	
Lane Util. Factor				1.00	1.00			0.91		1.00	0.91	
Frt				1.00	0.85			1.00		1.00	1.00	
Flt Protected				0.95	1.00			1.00		0.95	1.00	
Satd. Flow (prot)				1787	1599			4918		1719	4940	
Flt Permitted				0.95	1.00			1.00		0.08	1.00	
Satd. Flow (perm)				1787	1599			4918		153	4940	
Volume (vph)	0	0	0	35	0	40	0	1805	55	85	3105	0
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	0	0	37	0	42	0	1900	58	89	3268	0
RTOR Reduction (vph)	0	0	0	0	40	0	0	1	0	0	0	0
Lane Group Flow (vph)	0	0	0	37	2	0	0	1957	0	89	3268	0
Heavy Vehicles (%)	2%	2%	2%	1%	1%	1%	5%	5%	5%	5%	5%	5%
Turn Type				Perm			Perm			pm+pt		
Protected Phases					8			6		5	2	
Permitted Phases				8			6			2		
Actuated Green, G (s)				7.4	7.4			120.6		132.6	132.6	
Effective Green, g (s)				8.4	8.4			121.6		133.6	133.6	
Actuated g/C Ratio				0.06	0.06			0.81		0.89	0.89	
Clearance Time (s)				5.0	5.0			5.0		5.0	5.0	
Vehicle Extension (s)				3.0	3.0			3.0		3.0	3.0	
Lane Grp Cap (vph)				100	90			3987		220	4400	
v/s Ratio Prot					0.00			0.40		0.02	0.66	
v/s Ratio Perm				c0.02						0.34		
v/c Ratio				0.37	0.03			0.49		0.40	0.74	
Uniform Delay, d1				68.2	66.9			4.5		3.3	2.6	
Progression Factor				1.00	1.00			0.46		1.95	4.10	
Incremental Delay, d2				2.3	0.1			0.4		0.8	0.7	
Delay (s)				70.6	67.1			2.5		7.2	11.6	
Level of Service				E	E			A		A	B	
Approach Delay (s)		0.0			68.7			2.5			11.5	
Approach LOS		A			E			A			B	

Intersection Summary			
HCM Average Control Delay	9.1	HCM Level of Service	A
HCM Volume to Capacity ratio	0.72		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	79.2%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis  
 18: Chevy Chase Lake Dr & MD 185

6/10/2008



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations				↖	↗		↖	↑↑↑		↖	↑↑↑	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)				4.0	4.0			4.0		4.0	4.0	
Lane Util. Factor				1.00	1.00			0.91		1.00	0.91	
Frt				1.00	0.85			1.00		1.00	1.00	
Flt Protected				0.95	1.00			1.00		0.95	1.00	
Satd. Flow (prot)				1787	1599			5027		1752	5036	
Flt Permitted				0.95	1.00			1.00		0.03	1.00	
Satd. Flow (perm)				1787	1599			5027		59	5036	
Volume (vph)	0	0	0	70	0	75	0	3315	40	55	2125	0
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	0	0	74	0	79	0	3489	42	58	2237	0
RTOR Reduction (vph)	0	0	0	0	51	0	0	1	0	0	0	0
Lane Group Flow (vph)	0	0	0	74	28	0	0	3530	0	58	2237	0
Heavy Vehicles (%)	2%	2%	2%	1%	1%	1%	3%	3%	3%	3%	3%	3%
Turn Type				Perm			Perm			pm+pt		
Protected Phases					8			6		5	2	
Permitted Phases				8			6			2		
Actuated Green, G (s)				9.4	9.4			120.8		130.6	130.6	
Effective Green, g (s)				10.4	10.4			121.8		131.6	131.6	
Actuated g/C Ratio				0.07	0.07			0.81		0.88	0.88	
Clearance Time (s)				5.0	5.0			5.0		5.0	5.0	
Vehicle Extension (s)				3.0	3.0			3.0		3.0	3.0	
Lane Grp Cap (vph)				124	111			4082		117	4418	
v/s Ratio Prot					0.02			c0.70		0.02	c0.44	
v/s Ratio Perm				c0.04						0.42		
v/c Ratio				0.60	0.25			0.86		0.50	0.51	
Uniform Delay, d1				67.8	66.1			8.9		31.1	2.0	
Progression Factor				1.00	1.00			1.39		1.40	1.04	
Incremental Delay, d2				7.5	1.2			2.4		3.2	0.4	
Delay (s)				75.3	67.3			14.8		46.7	2.5	
Level of Service				E	E			B		D	A	
Approach Delay (s)		0.0			71.2			14.8			3.6	
Approach LOS		A			E			B			A	

Intersection Summary			
HCM Average Control Delay	12.0	HCM Level of Service	B
HCM Volume to Capacity ratio	0.84		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	76.3%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

# HCM Signalized Intersection Capacity Analysis

## 2: MD 193 & Carroll Ave

6/10/2008



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗↖↗			↗↖↗		↖	↗		↖	↗	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	2.0	2.0			2.0		2.0	2.0		2.0	2.0	
Lane Util. Factor	1.00	0.91			0.91		1.00	1.00		1.00	1.00	
Frt	1.00	0.98			1.00		1.00	0.98		1.00	0.98	
Flt Protected	0.95	1.00			1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1703	4809			4869		1703	1760		1703	1748	
Flt Permitted	0.09	1.00			1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	156	4809			4869		1703	1760		1703	1748	
Volume (vph)	25	1650	215	0	1890	65	185	145	20	100	540	105
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	26	1737	226	0	1989	68	195	153	21	105	568	111
RTOR Reduction (vph)	0	14	0	0	3	0	0	4	0	0	6	0
Lane Group Flow (vph)	26	1949	0	0	2054	0	195	170	0	105	673	0
Heavy Vehicles (%)	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%
Turn Type	Perm						Split			Split		
Protected Phases	6			2			3	3	4		4	
Permitted Phases	6											
Actuated Green, G (s)	42.0	42.0			42.0		23.0	23.0		37.0	37.0	
Effective Green, g (s)	46.0	46.0			46.0		27.0	27.0		41.0	41.0	
Actuated g/C Ratio	0.38	0.38			0.38		0.22	0.22		0.34	0.34	
Clearance Time (s)	6.0	6.0			6.0		6.0	6.0		6.0	6.0	
Vehicle Extension (s)	3.0	3.0			3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	60	1843			1866		383	396		582	597	
v/s Ratio Prot		0.41			c0.42		c0.11	0.10		0.06	c0.38	
v/s Ratio Perm	0.17											
v/c Ratio	0.43	1.06			1.10		0.51	0.43		0.18	1.13	
Uniform Delay, d1	27.4	37.0			37.0		40.7	39.9		27.7	39.5	
Progression Factor	0.38	0.45			1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	7.1	30.8			54.1		4.8	3.4		0.1	77.2	
Delay (s)	17.5	47.3			91.1		45.5	43.3		27.9	116.7	
Level of Service	B	D			F		D	D		C	F	
Approach Delay (s)		46.9			91.1			44.4			104.8	
Approach LOS		D			F			D			F	

### Intersection Summary

HCM Average Control Delay	72.9	HCM Level of Service	E
HCM Volume to Capacity ratio	0.96		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	6.0
Intersection Capacity Utilization	101.9%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group



# HCM Signalized Intersection Capacity Analysis

5: MD 193 & MD 320

6/10/2008



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗↘↙		↖	↗↘↙		↖	↗↘		↖	↗↘	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lane Util. Factor	1.00	0.91		1.00	0.91		1.00	0.95		1.00	0.95	
Frt	1.00	0.99		1.00	1.00		1.00	0.94		1.00	0.95	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1703	4833		1703	4886		1703	3212		1703	3219	
Flt Permitted	0.95	1.00		0.95	1.00		0.09	1.00		0.41	1.00	
Satd. Flow (perm)	1703	4833		1703	4886		164	3212		726	3219	
Volume (vph)	245	1615	145	235	1925	20	213	360	220	30	950	545
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	258	1700	153	247	2026	21	224	379	232	32	1000	574
RTOR Reduction (vph)	0	9	0	0	1	0	0	74	0	0	66	0
Lane Group Flow (vph)	258	1844	0	247	2046	0	224	537	0	32	1508	0
Heavy Vehicles (%)	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%
Turn Type	Prot		Prot		pm+pt		pm+pt					
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases							8				4	
Actuated Green, G (s)	12.0	38.4		12.0	38.4		49.8	49.8		45.6	44.6	
Effective Green, g (s)	14.0	41.4		14.0	41.4		52.8	52.8		47.6	47.6	
Actuated g/C Ratio	0.12	0.34		0.12	0.34		0.44	0.44		0.40	0.40	
Clearance Time (s)	4.0	5.0		4.0	5.0		4.0	5.0		4.0	5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	199	1667		199	1686		188	1413		319	1277	
v/s Ratio Prot	0.15	c0.38		c0.15	c0.42		c0.09	0.17		0.00	c0.47	
v/s Ratio Perm							0.44				0.04	
v/c Ratio	1.30	1.11		1.24	1.21		1.19	0.38		0.10	1.18	
Uniform Delay, d1	53.0	39.3		53.0	39.3		57.7	22.6		23.8	36.2	
Progression Factor	1.00	1.00		0.73	0.54		1.00	1.00		1.00	1.00	
Incremental Delay, d2	165.3	57.1		112.6	96.7		126.7	0.8		0.1	89.6	
Delay (s)	218.3	96.4		151.1	117.9		184.4	23.4		24.0	125.8	
Level of Service	F	F		F	F		F	C		C	F	
Approach Delay (s)	111.3				121.5		66.6				123.8	
Approach LOS	F				F		E				F	

## Intersection Summary

HCM Average Control Delay	112.2	HCM Level of Service	F
HCM Volume to Capacity ratio	1.17		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	6.0
Intersection Capacity Utilization	120.1%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

# HCM Signalized Intersection Capacity Analysis

14: MD 193 & MD 193 West SC

6/10/2008

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	2.0	2.0		2.0	2.0			2.0	2.0	2.0	2.0	
Lane Util. Factor	1.00	0.91		1.00	0.91			1.00	1.00	1.00	1.00	
Frt	1.00	1.00		1.00	1.00			1.00	0.85	1.00	0.89	
Flt Protected	0.95	1.00		0.95	1.00			0.96	1.00	0.95	1.00	
Satd. Flow (prot)	1703	4887		1703	4880			1814	1599	1787	1666	
Flt Permitted	0.09	1.00		0.09	1.00			0.81	1.00	0.66	1.00	
Satd. Flow (perm)	156	4887		156	4880			1519	1599	1236	1666	
Volume (vph)	65	1690	15	25	1885	35	45	15	20	15	5	15
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	68	1779	16	26	1984	37	47	16	21	16	5	16
RTOR Reduction (vph)	0	1	0	0	1	0	0	0	17	0	13	0
Lane Group Flow (vph)	68	1794	0	26	2020	0	0	63	4	16	8	0
Heavy Vehicles (%)	6%	6%	6%	6%	6%	6%	1%	1%	1%	1%	1%	1%
Turn Type	Perm			pm+pt			Perm		Perm	Perm		
Protected Phases		2		1	6			3				3
Permitted Phases	2			6			3	3	3	3		
Actuated Green, G (s)	99.0	99.0		114.0	114.0			26.0	26.0	26.0	26.0	
Effective Green, g (s)	102.0	102.0		117.0	117.0			29.0	29.0	29.0	29.0	
Actuated g/C Ratio	0.68	0.68		0.78	0.78			0.19	0.19	0.19	0.19	
Clearance Time (s)	5.0	5.0		5.0	5.0			5.0	5.0	5.0	5.0	
Lane Grp Cap (vph)	106	3323		256	3806			294	309	239	322	
v/s Ratio Prot		0.37		0.01	c0.41							0.00
v/s Ratio Perm	c0.44			0.07				c0.04	0.00	0.01		
v/c Ratio	0.64	0.54		0.10	0.53			0.21	0.01	0.07	0.03	
Uniform Delay, d1	13.6	12.1		6.6	6.2			50.9	48.9	49.4	49.0	
Progression Factor	1.00	1.00		0.90	0.76			1.00	1.00	1.00	1.00	
Incremental Delay, d2	26.1	0.6		0.1	0.0			1.7	0.1	0.5	0.1	
Delay (s)	39.8	12.8		6.0	4.7			52.6	49.0	50.0	49.2	
Level of Service	D	B		A	A			D	D	D	D	
Approach Delay (s)		13.8			4.8			51.7			49.5	
Approach LOS		B			A			D			D	
<b>Intersection Summary</b>												
HCM Average Control Delay			10.3			HCM Level of Service				B		
HCM Volume to Capacity ratio			0.54									
Actuated Cycle Length (s)			150.0			Sum of lost time (s)				6.0		
Intersection Capacity Utilization			76.3%			ICU Level of Service				D		
Analysis Period (min)			15									
c Critical Lane Group												

# HCM Signalized Intersection Capacity Analysis

15: MD 193 & MD 193 East SC

6/10/2008



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↕↕↕		↖	↕↕↕		↖	↕		↖	↕↕	↖
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	2.0
Lane Util. Factor	1.00	0.91		1.00	0.91		1.00	1.00		0.95	0.95	1.00
Frt	1.00	1.00		1.00	1.00		1.00	0.92		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	0.96	1.00
Satd. Flow (prot)	1703	4874		1703	4878		1787	1740		1698	1712	1599
Flt Permitted	0.06	1.00		0.18	1.00		0.71	1.00		0.75	0.81	1.00
Satd. Flow (perm)	108	4874		316	4878		1335	1740		1342	1442	1599
Volume (vph)	30	1315	35	20	1905	40	5	5	5	65	5	15
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	32	1384	37	21	2005	42	5	5	5	68	5	16
RTOR Reduction (vph)	0	2	0	0	1	0	0	4	0	0	0	13
Lane Group Flow (vph)	32	1419	0	21	2046	0	5	6	0	34	39	3
Heavy Vehicles (%)	6%	6%	6%	6%	6%	6%	1%	1%	1%	1%	1%	1%
Turn Type	custom			Perm			Perm			Perm		Perm
Protected Phases	1	6			2			3				3
Permitted Phases	6 1	6		2	2		3	3		3		3
Actuated Green, G (s)	114.0	114.0		99.0	99.0		26.0	26.0		26.0	26.0	26.0
Effective Green, g (s)	117.0	117.0		102.0	102.0		29.0	29.0		29.0	29.0	29.0
Actuated g/C Ratio	0.78	0.78		0.68	0.68		0.19	0.19		0.19	0.19	0.19
Clearance Time (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	5.0
Lane Grp Cap (vph)	222	3802		215	3317		258	336		259	279	309
v/s Ratio Prot	0.01	c0.29			c0.42			0.00				
v/s Ratio Perm	0.10			0.07			0.00			0.03	c0.03	0.00
v/c Ratio	0.14	0.37		0.10	0.62		0.02	0.02		0.13	0.14	0.01
Uniform Delay, d1	8.6	5.1		8.2	13.2		49.0	49.0		50.1	50.2	48.9
Progression Factor	2.48	0.69		1.00	1.00		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	0.1	0.0		0.9	0.9		0.1	0.1		1.0	1.0	0.1
Delay (s)	21.4	3.6		9.1	14.1		49.1	49.1		51.1	51.2	49.0
Level of Service	C	A		A	B		D	D		D	D	D
Approach Delay (s)		4.0			14.0			49.1			50.8	
Approach LOS		A			B			D			D	

## Intersection Summary

HCM Average Control Delay	11.1	HCM Level of Service	B
HCM Volume to Capacity ratio	0.49		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	6.0
Intersection Capacity Utilization	81.0%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

# HCM Signalized Intersection Capacity Analysis

91: MD 193 & MD 212

6/10/2008

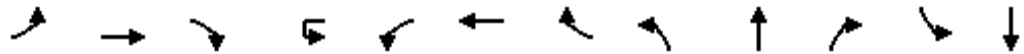
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Lane Util. Factor	1.00	0.91	1.00	0.97	0.91		0.97	1.00	1.00	1.00	0.95	
Frt	1.00	1.00	0.85	1.00	0.99		1.00	1.00	0.85	1.00	0.98	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1703	4893	1524	3303	4825		3303	1792	1524	1703	3322	
Flt Permitted	0.17	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	299	4893	1524	3303	4825		3303	1792	1524	1703	3322	
Volume (vph)	80	875	555	720	1220	125	780	520	395	155	485	95
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	84	921	584	758	1284	132	821	547	416	163	511	100
RTOR Reduction (vph)	0	0	0	0	10	0	0	0	251	0	13	0
Lane Group Flow (vph)	84	921	584	758	1406	0	821	547	165	163	598	0
Heavy Vehicles (%)	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%
Turn Type	pm+pt		Free	Prot			Split		Perm	Split		
Protected Phases	1	6		5	2		4	4		3	3	
Permitted Phases	6		Free						4			
Actuated Green, G (s)	25.6	20.0	120.0	25.0	39.4		34.0	34.0	34.0	19.0	19.0	
Effective Green, g (s)	31.6	24.0	120.0	27.0	43.4		36.0	36.0	36.0	21.0	21.0	
Actuated g/C Ratio	0.26	0.20	1.00	0.22	0.36		0.30	0.30	0.30	0.18	0.18	
Clearance Time (s)	5.0	7.0		5.0	7.0		5.0	5.0	5.0	5.0	5.0	
Vehicle Extension (s)	2.5	5.0		2.5	5.0		2.5	2.5	2.5	2.5	2.5	
Lane Grp Cap (vph)	168	979	1524	743	1745		991	538	457	298	581	
v/s Ratio Prot	0.03	c0.19		c0.23	0.29		0.25	c0.31		0.10	c0.18	
v/s Ratio Perm	0.10		0.38						0.11			
v/c Ratio	0.50	0.94	0.38	1.02	0.81		0.83	1.02	0.36	0.55	1.03	
Uniform Delay, d1	34.6	47.3	0.0	46.5	34.5		39.1	42.0	33.0	45.2	49.5	
Progression Factor	1.18	0.91	1.00	1.16	0.85		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	1.6	16.8	0.7	34.5	3.2		5.7	43.1	0.4	1.6	44.9	
Delay (s)	42.5	60.0	0.7	88.2	32.7		44.8	85.1	33.3	46.8	94.4	
Level of Service	D	E	A	F	C		D	F	C	D	F	
Approach Delay (s)		37.3			52.0			54.5			84.4	
Approach LOS		D			D			D			F	
<b>Intersection Summary</b>												
HCM Average Control Delay			53.0	HCM Level of Service				D				
HCM Volume to Capacity ratio			1.00									
Actuated Cycle Length (s)			120.0	Sum of lost time (s)				12.0				
Intersection Capacity Utilization			89.5%	ICU Level of Service				E				
Analysis Period (min)			15									

c Critical Lane Group

# HCM Signalized Intersection Capacity Analysis

105: MD 193 & 23rd Ave

6/10/2008



Movement	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations		↑↑↑			↓	↑↑↑			↑	↑		
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		3.0			3.0	3.0			3.0	3.0		
Lane Util. Factor		0.91			1.00	0.91			1.00	1.00		
Frt		0.98			1.00	1.00			1.00	0.85		
Flt Protected		1.00			0.95	1.00			0.95	1.00		
Satd. Flow (prot)		4817			1703	4878			1796	1599		
Flt Permitted		1.00			0.13	1.00			0.95	1.00		
Satd. Flow (perm)		4817			226	4878			1796	1599		
Volume (vph)	0	1200	140	30	105	1925	40	200	10	115	0	0
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	1263	147	32	111	2026	42	211	11	121	0	0
RTOR Reduction (vph)	0	21	0	0	0	3	0	0	0	91	0	0
Lane Group Flow (vph)	0	1389	0	0	143	2065	0	0	222	30	0	0
Heavy Vehicles (%)	6%	6%	6%	6%	6%	6%	6%	1%	1%	1%	1%	1%
Turn Type				custom	pm+pt			Perm		Perm		
Protected Phases		6			5	2			4			
Permitted Phases		6		5	2			4		4		
Actuated Green, G (s)		25.7			36.1	36.1			11.9	11.9		
Effective Green, g (s)		28.7			39.1	39.1			14.9	14.9		
Actuated g/C Ratio		0.48			0.65	0.65			0.25	0.25		
Clearance Time (s)		6.0			5.0	6.0			6.0	6.0		
Vehicle Extension (s)		5.0			3.0	5.0			3.0	3.0		
Lane Grp Cap (vph)		2304			329	3179			446	397		
v/s Ratio Prot		0.29			0.05	0.42						
v/s Ratio Perm					0.23				0.12	0.02		
v/c Ratio		0.60			0.43	0.65			0.50	0.08		
Uniform Delay, d1		11.5			6.1	6.3			19.3	17.3		
Progression Factor		0.64			0.89	0.89			1.00	1.00		
Incremental Delay, d2		0.7			0.6	0.7			0.9	0.1		
Delay (s)		8.1			6.0	6.3			20.2	17.4		
Level of Service		A			A	A			C	B		
Approach Delay (s)		8.1				6.2			19.2			8.2
Approach LOS		A				A			B			A

## Intersection Summary

HCM Average Control Delay	8.0	HCM Level of Service	A
HCM Volume to Capacity ratio	0.61		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	6.0
Intersection Capacity Utilization	76.4%	ICU Level of Service	D
Analysis Period (min)	15		
























c Critical Lane Group



<b>Movement</b>	<b>SBR</b>
Lane Configurations	7
Ideal Flow (vphpl)	1900
Total Lost time (s)	3.0
Lane Util. Factor	1.00
Frt	0.86
Flt Protected	1.00
Satd. Flow (prot)	1627
Flt Permitted	1.00
Satd. Flow (perm)	1627
Volume (vph)	5
Peak-hour factor, PHF	0.95
Adj. Flow (vph)	5
RTOR Reduction (vph)	3
Lane Group Flow (vph)	2
Heavy Vehicles (%)	1%
Turn Type	custom
Protected Phases	
Permitted Phases	6
Actuated Green, G (s)	25.7
Effective Green, g (s)	28.7
Actuated g/C Ratio	0.48
Clearance Time (s)	6.0
Vehicle Extension (s)	5.0
Lane Grp Cap (vph)	778
v/s Ratio Prot	
v/s Ratio Perm	0.00
v/c Ratio	0.00
Uniform Delay, d1	8.2
Progression Factor	1.00
Incremental Delay, d2	0.0
Delay (s)	8.2
Level of Service	A
Approach Delay (s)	
Approach LOS	
<b>Intersection Summary</b>	

HCM Signalized Intersection Capacity Analysis  
 107: MD 193 & West Park Dr.

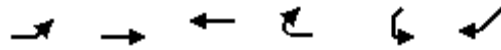
6/10/2008

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		 			 							
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95		1.00	1.00		1.00	1.00	
Frt	1.00	1.00	0.85	1.00	1.00		1.00	0.87		1.00	0.90	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1703	3406	1524	1703	3398		1787	1632		1787	1687	
Flt Permitted	0.04	1.00	1.00	0.18	1.00		0.75	1.00		0.53	1.00	
Satd. Flow (perm)	78	3406	1524	316	3398		1405	1632		1001	1687	
Volume (vph)	25	1235	25	50	2070	30	20	10	80	30	5	10
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	26	1300	26	53	2179	32	21	11	84	32	5	11
RTOR Reduction (vph)	0	0	6	0	1	0	0	75	0	0	10	0
Lane Group Flow (vph)	26	1300	20	53	2210	0	21	20	0	32	6	0
Heavy Vehicles (%)	6%	6%	6%	6%	6%	6%	1%	1%	1%	1%	1%	1%
Turn Type	pm+pt		Perm	pm+pt		Perm		Perm		Perm		
Protected Phases	1	6		5	2			8				4
Permitted Phases	6		6	2		8				4		
Actuated Green, G (s)	92.0	88.5	88.5	94.6	89.8		9.7	9.7		9.7	9.7	
Effective Green, g (s)	97.0	91.5	91.5	99.6	92.8		12.7	12.7		12.7	12.7	
Actuated g/C Ratio	0.81	0.76	0.76	0.83	0.77		0.11	0.11		0.11	0.11	
Clearance Time (s)	5.0	6.0	6.0	5.0	6.0		6.0	6.0		6.0	6.0	
Vehicle Extension (s)	3.0	5.0	5.0	3.0	5.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	138	2597	1162	341	2628		149	173		106	179	
v/s Ratio Prot	c0.01	0.38		c0.01	c0.65			0.01			0.00	
v/s Ratio Perm	0.14		0.01	0.12		0.01				c0.03		
v/c Ratio	0.19	0.50	0.02	0.16	0.84		0.14	0.11		0.30	0.03	
Uniform Delay, d1	12.6	5.5	3.4	3.0	8.8		48.7	48.6		49.6	48.1	
Progression Factor	3.49	0.47	0.00	1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.6	0.6	0.0	0.2	3.5		0.4	0.3		1.6	0.1	
Delay (s)	44.4	3.2	0.0	3.2	12.3		49.1	48.9		51.2	48.2	
Level of Service	D	A	A	A	B		D	D		D	D	
Approach Delay (s)		3.9			12.1			48.9			50.2	
Approach LOS		A			B			D			D	
<b>Intersection Summary</b>												
HCM Average Control Delay			10.8			HCM Level of Service				B		
HCM Volume to Capacity ratio			0.75									
Actuated Cycle Length (s)			120.0			Sum of lost time (s)				9.0		
Intersection Capacity Utilization			73.2%			ICU Level of Service				D		
Analysis Period (min)			15									

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis  
 109: MD 193 & Campus Dr.

6/10/2008



Movement	EBL	EBT	WBT	WBR	SWL	SWR
Lane Configurations	↔↔	↑	↕↕			↔↔
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0	3.0			3.0
Lane Util. Factor	0.97	1.00	0.95			0.88
Frt	1.00	1.00	1.00			0.85
Flt Protected	0.95	1.00	1.00			1.00
Satd. Flow (prot)	3303	1792	3406			2682
Flt Permitted	0.95	1.00	1.00			1.00
Satd. Flow (perm)	3303	1792	3406			2682
Volume (vph)	955	410	530	0	0	1590
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	1005	432	558	0	0	1674
RTOR Reduction (vph)	0	0	0	0	0	108
Lane Group Flow (vph)	1005	432	558	0	0	1566
Heavy Vehicles (%)	6%	6%	6%	6%	6%	6%
Turn Type	Free					
Protected Phases	1 2 5 6		3 4			1 2 5 6
Permitted Phases	Free					
Actuated Green, G (s)	146.0	248.0	90.0			146.0
Effective Green, g (s)	149.0	248.0	93.0			149.0
Actuated g/C Ratio	0.60	1.00	0.38			0.60
Clearance Time (s)						
Vehicle Extension (s)						
Lane Grp Cap (vph)	1984	1792	1277			1611
v/s Ratio Prot	0.30		c0.16			c0.58
v/s Ratio Perm		0.24				
v/c Ratio	0.51	0.24	0.44			0.97
Uniform Delay, d1	28.4	0.0	57.9			47.5
Progression Factor	1.00	1.00	0.25			0.60
Incremental Delay, d2	0.2	0.3	0.0			2.7
Delay (s)	28.6	0.3	14.4			31.3
Level of Service	C	A	B			C
Approach Delay (s)		20.1	14.4		31.3	
Approach LOS		C	B		C	
<b>Intersection Summary</b>						
HCM Average Control Delay			24.3		HCM Level of Service	C
HCM Volume to Capacity ratio			0.77			
Actuated Cycle Length (s)			248.0		Sum of lost time (s)	6.0
Intersection Capacity Utilization			76.9%		ICU Level of Service	D
Analysis Period (min)			15			

c Critical Lane Group



# HCM Signalized Intersection Capacity Analysis

111: MD 193 & Adelphi Rd.

6/10/2008



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↘	↑↑		↘↘	↑↑	↗		↑↑↑	↗	↘	↑↑↑	↗
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0		3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0
Lane Util. Factor	1.00	0.95		0.97	0.95	1.00		0.91	1.00	1.00	0.91	1.00
Frt	1.00	1.00		1.00	1.00	0.85		1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00		1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1703	3406		3303	3406	1524		4893	1524	1703	4893	1524
Flt Permitted	0.95	1.00		0.95	1.00	1.00		1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1703	3406		3303	3406	1524		4893	1524	1703	4893	1524
Volume (vph)	120	830	0	645	1510	170	0	775	430	240	1130	80
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	126	874	0	679	1589	179	0	816	453	253	1189	84
RTOR Reduction (vph)	0	0	0	0	0	65	0	0	0	0	0	42
Lane Group Flow (vph)	126	874	0	679	1589	114	0	816	453	253	1189	42
Heavy Vehicles (%)	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%
Turn Type	Prot		Prot		Perm		Free		Prot		Perm	
Protected Phases	6	2 6	1		5		4		3		7 8	
Permitted Phases					5		4 Free		3		7 8	
Actuated Green, G (s)	35.0	90.0	51.0		105.0		51.0		248.0		34.0	
Effective Green, g (s)	38.0	93.0	53.0		108.0		54.0		248.0		36.0	
Actuated g/C Ratio	0.15	0.38	0.21		0.44		0.22		1.00		0.15	
Clearance Time (s)	6.0		5.0		6.0		6.0		6.0		5.0	
Vehicle Extension (s)	3.0		3.0		4.0		4.0		3.5		3.0	
Lane Grp Cap (vph)	261	1277	706		1483		664		1065		1524	
v/s Ratio Prot	0.07	c0.26	0.21		c0.47		c0.17		c0.15		0.24	
v/s Ratio Perm					0.07		0.30				0.03	
v/c Ratio	0.48	0.68	0.96		1.07		0.17		0.77		0.30	
Uniform Delay, d1	96.0	65.2	96.5		70.0		42.7		91.1		0.0	
Progression Factor	0.70	0.56	1.00		1.00		1.00		0.32		1.00	
Incremental Delay, d2	1.2	1.5	24.7		45.1		0.2		1.9		0.3	
Delay (s)	68.6	38.2	121.2		115.1		42.9		31.1		0.3	
Level of Service	E	D	F		F		D		C		A	
Approach Delay (s)	42.0		111.5		20.1		81.4					
Approach LOS	D		F		C		F					

## Intersection Summary

HCM Average Control Delay	74.4	HCM Level of Service	E
HCM Volume to Capacity ratio	0.93		
Actuated Cycle Length (s)	248.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	90.0%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

# HCM Signalized Intersection Capacity Analysis

113: Campus Dr. & Adelphi Rd.

6/10/2008



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑	↑	↑	↑	↑	↑	↑↑↑	↑	↑↑	↑↑	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Lane Util. Factor		0.95	1.00	1.00	1.00	1.00	1.00	0.91	1.00	0.97	0.95	
Frt		1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	
Flt Protected		1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)		3406	1524	1703	1792	1524	1703	4893	1524	3303	3406	
Flt Permitted		1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)		3406	1524	1703	1792	1524	1703	4893	1524	3303	3406	
Volume (vph)	0	200	210	150	280	100	250	1105	155	275	1495	0
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	211	221	158	295	105	263	1163	163	289	1574	0
RTOR Reduction (vph)	0	0	175	0	0	57	0	0	117	0	0	0
Lane Group Flow (vph)	0	211	46	158	295	48	263	1163	46	289	1574	0
Heavy Vehicles (%)	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%
Turn Type			Perm	Split		Perm	Prot		Perm	Prot		
Protected Phases		2		6	6		3	8			1	4
Permitted Phases			2			6			8			
Actuated Green, G (s)		49.0	49.0	35.0	35.0	35.0	34.0	66.0	66.0	75.0	108.0	
Effective Green, g (s)		52.0	52.0	38.0	38.0	38.0	36.0	69.0	69.0	77.0	110.0	
Actuated g/C Ratio		0.21	0.21	0.15	0.15	0.15	0.15	0.28	0.28	0.31	0.44	
Clearance Time (s)		6.0	6.0	6.0	6.0	6.0	5.0	6.0	6.0			
Vehicle Extension (s)		4.0	4.0	3.0	3.0	3.0	3.0	3.5	3.5			
Lane Grp Cap (vph)		714	320	261	275	234	247	1361	424	1026	1511	
v/s Ratio Prot		c0.06		0.09	c0.16		c0.15	0.24		0.09	c0.46	
v/s Ratio Perm			0.03			0.03			0.03			
v/c Ratio		0.30	0.14	0.61	1.07	0.21	1.06	0.85	0.11	0.28	1.04	
Uniform Delay, d1		82.6	79.9	98.0	105.0	91.8	106.0	84.7	66.6	64.6	69.0	
Progression Factor		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.47	0.42	
Incremental Delay, d2		0.3	0.3	3.9	74.9	0.4	75.4	5.6	0.1	0.1	30.2	
Delay (s)		82.9	80.2	101.9	179.9	92.3	181.4	90.3	66.7	30.7	59.3	
Level of Service		F	F	F	F	F	F	F	E	C	E	
Approach Delay (s)		81.5			141.3			103.0			54.8	
Approach LOS		F			F			F			D	

## Intersection Summary
































HCM Average Control Delay	85.5	HCM Level of Service	F
HCM Volume to Capacity ratio	0.89		
Actuated Cycle Length (s)	248.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	97.7%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

# HCM Signalized Intersection Capacity Analysis

1621: MD 193 & MD 650

6/10/2008

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		  			  		 	  		  	  	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lane Util. Factor	1.00	0.91		1.00	0.91		0.97	0.91		1.00	0.91	
Frt	1.00	0.95		1.00	0.98		1.00	0.99		1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1703	4652		1703	4777		3303	4837		1703	4831	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1703	4652		1703	4777		3303	4837		1703	4831	
Volume (vph)	100	1090	535	210	1430	270	300	950	80	210	2250	210
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	105	1147	563	221	1505	284	316	1000	84	221	2368	221
RTOR Reduction (vph)	0	59	0	0	18	0	0	6	0	0	7	0
Lane Group Flow (vph)	105	1651	0	221	1771	0	316	1078	0	221	2582	0
Heavy Vehicles (%)	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%
Turn Type	Prot			Prot			Prot			Prot		
Protected Phases	7	4		3	8		1	6		5	2	
Permitted Phases												
Actuated Green, G (s)	6.0	39.0		12.0	45.0		15.7	54.1		22.4	60.8	
Effective Green, g (s)	9.0	43.0		15.0	49.0		18.7	58.6		25.4	65.3	
Actuated g/C Ratio	0.06	0.29		0.10	0.33		0.12	0.39		0.17	0.44	
Clearance Time (s)	5.0	6.0		5.0	6.0		5.0	6.5		5.0	6.5	
Vehicle Extension (s)	3.0	5.0		3.0	5.0		3.0	5.0		3.0	5.0	
Lane Grp Cap (vph)	102	1334		170	1560		412	1890		288	2103	
v/s Ratio Prot	0.06	c0.35		c0.13	c0.37		c0.10	0.22		0.13	c0.53	
v/s Ratio Perm												
v/c Ratio	1.03	1.24		1.30	1.14		0.77	0.57		0.77	1.23	
Uniform Delay, d1	70.5	53.5		67.5	50.5		63.5	35.8		59.5	42.4	
Progression Factor	0.84	0.77		0.81	0.74		0.93	0.74		1.14	0.82	
Incremental Delay, d2	90.6	112.6		165.0	67.8		8.0	1.2		1.1	102.8	
Delay (s)	149.5	153.8		219.6	105.2		66.7	27.9		68.7	137.5	
Level of Service	F	F		F	F		E	C		E	F	
Approach Delay (s)		153.6			117.8			36.6			132.1	
Approach LOS		F			F			D			F	
<b>Intersection Summary</b>												
HCM Average Control Delay			116.7			HCM Level of Service				F		
HCM Volume to Capacity ratio			1.16									
Actuated Cycle Length (s)			150.0			Sum of lost time (s)			6.0			
Intersection Capacity Utilization		114.7%				ICU Level of Service				H		
Analysis Period (min)			15									

c Critical Lane Group

# HCM Signalized Intersection Capacity Analysis

1629: MD 193 & 15th Ave

6/10/2008

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	2.0	2.0		3.0	2.0		2.0	3.0		3.0	3.0	
Lane Util. Factor	1.00	0.91		1.00	0.91		1.00	1.00		1.00	1.00	
Frt	1.00	1.00		1.00	0.99		1.00	0.92		1.00	0.85	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1703	4893		1703	4850		1787	1740		1787	1602	
Flt Permitted	0.05	1.00		0.17	1.00		0.65	1.00		0.76	1.00	
Satd. Flow (perm)	90	4893		303	4850		1225	1740		1423	1602	
Volume (vph)	60	1290	0	5	1895	120	1	1	1	220	1	85
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	63	1358	0	5	1995	126	1	1	1	232	1	89
RTOR Reduction (vph)	0	0	0	0	5	0	0	1	0	0	69	0
Lane Group Flow (vph)	63	1358	0	5	2116	0	1	1	0	232	21	0
Heavy Vehicles (%)	6%	6%	6%	6%	6%	6%	1%	1%	1%	1%	1%	1%
Turn Type	pm+pt			pm+pt			Perm			Perm		
Protected Phases	5	2		1	6			8			4	
Permitted Phases	2			6			8			4		
Actuated Green, G (s)	83.7	77.9		76.5	75.3		23.9	23.9		23.9	23.9	
Effective Green, g (s)	88.1	81.9		79.5	77.3		27.9	26.9		26.9	26.9	
Actuated g/C Ratio	0.73	0.68		0.66	0.64		0.23	0.22		0.22	0.22	
Clearance Time (s)	5.0	6.0		5.0	4.0		6.0	6.0		6.0	6.0	
Vehicle Extension (s)	3.0	5.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	184	3339		238	3124		285	390		319	359	
v/s Ratio Prot	c0.03	0.28		0.00	c0.44			0.00			0.01	
v/s Ratio Perm	0.22			0.01			0.00			c0.16		
v/c Ratio	0.34	0.41		0.02	0.68		0.00	0.00		0.73	0.06	
Uniform Delay, d1	11.9	8.4		7.1	13.5		35.4	36.1		43.1	36.6	
Progression Factor	1.00	1.00		0.37	0.46		1.00	1.00		1.00	1.00	
Incremental Delay, d2	1.1	0.4		0.0	0.7		0.0	0.0		8.0	0.1	
Delay (s)	13.0	8.7		2.6	6.9		35.4	36.1		51.2	36.7	
Level of Service	B	A		A	A		D	D		D	D	
Approach Delay (s)		8.9			6.9			35.9			47.1	
Approach LOS		A			A			D			D	
<b>Intersection Summary</b>												
HCM Average Control Delay			11.0			HCM Level of Service				B		
HCM Volume to Capacity ratio			0.66									
Actuated Cycle Length (s)			120.0			Sum of lost time (s)				7.0		
Intersection Capacity Utilization			72.3%			ICU Level of Service				C		
Analysis Period (min)			15									

c Critical Lane Group

# HCM Signalized Intersection Capacity Analysis

## 2: MD 193 & Carroll Ave

6/10/2008



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations	↖	↗↖↗			↗↖↗		↖	↗		↖	↗		
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)	2.0	2.0			2.0		2.0	2.0		2.0	2.0		
Lane Util. Factor	1.00	0.91			0.91		1.00	1.00		1.00	1.00		
Frt	1.00	0.99			0.99		1.00	0.98		1.00	0.98		
Flt Protected	0.95	1.00			1.00		0.95	1.00		0.95	1.00		
Satd. Flow (prot)	1736	4920			4941		1736	1789		1736	1794		
Flt Permitted	0.06	1.00			1.00		0.95	1.00		0.95	1.00		
Satd. Flow (perm)	112	4920			4941		1736	1789		1736	1794		
Volume (vph)	40	2205	220	0	2200	145	285	340	55	120	225	30	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	
Adj. Flow (vph)	42	2321	232	0	2316	153	300	358	58	126	237	32	
RTOR Reduction (vph)	0	10	0	0	6	0	0	5	0	0	4	0	
Lane Group Flow (vph)	42	2543	0	0	2463	0	300	412	0	126	265	0	
Heavy Vehicles (%)	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	
Turn Type	Perm						Split			Split			
Protected Phases	6				2		3	3		4	4		
Permitted Phases	6												
Actuated Green, G (s)	61.0	61.0			61.0			26.0	26.0			15.0	15.0
Effective Green, g (s)	65.0	65.0			65.0			30.0	30.0			19.0	19.0
Actuated g/C Ratio	0.54	0.54			0.54			0.25	0.25			0.16	0.16
Clearance Time (s)	6.0	6.0			6.0			6.0	6.0			6.0	6.0
Vehicle Extension (s)	3.0	3.0			3.0			3.0	3.0			3.0	3.0
Lane Grp Cap (vph)	61	2665			2676			434	447			275	284
v/s Ratio Prot	c0.52				0.50			0.17	c0.23			0.07	c0.15
v/s Ratio Perm	0.37												
v/c Ratio	0.69	0.95			0.92			0.69	0.92			0.46	0.93
Uniform Delay, d1	20.1	26.1			25.1			40.8	43.8			45.8	49.9
Progression Factor	0.81	0.84			1.00			1.00	1.00			1.00	1.00
Incremental Delay, d2	5.6	1.2			6.6			8.7	26.7			1.2	35.7
Delay (s)	21.9	23.0			31.7			49.5	70.6			47.0	85.6
Level of Service	C	C			C			D	E			D	F
Approach Delay (s)	23.0				31.7			61.7				73.3	
Approach LOS	C				C			E				E	

### Intersection Summary

























HCM Average Control Delay	34.2	HCM Level of Service	C
HCM Volume to Capacity ratio	0.93		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	6.0
Intersection Capacity Utilization	90.3%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

# HCM Signalized Intersection Capacity Analysis

5: MD 193 & MD 320

6/10/2008


























												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		 			 			 			 	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lane Util. Factor	1.00	0.91		1.00	0.91		1.00	0.95		1.00	0.95	
Frt	1.00	0.98		1.00	1.00		1.00	0.97		1.00	0.96	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1736	4910		1736	4967		1736	3359		1736	3337	
Flt Permitted	0.95	1.00		0.95	1.00		0.13	1.00		0.14	1.00	
Satd. Flow (perm)	1736	4910		1736	4967		245	3359		263	3337	
Volume (vph)	280	2115	245	305	2145	60	350	970	265	75	590	205
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	295	2226	258	321	2258	63	368	1021	279	79	621	216
RTOR Reduction (vph)	0	12	0	0	2	0	0	20	0	0	28	0
Lane Group Flow (vph)	295	2472	0	321	2319	0	368	1280	0	79	809	0
Heavy Vehicles (%)	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%
Turn Type	Prot		Prot		pm+pt		pm+pt					
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases							8				4	
Actuated Green, G (s)	15.0	48.2		15.0	48.2		42.8	36.4		27.2	24.8	
Effective Green, g (s)	17.0	51.2		17.0	51.2		45.8	39.4		32.2	27.8	
Actuated g/C Ratio	0.14	0.43		0.14	0.43		0.38	0.33		0.27	0.23	
Clearance Time (s)	4.0	5.0		4.0	5.0		4.0	5.0		4.0	5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	246	2095		246	2119		292	1103		125	773	
v/s Ratio Prot	0.17	c0.50		c0.18	c0.47		c0.17	c0.38		0.02	0.24	
v/s Ratio Perm							0.31				0.15	
v/c Ratio	1.20	1.18		1.30	1.09		1.26	1.16		0.63	1.05	
Uniform Delay, d1	51.5	34.4		51.5	34.4		34.8	40.3		36.9	46.1	
Progression Factor	1.00	1.00		0.96	0.47		1.00	1.00		1.00	1.00	
Incremental Delay, d2	122.0	86.3		149.6	46.3		141.8	82.5		10.0	45.0	
Delay (s)	173.5	120.7		199.1	62.4		176.6	122.8		46.9	91.1	
Level of Service	F	F		F	E		F	F		D	F	
Approach Delay (s)	126.3				79.0		134.7				87.3	
Approach LOS	F				E		F				F	
<b>Intersection Summary</b>												
HCM Average Control Delay	108.0		HCM Level of Service		F							
HCM Volume to Capacity ratio	1.17											
Actuated Cycle Length (s)	120.0		Sum of lost time (s)		4.0							
Intersection Capacity Utilization	118.8%		ICU Level of Service		H							
Analysis Period (min)	15											

c Critical Lane Group

# HCM Signalized Intersection Capacity Analysis



























14: MD 193 & MD 193 West SC

6/10/2008

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		  			  							
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	2.0	2.0		2.0	2.0			2.0	2.0	2.0	2.0	
Lane Util. Factor	1.00	0.91		1.00	0.91			1.00	1.00	1.00	1.00	
Frt	1.00	1.00		1.00	1.00			1.00	0.85	1.00	0.92	
Flt Protected	0.95	1.00		0.95	1.00			0.98	1.00	0.95	1.00	
Satd. Flow (prot)	1736	4977		1736	4978			1835	1599	1787	1740	
Flt Permitted	0.05	1.00		0.04	1.00			0.85	1.00	0.63	1.00	
Satd. Flow (perm)	92	4977		76	4978			1602	1599	1189	1740	
Volume (vph)	30	2210	30	30	2325	30	30	30	30	30	30	30
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	32	2326	32	32	2447	32	32	32	32	32	32	32
RTOR Reduction (vph)	0	1	0	0	1	0	0	0	27	0	16	0
Lane Group Flow (vph)	32	2357	0	32	2478	0	0	64	5	32	48	0
Heavy Vehicles (%)	4%	4%	4%	4%	4%	4%	1%	1%	1%	1%	1%	1%
Turn Type	Perm			pm+pt			Perm		Perm	Perm		
Protected Phases		2		1	6			3				3
Permitted Phases	2			6			3	3	3	3		
Actuated Green, G (s)	105.0	105.0		120.0	120.0			20.0	20.0	20.0	20.0	
Effective Green, g (s)	108.0	108.0		123.0	123.0			23.0	23.0	23.0	23.0	
Actuated g/C Ratio	0.72	0.72		0.82	0.82			0.15	0.15	0.15	0.15	
Clearance Time (s)	5.0	5.0		5.0	5.0			5.0	5.0	5.0	5.0	
Lane Grp Cap (vph)	66	3583		206	4082			246	245	182	267	
v/s Ratio Prot		c0.47		0.01	c0.50							0.03
v/s Ratio Perm	0.35			0.11				c0.04	0.00	0.03		
v/c Ratio	0.48	0.66		0.16	0.61			0.26	0.02	0.18	0.18	
Uniform Delay, d1	9.0	11.2		9.4	4.8			56.0	53.9	55.3	55.3	
Progression Factor	1.00	1.00		4.30	0.20			1.00	1.00	1.00	1.00	
Incremental Delay, d2	23.3	1.0		0.1	0.1			2.6	0.2	2.1	1.5	
Delay (s)	32.4	12.1		40.4	1.0			58.6	54.1	57.4	56.8	
Level of Service	C	B		D	A			E	D	E	E	
Approach Delay (s)		12.4			1.5			57.1			57.0	
Approach LOS		B			A			E			E	
<b>Intersection Summary</b>												
HCM Average Control Delay			8.7			HCM Level of Service			A			
HCM Volume to Capacity ratio			0.58									
Actuated Cycle Length (s)			150.0			Sum of lost time (s)			6.0			
Intersection Capacity Utilization			86.7%			ICU Level of Service			E			
Analysis Period (min)			15									
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis  
 15: MD 193 & MD 193 East SC

6/10/2008

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		  			  						 	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	2.0
Lane Util. Factor	1.00	0.91		1.00	0.91		1.00	1.00		0.95	0.95	1.00
Frt	1.00	1.00		1.00	0.99		1.00	0.87		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	0.97	1.00
Satd. Flow (prot)	1736	4977		1736	4949		1787	1638		1698	1731	1599
Flt Permitted	0.04	1.00		0.06	1.00		0.68	1.00		0.48	0.76	1.00
Satd. Flow (perm)	76	4977		111	4949		1281	1638		862	1364	1599
Volume (vph)	45	2195	30	70	2120	115	95	15	95	55	15	40
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	47	2311	32	74	2232	121	100	16	100	58	16	42
RTOR Reduction (vph)	0	1	0	0	4	0	0	20	0	0	0	36
Lane Group Flow (vph)	47	2342	0	74	2349	0	100	96	0	29	45	6
Heavy Vehicles (%)	4%	4%	4%	4%	4%	4%	1%	1%	1%	1%	1%	1%
Turn Type	custom			Perm			Perm			Perm		Perm
Protected Phases	1	6			2			3				3
Permitted Phases	6	1	6	2	2		3	3		3		3
Actuated Green, G (s)	120.0	120.0		105.0	105.0		20.0	20.0		20.0	20.0	20.0
Effective Green, g (s)	123.0	123.0		108.0	108.0		23.0	23.0		23.0	23.0	23.0
Actuated g/C Ratio	0.82	0.82		0.72	0.72		0.15	0.15		0.15	0.15	0.15
Clearance Time (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	5.0
Lane Grp Cap (vph)	206	4081		80	3563		196	251		132	209	245
v/s Ratio Prot	0.02	c0.47			0.47			0.06				
v/s Ratio Perm	0.17			c0.67			c0.08			0.03	0.03	0.00
v/c Ratio	0.23	0.57		0.92	0.66		0.51	0.38		0.22	0.22	0.03
Uniform Delay, d1	10.8	4.6		17.6	11.2		58.3	57.1		55.6	55.6	54.0
Progression Factor	3.39	0.47		1.00	1.00		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	0.2	0.1		81.4	1.0		9.2	4.3		3.8	2.3	0.2
Delay (s)	36.7	2.2		99.0	12.2		67.5	61.5		59.4	57.9	54.2
Level of Service	D	A		F	B		E	E		E	E	D
Approach Delay (s)		2.9			14.8			64.3			57.0	
Approach LOS		A			B			E			E	
<b>Intersection Summary</b>												
HCM Average Control Delay			12.3			HCM Level of Service				B		
HCM Volume to Capacity ratio			0.82									
Actuated Cycle Length (s)			150.0			Sum of lost time (s)				6.0		
Intersection Capacity Utilization			86.9%			ICU Level of Service				E		
Analysis Period (min)			15									
c Critical Lane Group												



# HCM Signalized Intersection Capacity Analysis

91: MD 193 & MD 212

6/10/2008

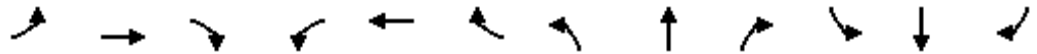
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Lane Util. Factor	1.00	0.91	1.00	0.97	0.91		0.97	1.00	1.00	1.00	0.95	
Frt	1.00	1.00	0.85	1.00	0.98		1.00	1.00	0.85	1.00	0.98	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1736	4988	1553	3367	4912		3367	1827	1553	1736	3397	
Flt Permitted	0.11	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	198	4988	1553	3367	4912		3367	1827	1553	1736	3397	
Volume (vph)	140	1625	665	670	1550	175	800	635	670	270	479	80
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	147	1711	700	705	1632	184	842	668	705	284	504	84
RTOR Reduction (vph)	0	0	0	0	12	0	0	0	178	0	11	0
Lane Group Flow (vph)	147	1711	700	705	1804	0	842	668	527	284	577	0
Heavy Vehicles (%)	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%
Turn Type	pm+pt		Free	Prot			Split		Perm	Split		
Protected Phases	1	6		5	2		4	4		3	3	
Permitted Phases	6		Free						4			
Actuated Green, G (s)	38.0	33.0	120.0	18.0	46.0		33.0	33.0	33.0	14.0	14.0	
Effective Green, g (s)	44.0	37.0	120.0	20.0	50.0		35.0	35.0	35.0	16.0	16.0	
Actuated g/C Ratio	0.37	0.31	1.00	0.17	0.42		0.29	0.29	0.29	0.13	0.13	
Clearance Time (s)	5.0	7.0		5.0	7.0		5.0	5.0	5.0	5.0	5.0	
Vehicle Extension (s)	2.5	5.0		2.5	5.0		2.5	2.5	2.5	2.5	2.5	
Lane Grp Cap (vph)	162	1538	1553	561	2047		982	533	453	231	453	
v/s Ratio Prot	0.05	c0.34		c0.21	0.37		0.25	c0.37		0.16	c0.17	
v/s Ratio Perm	0.28		0.45						0.34			
v/c Ratio	0.91	1.11	0.45	1.26	0.88		0.86	1.25	1.16	1.23	1.27	
Uniform Delay, d1	29.8	41.5	0.0	50.0	32.3		40.1	42.5	42.5	52.0	52.0	
Progression Factor	1.50	0.80	1.00	0.97	1.18		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	35.2	57.8	0.7	126.5	4.6		7.4	128.8	95.5	135.1	139.3	
Delay (s)	79.9	91.1	0.7	175.1	42.5		47.6	171.3	138.0	187.1	191.3	
Level of Service	E	F	A	F	D		D	F	F	F	F	
Approach Delay (s)		65.7			79.6			113.7			189.9	
Approach LOS		E			E			F			F	
<b>Intersection Summary</b>												
HCM Average Control Delay			96.3			HCM Level of Service				F		
HCM Volume to Capacity ratio			1.21									
Actuated Cycle Length (s)			120.0			Sum of lost time (s)			12.0			
Intersection Capacity Utilization			112.2%			ICU Level of Service				H		
Analysis Period (min)			15									

c Critical Lane Group

# HCM Signalized Intersection Capacity Analysis

105: MD 193 & 23rd Ave

6/10/2008



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑↑		↑	↑↑↑			↑	↑			↑
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		3.0		3.0	3.0			3.0	3.0			3.0
Lane Util. Factor		0.91		1.00	0.91			1.00	1.00			1.00
Frt		0.98		1.00	1.00			1.00	0.85			0.86
Flt Protected		1.00		0.95	1.00			0.95	1.00			1.00
Satd. Flow (prot)		4894		1736	4976			1793	1599			1627
Flt Permitted		1.00		0.06	1.00			0.95	1.00			1.00
Satd. Flow (perm)		4894		103	4976			1793	1599			1627
Volume (vph)	0	2215	315	185	1970	30	400	5	145	0	0	75
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	2332	332	195	2074	32	421	5	153	0	0	79
RTOR Reduction (vph)	0	15	0	0	1	0	0	0	111	0	0	34
Lane Group Flow (vph)	0	2649	0	195	2105	0	0	426	42	0	0	45
Heavy Vehicles (%)	4%	4%	4%	4%	4%	4%	1%	1%	1%	1%	1%	1%
Turn Type				pm+pt			Perm		Perm			custom
Protected Phases		6		5	2			4				
Permitted Phases		6		2			4		4			6
Actuated Green, G (s)		64.8		79.7	79.7			28.3	28.3			64.8
Effective Green, g (s)		67.8		82.7	82.7			31.3	31.3			67.8
Actuated g/C Ratio		0.56		0.69	0.69			0.26	0.26			0.56
Clearance Time (s)		6.0		5.0	6.0			6.0	6.0			6.0
Vehicle Extension (s)		5.0		3.0	5.0			3.0	3.0			5.0
Lane Grp Cap (vph)		2765		233	3429			468	417			919
v/s Ratio Prot		c0.54		c0.08	0.42							
v/s Ratio Perm				0.49				0.24	0.03			0.03
v/c Ratio		0.96		0.84	0.61			0.91	0.10			0.05
Uniform Delay, d1		24.7		38.3	10.0			43.0	33.7			11.7
Progression Factor		0.47		0.82	1.43			1.00	1.00			1.00
Incremental Delay, d2		1.3		15.1	0.5			21.7	0.1			0.1
Delay (s)		13.0		46.5	14.8			64.7	33.8			11.8
Level of Service		B		D	B			E	C			B
Approach Delay (s)		13.0			17.5			56.5			11.8	
Approach LOS		B			B			E			B	
<b>Intersection Summary</b>												
HCM Average Control Delay			19.3			HCM Level of Service			B			
HCM Volume to Capacity ratio			0.93									
Actuated Cycle Length (s)			120.0			Sum of lost time (s)			9.0			
Intersection Capacity Utilization			92.5%			ICU Level of Service			F			
Analysis Period (min)			15									

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis  
 107: MD 193 & West Park Dr.

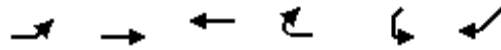
6/10/2008

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95		1.00	1.00		1.00	1.00	
Frt	1.00	1.00	0.85	1.00	1.00		1.00	0.86		1.00	0.90	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1736	3471	1553	1736	3454		1787	1612		1787	1696	
Flt Permitted	0.04	1.00	1.00	0.04	1.00		0.74	1.00		0.53	1.00	
Satd. Flow (perm)	81	3471	1553	81	3454		1385	1612		1004	1696	
Volume (vph)	25	2235	40	35	2070	69	25	5	95	80	10	20
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	26	2353	42	37	2179	73	26	5	100	84	11	21
RTOR Reduction (vph)	0	0	10	0	2	0	0	64	0	0	18	0
Lane Group Flow (vph)	26	2353	32	37	2250	0	26	41	0	84	14	0
Heavy Vehicles (%)	4%	4%	4%	4%	4%	4%	1%	1%	1%	1%	1%	1%
Turn Type	pm+pt		Perm	pm+pt		Perm		Perm		Perm		
Protected Phases	1	6		5	2			8				4
Permitted Phases	6		6	2		8				4		
Actuated Green, G (s)	90.6	87.6	87.6	90.6	87.6		12.4	12.4		12.4	12.4	
Effective Green, g (s)	95.6	90.6	90.6	95.6	90.6		15.4	15.4		15.4	15.4	
Actuated g/C Ratio	0.80	0.76	0.76	0.80	0.76		0.13	0.13		0.13	0.13	
Clearance Time (s)	5.0	6.0	6.0	5.0	6.0		6.0	6.0		6.0	6.0	
Vehicle Extension (s)	3.0	5.0	5.0	3.0	5.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	133	2621	1173	133	2608		178	207		129	218	
v/s Ratio Prot	0.01	c0.68		c0.01	0.65			0.03			0.01	
v/s Ratio Perm	0.15		0.02	0.21		0.02				c0.08		
v/c Ratio	0.20	0.90	0.03	0.28	0.86		0.15	0.20		0.65	0.06	
Uniform Delay, d1	16.3	11.2	3.7	21.2	10.3		46.5	46.8		49.7	46.0	
Progression Factor	1.96	0.65	0.00	1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.3	2.6	0.0	1.1	4.1		0.4	0.5		11.2	0.1	
Delay (s)	32.4	9.9	0.0	22.3	14.4		46.8	47.3		60.9	46.1	
Level of Service	C	A	A	C	B		D	D		E	D	
Approach Delay (s)		9.9			14.5			47.2			56.8	
Approach LOS		A			B			D			E	
<b>Intersection Summary</b>												
HCM Average Control Delay			14.1			HCM Level of Service			B			
HCM Volume to Capacity ratio			0.84									
Actuated Cycle Length (s)			120.0			Sum of lost time (s)			9.0			
Intersection Capacity Utilization			79.5%			ICU Level of Service			D			
Analysis Period (min)			15									

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis  
 109: MD 193 & Campus Dr.

6/10/2008



Movement	EBL	EBT	WBT	WBR	SWL	SWR
Lane Configurations	↗↘	↑	↗↘			↗↘
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0	3.0			3.0
Lane Util. Factor	0.97	1.00	0.95			0.88
Frt	1.00	1.00	1.00			0.85
Flt Protected	0.95	1.00	1.00			1.00
Satd. Flow (prot)	3367	1827	3471			2733
Flt Permitted	0.95	1.00	1.00			1.00
Satd. Flow (perm)	3367	1827	3471			2733
Volume (vph)	1745	610	815	0	0	1405
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	1837	642	858	0	0	1479
RTOR Reduction (vph)	0	0	0	0	0	50
Lane Group Flow (vph)	1837	642	858	0	0	1429
Heavy Vehicles (%)	4%	4%	4%	4%	4%	4%
Turn Type	Free					
Protected Phases	1 2 5 6		3 4			1 2 5 6
Permitted Phases	Free					
Actuated Green, G (s)	138.0	248.0	98.0			138.0
Effective Green, g (s)	141.0	248.0	101.0			141.0
Actuated g/C Ratio	0.57	1.00	0.41			0.57
Clearance Time (s)						
Vehicle Extension (s)						
Lane Grp Cap (vph)	1914	1827	1414			1554
v/s Ratio Prot	c0.55		c0.25			0.52
v/s Ratio Perm		0.35				
v/c Ratio	0.96	0.35	0.61			0.92
Uniform Delay, d1	50.8	0.0	57.9			48.4
Progression Factor	1.00	1.00	0.67			0.50
Incremental Delay, d2	12.3	0.5	0.1			1.0
Delay (s)	63.1	0.5	39.1			25.3
Level of Service	E	A	D			C
Approach Delay (s)		46.9	39.1		25.3	
Approach LOS		D	D		C	

Intersection Summary

HCM Average Control Delay	38.9	HCM Level of Service	D
HCM Volume to Capacity ratio	0.81		
Actuated Cycle Length (s)	248.0	Sum of lost time (s)	6.0
Intersection Capacity Utilization	79.0%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

# HCM Signalized Intersection Capacity Analysis

111: MD 193 & Adelphi Rd.

6/10/2008













Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0		3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0
Lane Util. Factor	1.00	0.95		0.97	0.95	1.00		0.91	1.00	1.00	0.91	1.00
Frt	1.00	1.00		1.00	1.00	0.85		1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00		1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1736	3471		3367	3471	1553		4988	1553	1736	4988	1553
Flt Permitted	0.95	1.00		0.95	1.00	1.00		1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1736	3471		3367	3471	1553		4988	1553	1736	4988	1553
Volume (vph)	125	1620	0	470	1215	365	0	1465	745	135	1105	195
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	132	1705	0	495	1279	384	0	1542	784	142	1163	205
RTOR Reduction (vph)	0	0	0	0	0	174	0	0	0	0	0	105
Lane Group Flow (vph)	132	1705	0	495	1279	210	0	1542	784	142	1163	100
Heavy Vehicles (%)	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%
Turn Type	Prot			Prot		Perm			Free	Prot		Perm
Protected Phases	6	2 6		1	5			4		3	7 8	
Permitted Phases						5		4	Free			7 8
Actuated Green, G (s)	58.0	105.0		28.0	74.0	74.0		66.0	248.0	27.0	100.0	100.0
Effective Green, g (s)	61.0	108.0		30.0	77.0	77.0		69.0	248.0	29.0	101.0	101.0
Actuated g/C Ratio	0.25	0.44		0.12	0.31	0.31		0.28	1.00	0.12	0.41	0.41
Clearance Time (s)	6.0			5.0	6.0	6.0		6.0		5.0		
Vehicle Extension (s)	3.0			3.0	4.0	4.0		3.5		3.0		
Lane Grp Cap (vph)	427	1512		407	1078	482		1388	1553	203	2031	632
v/s Ratio Prot	0.08	c0.49		c0.15	c0.37			c0.31		c0.08	0.23	
v/s Ratio Perm						0.14			0.50			0.06
v/c Ratio	0.31	1.13		1.22	1.19	0.44		1.11	0.50	0.70	0.57	0.16
Uniform Delay, d1	76.3	70.0		109.0	85.5	68.2		89.5	0.0	105.3	56.8	46.6
Progression Factor	0.41	0.32		1.00	1.00	1.00		0.38	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.1	60.5		117.8	93.4	0.9		51.1	0.1	10.1	0.4	0.1
Delay (s)	31.4	82.8		226.8	178.9	69.1		85.5	0.1	115.4	57.2	46.7
Level of Service	C	F		F	F	E		F	A	F	E	D
Approach Delay (s)		79.1			170.4			56.7			61.3	
Approach LOS		E			F			E			E	
<b>Intersection Summary</b>												
HCM Average Control Delay			94.2				HCM Level of Service		F			
HCM Volume to Capacity ratio			1.09									
Actuated Cycle Length (s)			248.0				Sum of lost time (s)		9.0			
Intersection Capacity Utilization			107.3%				ICU Level of Service		G			
Analysis Period (min)			15									

c Critical Lane Group

# HCM Signalized Intersection Capacity Analysis

113: Campus Dr. & Adelphi Rd.

6/10/2008

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑	↑	↑	↑	↑	↑	↑↑↑	↑	↑↑	↑↑	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Lane Util. Factor		0.95	1.00	1.00	1.00	1.00	1.00	0.91	1.00	0.97	0.95	
Frt		1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	
Flt Protected		1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)		3471	1553	1736	1827	1553	1736	4988	1553	3367	3471	
Flt Permitted		1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)		3471	1553	1736	1827	1553	1736	4988	1553	3367	3471	
Volume (vph)	0	245	365	225	565	445	250	1765	250	275	1295	0
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	258	384	237	595	468	263	1858	263	289	1363	0
RTOR Reduction (vph)	0	0	231	0	0	126	0	0	118	0	0	0
Lane Group Flow (vph)	0	258	153	237	595	342	263	1858	145	289	1363	0
Heavy Vehicles (%)	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%
Turn Type			Perm	Split		Perm	Prot		Perm	Prot		
Protected Phases		2		6	6		3	8		1	7	1
Permitted Phases			2			6			8			
Actuated Green, G (s)		41.0	41.0	58.0	58.0	58.0	27.0	79.0	79.0	47.0	100.0	
Effective Green, g (s)		44.0	44.0	61.0	61.0	61.0	29.0	82.0	82.0	49.0	102.0	
Actuated g/C Ratio		0.18	0.18	0.25	0.25	0.25	0.12	0.33	0.33	0.20	0.41	
Clearance Time (s)		6.0	6.0	6.0	6.0	6.0	5.0	6.0	6.0			
Vehicle Extension (s)		4.0	4.0	3.0	3.0	3.0	3.0	3.5	3.5			
Lane Grp Cap (vph)		616	276	427	449	382	203	1649	513	665	1428	
v/s Ratio Prot		0.07		0.14	c0.33		c0.15	c0.37		0.09	c0.39	
v/s Ratio Perm			c0.10			0.22			0.09			
v/c Ratio		0.42	0.55	0.56	1.33	0.90	1.30	1.13	0.28	0.43	0.95	
Uniform Delay, d1		90.6	93.0	81.6	93.5	90.4	109.5	83.0	61.3	87.3	70.8	
Progression Factor		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.56	0.44	
Incremental Delay, d2		0.6	2.8	1.6	161.2	22.5	164.4	65.5	0.4	0.3	10.1	
Delay (s)		91.2	95.9	83.2	254.7	112.9	273.9	148.5	61.7	49.4	41.3	
Level of Service		F	F	F	F	F	F	F	E	D	D	
Approach Delay (s)		94.0			172.4			152.7			42.7	
Approach LOS		F			F			F			D	
<b>Intersection Summary</b>												
HCM Average Control Delay		120.3		HCM Level of Service				F				
HCM Volume to Capacity ratio		1.05										
Actuated Cycle Length (s)		248.0		Sum of lost time (s)				9.0				
Intersection Capacity Utilization		96.3%		ICU Level of Service				F				
Analysis Period (min)		15										

c Critical Lane Group

# HCM Signalized Intersection Capacity Analysis

1621: MD 193 & MD 650

6/10/2008

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lane Util. Factor	1.00	0.91		1.00	0.91		0.97	0.91		1.00	0.91	
Frt	1.00	0.97		1.00	0.98		1.00	0.99		1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1736	4840		1736	4896		3367	4917		1736	4938	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1736	4840		1736	4896		3367	4917		1736	4938	
Volume (vph)	135	1715	420	265	1770	245	535	2120	220	360	1270	90
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	142	1805	442	279	1863	258	563	2232	232	379	1337	95
RTOR Reduction (vph)	0	28	0	0	12	0	0	8	0	0	5	0
Lane Group Flow (vph)	142	2219	0	279	2109	0	563	2456	0	379	1427	0
Heavy Vehicles (%)	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%
Turn Type	Prot			Prot			Prot			Prot		
Protected Phases	7	4		3	8		1	6		5	2	
Permitted Phases												
Actuated Green, G (s)	7.0	45.0		14.0	52.0		23.0	50.5		18.0	45.5	
Effective Green, g (s)	10.0	49.0		17.0	56.0		26.0	55.0		21.0	50.0	
Actuated g/C Ratio	0.07	0.33		0.11	0.37		0.17	0.37		0.14	0.33	
Clearance Time (s)	5.0	6.0		5.0	6.0		5.0	6.5		5.0	6.5	
Vehicle Extension (s)	3.0	5.0		3.0	5.0		3.0	5.0		3.0	5.0	
Lane Grp Cap (vph)	116	1581		197	1828		584	1803		243	1646	
v/s Ratio Prot	0.08	c0.46		c0.16	c0.43		0.17	c0.50		c0.22	0.29	
v/s Ratio Perm												
v/c Ratio	1.22	1.40		1.42	1.15		0.96	1.36		1.56	0.87	
Uniform Delay, d1	70.0	50.5		66.5	47.0		61.5	47.5		64.5	46.9	
Progression Factor	0.85	0.79		0.87	0.81		0.71	0.70		0.79	0.68	
Incremental Delay, d2	145.6	184.7		208.8	74.5		20.1	165.1		268.4	5.5	
Delay (s)	205.1	224.4		266.9	112.5		64.0	198.4		319.1	37.6	
Level of Service	F	F		F	F		E	F		F	D	
Approach Delay (s)		223.2			130.4			173.4			96.5	
Approach LOS		F			F			F			F	
<b>Intersection Summary</b>												
HCM Average Control Delay			160.6			HCM Level of Service				F		
HCM Volume to Capacity ratio			1.38									
Actuated Cycle Length (s)			150.0			Sum of lost time (s)			6.0			
Intersection Capacity Utilization			136.3%			ICU Level of Service				H		
Analysis Period (min)			15									

c Critical Lane Group

# HCM Signalized Intersection Capacity Analysis

1629: MD 193 & 15th Ave

6/10/2008



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↙	↑↑↑		↙	↑↑↑		↙	↘		↙	↘	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	2.0	2.0			2.0		2.0	3.0		3.0	3.0	
Lane Util. Factor	1.00	0.91			0.91		1.00	1.00		1.00	1.00	
Frt	1.00	1.00			0.98		1.00	0.92		1.00	0.85	
Flt Protected	0.95	1.00			1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1736	4988			4903		1787	1740		1787	1602	
Flt Permitted	0.06	1.00			1.00		0.65	1.00		0.76	1.00	
Satd. Flow (perm)	109	4988			4903		1227	1740		1423	1602	
Volume (vph)	225	2105	0	0	2195	280	1	1	1	375	1	95
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	237	2216	0	0	2311	295	1	1	1	395	1	100
RTOR Reduction (vph)	0	0	0	0	13	0	0	1	0	0	60	0
Lane Group Flow (vph)	237	2216	0	0	2593	0	1	1	0	395	41	0
Heavy Vehicles (%)	4%	4%	4%	4%	4%	4%	1%	1%	1%	1%	1%	1%
Turn Type	pm+pt		pm+pt		Perm		Perm		Perm		Perm	
Protected Phases	5	2		1	6			8				4
Permitted Phases	2			6			8			4		
Actuated Green, G (s)	76.0	76.0			63.0		32.0	32.0		32.0	32.0	
Effective Green, g (s)	80.0	80.0			65.0		36.0	35.0		35.0	35.0	
Actuated g/C Ratio	0.67	0.67			0.54		0.30	0.29		0.29	0.29	
Clearance Time (s)	5.0	6.0			4.0		6.0	6.0		6.0	6.0	
Vehicle Extension (s)	3.0	5.0			3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	249	3325			2656		368	508		415	467	
v/s Ratio Prot	c0.10	0.44			c0.53			0.00			0.03	
v/s Ratio Perm	0.53						0.00			c0.28		
v/c Ratio	0.95	0.67			0.98		0.00	0.00		0.95	0.09	
Uniform Delay, d1	40.6	12.0			26.7		29.4	30.1		41.7	30.9	
Progression Factor	1.00	1.00			0.59		1.00	1.00		1.00	1.00	
Incremental Delay, d2	43.6	1.1			8.2		0.0	0.0		31.9	0.1	
Delay (s)	84.2	13.1			23.9		29.4	30.1		73.6	31.0	
Level of Service	F	B			C		C	C		E	C	
Approach Delay (s)		19.9			23.9			29.9			64.9	
Approach LOS		B			C			C			E	

## Intersection Summary

HCM Average Control Delay	25.8	HCM Level of Service	C
HCM Volume to Capacity ratio	0.96		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	7.0
Intersection Capacity Utilization	98.6%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group



# HCM Signalized Intersection Capacity Analysis

## 3: River Rd. & MD 201

6/11/2008
























Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0	3.0		3.0		3.0	3.0	3.0		3.0	3.0
Lane Util. Factor	0.95	0.95	1.00		1.00		1.00	0.95	1.00		0.91	1.00
Frt	1.00	1.00	0.85		0.95		1.00	1.00	0.85		1.00	0.85
Flt Protected	0.95	0.96	1.00		0.98		0.95	1.00	1.00		1.00	1.00
Satd. Flow (prot)	1618	1629	1524		1767		1703	3406	1524		4893	1524
Flt Permitted	0.95	0.96	1.00		0.98		0.04	1.00	1.00		0.94	1.00
Satd. Flow (perm)	1618	1629	1524		1767		80	3406	1524		4580	1524
Volume (vph)	90	5	125	5	5	5	430	1370	5	5	2135	455
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Growth Factor (vph)	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Adj. Flow (vph)	95	5	132	5	5	5	453	1442	5	5	2247	479
RTOR Reduction (vph)	0	0	121	0	5	0	0	0	1	0	0	85
Lane Group Flow (vph)	49	51	11	0	10	0	453	1442	4	0	2252	394
Heavy Vehicles (%)	6%	6%	6%	1%	1%	1%	6%	6%	6%	6%	6%	6%
Turn Type	Split		Perm	Split			pm+pt		Perm	Perm		Perm
Protected Phases	4	4		3	3		1	6		2		2
Permitted Phases			4				6		6	2		2
Actuated Green, G (s)	10.3	10.3	10.3		2.2		130.5	130.5	130.5		83.8	83.8
Effective Green, g (s)	12.8	12.8	12.8		4.7		133.5	133.5	133.5		86.8	86.8
Actuated g/C Ratio	0.08	0.08	0.08		0.03		0.83	0.83	0.83		0.54	0.54
Clearance Time (s)	5.5	5.5	5.5		5.5		5.0	6.0	6.0		6.0	6.0
Vehicle Extension (s)	3.0	3.0	3.0		3.0		3.0	3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	129	130	122		52		510	2842	1272		2485	827
v/s Ratio Prot	0.03	c0.03			c0.01		c0.24	0.42				
v/s Ratio Perm			0.01				c0.50		0.00		0.49	0.26
v/c Ratio	0.38	0.39	0.09		0.20		0.89	0.51	0.00		0.91	0.48
Uniform Delay, d1	69.8	69.9	68.2		75.8		49.7	3.8	2.2		32.9	22.6
Progression Factor	1.00	1.00	1.00		1.00		0.81	0.27	0.13		0.65	0.60
Incremental Delay, d2	1.9	2.0	0.3		1.8		13.4	0.5	0.0		5.1	1.6
Delay (s)	71.7	71.9	68.5		77.6		53.7	1.5	0.3		26.6	15.2
Level of Service	E	E	E		E		D	A	A		C	B
Approach Delay (s)		69.9			77.6			14.0			24.6	
Approach LOS		E			E			B			C	

### Intersection Summary

HCM Average Control Delay	22.8	HCM Level of Service	C
HCM Volume to Capacity ratio	0.82		
Actuated Cycle Length (s)	160.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	95.5%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis  
4: Shopping Center & MD 201































6/11/2008

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		3.0	3.0		3.0		3.0	3.0	3.0	3.0	3.0	
Lane Util. Factor		1.00	1.00		1.00		1.00	0.95	1.00	1.00	0.91	
Frt		1.00	0.85		0.91		1.00	1.00	0.85	1.00	1.00	
Flt Protected		0.96	1.00		0.99		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)		1812	1599		1690		1703	3406	1524	1703	4892	
Flt Permitted		0.84	1.00		0.92		0.07	1.00	1.00	0.08	1.00	
Satd. Flow (perm)		1582	1599		1570		122	3406	1524	139	4892	
Volume (vph)	15	5	15	15	5	40	25	1750	15	15	2245	5
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Growth Factor (vph)	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Adj. Flow (vph)	16	5	16	16	5	42	26	1842	16	16	2363	5
RTOR Reduction (vph)	0	0	14	0	37	0	0	0	3	0	0	0
Lane Group Flow (vph)	0	21	2	0	26	0	26	1842	13	16	2368	0
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	6%	6%	6%	6%	6%	6%
Turn Type	Perm		Perm	Perm			pm+pt		Perm	pm+pt		
Protected Phases		8		4			5	2		1	6	
Permitted Phases	8		8	4			2		2	6		
Actuated Green, G (s)		6.4	6.4		6.4		57.1	55.1	55.1	55.1	54.1	
Effective Green, g (s)		9.4	9.4		9.4		62.6	58.6	58.6	60.6	57.6	
Actuated g/C Ratio		0.12	0.12		0.12		0.78	0.73	0.73	0.76	0.72	
Clearance Time (s)		6.0	6.0		6.0		5.0	6.5	6.5	5.0	6.5	
Vehicle Extension (s)		3.0	3.0		3.0		3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)		186	188		184		175	2495	1116	164	3522	
v/s Ratio Prot							c0.01	c0.54		0.00	0.48	
v/s Ratio Perm		0.01	0.00		c0.02		0.11		0.01	0.07		
v/c Ratio		0.11	0.01		0.14		0.15	0.74	0.01	0.10	0.67	
Uniform Delay, d1		31.6	31.2		31.7		4.5	6.2	2.9	5.3	6.1	
Progression Factor		1.00	1.00		1.00		0.84	1.34	0.72	0.99	1.68	
Incremental Delay, d2		0.3	0.0		0.4		0.3	1.5	0.0	0.1	0.5	
Delay (s)		31.8	31.2		32.0		4.1	9.8	2.1	5.4	10.7	
Level of Service		C	C		C		A	A	A	A	B	
Approach Delay (s)		31.6			32.0			9.7			10.7	
Approach LOS		C			C			A			B	
<b>Intersection Summary</b>												
HCM Average Control Delay			10.8				HCM Level of Service				B	
HCM Volume to Capacity ratio			0.64									
Actuated Cycle Length (s)			80.0				Sum of lost time (s)				9.0	
Intersection Capacity Utilization			66.8%				ICU Level of Service				C	
Analysis Period (min)			15									
c Critical Lane Group												

# HCM Signalized Intersection Capacity Analysis

## 5: MD 410 & MD 201

6/11/2008

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	 	 			 		 	 			 	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Util. Factor	0.97	0.95	1.00	1.00	0.95	1.00	0.97	0.95	1.00	1.00	0.95	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3303	3406	1524	1703	3406	1524	3303	3406	1524	1703	3406	1524
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3303	3406	1524	1703	3406	1524	3303	3406	1524	1703	3406	1524
Volume (vph)	345	955	365	50	1675	550	405	895	40	125	1815	335
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Growth Factor (vph)	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Adj. Flow (vph)	363	1005	384	53	1763	579	426	942	42	132	1911	353
RTOR Reduction (vph)	0	0	124	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	363	1005	260	53	1763	579	426	942	42	132	1911	353
Heavy Vehicles (%)	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%
Turn Type	Prot		Perm	Prot		Free	Prot		Free	Prot		Free
Protected Phases	3	8		7	4		5	2		1	6	
Permitted Phases			8			Free			Free			Free
Actuated Green, G (s)	15.0	58.0	58.0	4.0	47.0	160.0	13.0	60.3	160.0	15.7	63.0	160.0
Effective Green, g (s)	17.0	61.0	61.0	6.0	50.0	160.0	15.0	63.3	160.0	17.7	66.0	160.0
Actuated g/C Ratio	0.11	0.38	0.38	0.04	0.31	1.00	0.09	0.40	1.00	0.11	0.41	1.00
Clearance Time (s)	5.0	6.0	6.0	5.0	6.0		5.0	6.0		5.0	6.0	
Vehicle Extension (s)	3.0	5.0	5.0	3.0	5.0		3.0	5.0		3.0	5.0	
Lane Grp Cap (vph)	351	1299	581	64	1064	1524	310	1347	1524	188	1405	1524
v/s Ratio Prot	c0.11	0.30		0.03	c0.52		c0.13	0.28		0.08	c0.56	
v/s Ratio Perm			0.17			c0.38			0.03			0.23
v/c Ratio	1.03	0.77	0.45	0.83	1.66	0.38	1.37	0.70	0.03	0.70	1.36	0.23
Uniform Delay, d1	71.5	43.4	36.9	76.5	55.0	0.0	72.5	40.4	0.0	68.6	47.0	0.0
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.10	0.73	1.00	0.98	0.71	1.00
Incremental Delay, d2	57.1	4.5	2.5	56.0	299.8	0.7	185.9	2.8	0.0	9.0	165.8	0.3
Delay (s)	128.6	48.0	39.4	132.5	354.8	0.7	265.9	32.1	0.0	76.4	199.2	0.3
Level of Service	F	D	D	F	F	A	F	C	A	E	F	A
Approach Delay (s)		62.8			264.3			101.8			163.1	
Approach LOS		E			F			F			F	
<b>Intersection Summary</b>												
HCM Average Control Delay	160.6		HCM Level of Service				F					
HCM Volume to Capacity ratio	1.40											
Actuated Cycle Length (s)	160.0				Sum of lost time (s)				9.0			
Intersection Capacity Utilization	131.2%		ICU Level of Service				H					
Analysis Period (min)	15											
c Critical Lane Group												

# HCM Signalized Intersection Capacity Analysis

## 3: River Rd. & MD 201

6/11/2008
























Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0	3.0		3.0		3.0	3.0	3.0		3.0	3.0
Lane Util. Factor	0.95	0.95	1.00		1.00		1.00	0.95	1.00		0.91	1.00
Frt	1.00	1.00	0.85		0.95		1.00	1.00	0.85		1.00	0.85
Flt Protected	0.95	0.95	1.00		0.98		0.95	1.00	1.00		1.00	1.00
Satd. Flow (prot)	1665	1671	1568		1767		1752	3505	1568		5035	1568
Flt Permitted	0.95	0.95	1.00		0.98		0.08	1.00	1.00		0.93	1.00
Satd. Flow (perm)	1665	1671	1568		1767		141	3505	1568		4680	1568
Volume (vph)	330	5	365	5	5	5	125	2115	5	5	1715	65
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Growth Factor (vph)	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Adj. Flow (vph)	347	5	384	5	5	5	132	2226	5	5	1805	68
RTOR Reduction (vph)	0	0	178	0	5	0	0	0	1	0	0	17
Lane Group Flow (vph)	174	178	206	0	10	0	132	2226	4	0	1810	51
Heavy Vehicles (%)	3%	3%	3%	1%	1%	1%	3%	3%	3%	3%	3%	3%
Turn Type	Split		Perm	Split			pm+pt		Perm	Perm		Perm
Protected Phases	4	4		3	3		1	6			2	
Permitted Phases			4				6		6	2		2
Actuated Green, G (s)	19.5	19.5	19.5		2.2		91.3	91.3	91.3		77.6	77.6
Effective Green, g (s)	22.0	22.0	22.0		4.7		94.3	94.3	94.3		80.6	80.6
Actuated g/C Ratio	0.17	0.17	0.17		0.04		0.73	0.73	0.73		0.62	0.62
Clearance Time (s)	5.5	5.5	5.5		5.5		5.0	6.0	6.0		6.0	6.0
Vehicle Extension (s)	3.0	3.0	3.0		3.0		3.0	3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	282	283	265		64		235	2542	1137		2902	972
v/s Ratio Prot	0.10	0.11			c0.01		0.05	c0.64				
v/s Ratio Perm			c0.13				0.36		0.00		0.39	0.03
v/c Ratio	0.62	0.63	0.78		0.16		0.56	0.88	0.00		0.62	0.05
Uniform Delay, d1	50.1	50.2	51.7		60.7		13.6	13.4	4.9		15.3	9.7
Progression Factor	1.00	1.00	1.00		1.00		1.59	0.34	0.17		0.79	0.95
Incremental Delay, d2	4.0	4.3	13.4		1.2		1.7	2.7	0.0		0.9	0.1
Delay (s)	54.1	54.5	65.1		61.9		23.3	7.3	0.9		13.0	9.3
Level of Service	D	D	E		E		C	A	A		B	A
Approach Delay (s)		59.9			61.9			8.2			12.9	
Approach LOS		E			E			A			B	

### Intersection Summary

HCM Average Control Delay	17.7	HCM Level of Service	B
HCM Volume to Capacity ratio	0.83		
Actuated Cycle Length (s)	130.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	117.6%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis  
 4: Shopping Center & MD 201































6/11/2008

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		3.0	3.0		3.0		3.0	3.0	3.0	3.0	3.0	
Lane Util. Factor		1.00	1.00		1.00		1.00	0.95	1.00	1.00	0.91	
Frt		1.00	0.85		0.91		1.00	1.00	0.85	1.00	1.00	
Flt Protected		0.96	1.00		0.99		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)		1800	1599		1686		1752	3505	1568	1752	5034	
Flt Permitted		0.56	1.00		0.91		0.07	1.00	1.00	0.04	1.00	
Satd. Flow (perm)		1060	1599		1560		134	3505	1568	72	5034	
Volume (vph)	45	5	40	15	5	45	80	2155	35	100	1980	5
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Growth Factor (vph)	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Adj. Flow (vph)	47	5	42	16	5	47	84	2268	37	105	2084	5
RTOR Reduction (vph)	0	0	39	0	43	0	0	0	4	0	0	0
Lane Group Flow (vph)	0	52	3	0	25	0	84	2268	33	105	2089	0
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	3%	3%	3%	3%	3%	3%
Turn Type	Perm		Perm	Perm			pm+pt		Perm	pm+pt		
Protected Phases		8			4		5	2		1	6	
Permitted Phases	8		8	4			2		2	6		
Actuated Green, G (s)		7.8	7.8		7.8		103.0	97.3	97.3	106.4	99.0	
Effective Green, g (s)		10.8	10.8		10.8		108.5	100.8	100.8	111.9	102.5	
Actuated g/C Ratio		0.08	0.08		0.08		0.83	0.78	0.78	0.86	0.79	
Clearance Time (s)		6.0	6.0		6.0		5.0	6.5	6.5	5.0	6.5	
Vehicle Extension (s)		3.0	3.0		3.0		3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)		88	133		130		208	2718	1216	183	3969	
v/s Ratio Prot							0.02	c0.65		c0.04	0.41	
v/s Ratio Perm		c0.05	0.00		0.02		0.31		0.02	0.45		
v/c Ratio		0.59	0.03		0.19		0.40	0.83	0.03	0.57	0.53	
Uniform Delay, d1		57.5	54.8		55.5		3.9	9.3	3.4	34.3	5.0	
Progression Factor		1.00	1.00		1.00		3.72	1.00	0.00	0.76	1.69	
Incremental Delay, d2		10.2	0.1		0.7		0.1	0.3	0.0	3.2	0.4	
Delay (s)		67.7	54.8		56.3		14.5	9.5	0.0	29.4	8.8	
Level of Service		E	D		E		B	A	A	C	A	
Approach Delay (s)		61.9			56.3			9.6			9.8	
Approach LOS		E			E			A			A	
<b>Intersection Summary</b>												
HCM Average Control Delay			11.4				HCM Level of Service				B	
HCM Volume to Capacity ratio			0.81									
Actuated Cycle Length (s)			130.0				Sum of lost time (s)				12.0	
Intersection Capacity Utilization			85.6%				ICU Level of Service				E	
Analysis Period (min)			15									
c Critical Lane Group												

# HCM Signalized Intersection Capacity Analysis

## 5: MD 410 & MD 201

6/11/2008




















												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	 	 			 		 	 			 	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	11	11	11	11	11	11	11	11	11	11	11	11
Total Lost time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Util. Factor	0.97	0.95	1.00	1.00	0.95	1.00	0.97	0.95	1.00	1.00	0.95	1.00
Fr <sub>t</sub>	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Fl <sub>t</sub> Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3286	3388	1516	1694	3388	1516	3286	3388	1516	1694	3388	1516
Fl <sub>t</sub> Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3286	3388	1516	1694	3388	1516	3286	3388	1516	1694	3388	1516
Volume (vph)	665	1595	495	155	1630	300	455	1305	55	415	1430	190
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Growth Factor (vph)	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Adj. Flow (vph)	700	1679	521	163	1716	316	479	1374	58	437	1505	200
RTOR Reduction (vph)	0	0	145	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	700	1679	376	163	1716	316	479	1374	58	437	1505	200
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%
Turn Type	Prot		Perm	Prot		Free	Prot		Free	Prot		Free
Protected Phases	3	8		7	4		5	2		1	6	
Permitted Phases			8			Free			Free			Free
Actuated Green, G (s)	15.0	39.4	39.4	13.6	38.0	130.0	10.0	36.0	130.0	19.0	45.0	130.0
Effective Green, g (s)	17.0	42.4	42.4	15.6	41.0	130.0	12.0	39.0	130.0	21.0	48.0	130.0
Actuated g/C Ratio	0.13	0.33	0.33	0.12	0.32	1.00	0.09	0.30	1.00	0.16	0.37	1.00
Clearance Time (s)	5.0	6.0	6.0	5.0	6.0		5.0	6.0		5.0	6.0	
Vehicle Extension (s)	3.0	3.5	3.5	3.0	3.5		3.0	5.0		3.0	5.0	
Lane Grp Cap (vph)	430	1105	494	203	1069	1516	303	1016	1516	274	1251	1516
v/s Ratio Prot	c0.21	0.50		0.10	c0.51		0.15	c0.41		c0.26	0.44	
v/s Ratio Perm			0.25			c0.21			0.04			0.13
v/c Ratio	1.63	1.52	0.76	0.80	1.61	0.21	1.58	1.35	0.04	1.59	1.20	0.13
Uniform Delay, d <sub>1</sub>	56.5	43.8	39.3	55.7	44.5	0.0	59.0	45.5	0.0	54.5	41.0	0.0
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.45	0.57	1.00	1.07	0.91	1.00
Incremental Delay, d <sub>2</sub>	293.0	238.4	7.0	20.0	276.8	0.3	271.4	162.8	0.0	282.2	98.3	0.2
Delay (s)	349.5	282.2	46.3	75.7	321.3	0.3	357.1	188.8	0.0	340.5	135.5	0.2
Level of Service	F	F	D	E	F	A	F	F	A	F	F	A
Approach Delay (s)		256.1			256.8			225.3			164.7	
Approach LOS		F			F			F			F	
<b>Intersection Summary</b>												
HCM Average Control Delay	228.4		HCM Level of Service				F					
HCM Volume to Capacity ratio	1.51											
Actuated Cycle Length (s)	130.0		Sum of lost time (s)				12.0					
Intersection Capacity Utilization	136.4%		ICU Level of Service				H					
Analysis Period (min)	15											

c Critical Lane Group

# HCM Signalized Intersection Capacity Analysis

1601: MD 410 & 62nd Pl.

6/10/2008

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0			4.0			4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00			1.00	
Frt	1.00	1.00		1.00	1.00			0.94			0.97	
Flt Protected	0.95	1.00		0.95	1.00			0.97			0.96	
Satd. Flow (prot)	1703	3404		1703	3399			1726			1757	
Flt Permitted	0.05	1.00		0.15	1.00			0.97			0.96	
Satd. Flow (perm)	95	3404		264	3399			1726			1757	
Volume (vph)	30	1375	5	5	2210	30	65	0	45	55	0	15
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	32	1447	5	5	2326	32	68	0	47	58	0	16
RTOR Reduction (vph)	0	0	0	0	1	0	0	25	0	0	10	0
Lane Group Flow (vph)	32	1452	0	5	2357	0	0	90	0	0	64	0
Heavy Vehicles (%)	6%	6%	6%	6%	6%	6%	1%	1%	1%	1%	1%	1%
Turn Type	Perm			Perm			Split			Split		
Protected Phases		6			2		3	3		4	4	
Permitted Phases	6			2								
Actuated Green, G (s)	73.1	73.1		73.1	73.1			6.9			4.0	
Effective Green, g (s)	75.1	75.1		75.1	75.1			7.9			5.0	
Actuated g/C Ratio	0.75	0.75		0.75	0.75			0.08			0.05	
Clearance Time (s)	6.0	6.0		6.0	6.0			5.0			5.0	
Vehicle Extension (s)	6.0	6.0		6.0	6.0			3.0			3.0	
Lane Grp Cap (vph)	71	2556		198	2553			136			88	
v/s Ratio Prot		0.43			c0.69			c0.05			c0.04	
v/s Ratio Perm	0.34			0.02								
v/c Ratio	0.45	0.57		0.03	0.92			0.66			0.72	
Uniform Delay, d1	4.7	5.4		3.2	10.1			44.8			46.8	
Progression Factor	1.00	1.00		0.33	0.30			1.00			1.00	
Incremental Delay, d2	19.3	0.9		0.1	3.9			11.5			25.1	
Delay (s)	24.0	6.3		1.2	6.9			56.3			72.0	
Level of Service	C	A		A	A			E			E	
Approach Delay (s)		6.7			6.9			56.3			72.0	
Approach LOS		A			A			E			E	
<b>Intersection Summary</b>												
HCM Average Control Delay			9.4			HCM Level of Service					A	
HCM Volume to Capacity ratio			0.89									
Actuated Cycle Length (s)			100.0			Sum of lost time (s)			12.0			
Intersection Capacity Utilization			75.2%			ICU Level of Service					D	
Analysis Period (min)			15									

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis  
 1602: MD 410 & 64th Ave.

6/10/2008



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↖	↑↑	↗		↙	↘
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0		4.0	4.0
Lane Util. Factor	1.00	0.95	0.95		1.00	1.00
Frt	1.00	1.00	0.99		1.00	0.85
Flt Protected	0.95	1.00	1.00		0.95	1.00
Satd. Flow (prot)	1703	3406	3384		1787	1599
Flt Permitted	0.05	1.00	1.00		0.95	1.00
Satd. Flow (perm)	89	3406	3384		1787	1599
Volume (vph)	30	1445	2150	95	100	95
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	32	1521	2263	100	105	100
RTOR Reduction (vph)	0	0	3	0	0	20
Lane Group Flow (vph)	32	1521	2360	0	105	80
Heavy Vehicles (%)	6%	6%	6%	6%	1%	1%
Turn Type	Perm			Perm		
Protected Phases		6	2		4	
Permitted Phases	6					4
Actuated Green, G (s)	79.8	79.8	79.8		10.2	10.2
Effective Green, g (s)	80.8	80.8	80.8		11.2	11.2
Actuated g/C Ratio	0.81	0.81	0.81		0.11	0.11
Clearance Time (s)	5.0	5.0	5.0		5.0	5.0
Vehicle Extension (s)	6.0	6.0	6.0		3.0	3.0
Lane Grp Cap (vph)	72	2752	2734		200	179
v/s Ratio Prot		0.45	c0.70		c0.06	
v/s Ratio Perm	0.36					0.05
v/c Ratio	0.44	0.55	0.86		0.52	0.45
Uniform Delay, d1	2.9	3.3	6.1		41.9	41.5
Progression Factor	1.12	0.81	0.28		1.00	1.00
Incremental Delay, d2	15.6	0.7	1.9		2.5	1.8
Delay (s)	18.8	3.4	3.6		44.4	43.3
Level of Service	B	A	A		D	D
Approach Delay (s)		3.7	3.6		43.9	
Approach LOS		A	A		D	

Intersection Summary

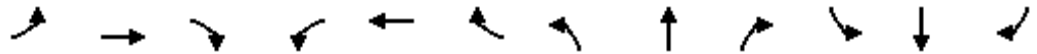
HCM Average Control Delay	5.6	HCM Level of Service	A
HCM Volume to Capacity ratio	0.82		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	75.0%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group



HCM Signalized Intersection Capacity Analysis  
 1603: MD 410 & BW Parkway S/B Ramps

6/10/2008



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑↑	↑	↑	↑↑					↑↑		↑
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0	4.0	4.0					4.0		4.0
Lane Util. Factor		0.91	1.00	1.00	0.95					0.97		1.00
Frt		1.00	0.85	1.00	1.00					1.00		0.85
Flt Protected		1.00	1.00	0.95	1.00					0.95		1.00
Satd. Flow (prot)		4893	1524	1703	3406					3303		1524
Flt Permitted		1.00	1.00	0.10	1.00					0.95		1.00
Satd. Flow (perm)		4893	1524	180	3406					3303		1524
Volume (vph)	0	1350	195	320	1925	0	0	0	0	105	0	320
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	1421	205	337	2026	0	0	0	0	111	0	337
RTOR Reduction (vph)	0	0	110	0	0	0	0	0	0	0	0	13
Lane Group Flow (vph)	0	1421	95	337	2026	0	0	0	0	111	0	324
Heavy Vehicles (%)	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%
Turn Type			Perm pm+pt							custom		custom
Protected Phases		6		5	2							
Permitted Phases			6	2						4		4
Actuated Green, G (s)		45.5	45.5	66.8	66.8					23.2		23.2
Effective Green, g (s)		46.5	46.5	67.8	67.8					24.2		24.2
Actuated g/C Ratio		0.46	0.46	0.68	0.68					0.24		0.24
Clearance Time (s)		5.0	5.0	4.0	5.0					5.0		5.0
Vehicle Extension (s)		6.0	6.0	3.0	6.0					3.0		3.0
Lane Grp Cap (vph)		2275	709	386	2309					799		369
v/s Ratio Prot		0.29		0.15	c0.59							
v/s Ratio Perm			0.06	0.44						0.03		c0.21
v/c Ratio		0.62	0.13	0.87	0.88					0.14		0.88
Uniform Delay, d1		20.2	15.3	25.5	12.8					29.7		36.5
Progression Factor		0.73	0.62	1.12	0.28					1.00		1.00
Incremental Delay, d2		1.1	0.3	12.3	3.2					0.1		20.3
Delay (s)		15.8	9.8	40.9	6.7					29.8		56.8
Level of Service		B	A	D	A					C		E
Approach Delay (s)		15.1			11.6			0.0			50.1	
Approach LOS		B			B			A			D	
<b>Intersection Summary</b>												
HCM Average Control Delay			16.8			HCM Level of Service				B		
HCM Volume to Capacity ratio			0.88									
Actuated Cycle Length (s)			100.0			Sum of lost time (s)				8.0		
Intersection Capacity Utilization			79.7%			ICU Level of Service				D		
Analysis Period (min)			15									

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis  
 1604: MD 410 & BW Parkway N/B Ramps

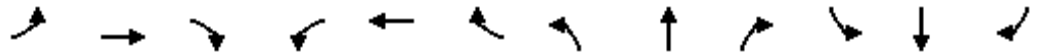
6/10/2008

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations													
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)	4.0	4.0			4.0	4.0	4.0		4.0				
Lane Util. Factor	1.00	0.95			0.91	1.00	0.97		1.00				
Frt	1.00	1.00			1.00	0.85	1.00		0.85				
Flt Protected	0.95	1.00			1.00	1.00	0.95		1.00				
Satd. Flow (prot)	1703	3406			4893	1524	3303		1524				
Flt Permitted	0.07	1.00			1.00	1.00	0.95		1.00				
Satd. Flow (perm)	130	3406			4893	1524	3303		1524				
Volume (vph)	315	1140	0	0	1875	315	370	0	70	0	0	0	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	
Adj. Flow (vph)	332	1200	0	0	1974	332	389	0	74	0	0	0	
RTOR Reduction (vph)	0	0	0	0	0	162	0	0	63	0	0	0	
Lane Group Flow (vph)	332	1200	0	0	1974	170	389	0	11	0	0	0	
Heavy Vehicles (%)	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%	
Turn Type	pm+pt				Perm				custom				
Protected Phases	1	6			2								
Permitted Phases	6					2	4		4				
Actuated Green, G (s)	75.5	75.5			50.1	50.1	14.5		14.5				
Effective Green, g (s)	76.5	76.5			51.1	51.1	15.5		15.5				
Actuated g/C Ratio	0.76	0.76			0.51	0.51	0.16		0.16				
Clearance Time (s)	4.0	5.0			5.0	5.0	5.0		5.0				
Vehicle Extension (s)	3.0	6.0			6.0	6.0	3.0		3.0				
Lane Grp Cap (vph)	436	2606			2500	779	512		236				
v/s Ratio Prot	c0.16	0.35			0.40								
v/s Ratio Perm	c0.42					0.11	c0.12		0.01				
v/c Ratio	0.76	0.46			0.79	0.22	0.76		0.05				
Uniform Delay, d1	27.3	4.3			20.0	13.5	40.5		36.0				
Progression Factor	1.16	3.20			0.68	0.69	1.00		1.00				
Incremental Delay, d2	6.1	0.5			1.3	0.3	6.4		0.1				
Delay (s)	37.8	14.1			14.9	9.6	46.9		36.1				
Level of Service	D	B			B	A	D		D				
Approach Delay (s)		19.3			14.1			45.1			0.0		
Approach LOS		B			B			D			A		
<b>Intersection Summary</b>													
HCM Average Control Delay			19.3									HCM Level of Service	B
HCM Volume to Capacity ratio			0.75										
Actuated Cycle Length (s)			100.0									Sum of lost time (s)	8.0
Intersection Capacity Utilization			79.7%									ICU Level of Service	D
Analysis Period (min)			15										
c Critical Lane Group													

# HCM Signalized Intersection Capacity Analysis

1605: MD 410 & 67th. Ave.

6/10/2008



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕↕			↕↕		↕	↕			↕↕	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0		4.0	4.0			4.0	
Lane Util. Factor		0.95			0.95		1.00	1.00			1.00	
Frt		1.00			1.00		1.00	0.86			0.94	
Flt Protected		1.00			1.00		0.95	1.00			0.98	
Satd. Flow (prot)		3399			3403		1787	1618			1734	
Flt Permitted		0.94			0.94		0.82	1.00			0.88	
Satd. Flow (perm)		3208			3197		1549	1618			1557	
Volume (vph)	5	1190	15	15	2000	5	175	5	65	15	5	15
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	5	1253	16	16	2105	5	184	5	68	16	5	16
RTOR Reduction (vph)	0	1	0	0	0	0	0	57	0	0	13	0
Lane Group Flow (vph)	0	1273	0	0	2126	0	184	16	0	0	24	0
Heavy Vehicles (%)	6%	6%	6%	6%	6%	6%	1%	1%	1%	1%	1%	1%
Turn Type	Perm			Perm			Perm				Perm	
Protected Phases		6			2			8				4
Permitted Phases	6			2			8				4	
Actuated Green, G (s)		75.3			75.3		14.7	14.7			14.7	
Effective Green, g (s)		76.3			76.3		15.7	15.7			15.7	
Actuated g/C Ratio		0.76			0.76		0.16	0.16			0.16	
Clearance Time (s)		5.0			5.0		5.0	5.0			5.0	
Vehicle Extension (s)		6.0			6.0		3.0	3.0			3.0	
Lane Grp Cap (vph)		2448			2439		243	254			244	
v/s Ratio Prot							0.01					
v/s Ratio Perm		0.40			0.66		0.12				0.02	
v/c Ratio		0.52			0.87		0.76	0.06			0.10	
Uniform Delay, d1		4.7			8.4		40.3	35.9			36.1	
Progression Factor		1.29			0.38		1.00	1.00			1.00	
Incremental Delay, d2		0.7			2.7		12.6	0.1			0.2	
Delay (s)		6.7			5.9		53.0	36.0			36.3	
Level of Service		A			A		D	D			D	
Approach Delay (s)		6.7			5.9		48.1				36.3	
Approach LOS		A			A		D				D	

## Intersection Summary

HCM Average Control Delay	9.4	HCM Level of Service	A
HCM Volume to Capacity ratio	0.85		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	89.0%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis  
1606: MD 410 & Riverdale Rd.

6/10/2008

	→	↘	↙	←	↖	↗
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑		↘	↑↑	↘↙	↗
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0		4.0	4.0	4.0	4.0
Lane Util. Factor	0.95		1.00	0.95	0.97	1.00
Frt	0.91		1.00	1.00	1.00	0.85
Flt Protected	1.00		0.95	1.00	0.95	1.00
Satd. Flow (prot)	3113		1703	3406	3303	1524
Flt Permitted	1.00		0.09	1.00	0.95	1.00
Satd. Flow (perm)	3113		167	3406	3303	1524
Volume (vph)	620	830	345	950	1115	315
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	653	874	363	1000	1174	332
RTOR Reduction (vph)	242	0	0	0	0	222
Lane Group Flow (vph)	1285	0	363	1000	1174	110
Heavy Vehicles (%)	6%	6%	6%	6%	6%	6%
Turn Type			pm+pt			Perm
Protected Phases	6		5	2	4	
Permitted Phases			2			4
Actuated Green, G (s)	38.0		58.0	58.0	32.0	32.0
Effective Green, g (s)	39.0		59.0	59.0	33.0	33.0
Actuated g/C Ratio	0.39		0.59	0.59	0.33	0.33
Clearance Time (s)	5.0		5.0	5.0	5.0	5.0
Vehicle Extension (s)	6.0		3.0	6.0	3.0	3.0
Lane Grp Cap (vph)	1214		344	2010	1090	503
v/s Ratio Prot	0.41		c0.17	0.29	c0.36	
v/s Ratio Perm			c0.45			0.07
v/c Ratio	1.06		1.06	0.50	1.08	0.22
Uniform Delay, d1	30.5		38.7	11.9	33.5	24.2
Progression Factor	0.94		1.00	1.00	1.00	1.00
Incremental Delay, d2	41.7		63.8	0.9	50.5	0.2
Delay (s)	70.5		102.5	12.8	84.0	24.4
Level of Service	E		F	B	F	C
Approach Delay (s)	70.5			36.7	70.9	
Approach LOS	E			D	E	
<b>Intersection Summary</b>						
HCM Average Control Delay			60.1		HCM Level of Service	E
HCM Volume to Capacity ratio			1.04			
Actuated Cycle Length (s)			100.0		Sum of lost time (s)	8.0
Intersection Capacity Utilization			104.8%		ICU Level of Service	G
Analysis Period (min)			15			
c Critical Lane Group						

# HCM Signalized Intersection Capacity Analysis

1601: MD 410 & 62nd Pl.

6/10/2008

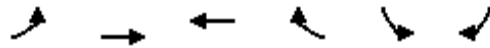
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0			4.0			4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00			1.00	
Frt	1.00	0.99		1.00	1.00			0.97			0.96	
Flt Protected	0.95	1.00		0.95	1.00			0.96			0.97	
Satd. Flow (prot)	1752	3484		1752	3495			1760			1742	
Flt Permitted	0.06	1.00		0.06	1.00			0.96			0.97	
Satd. Flow (perm)	117	3484		117	3495			1760			1742	
Volume (vph)	30	2280	95	25	2185	40	80	0	20	120	0	55
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	32	2400	100	26	2300	42	84	0	21	126	0	58
RTOR Reduction (vph)	0	3	0	0	2	0	0	10	0	0	18	0
Lane Group Flow (vph)	32	2497	0	26	2341	0	0	95	0	0	166	0
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%	1%	1%	1%	1%	1%	1%
Turn Type	Perm			Perm			Split			Split		
Protected Phases		6			2		3	3		4	4	
Permitted Phases	6			2								
Actuated Green, G (s)	61.0	61.0		61.0	61.0			5.0			8.0	
Effective Green, g (s)	63.0	63.0		63.0	63.0			6.0			9.0	
Actuated g/C Ratio	0.70	0.70		0.70	0.70			0.07			0.10	
Clearance Time (s)	6.0	6.0		6.0	6.0			5.0			5.0	
Vehicle Extension (s)	6.0	6.0		6.0	6.0			3.0			3.0	
Lane Grp Cap (vph)	82	2439		82	2447			117			174	
v/s Ratio Prot		c0.72			0.67			c0.05			c0.10	
v/s Ratio Perm	0.27			0.22								
v/c Ratio	0.39	1.02		0.32	0.96			0.81			0.95	
Uniform Delay, d1	5.6	13.5		5.2	12.3			41.4			40.3	
Progression Factor	1.00	1.00		1.00	0.94			1.00			1.00	
Incremental Delay, d2	13.4	24.5		5.6	6.7			32.3			54.4	
Delay (s)	19.0	38.0		10.8	18.3			73.8			94.7	
Level of Service	B	D		B	B			E			F	
Approach Delay (s)		37.8			18.2			73.8			94.7	
Approach LOS		D			B			E			F	
<b>Intersection Summary</b>												
HCM Average Control Delay			31.6			HCM Level of Service				C		
HCM Volume to Capacity ratio			1.00									
Actuated Cycle Length (s)			90.0			Sum of lost time (s)		12.0				
Intersection Capacity Utilization			83.1%			ICU Level of Service		E				
Analysis Period (min)			15									

c Critical Lane Group

# HCM Signalized Intersection Capacity Analysis

1602: MD 410 & 64th Ave.

6/10/2008



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↖	↑↑	↗		↙	↘
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0		4.0	4.0
Lane Util. Factor	1.00	0.95	0.95		1.00	1.00
Frt	1.00	1.00	0.99		1.00	0.85
Flt Protected	0.95	1.00	1.00		0.95	1.00
Satd. Flow (prot)	1752	3505	3478		1787	1599
Flt Permitted	0.05	1.00	1.00		0.95	1.00
Satd. Flow (perm)	97	3505	3478		1787	1599
Volume (vph)	100	2320	2170	115	80	80
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	105	2442	2284	121	84	84
RTOR Reduction (vph)	0	0	4	0	0	26
Lane Group Flow (vph)	105	2442	2401	0	84	58
Heavy Vehicles (%)	3%	3%	3%	3%	1%	1%
Turn Type	Perm			Perm		
Protected Phases		6	2		4	
Permitted Phases	6					4
Actuated Green, G (s)	75.0	75.0	75.0		5.0	5.0
Effective Green, g (s)	76.0	76.0	76.0		6.0	6.0
Actuated g/C Ratio	0.84	0.84	0.84		0.07	0.07
Clearance Time (s)	5.0	5.0	5.0		5.0	5.0
Vehicle Extension (s)	6.0	6.0	6.0		3.0	3.0
Lane Grp Cap (vph)	82	2960	2937		119	107
v/s Ratio Prot		0.70	0.69		c0.05	
v/s Ratio Perm	c1.08					0.04
v/c Ratio	1.28	0.82	0.82		0.71	0.54
Uniform Delay, d1	7.0	3.6	3.5		41.1	40.7
Progression Factor	0.76	0.26	0.76		1.00	1.00
Incremental Delay, d2	134.7	0.3	1.2		17.3	5.5
Delay (s)	140.0	1.2	3.9		58.5	46.1
Level of Service	F	A	A		E	D
Approach Delay (s)		6.9	3.9		52.3	
Approach LOS		A	A		D	

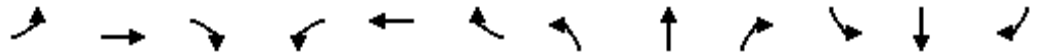
## Intersection Summary

HCM Average Control Delay	7.0	HCM Level of Service	A
HCM Volume to Capacity ratio	1.24		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	94.2%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis  
 1603: MD 410 & BW Parkway S/B Ramps

6/10/2008



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑↑	↑	↑	↑↑					↑↑		↑
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0	4.0	4.0					4.0		4.0
Lane Util. Factor		0.91	1.00	1.00	0.95					0.97		1.00
Frt		1.00	0.85	1.00	1.00					1.00		0.85
Flt Protected		1.00	1.00	0.95	1.00					0.95		1.00
Satd. Flow (prot)		5036	1568	1752	3505					3400		1568
Flt Permitted		1.00	1.00	0.09	1.00					0.95		1.00
Satd. Flow (perm)		5036	1568	168	3505					3400		1568
Volume (vph)	0	2010	390	345	1885	0	0	0	0	225	0	395
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	2116	411	363	1984	0	0	0	0	237	0	416
RTOR Reduction (vph)	0	0	228	0	0	0	0	0	0	0	0	13
Lane Group Flow (vph)	0	2116	183	363	1984	0	0	0	0	237	0	403
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%
Turn Type			Perm pm+pt							custom		custom
Protected Phases		6		5	2							
Permitted Phases			6	2						4		4
Actuated Green, G (s)		39.0	39.0	58.0	58.0					22.0		22.0
Effective Green, g (s)		40.0	40.0	59.0	59.0					23.0		23.0
Actuated g/C Ratio		0.44	0.44	0.66	0.66					0.26		0.26
Clearance Time (s)		5.0	5.0	4.0	5.0					5.0		5.0
Vehicle Extension (s)		6.0	6.0	3.0	6.0					3.0		3.0
Lane Grp Cap (vph)		2238	697	374	2298					869		401
v/s Ratio Prot		0.42		c0.16	0.57							
v/s Ratio Perm			0.12	c0.48						0.07		c0.26
v/c Ratio		0.95	0.26	0.97	0.86					0.27		1.00
Uniform Delay, d1		24.0	15.7	27.9	12.3					26.8		33.5
Progression Factor		0.68	0.60	1.83	0.99					1.00		1.00
Incremental Delay, d2		6.1	0.5	30.9	3.4					0.2		45.9
Delay (s)		22.4	9.9	81.9	15.6					27.0		79.4
Level of Service		C	A	F	B					C		E
Approach Delay (s)		20.3			25.9			0.0			60.4	
Approach LOS		C			C			A			E	
<b>Intersection Summary</b>												
HCM Average Control Delay			27.4			HCM Level of Service				C		
HCM Volume to Capacity ratio			0.96									
Actuated Cycle Length (s)			90.0			Sum of lost time (s)				8.0		
Intersection Capacity Utilization			83.2%			ICU Level of Service				E		
Analysis Period (min)			15									

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis  
 1604: MD 410 & BW Parkway N/B Ramps

6/10/2008

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations													
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)	4.0	4.0			4.0	4.0	4.0		4.0				
Lane Util. Factor	1.00	0.95			0.91	1.00	0.97		1.00				
Frt	1.00	1.00			1.00	0.85	1.00		0.85				
Flt Protected	0.95	1.00			1.00	1.00	0.95		1.00				
Satd. Flow (prot)	1752	3505			5036	1568	3400		1568				
Flt Permitted	0.08	1.00			1.00	1.00	0.95		1.00				
Satd. Flow (perm)	141	3505			5036	1568	3400		1568				
Volume (vph)	200	2035	0	0	1850	170	380	0	275	0	0	0	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	
Adj. Flow (vph)	211	2142	0	0	1947	179	400	0	289	0	0	0	
RTOR Reduction (vph)	0	0	0	0	0	83	0	0	11	0	0	0	
Lane Group Flow (vph)	211	2142	0	0	1947	96	400	0	278	0	0	0	
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	
Turn Type	pm+pt				Perm				custom				
Protected Phases	1	6			2								
Permitted Phases	6					2	4		4				
Actuated Green, G (s)	61.6	61.6			47.4	47.4	18.4		18.4				
Effective Green, g (s)	62.6	62.6			48.4	48.4	19.4		19.4				
Actuated g/C Ratio	0.70	0.70			0.54	0.54	0.22		0.22				
Clearance Time (s)	4.0	5.0			5.0	5.0	5.0		5.0				
Vehicle Extension (s)	3.0	6.0			6.0	6.0	3.0		3.0				
Lane Grp Cap (vph)	281	2438			2708	843	733		338				
v/s Ratio Prot	0.09	c0.61			0.39								
v/s Ratio Perm	0.44					0.06	0.12		c0.18				
v/c Ratio	0.75	0.88			0.72	0.11	0.55		0.82				
Uniform Delay, d1	21.4	10.7			15.7	10.2	31.4		33.7				
Progression Factor	2.26	1.13			0.72	0.60	1.00		1.00				
Incremental Delay, d2	4.0	2.4			0.6	0.1	0.8		14.8				
Delay (s)	52.3	14.5			11.9	6.3	32.2		48.5				
Level of Service	D	B			B	A	C		D				
Approach Delay (s)		17.9			11.4			39.0			0.0		
Approach LOS		B			B			D			A		
<b>Intersection Summary</b>													
HCM Average Control Delay			18.0									HCM Level of Service	B
HCM Volume to Capacity ratio			0.87										
Actuated Cycle Length (s)			90.0									Sum of lost time (s)	8.0
Intersection Capacity Utilization			83.2%									ICU Level of Service	E
Analysis Period (min)			15										

c Critical Lane Group



# HCM Signalized Intersection Capacity Analysis

1605: MD 410 & 67th. Ave.

6/10/2008



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕↕			↕↕		↖	↗			↕↕	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0		4.0	4.0			4.0	
Lane Util. Factor		0.95			0.95		1.00	1.00			1.00	
Frt		1.00			1.00		1.00	0.86			0.96	
Flt Protected		1.00			1.00		0.95	1.00			0.98	
Satd. Flow (prot)		3499			3496		1787	1609			1767	
Flt Permitted		0.95			0.78		0.75	1.00			0.91	
Satd. Flow (perm)		3324			2736		1407	1609			1626	
Volume (vph)	5	2280	25	25	1840	25	175	5	125	5	5	5
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	5	2400	26	26	1937	26	184	5	132	5	5	5
RTOR Reduction (vph)	0	1	0	0	1	0	0	13	0	0	4	0
Lane Group Flow (vph)	0	2430	0	0	1988	0	184	124	0	0	11	0
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%	1%	1%	1%	1%	1%	1%
Turn Type	Perm			Perm			Perm				Perm	
Protected Phases		6			2			8				4
Permitted Phases	6			2			8				4	
Actuated Green, G (s)		68.0			68.0		12.0	12.0			12.0	
Effective Green, g (s)		69.0			69.0		13.0	13.0			13.0	
Actuated g/C Ratio		0.77			0.77		0.14	0.14			0.14	
Clearance Time (s)		5.0			5.0		5.0	5.0			5.0	
Vehicle Extension (s)		6.0			6.0		3.0	3.0			3.0	
Lane Grp Cap (vph)		2548			2098		203	232			235	
v/s Ratio Prot								0.08				
v/s Ratio Perm		c0.73			0.73		c0.13				0.01	
v/c Ratio		0.95			0.95		0.91	0.54			0.05	
Uniform Delay, d1		9.1			9.0		37.9	35.7			33.2	
Progression Factor		0.41			0.80		1.00	1.00			1.00	
Incremental Delay, d2		5.5			7.7		37.9	2.4			0.1	
Delay (s)		9.2			14.9		75.8	38.1			33.2	
Level of Service		A			B		E	D			C	
Approach Delay (s)		9.2			14.9			59.7			33.2	
Approach LOS		A			B			E			C	

## Intersection Summary

HCM Average Control Delay	15.1	HCM Level of Service	B
HCM Volume to Capacity ratio	0.95		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	92.4%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis  
 1606: MD 410 & Riverdale Rd.

6/10/2008



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑		↵	↑↑	↵↵	↵
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0		4.0	4.0	4.0	4.0
Lane Util. Factor	0.95		1.00	0.95	0.97	1.00
Frt	0.92		1.00	1.00	1.00	0.85
Flt Protected	1.00		0.95	1.00	0.95	1.00
Satd. Flow (prot)	3231		1752	3505	3400	1568
Flt Permitted	1.00		0.08	1.00	0.95	1.00
Satd. Flow (perm)	3231		139	3505	3400	1568
Volume (vph)	1105	1200	295	895	845	290
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	1163	1263	311	942	889	305
RTOR Reduction (vph)	218	0	0	0	0	178
Lane Group Flow (vph)	2208	0	311	942	889	128
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%
Turn Type			pm+pt			Perm
Protected Phases	6		5	2	4	
Permitted Phases			2			4
Actuated Green, G (s)	48.0		62.0	62.0	18.0	18.0
Effective Green, g (s)	49.0		63.0	63.0	19.0	19.0
Actuated g/C Ratio	0.54		0.70	0.70	0.21	0.21
Clearance Time (s)	5.0		5.0	5.0	5.0	5.0
Vehicle Extension (s)	6.0		3.0	6.0	3.0	3.0
Lane Grp Cap (vph)	1759		277	2454	718	331
v/s Ratio Prot	c0.68		c0.12	0.27	c0.26	
v/s Ratio Perm			0.66			0.08
v/c Ratio	1.26		1.12	0.38	1.24	0.39
Uniform Delay, d1	20.5		36.8	5.5	35.5	30.5
Progression Factor	0.60		1.00	1.00	1.00	1.00
Incremental Delay, d2	116.7		91.2	0.5	118.9	0.7
Delay (s)	128.9		128.0	6.0	154.4	31.2
Level of Service	F		F	A	F	C
Approach Delay (s)	128.9			36.3	123.0	
Approach LOS	F			D	F	

Intersection Summary

HCM Average Control Delay	103.6	HCM Level of Service	F
HCM Volume to Capacity ratio	1.18		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	119.6%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

# HCM Signalized Intersection Capacity Analysis

7: MD 450 & Finns La.

6/11/2008



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗↖↗		↖	↗↖↗		↖	↗	↖		↗↖	↖
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0		4.0	4.0
Lane Util. Factor	1.00	0.91		1.00	0.91		1.00	1.00	1.00		1.00	1.00
Frt	1.00	0.99		1.00	1.00		1.00	1.00	0.85		1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00		0.97	1.00
Satd. Flow (prot)	1703	4822		1703	4880		1787	1881	1599		1827	1599
Flt Permitted	0.06	1.00		0.20	1.00		0.59	1.00	1.00		0.79	1.00
Satd. Flow (perm)	103	4822		361	4880		1104	1881	1599		1489	1599
Volume (vph)	105	1070	115	75	2450	45	70	45	20	65	45	175
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Growth Factor (vph)	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Adj. Flow (vph)	111	1126	121	79	2579	47	74	47	21	68	47	184
RTOR Reduction (vph)	0	12	0	0	2	0	0	0	18	0	0	3
Lane Group Flow (vph)	111	1235	0	79	2624	0	74	47	3	0	115	181
Heavy Vehicles (%)	6%	6%	6%	6%	6%	6%	1%	1%	1%	1%	1%	1%
Turn Type	pm+pt			pm+pt			Perm		Perm	Perm		pm+ov
Protected Phases	1	6		5	2			8				4
Permitted Phases	6			2			8		8	4		4
Actuated Green, G (s)	74.7	67.3		68.3	64.1		11.5	11.5	11.5		11.5	18.9
Effective Green, g (s)	77.7	69.3		71.3	66.1		13.5	13.5	13.5		13.5	21.9
Actuated g/C Ratio	0.78	0.69		0.71	0.66		0.14	0.14	0.14		0.14	0.22
Clearance Time (s)	5.0	6.0		5.0	6.0		6.0	6.0	6.0		6.0	5.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	214	3342		327	3226		149	254	216		201	414
v/s Ratio Prot	c0.04	0.26		0.01	c0.54			0.02				c0.04
v/s Ratio Perm	0.36			0.16			0.07		0.00		c0.08	0.08
v/c Ratio	0.52	0.37		0.24	0.81		0.50	0.19	0.01		0.57	0.44
Uniform Delay, d1	17.7	6.3		4.4	12.4		40.1	38.4	37.5		40.5	33.7
Progression Factor	2.06	0.49		0.16	0.12		1.00	1.00	1.00		1.00	1.00
Incremental Delay, d2	2.1	0.3		0.0	0.2		2.6	0.4	0.0		3.9	0.7
Delay (s)	38.5	3.4		0.7	1.7		42.7	38.7	37.5		44.4	34.5
Level of Service	D	A		A	A		D	D	D		D	C
Approach Delay (s)		6.3			1.7			40.6			38.3	
Approach LOS		A			A			D			D	


































## Intersection Summary

HCM Average Control Delay	6.7	HCM Level of Service	A
HCM Volume to Capacity ratio	0.75		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	76.8%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

# HCM Signalized Intersection Capacity Analysis

9: MD 450 & MD 410

6/11/2008

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		  		  	  			 		 	 	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	0.91	1.00	0.97	0.91	1.00	1.00	0.95	1.00	0.97	0.95	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1703	4893	1524	3303	4893	1524	1703	3406	1524	3303	3406	1524
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1703	4893	1524	3303	4893	1524	1703	3406	1524	3303	3406	1524
Volume (vph)	280	670	455	470	2090	135	770	1065	440	180	745	250
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Growth Factor (vph)	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Adj. Flow (vph)	295	705	479	495	2200	142	811	1121	463	189	784	263
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	208	0	0	172
Lane Group Flow (vph)	295	705	479	495	2200	142	811	1121	255	189	784	91
Heavy Vehicles (%)	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%
Turn Type	Prot		Free	Prot		Free	Prot		Perm	Prot		Perm
Protected Phases	1	6		5	2		3	8		7	4	
Permitted Phases			Free			Free			8			4
Actuated Green, G (s)	10.0	26.0	100.0	16.0	32.0	100.0	23.0	31.0	31.0	5.0	13.0	13.0
Effective Green, g (s)	11.0	28.0	100.0	17.0	34.0	100.0	24.0	33.0	33.0	6.0	15.0	15.0
Actuated g/C Ratio	0.11	0.28	1.00	0.17	0.34	1.00	0.24	0.33	0.33	0.06	0.15	0.15
Clearance Time (s)	5.0	6.0		5.0	6.0		5.0	6.0	6.0	5.0	6.0	6.0
Vehicle Extension (s)	3.0	6.0		3.0	6.0		3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	187	1370	1524	562	1664	1524	409	1124	503	198	511	229
v/s Ratio Prot	c0.17	0.14		0.15	c0.45		c0.48	0.33		0.06	c0.23	
v/s Ratio Perm			0.31			0.09			0.17			0.06
v/c Ratio	1.58	0.51	0.31	0.88	1.32	0.09	1.98	1.00	0.51	0.95	1.53	0.40
Uniform Delay, d1	44.5	30.3	0.0	40.5	33.0	0.0	38.0	33.5	27.0	46.9	42.5	38.4
Progression Factor	0.79	0.91	1.00	1.04	0.62	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	282.4	1.3	0.5	11.6	148.2	0.1	451.0	26.0	0.8	50.6	250.1	1.1
Delay (s)	317.7	28.8	0.5	53.6	168.6	0.1	489.0	59.5	27.8	97.4	292.6	39.6
Level of Service	F	C	A	D	F	A	F	E	C	F	F	D
Approach Delay (s)		77.3			140.1			198.8			208.9	
Approach LOS		E			F			F			F	
<b>Intersection Summary</b>												
HCM Average Control Delay			156.8				HCM Level of Service			F		
HCM Volume to Capacity ratio			1.58									
Actuated Cycle Length (s)			100.0				Sum of lost time (s)		16.0			
Intersection Capacity Utilization			132.5%				ICU Level of Service		H			
Analysis Period (min)			15									
c Critical Lane Group												

# HCM Signalized Intersection Capacity Analysis

7: MD 450 & Finns La.

6/11/2008



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↗	↑↑↑		↗	↑↑↑		↗	↑	↗		↗	↗
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0		4.0	4.0
Lane Util. Factor	1.00	0.91		1.00	0.91		1.00	1.00	1.00		1.00	1.00
Frt	1.00	0.99		1.00	0.99		1.00	1.00	0.85		1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00		0.97	1.00
Satd. Flow (prot)	1752	5008		1752	5000		1787	1881	1599		1828	1599
Flt Permitted	0.08	1.00		0.08	1.00		0.62	1.00	1.00		0.78	1.00
Satd. Flow (perm)	154	5008		153	5000		1165	1881	1599		1470	1599
Volume (vph)	200	1925	75	130	1485	75	150	75	40	70	50	165
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Growth Factor (vph)	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Adj. Flow (vph)	211	2026	79	137	1563	79	158	79	42	74	53	174
RTOR Reduction (vph)	0	4	0	0	5	0	0	0	34	0	0	7
Lane Group Flow (vph)	211	2101	0	137	1637	0	158	79	8	0	127	167
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%	1%	1%	1%	1%	1%	1%
Turn Type	pm+pt			pm+pt			Perm		Perm	Perm		pm+ov
Protected Phases	1	6		5	2			8			4	1
Permitted Phases	6			2			8		8	4		4
Actuated Green, G (s)	61.0	49.9		53.4	46.1		15.8	15.8	15.8		15.8	26.9
Effective Green, g (s)	64.0	51.9		56.4	48.1		17.8	17.8	17.8		17.8	29.9
Actuated g/C Ratio	0.71	0.58		0.63	0.53		0.20	0.20	0.20		0.20	0.33
Clearance Time (s)	5.0	6.0		5.0	6.0		6.0	6.0	6.0		6.0	5.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	324	2888		243	2672		230	372	316		291	602
v/s Ratio Prot	c0.09	c0.42		0.05	0.33			0.04				0.04
v/s Ratio Perm	0.38			0.30			c0.14		0.01		0.09	0.07
v/c Ratio	0.65	0.73		0.56	0.61		0.69	0.21	0.03		0.44	0.28
Uniform Delay, d1	17.5	13.9		11.7	14.5		33.5	30.2	29.1		31.7	22.1
Progression Factor	2.30	0.21		1.64	0.72		1.00	1.00	1.00		1.00	1.00
Incremental Delay, d2	4.2	1.5		1.2	0.4		8.2	0.3	0.0		1.0	0.3
Delay (s)	44.3	4.4		20.3	10.8		41.8	30.5	29.1		32.7	22.4
Level of Service	D	A		C	B		D	C	C		C	C
Approach Delay (s)		8.1			11.5			36.7			26.7	
Approach LOS		A			B			D			C	

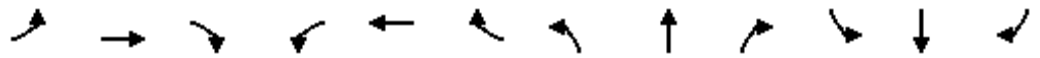
## Intersection Summary

HCM Average Control Delay	12.3	HCM Level of Service	B
HCM Volume to Capacity ratio	0.73		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	71.0%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

# HCM Signalized Intersection Capacity Analysis

9: MD 450 & MD 410

6/11/2008



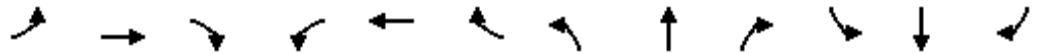
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↘	↑↑↑	↗	↘↗	↑↑↑	↗	↘	↑↑	↗	↘↗	↑↑	↗
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	0.91	1.00	0.97	0.91	1.00	1.00	0.95	1.00	0.97	0.95	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1752	5036	1568	3400	5036	1568	1752	3505	1568	3400	3505	1568
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1752	5036	1568	3400	5036	1568	1752	3505	1568	3400	3505	1568
Volume (vph)	195	1740	665	280	1355	165	555	775	265	195	1025	275
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Growth Factor (vph)	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Adj. Flow (vph)	205	1832	700	295	1426	174	584	816	279	205	1079	289
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	115	0	0	120
Lane Group Flow (vph)	205	1832	700	295	1426	174	584	816	164	205	1079	169
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%
Turn Type	Prot		Free	Prot		Free	Prot		Perm	Prot		Perm
Protected Phases	1	6		5	2		3	8		7		4
Permitted Phases			Free			Free			8			4
Actuated Green, G (s)	7.0	28.0	90.0	6.0	27.0	90.0	17.0	28.0	28.0	6.0	17.0	17.0
Effective Green, g (s)	8.0	30.0	90.0	7.0	29.0	90.0	18.0	30.0	30.0	7.0	19.0	19.0
Actuated g/C Ratio	0.09	0.33	1.00	0.08	0.32	1.00	0.20	0.33	0.33	0.08	0.21	0.21
Clearance Time (s)	5.0	6.0		5.0	6.0		5.0	6.0	6.0	5.0	6.0	6.0
Vehicle Extension (s)	3.0	6.0		3.0	6.0		3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	156	1679	1568	264	1623	1568	350	1168	523	264	740	331
v/s Ratio Prot	c0.12	c0.36		0.09	0.28		c0.33	0.23		0.06	c0.31	
v/s Ratio Perm			c0.45			0.11			0.10			0.11
v/c Ratio	1.31	1.09	0.45	1.12	0.88	0.11	1.67	0.70	0.31	0.78	1.46	0.51
Uniform Delay, d1	41.0	30.0	0.0	41.5	28.8	0.0	36.0	26.1	22.3	40.7	35.5	31.4
Progression Factor	1.27	0.63	1.00	0.75	0.89	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	164.5	47.2	0.5	88.2	6.5	0.1	313.2	1.8	0.3	13.3	213.6	1.3
Delay (s)	216.4	66.2	0.5	119.6	32.2	0.1	349.2	27.9	22.7	54.1	249.1	32.7
Level of Service	F	E	A	F	C	A	F	C	C	D	F	C
Approach Delay (s)		60.7			42.8			138.8			183.9	
Approach LOS		E			D			F			F	

Intersection Summary		
HCM Average Control Delay	97.6	HCM Level of Service F
HCM Volume to Capacity ratio	1.30	
Actuated Cycle Length (s)	90.0	Sum of lost time (s) 12.0
Intersection Capacity Utilization	114.0%	ICU Level of Service H
Analysis Period (min)	15	
c Critical Lane Group		

# HCM Signalized Intersection Capacity Analysis

## 9: Battery Lane & Woodmont Ave

6/10/2008



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕↕			↕↕		↕	↕↕		↕	↕↕	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor		0.95			0.95		1.00	0.95		1.00	0.95	
Frt		0.96			0.99		1.00	0.97		1.00	0.98	
Flt Protected		0.99			0.98		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		3273			3324		1719	3330		1719	3370	
Flt Permitted		0.86			0.56		0.13	1.00		0.60	1.00	
Satd. Flow (perm)		2824			1911		237	3330		1077	3370	
Volume (vph)	85	275	130	60	65	10	35	190	50	75	1245	190
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	89	289	137	63	68	11	37	200	53	79	1311	200
RTOR Reduction (vph)	0	31	0	0	6	0	0	12	0	0	6	0
Lane Group Flow (vph)	0	484	0	0	136	0	37	241	0	79	1505	0
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%
Turn Type	Perm			pm+pt			Perm			Perm		
Protected Phases		4		3	8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)		23.4			23.4		88.6	88.6		88.6	88.6	
Effective Green, g (s)		23.4			23.4		88.6	88.6		88.6	88.6	
Actuated g/C Ratio		0.19			0.19		0.74	0.74		0.74	0.74	
Clearance Time (s)		4.0			4.0		4.0	4.0		4.0	4.0	
Vehicle Extension (s)		3.0			3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		551			373		175	2459		795	2488	
v/s Ratio Prot								0.07			c0.45	
v/s Ratio Perm		c0.17			0.07		0.16			0.07		
v/c Ratio		0.88			0.36		0.21	0.10		0.10	0.60	
Uniform Delay, d1		46.9			41.8		4.9	4.4		4.4	7.4	
Progression Factor		1.00			1.00		0.91	0.65		1.00	1.00	
Incremental Delay, d2		14.7			0.6		2.7	0.1		0.2	1.1	
Delay (s)		61.6			42.5		7.1	3.0		4.7	8.5	
Level of Service		E			D		A	A		A	A	
Approach Delay (s)		61.6			42.5			3.5			8.3	
Approach LOS		E			D			A			A	

### Intersection Summary

HCM Average Control Delay	20.5	HCM Level of Service	C
HCM Volume to Capacity ratio	0.66		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	75.2%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

# HCM Signalized Intersection Capacity Analysis

## 11: Cordell Ave & Woodmont Ave

6/10/2008



Movement	WBL2	WBL	WBR	NBL	NBT	NBR	SBL	SBT	SBR	NEL	NER	NER2
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0		4.0
Lane Util. Factor	1.00	1.00		1.00	0.95		1.00	0.95		1.00		1.00
Frt	1.00	0.85		1.00	0.97		1.00	0.99		1.00		0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95		1.00
Satd. Flow (prot)	1787	1599		1719	3342		1719	3398		1787		1599
Flt Permitted	0.95	1.00		0.16	1.00		0.58	1.00		0.95		1.00
Satd. Flow (perm)	1787	1599		285	3342		1044	3398		1787		1599
Volume (vph)	30	0	35	5	220	50	70	1260	105	25	0	25
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	32	0	37	5	232	53	74	1326	111	26	0	26
RTOR Reduction (vph)	0	32	0	0	10	0	0	3	0	0	0	22
Lane Group Flow (vph)	32	5	0	5	275	0	74	1434	0	26	0	4
Heavy Vehicles (%)	1%	1%	1%	5%	5%	5%	5%	5%	5%	1%	1%	1%
Turn Type	Perm			Perm			Perm			custom		custom
Protected Phases		8			2			6				
Permitted Phases	8			2			6			4		4
Actuated Green, G (s)	16.0	16.0		94.0	94.0		94.0	94.0		16.0		16.0
Effective Green, g (s)	17.0	17.0		95.0	95.0		95.0	95.0		17.0		17.0
Actuated g/C Ratio	0.14	0.14		0.79	0.79		0.79	0.79		0.14		0.14
Clearance Time (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0		5.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0		3.0
Lane Grp Cap (vph)	253	227		226	2646		827	2690		253		227
v/s Ratio Prot		0.00			0.08			0.42				
v/s Ratio Perm	0.02			0.02			0.07			0.01		0.00
v/c Ratio	0.13	0.02		0.02	0.10		0.09	0.53		0.10		0.02
Uniform Delay, d1	45.0	44.3		2.7	2.8		2.8	4.5		44.9		44.3
Progression Factor	1.00	1.00		0.38	0.32		0.56	0.45		1.00		1.00
Incremental Delay, d2	0.2	0.0		0.2	0.1		0.2	0.6		0.2		0.0
Delay (s)	45.2	44.4		1.2	1.0		1.7	2.7		45.0		44.3
Level of Service	D	D		A	A		A	A		D		D
Approach Delay (s)		44.8			1.0			2.6		44.7		
Approach LOS		D			A			A		D		

### Intersection Summary

HCM Average Control Delay	5.0	HCM Level of Service	A
HCM Volume to Capacity ratio	0.47		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	61.5%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group



# HCM Signalized Intersection Capacity Analysis

## 14: St. Elmo Ave & Woodmont Ave

6/10/2008



Movement	WBL	WBR	NBL	NBT	NBR	SBL	SBT	SBR	NEL	NER	NER2
Lane Configurations			↵	↕		↵	↕		↵		↵
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)			4.0	4.0			4.0		4.0		4.0
Lane Util. Factor			1.00	0.95			0.95		1.00		0.95
Frt			1.00	1.00			0.96		1.00		0.85
Flt Protected			0.95	1.00			1.00		0.95		1.00
Satd. Flow (prot)			1719	3438			3317		1787		1519
Flt Permitted			0.17	1.00			1.00		0.95		1.00
Satd. Flow (perm)			301	3438			3317		1787		1519
Volume (vph)	0	0	20	155	0	0	1005	310	120	0	45
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	0	21	163	0	0	1058	326	126	0	47
RTOR Reduction (vph)	0	0	0	0	0	0	15	0	0	0	40
Lane Group Flow (vph)	0	0	21	163	0	0	1369	0	126	0	7
Heavy Vehicles (%)	2%	2%	5%	5%	5%	5%	5%	5%	1%	1%	1%
Turn Type			Perm			Perm			Prot		custom
Protected Phases				2			6		4		
Permitted Phases			2			6					4
Actuated Green, G (s)			92.8	92.8			92.8		17.2		17.2
Effective Green, g (s)			93.8	93.8			93.8		18.2		18.2
Actuated g/C Ratio			0.78	0.78			0.78		0.15		0.15
Clearance Time (s)			5.0	5.0			5.0		5.0		5.0
Vehicle Extension (s)			3.0	3.0			3.0		3.0		3.0
Lane Grp Cap (vph)			235	2687			2593		271		230
v/s Ratio Prot				0.05			c0.41		c0.07		
v/s Ratio Perm			0.07								0.00
v/c Ratio			0.09	0.06			0.53		0.46		0.03
Uniform Delay, d1			3.1	3.0			4.9		46.5		43.4
Progression Factor			0.64	0.70			0.27		1.00		1.00
Incremental Delay, d2			0.7	0.0			0.7		1.3		0.1
Delay (s)			2.7	2.1			2.0		47.7		43.4
Level of Service			A	A			A		D		D
Approach Delay (s)	0.0			2.2			2.0		46.6		
Approach LOS	A			A			A		D		
<b>Intersection Summary</b>											
HCM Average Control Delay			6.4				HCM Level of Service		A		
HCM Volume to Capacity ratio			0.52								
Actuated Cycle Length (s)			120.0				Sum of lost time (s)		8.0		
Intersection Capacity Utilization			51.9%				ICU Level of Service		A		
Analysis Period (min)			15								

c Critical Lane Group

# HCM Signalized Intersection Capacity Analysis

## 17: Norfolk Ave & Woodmont Ave

6/10/2008



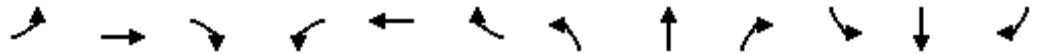
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗		↖	↗		↖	↕		↖	↗	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95		1.00	0.95	
Frt	1.00	0.92		1.00	0.96		1.00	0.94		1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1787	1734		1787	1808		1719	3216		1719	3411	
Flt Permitted	0.64	1.00		0.49	1.00		0.23	1.00		0.63	1.00	
Satd. Flow (perm)	1203	1734		914	1808		418	3216		1138	3411	
Volume (vph)	30	115	125	100	115	40	20	105	80	85	920	50
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	32	121	132	105	121	42	21	111	84	89	968	53
RTOR Reduction (vph)	0	50	0	0	25	0	0	34	0	0	5	0
Lane Group Flow (vph)	32	203	0	105	138	0	21	161	0	89	1016	0
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	5%	5%	5%	5%	5%	5%
Parking (#/hr)			0									
Turn Type	Perm		Perm		Perm		Perm		Perm		Perm	
Protected Phases	4		8		8		2		2		6	
Permitted Phases	4		8		8		2		2		6	
Actuated Green, G (s)	15.3	15.3		15.3	15.3		34.7	34.7		34.7	34.7	
Effective Green, g (s)	16.3	16.3		16.3	16.3		35.7	35.7		35.7	35.7	
Actuated g/C Ratio	0.27	0.27		0.27	0.27		0.60	0.60		0.60	0.60	
Clearance Time (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	327	471		248	491		249	1914		677	2030	
v/s Ratio Prot		c0.12			0.08			0.05			c0.30	
v/s Ratio Perm	0.03			0.11			0.05			0.08		
v/c Ratio	0.10	0.43		0.42	0.28		0.08	0.08		0.13	0.50	
Uniform Delay, d1	16.3	18.0		18.0	17.2		5.2	5.2		5.3	7.0	
Progression Factor	1.00	1.00		1.00	1.00		0.59	0.73		0.54	0.60	
Incremental Delay, d2	0.1	0.6		1.2	0.3		0.5	0.1		0.4	0.8	
Delay (s)	16.5	18.7		19.1	17.5		3.6	3.9		3.2	5.0	
Level of Service	B	B		B	B		A	A		A	A	
Approach Delay (s)		18.4			18.2			3.8			4.9	
Approach LOS		B			B			A			A	

### Intersection Summary

HCM Average Control Delay	8.7	HCM Level of Service	A
HCM Volume to Capacity ratio	0.48		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	62.9%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis  
 20: Old Georgetown Rd & Woodmont Ave

6/10/2008



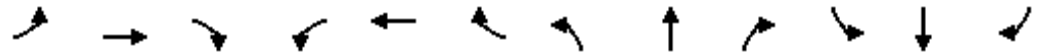
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔		↗↘	↔	↕						↕	↗↘
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0		4.0	4.0	4.0						4.0	4.0
Lane Util. Factor	1.00		0.88	1.00	0.95						0.95	1.00
Frt	1.00		0.85	1.00	0.97						1.00	0.85
Flt Protected	0.95		1.00	0.95	1.00						1.00	1.00
Satd. Flow (prot)	1719		2707	1719	3346						3438	1538
Flt Permitted	0.95		1.00	0.95	1.00						1.00	1.00
Satd. Flow (perm)	1719		2707	1719	3346						3438	1538
Volume (vph)	175	0	1540	130	870	190	0	0	0	0	590	50
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	184	0	1621	137	916	200	0	0	0	0	621	53
RTOR Reduction (vph)	0	0	15	19	15	0	0	0	0	0	0	41
Lane Group Flow (vph)	184	0	1606	118	1101	0	0	0	0	0	621	12
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%
Turn Type	Prot		custom		Perm							Perm
Protected Phases	7					8						6
Permitted Phases			4	8								6
Actuated Green, G (s)	20.0		84.7	59.7	59.7						25.3	25.3
Effective Green, g (s)	21.0		85.7	60.7	60.7						26.3	26.3
Actuated g/C Ratio	0.18		0.71	0.51	0.51						0.22	0.22
Clearance Time (s)	5.0		5.0	5.0	5.0						5.0	5.0
Vehicle Extension (s)	3.0		3.0	3.0	3.0						3.0	3.0
Lane Grp Cap (vph)	301		1933	870	1693						753	337
v/s Ratio Prot	0.11				0.33						c0.18	
v/s Ratio Perm			c0.59	0.07								0.01
v/c Ratio	0.61		0.83	0.14	0.65						0.82	0.03
Uniform Delay, d1	45.7		12.1	15.7	21.8						44.7	36.9
Progression Factor	1.00		1.00	0.20	0.30						0.82	0.80
Incremental Delay, d2	3.6		4.3	0.3	1.9						6.7	0.0
Delay (s)	49.4		16.4	3.5	8.5						43.2	29.7
Level of Service	D		B	A	A						D	C
Approach Delay (s)		19.7			8.0			0.0			42.1	
Approach LOS		B			A			A			D	

Intersection Summary			
HCM Average Control Delay	19.8	HCM Level of Service	B
HCM Volume to Capacity ratio	0.83		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	87.4%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis  
 25: Edgemoor Lane & Woodmont Ave

6/10/2008



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑			↑↑						↑↑↑↑	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0						4.0	
Lane Util. Factor		0.95			0.95						0.86	
Frt		0.85			1.00						1.00	
Flt Protected		1.00			0.95						1.00	
Satd. Flow (prot)		2922			3266						6200	
Flt Permitted		1.00			0.51						1.00	
Satd. Flow (perm)		2922			1753						6200	
Volume (vph)	0	0	210	60	0	0	0	0	0	120	2120	20
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	0	221	63	0	0	0	0	0	126	2232	21
RTOR Reduction (vph)	0	6	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	215	0	0	63	0	0	0	0	0	2379	0
Heavy Vehicles (%)	2%	2%	5%	5%	2%	2%	2%	2%	2%	5%	5%	5%
Turn Type					Perm						Perm	
Protected Phases		4			8						6	
Permitted Phases				8						6		
Actuated Green, G (s)		17.0			17.0						93.0	
Effective Green, g (s)		18.0			18.0						94.0	
Actuated g/C Ratio		0.15			0.15						0.78	
Clearance Time (s)		5.0			5.0						5.0	
Vehicle Extension (s)		3.0			3.0						3.0	
Lane Grp Cap (vph)		438			263						4857	
v/s Ratio Prot		c0.07										
v/s Ratio Perm					0.04						0.38	
v/c Ratio		0.92dr			0.24						0.49	
Uniform Delay, d1		46.8			45.0						4.6	
Progression Factor		1.00			0.79						0.95	
Incremental Delay, d2		0.9			0.5						0.2	
Delay (s)		47.7			36.2						4.5	
Level of Service		D			D						A	
Approach Delay (s)		47.7			36.2			0.0			4.5	
Approach LOS		D			D			A			A	

Intersection Summary

HCM Average Control Delay	8.9	HCM Level of Service	A
HCM Volume to Capacity ratio	0.49		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	53.0%	ICU Level of Service	A
Analysis Period (min)	15		

dr Defacto Right Lane. Recode with 1 though lane as a right lane.

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis  
 33: Old Georgetown Rd & Edgemoor Lane

6/10/2008



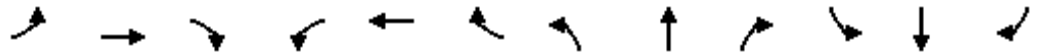
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations					←←←		←	↑			↑	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					4.0		4.0	4.0			4.0	
Lane Util. Factor					0.91		1.00	1.00			1.00	
Frt					1.00		1.00	1.00			0.94	
Flt Protected					0.99		0.95	1.00			1.00	
Satd. Flow (prot)					4891		1719	1810			1695	
Flt Permitted					0.99		0.48	1.00			1.00	
Satd. Flow (perm)					4891		865	1810			1695	
Volume (vph)	0	0	0	145	1010	30	105	35	0	0	80	70
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	0	0	153	1063	32	111	37	0	0	84	74
RTOR Reduction (vph)	0	0	0	0	1	0	0	0	0	0	37	0
Lane Group Flow (vph)	0	0	0	0	1247	0	111	37	0	0	121	0
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%
Turn Type				Perm		Perm						
Protected Phases					8			2			6	
Permitted Phases				8		2						
Actuated Green, G (s)					90.5		20.5	20.5			20.5	
Effective Green, g (s)					91.5		20.5	20.5			20.5	
Actuated g/C Ratio					0.76		0.17	0.17			0.17	
Clearance Time (s)					5.0		4.0	4.0			4.0	
Vehicle Extension (s)					3.0		3.0	3.0			3.0	
Lane Grp Cap (vph)					3729		148	309			290	
v/s Ratio Prot								0.02			0.07	
v/s Ratio Perm					0.25		c0.13					
v/c Ratio					0.33		0.75	0.12			0.42	
Uniform Delay, d1					4.5		47.3	42.1			44.4	
Progression Factor					0.08		0.97	0.98			1.00	
Incremental Delay, d2					0.0		17.8	0.2			1.0	
Delay (s)					0.4		63.6	41.4			45.4	
Level of Service					A		E	D			D	
Approach Delay (s)		0.0			0.4			58.1			45.4	
Approach LOS		A			A			E			D	
<b>Intersection Summary</b>												
HCM Average Control Delay			10.5				HCM Level of Service				B	
HCM Volume to Capacity ratio			0.41									
Actuated Cycle Length (s)			120.0				Sum of lost time (s)			8.0		
Intersection Capacity Utilization			47.4%				ICU Level of Service			A		
Analysis Period (min)			15									

c Critical Lane Group

# HCM Signalized Intersection Capacity Analysis

## 9: Battery Lane & Woodmont Ave

6/10/2008



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕↕			↕↕		↕	↕↕		↕	↕↕	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor		0.95			0.95		1.00	0.95		1.00	0.95	
Frt		0.97			1.00		1.00	0.98		1.00	0.97	
Flt Protected		0.99			0.98		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		3354			3432		1752	3434		1752	3400	
Flt Permitted		0.79			0.66		0.24	1.00		0.32	1.00	
Satd. Flow (perm)		2693			2315		452	3434		596	3400	
Volume (vph)	90	170	65	60	110	5	70	675	105	50	800	200
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	95	179	68	63	116	5	74	711	111	53	842	211
RTOR Reduction (vph)	0	23	0	0	2	0	0	6	0	0	11	0
Lane Group Flow (vph)	0	319	0	0	182	0	74	816	0	53	1042	0
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%
Turn Type	Perm			pm+pt			Perm			Perm		
Protected Phases		4		3	8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)		17.6			17.6		74.4	74.4		74.4	74.4	
Effective Green, g (s)		17.6			17.6		74.4	74.4		74.4	74.4	
Actuated g/C Ratio		0.18			0.18		0.74	0.74		0.74	0.74	
Clearance Time (s)		4.0			4.0		4.0	4.0		4.0	4.0	
Vehicle Extension (s)		3.0			3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		474			407		336	2555		443	2530	
v/s Ratio Prot								0.24			c0.31	
v/s Ratio Perm		c0.12			0.08		0.16			0.09		
v/c Ratio		0.67			0.45		0.22	0.32		0.12	0.41	
Uniform Delay, d1		38.5			36.8		3.9	4.3		3.6	4.7	
Progression Factor		1.00			1.00		0.60	0.61		1.00	1.00	
Incremental Delay, d2		3.7			0.8		1.5	0.3		0.6	0.5	
Delay (s)		42.3			37.6		3.9	3.0		4.1	5.2	
Level of Service		D			D		A	A		A	A	
Approach Delay (s)		42.3			37.6			3.0			5.2	
Approach LOS		D			D			A			A	

### Intersection Summary

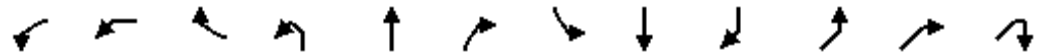
HCM Average Control Delay	11.8	HCM Level of Service	B
HCM Volume to Capacity ratio	0.46		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	60.0%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

# HCM Signalized Intersection Capacity Analysis

## 11: Cordell Ave & Woodmont Ave

6/10/2008



Movement	WBL2	WBL	WBR	NBL	NBT	NBR	SBL	SBT	SBR	NEL	NER	NER2
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0		4.0
Lane Util. Factor	1.00	1.00		1.00	0.95		1.00	0.95		1.00		1.00
Frt	1.00	0.85		1.00	0.96		1.00	0.97		1.00		0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95		1.00
Satd. Flow (prot)	1787	1599		1752	3376		1752	3401		1787		1599
Flt Permitted	0.95	1.00		0.29	1.00		0.40	1.00		0.95		1.00
Satd. Flow (perm)	1787	1599		542	3376		731	3401		1787		1599
Volume (vph)	20	0	40	30	465	150	65	690	170	85	0	70
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	21	0	42	32	489	158	68	726	179	89	0	74
RTOR Reduction (vph)	0	35	0	0	17	0	0	12	0	0	0	61
Lane Group Flow (vph)	21	7	0	32	630	0	68	893	0	89	0	13
Heavy Vehicles (%)	1%	1%	1%	3%	3%	3%	3%	3%	3%	1%	1%	1%
Turn Type	Perm			Perm			Perm			custom		custom
Protected Phases		8			2			6				
Permitted Phases	8			2			6			4		4
Actuated Green, G (s)	16.0	16.0		74.0	74.0		74.0	74.0		16.0		16.0
Effective Green, g (s)	17.0	17.0		75.0	75.0		75.0	75.0		17.0		17.0
Actuated g/C Ratio	0.17	0.17		0.75	0.75		0.75	0.75		0.17		0.17
Clearance Time (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0		5.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0		3.0
Lane Grp Cap (vph)	304	272		407	2532		548	2551		304		272
v/s Ratio Prot		0.00			0.19			c0.26				
v/s Ratio Perm	0.01			0.06			0.09			c0.05		0.01
v/c Ratio	0.07	0.03		0.08	0.25		0.12	0.35		0.29		0.05
Uniform Delay, d1	34.9	34.6		3.3	3.8		3.4	4.2		36.2		34.7
Progression Factor	1.00	1.00		0.43	0.45		0.68	0.64		1.00		1.00
Incremental Delay, d2	0.1	0.0		0.4	0.2		0.4	0.4		0.5		0.1
Delay (s)	35.0	34.6		1.8	1.9		2.8	3.0		36.8		34.8
Level of Service	C	C		A	A		A	A		D		C
Approach Delay (s)		34.7			1.9			3.0		35.9		
Approach LOS		C			A			A		D		

### Intersection Summary

HCM Average Control Delay	6.5	HCM Level of Service	A
HCM Volume to Capacity ratio	0.34		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	49.2%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

# HCM Signalized Intersection Capacity Analysis

## 14: St. Elmo Ave & Woodmont Ave

6/10/2008



Movement	WBL	WBR	NBL	NBT	NBR	SBL	SBT	SBR	NEL	NER	NER2
Lane Configurations			↖	↗		↖	↕		↖		↖
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)			4.0	4.0			4.0		4.0		4.0
Lane Util. Factor			1.00	1.00			0.95		1.00		0.95
Frt			1.00	1.00			0.95		1.00		0.85
Flt Protected			0.95	1.00			1.00		0.95		1.00
Satd. Flow (prot)			1752	1845			3328		1787		1519
Flt Permitted			0.32	1.00			1.00		0.95		1.00
Satd. Flow (perm)			584	1845			3328		1787		1519
Volume (vph)	0	0	45	350	0	0	515	260	295	0	50
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	0	47	368	0	0	542	274	311	0	53
RTOR Reduction (vph)	0	0	0	0	0	0	37	0	0	0	41
Lane Group Flow (vph)	0	0	47	368	0	0	779	0	311	0	12
Heavy Vehicles (%)	2%	2%	3%	3%	3%	3%	3%	3%	1%	1%	1%
Turn Type			Perm			Perm			Prot		custom
Protected Phases				2			6		4		
Permitted Phases			2			6					4
Actuated Green, G (s)			68.6	68.6			68.6		21.4		21.4
Effective Green, g (s)			69.6	69.6			69.6		22.4		22.4
Actuated g/C Ratio			0.70	0.70			0.70		0.22		0.22
Clearance Time (s)			5.0	5.0			5.0		5.0		5.0
Vehicle Extension (s)			3.0	3.0			3.0		3.0		3.0
Lane Grp Cap (vph)			406	1284			2316		400		340
v/s Ratio Prot				0.20			c0.23		c0.17		
v/s Ratio Perm			0.08								0.01
v/c Ratio			0.12	0.29			0.34		0.78		0.03
Uniform Delay, d1			5.0	5.8			6.0		36.5		30.3
Progression Factor			0.56	0.59			0.54		1.00		1.00
Incremental Delay, d2			0.5	0.5			0.4		9.2		0.0
Delay (s)			3.4	3.9			3.6		45.6		30.4
Level of Service			A	A			A		D		C
Approach Delay (s)	0.0			3.9			3.6		43.4		
Approach LOS	A			A			A		D		
<b>Intersection Summary</b>											
HCM Average Control Delay			12.8		HCM Level of Service				B		
HCM Volume to Capacity ratio			0.44								
Actuated Cycle Length (s)			100.0		Sum of lost time (s)				8.0		
Intersection Capacity Utilization			53.2%		ICU Level of Service				A		
Analysis Period (min)			15								

c Critical Lane Group



# HCM Signalized Intersection Capacity Analysis

## 17: Norfolk Ave & Woodmont Ave

6/10/2008



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗		↖	↗		↖	↗		↖	↗	↖
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	0.95	
Frt	1.00	0.92		1.00	0.95		1.00	0.95		1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1787	1732		1787	1790		1752	1760		1752	3457	
Flt Permitted	0.64	1.00		0.52	1.00		0.46	1.00		0.43	1.00	
Satd. Flow (perm)	1212	1732		982	1790		844	1760		788	3457	
Volume (vph)	45	120	135	65	115	55	60	295	130	80	445	45
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	47	126	142	68	121	58	63	311	137	84	468	47
RTOR Reduction (vph)	0	92	0	0	39	0	0	27	0	0	13	0
Lane Group Flow (vph)	47	176	0	68	140	0	63	421	0	84	502	0
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	3%	3%	3%	3%	3%	3%
Parking (#/hr)			0									
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	15.0	15.0		15.0	15.0		25.0	25.0		25.0	25.0	
Effective Green, g (s)	16.0	16.0		16.0	16.0		26.0	26.0		26.0	26.0	
Actuated g/C Ratio	0.32	0.32		0.32	0.32		0.52	0.52		0.52	0.52	
Clearance Time (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	388	554		314	573		439	915		410	1798	
v/s Ratio Prot		c0.10			0.08			c0.24			0.15	
v/s Ratio Perm	0.04			0.07			0.07			0.11		
v/c Ratio	0.12	0.32		0.22	0.24		0.14	0.46		0.20	0.28	
Uniform Delay, d1	12.0	12.9		12.4	12.5		6.2	7.6		6.4	6.7	
Progression Factor	1.00	1.00		1.00	1.00		0.61	0.63		0.73	0.82	
Incremental Delay, d2	0.1	0.3		0.3	0.2		0.6	1.5		1.1	0.4	
Delay (s)	12.2	13.2		12.8	12.8		4.4	6.2		5.8	5.9	
Level of Service	B	B		B	B		A	A		A	A	
Approach Delay (s)		13.0			12.8			6.0			5.9	
Approach LOS		B			B			A			A	
<b>Intersection Summary</b>												
HCM Average Control Delay			8.3				HCM Level of Service			A		
HCM Volume to Capacity ratio			0.41									
Actuated Cycle Length (s)			50.0				Sum of lost time (s)			8.0		
Intersection Capacity Utilization			59.4%				ICU Level of Service			B		
Analysis Period (min)			15									
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis  
 20: Old Georgetown Rd & Woodmont Ave

6/10/2008



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔		↔↔	↔	↔↔						↕↕	↔↔
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0		4.0	4.0	4.0						4.0	4.0
Lane Util. Factor	1.00		0.88	1.00	0.95						0.95	1.00
Frt	1.00		0.85	1.00	0.97						1.00	0.85
Flt Protected	0.95		1.00	0.95	1.00						1.00	1.00
Satd. Flow (prot)	1752		2760	1752	3404						3505	1568
Flt Permitted	0.95		1.00	0.95	1.00						1.00	1.00
Satd. Flow (perm)	1752		2760	1752	3404						3505	1568
Volume (vph)	175	0	905	155	905	215	0	0	0	0	540	135
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	184	0	953	163	953	226	0	0	0	0	568	142
RTOR Reduction (vph)	0	0	25	52	19	0	0	0	0	0	0	109
Lane Group Flow (vph)	184	0	928	111	1160	0	0	0	0	0	568	33
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%
Turn Type	Prot		custom		Perm							Perm
Protected Phases	7					8						6
Permitted Phases			4	8								6
Actuated Green, G (s)	14.8		67.6	47.8	47.8						22.4	22.4
Effective Green, g (s)	15.8		68.6	48.8	48.8						23.4	23.4
Actuated g/C Ratio	0.16		0.69	0.49	0.49						0.23	0.23
Clearance Time (s)	5.0		5.0	5.0	5.0						5.0	5.0
Vehicle Extension (s)	3.0		3.0	3.0	3.0						3.0	3.0
Lane Grp Cap (vph)	277		1893	855	1661						820	367
v/s Ratio Prot	c0.10				c0.34						c0.16	
v/s Ratio Perm			0.34	0.06								0.02
v/c Ratio	0.66		0.49	0.13	0.70						0.69	0.09
Uniform Delay, d1	39.6		7.4	14.0	19.9						35.0	30.0
Progression Factor	1.00		1.00	0.55	0.67						0.79	0.67
Incremental Delay, d2	5.9		0.9	0.3	2.4						2.5	0.1
Delay (s)	45.5		8.3	8.0	15.6						30.0	20.3
Level of Service	D		A	A	B						C	C
Approach Delay (s)		14.4			14.7		0.0				28.1	
Approach LOS		B			B		A				C	

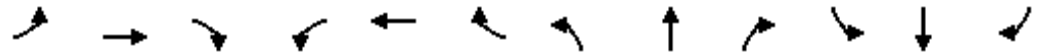
Intersection Summary

HCM Average Control Delay	17.5	HCM Level of Service	B
HCM Volume to Capacity ratio	0.69		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	66.5%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis  
 25: Edgemoor Lane & Woodmont Ave

6/10/2008



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑			↑↑						↑↑↑↑	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0						4.0	
Lane Util. Factor		0.95			0.95						0.86	
Frt		0.85			1.00						0.99	
Flt Protected		1.00			0.95						1.00	
Satd. Flow (prot)		2979			3330						6266	
Flt Permitted		1.00			0.68						1.00	
Satd. Flow (perm)		2979			2378						6266	
Volume (vph)	0	0	110	145	0	0	0	0	0	85	1405	105
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	0	116	153	0	0	0	0	0	89	1479	111
RTOR Reduction (vph)	0	21	0	0	0	0	0	0	0	0	6	0
Lane Group Flow (vph)	0	96	0	0	153	0	0	0	0	0	1673	0
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%
Turn Type				Perm							Perm	
Protected Phases		4			8							6
Permitted Phases				8							6	
Actuated Green, G (s)		17.0			17.0						73.0	
Effective Green, g (s)		18.0			18.0						74.0	
Actuated g/C Ratio		0.18			0.18						0.74	
Clearance Time (s)		5.0			5.0						5.0	
Vehicle Extension (s)		3.0			3.0						3.0	
Lane Grp Cap (vph)		536			428						4637	
v/s Ratio Prot		0.03										
v/s Ratio Perm					c0.06						0.27	
v/c Ratio		0.18			0.36						0.36	
Uniform Delay, d1		34.7			35.9						4.6	
Progression Factor		1.00			0.82						0.76	
Incremental Delay, d2		0.2			0.5						0.2	
Delay (s)		34.9			30.1						3.7	
Level of Service		C			C						A	
Approach Delay (s)		34.9			30.1			0.0			3.7	
Approach LOS		C			C			A			A	
<b>Intersection Summary</b>												
HCM Average Control Delay			7.6			HCM Level of Service					A	
HCM Volume to Capacity ratio			0.36									
Actuated Cycle Length (s)			100.0			Sum of lost time (s)				8.0		
Intersection Capacity Utilization			44.8%			ICU Level of Service				A		
Analysis Period (min)			15									

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis  
 33: Old Georgetown Rd & Edgemoor Lane

6/10/2008















Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations					←←←		←	↑			↑	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					4.0		4.0	4.0			4.0	
Lane Util. Factor					0.91		1.00	1.00			1.00	
Frt					0.99		1.00	1.00			0.90	
Flt Protected					1.00		0.95	1.00			1.00	
Satd. Flow (prot)					4970		1752	1845			1654	
Flt Permitted					1.00		0.64	1.00			1.00	
Satd. Flow (perm)					4970		1181	1845			1654	
Volume (vph)	0	0	0	115	1110	75	80	30	0	0	25	80
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	0	0	121	1168	79	84	32	0	0	26	84
RTOR Reduction (vph)	0	0	0	0	4	0	0	0	0	0	44	0
Lane Group Flow (vph)	0	0	0	0	1364	0	84	32	0	0	66	0
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%
Turn Type				Perm		Perm						
Protected Phases					8			2			6	
Permitted Phases				8		2						
Actuated Green, G (s)					72.0		19.0	19.0			19.0	
Effective Green, g (s)					73.0		19.0	19.0			19.0	
Actuated g/C Ratio					0.73		0.19	0.19			0.19	
Clearance Time (s)					5.0		4.0	4.0			4.0	
Vehicle Extension (s)					3.0		3.0	3.0			3.0	
Lane Grp Cap (vph)					3628		224	351			314	
v/s Ratio Prot								0.02			0.04	
v/s Ratio Perm					0.27		c0.07					
v/c Ratio					0.38		0.38	0.09			0.21	
Uniform Delay, d1					5.0		35.3	33.4			34.2	
Progression Factor					0.04		0.88	0.89			1.00	
Incremental Delay, d2					0.1		1.0	0.1			0.3	
Delay (s)					0.3		32.0	29.9			34.5	
Level of Service					A		C	C			C	
Approach Delay (s)		0.0			0.3			31.4			34.5	
Approach LOS		A			A			C			C	
<b>Intersection Summary</b>												
HCM Average Control Delay			4.9				HCM Level of Service				A	
HCM Volume to Capacity ratio			0.38									
Actuated Cycle Length (s)			100.0				Sum of lost time (s)			8.0		
Intersection Capacity Utilization			43.2%				ICU Level of Service			A		
Analysis Period (min)			15									

c Critical Lane Group













HCM Signalized Intersection Capacity Analysis  
801: Campus Drive & Adelphi Rd.

Purple Line (UMD)  
7/30/2008

													
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations		↑↑	↑	↖	↑	↗	↖	↑↑↑	↗	↖↗	↑↑		
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		
Lane Util. Factor		0.95	1.00	1.00	1.00	1.00	1.00	0.91	1.00	0.97	0.95		
Frbp, ped/bikes		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		
Flpb, ped/bikes		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		
Frt		1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00		
Flt Protected		1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		
Satd. Flow (prot)		3539	1583	1770	1863	1583	1770	5085	1583	3433	3539		
Flt Permitted		1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		
Satd. Flow (perm)		3539	1583	1770	1863	1583	1770	5085	1583	3433	3539		
Volume (vph)	0	197	207	95	233	62	208	881	339	336	1225	0	
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	
Adj. Flow (vph)	0	219	230	106	259	69	231	979	377	373	1361	0	
RTOR Reduction (vph)	0	0	169	0	0	42	0	0	281	0	0	0	
Lane Group Flow (vph)	0	219	61	106	259	27	231	979	96	373	1361	0	
Confl. Peds. (#/hr)	49			3			2						
Turn Type			Perm	Split		Perm	Prot		Perm	Prot			
Protected Phases		2		6	6		3	8		17	14		
Permitted Phases			2			6			8				
Actuated Green, G (s)		62.8	62.8	30.0	30.0	30.0	30.0	60.0	60.0	72.2	103.2		
Effective Green, g (s)		65.8	65.8	33.0	33.0	33.0	32.0	63.0	63.0	74.2	105.2		
Actuated g/C Ratio		0.27	0.27	0.13	0.13	0.13	0.13	0.25	0.25	0.30	0.42		
Clearance Time (s)		6.0	6.0	6.0	6.0	6.0	5.0	6.0	6.0				
Vehicle Extension (s)		4.0	4.0	3.0	3.0	3.0	3.0	3.5	3.5				
Lane Grp Cap (vph)		939	420	236	248	211	228	1292	402	1027	1501		
v/s Ratio Prot		c0.06		0.06	c0.14		c0.13	0.19		0.11	c0.38		
v/s Ratio Perm			0.04			0.02			0.06				
v/c Ratio		0.23	0.15	0.45	1.04	0.13	1.01	0.76	0.24	0.36	0.91		
Uniform Delay, d1		71.3	69.6	99.1	107.5	94.8	108.0	85.5	73.4	68.3	66.8		
Progression Factor		0.56	0.66	1.00	1.00	1.00	1.00	1.00	1.00	0.38	0.34		
Incremental Delay, d2		0.1	0.1	1.4	69.2	0.3	63.0	2.7	0.4	0.2	6.5		
Delay (s)		40.3	45.9	100.5	176.7	95.1	171.0	88.1	73.8	26.1	29.3		
Level of Service		D	D	F	F	F	F	F	E	C	C		
Approach Delay (s)		43.2			145.1			96.8			28.6		
Approach LOS		D			F			F			C		
Intersection Summary													
HCM Average Control Delay			67.9		HCM Level of Service					E			
HCM Volume to Capacity ratio			0.75										
Actuated Cycle Length (s)			248.0		Sum of lost time (s)					12.0			
Intersection Capacity Utilization			84.8%		ICU Level of Service					E			
Analysis Period (min)			15										
c Critical Lane Group													

HCM Unsignalized Intersection Capacity Analysis  
 810: Campus Drive & Regents Drive

Purple Line (UMD)  
 7/30/2008

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Right Turn Channelized			Yes			Yes			Yes			Yes
Volume (veh/h)	35	139	41	52	408	126	21	58	39	52	58	52
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	38	151	45	57	443	137	23	63	42	57	63	57
Approach Volume (veh/h)		189			500			86			120	
Crossing Volume (veh/h)		176			124			246			523	
High Capacity (veh/h)		1207			1257			1142			917	
High v/c (veh/h)		0.16			0.40			0.08			0.13	
Low Capacity (veh/h)		999			1045			941			739	
Low v/c (veh/h)		0.19			0.48			0.09			0.16	
Intersection Summary												
Maximum v/c High			0.40									
Maximum v/c Low			0.48									
Intersection Capacity Utilization			75.8%			ICU Level of Service					D	





















HCM Signalized Intersection Capacity Analysis  
812: Campus Drive & US 1

Purple Line (UMD)  
11/5/2007

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Util. Factor	0.95	0.95	1.00	0.91	0.91	0.88	0.97	0.95	1.00	0.97	3.0	3.0
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.95	1.00
Flt Protected	0.95	1.00	1.00	0.95	0.98	1.00	0.95	1.00	1.00	0.95	1.00	0.85
Satd. Flow (prot)	1681	1770	1583	1610	3327	2787	3433	3539	1583	3433	3539	1583
Flt Permitted	0.95	1.00	1.00	0.95	0.98	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1681	1770	1583	1610	3327	2787	3433	3539	1583	3433	3539	1583
Volume (vph)	75	151	72	677	492	490	165	774	140	507	1703	583
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	83	168	80	752	547	544	183	860	156	563	1892	648
RTOR Reduction (vph)	0	0	71	0	0	152	0	0	91	0	0	160
Lane Group Flow (vph)	83	168	9	418	881	392	183	860	65	563	1892	488
Turn Type	Split		Perm	Split		pt+ov	Prot		Perm	Prot		Perm
Protected Phases	4	4		3	3	3 5	1	6		5	2	
Permitted Phases			4						6			2
Actuated Green, G (s)	15.1	15.1	15.1	30.5	30.5	55.6	13.4	57.3	57.3	25.1	69.0	69.0
Effective Green, g (s)	17.6	17.6	17.6	33.0	33.0	60.1	15.4	60.3	60.3	27.1	72.0	72.0
Actuated g/C Ratio	0.12	0.12	0.12	0.22	0.22	0.40	0.10	0.40	0.40	0.18	0.48	0.48
Clearance Time (s)	5.5	5.5	5.5	5.5	5.5		5.0	6.0	6.0	5.0	6.0	6.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	5.0	5.0	3.0	5.0	5.0
Lane Grp Cap (vph)	197	208	186	354	732	1117	352	1423	636	620	1699	760
v/s Ratio Prot	0.05	c0.09		0.26	c0.26	0.14	0.05	0.24		c0.16	c0.53	
v/s Ratio Perm			0.01									
v/c Ratio	0.42	0.81	0.05	1.18	1.20	0.35	0.52	0.60	0.10	0.91	1.11	0.31
Uniform Delay, d1	61.5	64.5	58.8	58.5	58.5	31.3	63.8	35.4	28.0	60.2	39.0	29.3
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.13	0.91	1.38	1.16	0.77	0.48
Incremental Delay, d2	1.5	20.1	0.1	106.7	104.4	0.2	1.2	1.7	0.3	2.1	52.0	0.4
Delay (s)	62.9	84.6	58.9	165.2	162.9	31.5	73.6	34.0	38.8	71.7	81.9	14.6
Level of Service	E	F	E	F	F	C	E	C	D	E	F	B
Approach Delay (s)		73.0			124.6			40.6			66.0	
Approach LOS		E			F			D			E	
Intersection Summary												
HCM Average Control Delay			78.4									
HCM Volume to Capacity ratio			1.08									
Actuated Cycle Length (s)			150.0									
Intersection Capacity Utilization			95.2%						12.0			
Analysis Period (min)			15									
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis  
 212: Rossborough Rd. & US 1

Purple Line (UMD)  
 7/30/2008

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0			3.0	3.0	3.0	3.0		3.0	3.0	
Lane Util. Factor	1.00	1.00			1.00	1.00	1.00	0.95		1.00	0.95	
Frt	1.00	0.93			1.00	0.85	1.00	1.00		1.00	0.98	
Flt Protected	0.95	1.00			0.96	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1723			1783	1583	1770	3531		1770	3473	
Flt Permitted	0.73	1.00			0.76	1.00	0.07	1.00		0.23	1.00	
Satd. Flow (perm)	1351	1723			1408	1583	123	3531		422	3473	
Volume (vph)	16	2	2	32	4	293	8	974	16	157	1666	236
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	18	2	2	36	4	326	9	1082	18	174	1851	262
RTOR Reduction (vph)	0	2	0	0	0	295	0	0	0	0	3	0
Lane Group Flow (vph)	18	2	0	0	40	31	9	1100	0	174	2110	0
Turn Type	Perm			Perm		Perm	pm+pt			pm+pt		
Protected Phases		4			8		1	6		5	2	
Permitted Phases	4			8		8	6			2		
Actuated Green, G (s)	10.9	10.9			10.9	10.9	117.0	114.7		127.6	120.8	
Effective Green, g (s)	13.4	13.4			13.4	13.4	121.5	117.7		130.6	123.8	
Actuated g/C Ratio	0.09	0.09			0.09	0.09	0.81	0.78		0.87	0.83	
Clearance Time (s)	5.5	5.5			5.5	5.5	4.5	6.0		4.5	6.0	
Vehicle Extension (s)	3.0	3.0			3.0	3.0	3.0	5.0		3.0	5.0	
Lane Grp Cap (vph)	121	154			126	141	141	2771		456	2866	
v/s Ratio Prot		0.00					0.00	0.31		c0.03	c0.61	
v/s Ratio Perm	0.01				c0.03	0.02	0.05			0.31		
v/c Ratio	0.15	0.01			0.32	0.22	0.06	0.40		0.38	0.74	
Uniform Delay, d1	63.0	62.3			64.0	63.4	6.6	5.1		2.6	5.8	
Progression Factor	1.00	1.00			1.00	1.00	0.94	0.53		1.27	1.74	
Incremental Delay, d2	0.6	0.0			1.5	0.8	0.2	0.4		0.2	0.8	
Delay (s)	63.6	62.3			65.5	64.2	6.4	3.1		3.6	11.0	
Level of Service	E	E			E	E	A	A		A	B	
Approach Delay (s)		63.4			64.4			3.1			10.4	
Approach LOS		E			E			A			B	
<b>Intersection Summary</b>												
HCM Average Control Delay			13.8				HCM Level of Service			B		
HCM Volume to Capacity ratio			0.69									
Actuated Cycle Length (s)			150.0				Sum of lost time (s)			9.0		
Intersection Capacity Utilization			76.4%				ICU Level of Service			D		
Analysis Period (min)			15									
c Critical Lane Group												



HCM Signalized Intersection Capacity Analysis  
 813: Paint Branch Pkwy & Fire Academy













Purple Line (UMD)  
 11/5/2007

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	2.0	2.0		2.0	2.0			2.0			2.0	
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00			1.00	
Frt	1.00	0.97		1.00	0.99			0.98			0.92	
Flt Protected	0.95	1.00		0.95	1.00			0.97			0.99	
Satd. Flow (prot)	1770	3442		1770	3504			1762			1695	
Flt Permitted	0.13	1.00		0.43	1.00			0.87			0.95	
Satd. Flow (perm)	236	3442		794	3504			1580			1629	
Volume (vph)	220	421	94	50	1245	88	25	6	6	13	6	25
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	220	421	94	50	1245	88	25	6	6	13	6	25
RTOR Reduction (vph)	0	24	0	0	6	0	0	4	0	0	16	0
Lane Group Flow (vph)	220	491	0	50	1327	0	0	33	0	0	28	0
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	45.0	45.0		45.0	45.0			25.0			25.0	
Effective Green, g (s)	48.0	48.0		48.0	48.0			28.0			28.0	
Actuated g/C Ratio	0.60	0.60		0.60	0.60			0.35			0.35	
Clearance Time (s)	5.0	5.0		5.0	5.0			5.0			5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0			3.0	
Lane Grp Cap (vph)	142	2065		476	2102			553			570	
v/s Ratio Prot		0.14			0.38							
v/s Ratio Perm	c0.93			0.06				c0.02			0.02	
v/c Ratio	1.55	0.24		0.11	0.63			0.06			0.05	
Uniform Delay, d1	16.0	7.5		6.8	10.3			17.3			17.2	
Progression Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Incremental Delay, d2	278.9	0.1		0.1	0.6			0.2			0.2	
Delay (s)	294.9	7.5		6.9	10.9			17.5			17.4	
Level of Service	F	A		A	B			B			B	
Approach Delay (s)		93.5			10.8			17.5			17.4	
Approach LOS		F			B			B			B	
<b>Intersection Summary</b>												
HCM Average Control Delay			38.7									
HCM Volume to Capacity ratio			0.99									
Actuated Cycle Length (s)			80.0									
Intersection Capacity Utilization			63.7%						4.0			
Analysis Period (min)			15						B			
c Critical Lane Group												

No BuildAM Peak

HCM Signalized Intersection Capacity Analysis  
 814: Paint Branch Pkwy & Metro Parking Garage

Purple Line (UMD)  
 7/30/2008

						
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0			4.0		
Lane Util. Factor	0.95			0.95		
Frt	1.00			1.00		
FIt Protected	1.00			1.00		
Satd. Flow (prot)	3539			3539		
FIt Permitted	1.00			1.00		
Satd. Flow (perm)	3539			3539		
Volume (vph)	440	0	0	1383	0	0
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	478	0	0	1503	0	0
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	478	0	0	1503	0	0
Turn Type		Perm	pm+pt			pm+ov
Protected Phases	2		1	6	8	1
Permitted Phases		2	6			8
Actuated Green, G (s)	40.9			40.9		
Effective Green, g (s)	40.9			40.9		
Actuated g/C Ratio	0.52			0.52		
Clearance Time (s)	4.0			4.0		
Vehicle Extension (s)	3.0			3.0		
Lane Grp Cap (vph)	1828			1828		
v/s Ratio Prot	0.14			c0.42		
v/s Ratio Perm						
v/c Ratio	0.26			0.82		
Uniform Delay, d1	10.7			16.1		
Progression Factor	1.00			1.00		
Incremental Delay, d2	0.3			3.1		
Delay (s)	11.1			19.2		
Level of Service	B			B		
Approach Delay (s)	11.1			19.2	0.0	
Approach LOS	B			B	A	
<b>Intersection Summary</b>						
HCM Average Control Delay		17.2		HCM Level of Service		B
HCM Volume to Capacity ratio		0.82				
Actuated Cycle Length (s)		79.2		Sum of lost time (s)		38.3
Intersection Capacity Utilization		41.6%		ICU Level of Service		A
Analysis Period (min)		15				
c Critical Lane Group						

HCM Signalized Intersection Capacity Analysis  
 815: Paint Branch Pkwy & River Road













Purple Line (UMD)  
 11/5/2007

	→	↘	↙	←	↖	↗
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑	↑	↑↑	↑↑	↑↑	↑
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	2.0	2.0	2.0	2.0	2.0	2.0
Lane Util. Factor	0.95	1.00	0.97	0.95	0.97	1.00
Frbp, ped/bikes	1.00	0.97	1.00	1.00	1.00	0.98
Flpb, ped/bikes	1.00	1.00	0.99	1.00	1.00	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (prot)	3539	1532	3398	3539	3419	1552
Flt Permitted	1.00	1.00	0.49	1.00	0.95	1.00
Satd. Flow (perm)	3539	1532	1755	3539	3419	1552
Volume (vph)	261	215	199	1242	87	269
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	261	215	199	1242	87	269
RTOR Reduction (vph)	0	148	0	0	0	146
Lane Group Flow (vph)	261	67	199	1242	87	123
Confl. Peds. (#/hr)		25	25		5	10
Turn Type		Perm	pm+pt			custom
Protected Phases	4		3	8		
Permitted Phases		4	8		2	2
Actuated Green, G (s)	18.9	18.9	32.1	32.1	30.3	30.3
Effective Green, g (s)	22.9	22.9	36.1	36.1	33.8	33.8
Actuated g/C Ratio	0.31	0.31	0.49	0.49	0.46	0.46
Clearance Time (s)	6.0	6.0	5.5	6.0	5.5	5.5
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	1097	475	1106	1729	1564	710
v/s Ratio Prot	0.07		0.03	c0.35		
v/s Ratio Perm		0.04	0.06		0.03	c0.08
v/c Ratio	0.24	0.14	0.18	0.72	0.06	0.17
Uniform Delay, d1	19.0	18.4	10.4	14.9	11.2	11.8
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.1	0.1	0.1	1.5	0.1	0.5
Delay (s)	19.1	18.5	10.5	16.3	11.2	12.3
Level of Service	B	B	B	B	B	B
Approach Delay (s)	18.9			15.5	12.1	
Approach LOS	B			B	B	
<b>Intersection Summary</b>						
HCM Average Control Delay			15.7			
HCM Volume to Capacity ratio			0.45			
Actuated Cycle Length (s)			73.9			
Intersection Capacity Utilization		63.5%				
Analysis Period (min)			15			
c Critical Lane Group						
				HCM Level of Service		B
				Sum of lost time (s)		4.0
				ICU Level of Service		B

No BuildAM Peak













HCM Signalized Intersection Capacity Analysis  
801: Campus Drive & Adelphi Rd.

Purple Line (UMD)  
7/30/2008

													
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations		↑↑	↑	↘	↑	↗	↘	↑↑↑	↗	↘↘	↑↑		
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		
Lane Util. Factor		0.95	1.00	1.00	1.00	1.00	1.00	0.91	1.00	0.97	0.95		
Frpb, ped/bikes		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		
Flpb, ped/bikes		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		
Frt		1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00		
Flt Protected		1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		
Satd. Flow (prot)		3539	1583	1770	1863	1583	1770	5085	1583	3433	3539		
Flt Permitted		1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		
Satd. Flow (perm)		3539	1583	1770	1863	1583	1770	5085	1583	3433	3539		
Volume (vph)	0	196	210	185	222	381	222	1294	191	221	917	0	
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	
Adj. Flow (vph)	0	218	233	206	247	423	247	1438	212	246	1019	0	
RTOR Reduction (vph)	0	0	173	0	0	273	0	0	122	0	0	0	
Lane Group Flow (vph)	0	218	60	206	247	150	247	1438	90	246	1019	0	
Confl. Peds. (#/hr)	17			20			9			3			
Turn Type			Perm	Split		Perm	Prot		Perm	Prot			
Protected Phases		2		6	6		3	8		17	14		
Permitted Phases			2			6			8				
Actuated Green, G (s)		60.0	60.0	30.0	30.0	30.0	25.0	60.0	60.0	73.0	109.0		
Effective Green, g (s)		63.0	63.0	33.0	33.0	33.0	27.0	63.0	63.0	75.0	111.0		
Actuated g/C Ratio		0.26	0.26	0.13	0.13	0.13	0.11	0.26	0.26	0.30	0.45		
Clearance Time (s)		6.0	6.0	6.0	6.0	6.0	5.0	6.0	6.0				
Vehicle Extension (s)		4.0	4.0	3.0	3.0	3.0	3.0	3.5	3.5				
Lane Grp Cap (vph)		906	405	237	250	212	194	1302	405	1047	1597		
v/s Ratio Prot		c0.06		0.12	c0.13		c0.14	c0.28		0.07	c0.29		
v/s Ratio Perm			0.04			0.09			0.06				
v/c Ratio		0.24	0.15	0.87	0.99	0.71	1.27	1.10	0.22	0.23	0.64		
Uniform Delay, d1		72.5	70.7	104.4	106.3	101.9	109.5	91.5	72.2	64.0	52.0		
Progression Factor		0.81	1.19	1.00	1.00	1.00	1.00	1.00	1.00	0.52	0.40		
Incremental Delay, d2		0.0	0.0	26.9	53.0	10.3	156.8	58.7	0.3	0.1	0.8		
Delay (s)		58.9	84.4	131.3	159.3	112.2	266.3	150.2	72.5	33.1	21.6		
Level of Service		E	F	F	F	F	F	F	E	C	C		
Approach Delay (s)		72.1			130.0			156.6			23.8		
Approach LOS		E			F			F			C		
Intersection Summary													
HCM Average Control Delay			105.5		HCM Level of Service					F			
HCM Volume to Capacity ratio			0.72										
Actuated Cycle Length (s)			246.0		Sum of lost time (s)					9.0			
Intersection Capacity Utilization			81.2%		ICU Level of Service					D			
Analysis Period (min)			15										
c Critical Lane Group													

HCM Unsignalized Intersection Capacity Analysis  
 810: Campus Drive & Regents Drive

Purple Line (UMD)  
 7/30/2008

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Right Turn Channelized			Yes			Yes			Yes			Yes
Volume (veh/h)	36	257	32	135	237	126	70	120	52	304	5	60
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	39	279	35	147	258	137	76	130	57	330	5	65
Approach Volume (veh/h)		318			404			207			336	
Crossing Volume (veh/h)		483			246			649			480	
High Capacity (veh/h)		946			1142			828			948	
High v/c (veh/h)		0.34			0.35			0.25			0.35	
Low Capacity (veh/h)		766			941			662			767	
Low v/c (veh/h)		0.42			0.43			0.31			0.44	
Intersection Summary												
Maximum v/c High			0.35									
Maximum v/c Low			0.44									
Intersection Capacity Utilization			95.9%			ICU Level of Service					F	

HCM Signalized Intersection Capacity Analysis  
812: Campus Drive & US 1

Purple Line (UMD)  
11/5/2007





















Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Util. Factor	0.95	0.95	1.00	0.91	0.91	0.88	0.97	0.95	1.00	0.97	0.95	3.0
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	1.00
Flt Protected	0.95	1.00	1.00	0.95	0.98	1.00	0.95	1.00	1.00	0.95	1.00	0.85
Satd. Flow (prot)	1681	1770	1583	1610	3325	2787	3433	3539	1583	3433	3539	1583
Flt Permitted	0.95	1.00	1.00	0.95	0.98	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1681	1770	1583	1610	3325	2787	3433	3539	1583	3433	3539	1583
Volume (vph)	321	330	142	334	232	851	157	1448	489	470	1271	338
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	357	367	158	371	258	946	174	1609	543	522	1412	376
RTOR Reduction (vph)	0	0	116	0	0	92	0	0	169	0	0	113
Lane Group Flow (vph)	357	367	42	203	426	854	174	1609	374	522	1412	263
Turn Type	Split		Perm	Split		pt+ov	Prot		Perm	Prot		Perm
Protected Phases	4	4		3	3	3 5	1	6		5	2	
Permitted Phases			4						6			2
Actuated Green, G (s)	33.5	33.5	33.5	13.5	13.5	35.5	12.5	59.0	59.0	22.0	68.5	68.5
Effective Green, g (s)	36.0	36.0	36.0	16.0	16.0	40.0	14.5	62.0	62.0	24.0	71.5	71.5
Actuated g/C Ratio	0.24	0.24	0.24	0.11	0.11	0.27	0.10	0.41	0.41	0.16	0.48	0.48
Clearance Time (s)	5.5	5.5	5.5	5.5	5.5		5.0	6.0	6.0	5.0	6.0	6.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	5.0	5.0	3.0	5.0	5.0
Lane Grp Cap (vph)	403	425	380	172	355	743	332	1463	654	549	1687	755
v/s Ratio Prot	c0.21	0.21		0.13	c0.13	c0.31	0.05	c0.45		0.15	0.40	
v/s Ratio Perm			0.03						0.24			0.17
v/c Ratio	0.89	0.86	0.11	1.18	1.20	1.15	0.52	1.10	0.57	0.95	0.84	0.35
Uniform Delay, d1	55.0	54.6	44.5	67.0	67.0	55.0	64.5	44.0	33.8	62.4	34.2	24.6
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.93	1.01	1.23	1.34	0.82	0.92
Incremental Delay, d2	20.1	16.4	0.1	125.4	114.0	82.6	0.1	46.1	0.3	4.4	0.5	0.1
Delay (s)	75.1	71.1	44.6	192.4	181.0	137.6	60.1	90.6	41.9	88.2	28.5	22.9
Level of Service	E	E	D	F	F	F	E	F	D	F	C	C
Approach Delay (s)		68.0			156.4			77.0			41.1	
Approach LOS		E			F			E			D	
Intersection Summary												
HCM Average Control Delay			81.8									
HCM Volume to Capacity ratio			1.06									
Actuated Cycle Length (s)			150.0									
Intersection Capacity Utilization			97.4%						12.0			
Analysis Period (min)			15									
c Critical Lane Group												

# HCM Signalized Intersection Capacity Analysis

212: Rossborough Rd. & US 1

Purple Line (UMD)

7/30/2008

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0			3.0	3.0	3.0	3.0		3.0	3.0	
Lane Util. Factor	1.00	1.00			1.00	1.00	1.00	0.95		1.00	0.95	
Frt	1.00	0.88			1.00	0.85	1.00	0.99		1.00	1.00	
Flt Protected	0.95	1.00			0.96	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1641			1792	1583	1770	3519		1770	3534	
Flt Permitted	0.52	1.00			0.75	1.00	0.09	1.00		0.04	1.00	
Satd. Flow (perm)	960	1641			1398	1583	173	3519		83	3534	
Volume (vph)	67	5	21	118	31	669	45	1760	68	131	1414	14
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	74	6	23	131	34	743	50	1956	76	146	1571	16
RTOR Reduction (vph)	0	17	0	0	0	214	0	2	0	0	0	0
Lane Group Flow (vph)	74	12	0	0	165	529	50	2030	0	146	1587	0
Turn Type	Perm			Perm		Perm	pm+pt			pm+pt		
Protected Phases		4			8		1	6		5	2	
Permitted Phases	4			8		8	6			2		
Actuated Green, G (s)	36.5	36.5			36.5	36.5	89.2	83.9		102.0	92.2	
Effective Green, g (s)	39.0	39.0			39.0	39.0	93.7	86.9		105.0	95.2	
Actuated g/C Ratio	0.26	0.26			0.26	0.26	0.62	0.58		0.70	0.63	
Clearance Time (s)	5.5	5.5			5.5	5.5	4.5	6.0		4.5	6.0	
Vehicle Extension (s)	3.0	3.0			3.0	3.0	3.0	5.0		3.0	5.0	
Lane Grp Cap (vph)	250	427			363	412	180	2039		228	2243	
v/s Ratio Prot		0.01					0.01	c0.58		c0.06	0.45	
v/s Ratio Perm	0.08				0.12	c0.33	0.16			0.38		
v/c Ratio	0.30	0.03			0.45	1.28	0.28	1.00		0.64	0.71	
Uniform Delay, d1	44.5	41.4			46.6	55.5	16.1	31.4		47.5	18.2	
Progression Factor	1.00	1.00			1.00	1.00	1.57	0.40		1.24	1.12	
Incremental Delay, d2	0.7	0.0			0.9	145.3	0.6	15.8		4.6	1.5	
Delay (s)	45.2	41.4			47.5	200.8	25.9	28.4		63.3	21.9	
Level of Service	D	D			D	F	C	C		E	C	
Approach Delay (s)		44.1			173.0			28.3			25.4	
Approach LOS		D			F			C			C	
Intersection Summary												
HCM Average Control Delay			54.8				HCM Level of Service				D	
HCM Volume to Capacity ratio			1.04									
Actuated Cycle Length (s)			150.0				Sum of lost time (s)			9.0		
Intersection Capacity Utilization			108.9%				ICU Level of Service			G		
Analysis Period (min)			15									
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis  
813: Paint Branch Pkwy & Fire Academy

Purple Line (UMD)  
11/5/2007

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	2.0	2.0		2.0	2.0			2.0			2.0	
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00			1.00	
Frt	1.00	1.00		1.00	1.00			0.96			0.96	
Flt Protected	0.95	1.00		0.95	1.00			0.98			0.98	
Satd. Flow (prot)	1770	3537		1770	3531			1750			1750	
Flt Permitted	0.24	1.00		0.12	1.00			0.96			0.96	
Satd. Flow (perm)	443	3537		230	3531			1706			1706	
Volume (vph)	13	1270	6	6	851	13	6	6	6	6	6	6
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	13	1270	6	6	851	13	6	6	6	6	6	6
RTOR Reduction (vph)	0	0	0	0	1	0	0	3	0	0	3	0
Lane Group Flow (vph)	13	1276	0	6	863	0	0	15	0	0	15	0
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2				6	
Actuated Green, G (s)	29.4	29.4		29.4	29.4			25.3			25.3	
Effective Green, g (s)	32.4	32.4		32.4	32.4			28.3			28.3	
Actuated g/C Ratio	0.50	0.50		0.50	0.50			0.44			0.44	
Clearance Time (s)	5.0	5.0		5.0	5.0			5.0			5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0			3.0	
Lane Grp Cap (vph)	222	1771		115	1768			746			746	
v/s Ratio Prot		c0.36			0.24							
v/s Ratio Perm	0.03			0.03				c0.01			0.01	
v/c Ratio	0.06	0.72		0.05	0.49			0.02			0.02	
Uniform Delay, d1	8.3	12.6		8.3	10.7			10.3			10.3	
Progression Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Incremental Delay, d2	0.1	1.5		0.2	0.2			0.0			0.0	
Delay (s)	8.4	14.1		8.5	10.9			10.4			10.4	
Level of Service	A	B		A	B			B			B	
Approach Delay (s)		14.0			10.9			10.4			10.4	
Approach LOS		B			B			B			B	
Intersection Summary												
HCM Average Control Delay			12.7			HCM Level of Service				B		
HCM Volume to Capacity ratio			0.39			Sum of lost time (s)				4.0		
Actuated Cycle Length (s)			64.7			ICU Level of Service				A		
Intersection Capacity Utilization		46.1%										
Analysis Period (min)		15										
c Critical Lane Group												

No BuildPM Peak



HCM Signalized Intersection Capacity Analysis  
 814: Paint Branch Pkwy & Metro Parking Garage

Purple Line (UMD)  
 7/30/2008

	→	↘	↙	←	↖	↗
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑	↑	↓	↑↑	↓	↑
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0			4.0		
Lane Util. Factor	0.95			0.95		
Frt	1.00			1.00		
Flt Protected	1.00			1.00		
Satd. Flow (prot)	3539			3539		
Flt Permitted	1.00			1.00		
Satd. Flow (perm)	3539			3539		
Volume (vph)	1282	0	0	849	0	0
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	1393	0	0	923	0	0
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	1393	0	0	923	0	0
Turn Type		Perm	pm+pt			pm+ov
Protected Phases	2		1	6	8	1
Permitted Phases		2	6			8
Actuated Green, G (s)	120.0			120.0		
Effective Green, g (s)	120.0			120.0		
Actuated g/C Ratio	1.00			1.00		
Clearance Time (s)	4.0			4.0		
Vehicle Extension (s)	3.0			3.0		
Lane Grp Cap (vph)	3539			3539		
v/s Ratio Prot	c0.39			0.26		
v/s Ratio Perm						
v/c Ratio	0.39			0.26		
Uniform Delay, d1	0.0			0.0		
Progression Factor	1.00			1.00		
Incremental Delay, d2	0.3			0.2		
Delay (s)	0.3			0.2		
Level of Service	A			A		
Approach Delay (s)	0.3			0.2	0.0	
Approach LOS	A			A	A	
<b>Intersection Summary</b>						
HCM Average Control Delay		0.3		HCM Level of Service		A
HCM Volume to Capacity ratio		0.39				
Actuated Cycle Length (s)		120.0		Sum of lost time (s)		0.0
Intersection Capacity Utilization		38.8%		ICU Level of Service		A
Analysis Period (min)		15				
c Critical Lane Group						

HCM Signalized Intersection Capacity Analysis  
815: Paint Branch Pkwy & River Road

Purple Line (UMD)  
11/5/2007

	→	↘	↙	←	↖	↗
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑	↑	↘↘	↑↑	↘↘	↑
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	2.0	2.0	2.0	2.0	2.0	2.0
Lane Util. Factor	0.95	1.00	0.97	0.95	0.97	1.00
Frbp, ped/bikes	1.00	0.98	1.00	1.00	1.00	0.98
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (prot)	3539	1548	3432	3539	3430	1548
Flt Permitted	1.00	1.00	0.13	1.00	0.95	1.00
Satd. Flow (perm)	3539	1548	458	3539	3430	1548
Volume (vph)	989	304	50	568	186	277
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	989	304	50	568	186	277
RTOR Reduction (vph)	0	181	0	0	0	157
Lane Group Flow (vph)	989	123	50	568	186	120
Confl. Peds. (#/hr)		12	12		1	12
Turn Type		Perm	pm+pt			custom
Protected Phases	4		3	8		
Permitted Phases		4	8		2	2
Actuated Green, G (s)	28.3	28.3	37.1	37.1	31.1	31.1
Effective Green, g (s)	32.3	32.3	41.1	41.1	34.6	34.6
Actuated g/C Ratio	0.41	0.41	0.52	0.52	0.43	0.43
Clearance Time (s)	6.0	6.0	5.5	6.0	5.5	5.5
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	1434	627	490	1825	1489	672
v/s Ratio Prot	c0.28		0.01	c0.16		
v/s Ratio Perm		0.08	0.04		0.05	c0.08
v/c Ratio	0.69	0.20	0.10	0.31	0.12	0.18
Uniform Delay, d1	19.6	15.3	11.9	11.1	13.5	13.8
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	1.4	0.2	0.1	0.1	0.2	0.6
Delay (s)	21.0	15.5	12.0	11.2	13.7	14.4
Level of Service	C	B	B	B	B	B
Approach Delay (s)	19.7			11.3	14.1	
Approach LOS	B			B	B	
<b>Intersection Summary</b>						
HCM Average Control Delay			16.4		HCM Level of Service	B
HCM Volume to Capacity ratio			0.41			
Actuated Cycle Length (s)			79.7		Sum of lost time (s)	6.0
Intersection Capacity Utilization		56.5%			ICU Level of Service	B
Analysis Period (min)			15			
c Critical Lane Group						

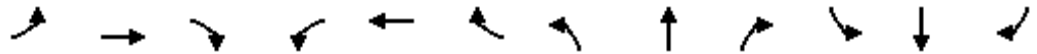
No BuildPM Peak

2030 Low BRT  
HCS Results

# HCM Signalized Intersection Capacity Analysis

## 3: Purple Line & 16th Street

6/10/2008



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑			↑			↑↑↑			↑↑↑	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0			4.0			4.0	
Lane Util. Factor		1.00			1.00			0.91			0.91	
Frt		1.00			1.00			1.00			1.00	
Flt Protected		1.00			1.00			1.00			1.00	
Satd. Flow (prot)		950			950			4848			4848	
Flt Permitted		1.00			1.00			1.00			1.00	
Satd. Flow (perm)		950			950			4848			4848	
Volume (vph)	0	10	0	0	10	0	0	1015	0	0	2290	0
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	11	0	0	11	0	0	1068	0	0	2411	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	11	0	0	11	0	0	1068	0	0	2411	0
Heavy Vehicles (%)	2%	100%	2%	2%	100%	2%	7%	7%	7%	7%	7%	7%
<b>Turn Type</b>												
Protected Phases		4			8			2			6	
Permitted Phases												
Actuated Green, G (s)		3.0			3.0			101.0			101.0	
Effective Green, g (s)		9.0			9.0			103.0			103.0	
Actuated g/C Ratio		0.08			0.08			0.86			0.86	
Clearance Time (s)		10.0			10.0			6.0			6.0	
Vehicle Extension (s)		3.0			3.0			3.0			3.0	
Lane Grp Cap (vph)		71			71			4161			4161	
v/s Ratio Prot		c0.01			0.01			0.22			c0.50	
v/s Ratio Perm												
v/c Ratio		0.15			0.15			0.26			0.58	
Uniform Delay, d1		51.9			51.9			1.5			2.4	
Progression Factor		1.00			1.00			1.00			1.00	
Incremental Delay, d2		1.0			1.0			0.1			0.6	
Delay (s)		53.0			53.0			1.7			3.0	
Level of Service		D			D			A			A	
Approach Delay (s)		53.0			53.0			1.7			3.0	
Approach LOS		D			D			A			A	
<b>Intersection Summary</b>												
HCM Average Control Delay			2.9				HCM Level of Service				A	
HCM Volume to Capacity ratio			0.55									
Actuated Cycle Length (s)			120.0				Sum of lost time (s)			8.0		
Intersection Capacity Utilization			63.4%				ICU Level of Service				B	
Analysis Period (min)			15									

c Critical Lane Group

# HCM Signalized Intersection Capacity Analysis

## 3: Purple Line & 16th Street

6/10/2008

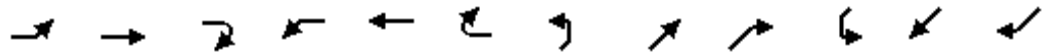


Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑			↑			↑↑↑			↑↑↑	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0			4.0			4.0	
Lane Util. Factor		1.00			1.00			0.91			0.91	
Frt		1.00			1.00			1.00			1.00	
Flt Protected		1.00			1.00			1.00			1.00	
Satd. Flow (prot)		950			950			4940			4940	
Flt Permitted		1.00			1.00			1.00			1.00	
Satd. Flow (perm)		950			950			4940			4940	
Volume (vph)	0	10	0	0	10	0	0	2280	0	0	1110	0
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	11	0	0	11	0	0	2400	0	0	1168	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	11	0	0	11	0	0	2400	0	0	1168	0
Heavy Vehicles (%)	2%	100%	2%	2%	100%	2%	5%	5%	5%	5%	5%	5%
<b>Turn Type</b>												
Protected Phases		4			8			2			6	
Permitted Phases												
Actuated Green, G (s)		3.0			3.0			101.0			101.0	
Effective Green, g (s)		9.0			9.0			103.0			103.0	
Actuated g/C Ratio		0.08			0.08			0.86			0.86	
Clearance Time (s)		10.0			10.0			6.0			6.0	
Vehicle Extension (s)		3.0			3.0			3.0			3.0	
Lane Grp Cap (vph)		71			71			4240			4240	
v/s Ratio Prot		c0.01			0.01			c0.49			0.24	
v/s Ratio Perm												
v/c Ratio		0.15			0.15			0.57			0.28	
Uniform Delay, d1		51.9			51.9			2.3			1.6	
Progression Factor		1.00			1.00			1.00			1.00	
Incremental Delay, d2		1.0			1.0			0.6			0.2	
Delay (s)		53.0			53.0			2.9			1.7	
Level of Service		D			D			A			A	
Approach Delay (s)		53.0			53.0			2.9			1.7	
Approach LOS		D			D			A			A	
<b>Intersection Summary</b>												
HCM Average Control Delay			2.8				HCM Level of Service				A	
HCM Volume to Capacity ratio			0.53									
Actuated Cycle Length (s)			120.0				Sum of lost time (s)			8.0		
Intersection Capacity Utilization			63.2%				ICU Level of Service				B	
Analysis Period (min)			15									

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis  
 1: 2nd Avenue & MD 384 (Colesville Rd.)

6/10/2008

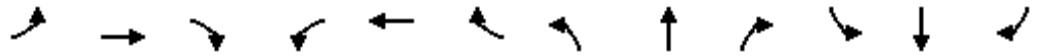


Movement	EBL	EBT	EBR	WBL	WBT	WBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations	↘	↑↑	↗	↘	↔			↑↑↑	↗	↘	↑↑↑	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	2.0	2.0	2.0	2.0	2.0			2.0	2.0	2.0	2.0	
Lane Util. Factor	1.00	0.95	1.00	0.91	0.91			0.91	1.00	1.00	0.91	
Frbp, ped/bikes	1.00	1.00	0.72	1.00	0.91			1.00	1.00	1.00	0.97	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00			1.00	1.00	1.00	1.00	
Frt	1.00	1.00	0.85	1.00	0.94			1.00	0.85	1.00	0.99	
Flt Protected	0.95	1.00	1.00	0.95	0.99			1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1687	3374	1088	1535	2745			4848	1509	1687	4668	
Flt Permitted	0.95	1.00	1.00	0.95	0.99			1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1687	3374	1088	1535	2745			4848	1509	1687	4668	
Volume (vph)	70	140	115	310	210	180	0	655	260	30	1610	145
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	74	147	121	326	221	189	0	689	274	32	1695	153
RTOR Reduction (vph)	0	0	54	0	60	0	0	0	160	0	7	0
Lane Group Flow (vph)	74	147	67	253	423	0	0	689	114	32	1841	0
Confl. Peds. (#/hr)			188			155			128			158
Heavy Vehicles (%)	7%	7%	7%	7%	7%	7%	7%	7%	7%	7%	7%	7%
Turn Type	Split		Perm	Split					Prot		Prot	
Protected Phases	3	3		4	4			6	6	5	2	
Permitted Phases			3									
Actuated Green, G (s)	31.0	31.0	31.0	32.8	32.8			58.6	58.6	3.6	68.2	
Effective Green, g (s)	35.0	35.0	35.0	36.8	36.8			62.6	62.6	7.6	72.2	
Actuated g/C Ratio	0.23	0.23	0.23	0.25	0.25			0.42	0.42	0.05	0.48	
Clearance Time (s)	6.0	6.0	6.0	6.0	6.0			6.0	6.0	6.0	6.0	
Vehicle Extension (s)	4.0	4.0	4.0	4.0	4.0			3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	394	787	254	377	673			2023	630	85	2247	
v/s Ratio Prot	0.04	0.04		c0.16	0.15			0.14	0.08	0.02	c0.39	
v/s Ratio Perm			c0.06									
v/c Ratio	0.19	0.19	0.27	0.67	0.63			0.34	0.18	0.38	0.82	
Uniform Delay, d1	46.1	46.1	47.0	51.1	50.5			29.7	27.5	68.9	33.3	
Progression Factor	1.00	1.00	1.00	1.00	1.00			0.38	0.07	1.00	1.00	
Incremental Delay, d2	0.3	0.2	0.8	5.1	2.1			0.4	0.6	2.8	3.5	
Delay (s)	46.4	46.2	47.8	56.2	52.6			11.7	2.6	71.7	36.8	
Level of Service	D	D	D	E	D			B	A	E	D	
Approach Delay (s)		46.8			53.8			9.1			37.4	
Approach LOS		D			D			A			D	
<b>Intersection Summary</b>												
HCM Average Control Delay			34.4			HCM Level of Service				C		
HCM Volume to Capacity ratio			0.64									
Actuated Cycle Length (s)			150.0			Sum of lost time (s)				6.0		
Intersection Capacity Utilization			96.6%			ICU Level of Service				F		
Analysis Period (min)			15									
c Critical Lane Group												

# HCM Signalized Intersection Capacity Analysis

## 2: Wayne Ave. #1 & Ramsey Rd

6/10/2008

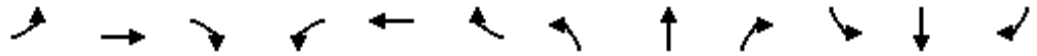


Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕↕			↕↕↕		↕	↕			↕↕	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		2.0			2.0		2.0	2.0			2.0	
Lane Util. Factor		0.95			0.91		1.00	1.00			1.00	
Frbp, ped/bikes		1.00			1.00		1.00	1.00			1.00	
Flpb, ped/bikes		1.00			1.00		0.75	1.00			0.93	
Frt		0.96			0.96		1.00	0.86			1.00	
Flt Protected		1.00			0.99		0.95	1.00			0.95	
Satd. Flow (prot)		3234			4604		1265	1532			1667	
Flt Permitted		1.00			0.70		0.75	1.00			0.63	
Satd. Flow (perm)		3234			3251		1005	1532			1104	
Volume (vph)	0	365	140	135	460	235	220	10	115	5	0	0
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	384	147	142	484	247	232	11	121	5	0	0
RTOR Reduction (vph)	0	27	0	0	47	0	0	65	0	0	0	0
Lane Group Flow (vph)	0	504	0	0	826	0	232	67	0	0	5	0
Confl. Peds. (#/hr)	233			137			123			44		
Heavy Vehicles (%)	7%	7%	7%	7%	7%	7%	7%	7%	7%	1%	1%	1%
Turn Type	Perm			pm+pt			Perm			Perm		
Protected Phases		2		1	6			4			8	
Permitted Phases	2			6			4			8		
Actuated Green, G (s)		47.0			74.0		66.0	66.0			66.0	
Effective Green, g (s)		50.0			77.0		69.0	69.0			69.0	
Actuated g/C Ratio		0.33			0.51		0.46	0.46			0.46	
Clearance Time (s)		5.0			5.0		5.0	5.0			5.0	
Vehicle Extension (s)		0.2			0.2		4.0	4.0			4.0	
Lane Grp Cap (vph)		1078			1894		462	705			508	
v/s Ratio Prot		c0.16			c0.07			0.04				
v/s Ratio Perm					0.15		c0.23				0.00	
v/c Ratio		0.47			0.44		0.50	0.09			0.01	
Uniform Delay, d1		39.5			22.9		28.4	22.9			22.0	
Progression Factor		1.00			1.00		1.00	1.00			1.00	
Incremental Delay, d2		0.1			0.7		3.9	0.3			0.0	
Delay (s)		39.6			23.6		32.3	23.1			22.0	
Level of Service		D			C		C	C			C	
Approach Delay (s)		39.6			23.6			29.0			22.0	
Approach LOS		D			C			C			C	
<b>Intersection Summary</b>												
HCM Average Control Delay			29.5				HCM Level of Service				C	
HCM Volume to Capacity ratio			0.47									
Actuated Cycle Length (s)			150.0				Sum of lost time (s)			6.0		
Intersection Capacity Utilization			52.9%				ICU Level of Service			A		
Analysis Period (min)			15									
c Critical Lane Group												

# HCM Signalized Intersection Capacity Analysis

## 3: Wayne Ave. #1 & Georgia Ave

6/10/2008



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↖↗		↖	↖↗		↖	↖↗↘		↖	↖↗↘	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	0.91		1.00	0.91	
Frbp, ped/bikes	1.00	0.99		1.00	0.99		1.00	0.99		1.00	0.99	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.98		1.00	0.98		1.00	0.99		1.00	0.98	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1687	3264		1687	3273		1687	4791		1687	4720	
Flt Permitted	0.15	1.00		0.34	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	263	3264		597	3273		1687	4791		1687	4720	
Volume (vph)	75	350	50	95	715	85	110	1430	65	85	2290	285
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	79	368	53	100	753	89	116	1505	68	89	2411	300
RTOR Reduction (vph)	0	9	0	0	8	0	0	4	0	0	13	0
Lane Group Flow (vph)	79	412	0	100	834	0	116	1569	0	89	2698	0
Confl. Peds. (#/hr)			67			84			66			46
Heavy Vehicles (%)	7%	7%	7%	7%	7%	7%	7%	7%	7%	7%	7%	7%
Turn Type	pm+pt			pm+pt			Prot			Prot		
Protected Phases	7	4		3	8		1	5		6	2	
Permitted Phases	4			8								
Actuated Green, G (s)	29.0	25.0		29.0	25.0		8.0	49.8		19.2	63.0	
Effective Green, g (s)	31.0	27.0		31.0	27.0		8.0	51.8		21.2	65.0	
Actuated g/C Ratio	0.26	0.22		0.26	0.22		0.07	0.43		0.18	0.54	
Clearance Time (s)	4.0	6.0		4.0	6.0		4.0	6.0		6.0	6.0	
Vehicle Extension (s)	3.0	4.0		3.0	4.0		3.0	0.2		3.0	0.2	
Lane Grp Cap (vph)	115	734		191	736		112	2068		298	2557	
v/s Ratio Prot	c0.02	0.13		0.02	c0.25		c0.07	0.33		0.05	c0.57	
v/s Ratio Perm	0.15			0.12								
v/c Ratio	0.69	0.56		0.52	1.13		1.04	0.76		0.30	1.06	
Uniform Delay, d1	39.2	41.2		37.8	46.5		56.0	28.8		42.9	27.5	
Progression Factor	1.00	1.00		1.00	1.00		1.38	0.46		0.68	0.43	
Incremental Delay, d2	15.7	3.1		2.6	76.4		92.6	2.5		0.4	32.3	
Delay (s)	54.9	44.3		40.4	122.9		170.1	15.9		29.5	44.1	
Level of Service	D	D		D	F		F	B		C	D	
Approach Delay (s)		46.0			114.1			26.5			43.6	
Approach LOS		D			F			C			D	

### Intersection Summary

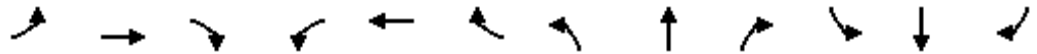
HCM Average Control Delay	50.1	HCM Level of Service	D
HCM Volume to Capacity ratio	1.06		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	97.6%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			



# HCM Signalized Intersection Capacity Analysis

65: Wayne Ave. #1 & Dixon Rd

6/10/2008



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑↑			↑↑↑			↑	↑		↑	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		2.0			2.0			2.0	2.0		2.0	
Lane Util. Factor		0.91			0.91			0.95	0.95		1.00	
Frt		0.97			1.00			0.95	0.85		0.92	
Flt Protected		1.00			0.99			0.97	1.00		0.99	
Satd. Flow (prot)		4700			4775			1643	1519		1708	
Flt Permitted		0.91			0.71			0.86	1.00		0.97	
Satd. Flow (perm)		4273			3433			1453	1519		1671	
Volume (vph)	10	380	95	305	790	10	25	0	55	5	5	15
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	11	400	100	321	832	11	26	0	58	5	5	16
RTOR Reduction (vph)	0	17	0	0	1	0	0	10	33	0	12	0
Lane Group Flow (vph)	0	494	0	0	1163	0	0	29	12	0	14	0
Heavy Vehicles (%)	7%	7%	7%	7%	7%	7%	1%	1%	1%	1%	1%	1%
Turn Type	Perm			pm+pt			Perm		Perm	Perm		
Protected Phases		6		5	2			4				8
Permitted Phases	6			2			4		4	8		
Actuated Green, G (s)		81.0			81.0			27.0	27.0			27.0
Effective Green, g (s)		85.0			85.0			31.0	31.0			31.0
Actuated g/C Ratio		0.71			0.71			0.26	0.26			0.26
Clearance Time (s)		6.0			6.0			6.0	6.0			6.0
Vehicle Extension (s)		3.0			3.0			3.0	3.0			3.0
Lane Grp Cap (vph)		3027			2432			375	392			432
v/s Ratio Prot												
v/s Ratio Perm		0.12			0.34			0.02	0.01			0.01
v/c Ratio		0.16			0.48			0.08	0.03			0.03
Uniform Delay, d1		5.8			7.7			33.7	33.3			33.3
Progression Factor		1.00			1.00			1.08	1.19			1.00
Incremental Delay, d2		0.1			0.1			0.1	0.0			0.0
Delay (s)		5.9			7.9			36.3	39.5			33.3
Level of Service		A			A			D	D			C
Approach Delay (s)		5.9			7.9			38.0				33.3
Approach LOS		A			A			D				C

## Intersection Summary

HCM Average Control Delay	9.1	HCM Level of Service	A
HCM Volume to Capacity ratio	0.37		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	4.0
Intersection Capacity Utilization	49.7%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

# HCM Signalized Intersection Capacity Analysis

84: Apple Ave & 2nd Avenue

6/10/2008



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕	↗	↖	↕			↕	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		2.0			2.0	2.0	2.0	2.0			2.0	
Lane Util. Factor		1.00			1.00	1.00	1.00	0.95			0.95	
Frt		0.93			1.00	0.85	1.00	0.95			0.99	
Flt Protected		0.99			0.96	1.00	0.95	1.00			0.99	
Satd. Flow (prot)		1744			1800	1599	1687	3199			3312	
Flt Permitted		0.97			0.83	1.00	0.44	1.00			0.81	
Satd. Flow (perm)		1693			1560	1599	774	3199			2712	
Volume (vph)	5	15	20	100	10	80	10	160	85	135	370	20
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	5	16	21	105	11	84	11	168	89	142	389	21
RTOR Reduction (vph)	0	17	0	0	0	68	0	23	0	0	2	0
Lane Group Flow (vph)	0	25	0	0	116	16	11	234	0	0	550	0
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	7%	7%	7%	7%	7%	7%
Turn Type	Perm			Perm		Perm	Perm				Perm	
Protected Phases		2			6			8				4
Permitted Phases	2			6		6	8				4	
Actuated Green, G (s)		8.3			8.3	8.3	41.7	41.7			41.7	
Effective Green, g (s)		11.3			11.3	11.3	44.7	44.7			44.7	
Actuated g/C Ratio		0.19			0.19	0.19	0.75	0.75			0.75	
Clearance Time (s)		5.0			5.0	5.0	5.0	5.0			5.0	
Vehicle Extension (s)		3.0			3.0	3.0	3.0	3.0			3.0	
Lane Grp Cap (vph)		319			294	301	577	2383			2020	
v/s Ratio Prot								0.07				
v/s Ratio Perm		0.01			c0.07	0.01	0.01				c0.20	
v/c Ratio		0.08			0.39	0.05	0.02	0.10			0.27	
Uniform Delay, d1		20.1			21.4	20.0	2.0	2.1			2.4	
Progression Factor		1.00			1.00	1.00	1.00	1.00			0.93	
Incremental Delay, d2		0.1			0.9	0.1	0.1	0.1			0.3	
Delay (s)		20.2			22.2	20.0	2.0	2.2			2.6	
Level of Service		C			C	C	A	A			A	
Approach Delay (s)		20.2			21.3			2.2			2.6	
Approach LOS		C			C			A			A	

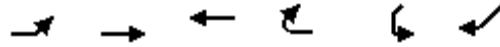
## Intersection Summary

HCM Average Control Delay	6.7	HCM Level of Service	A
HCM Volume to Capacity ratio	0.29		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	4.0
Intersection Capacity Utilization	44.7%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis  
 98: 2nd Avenue & Fenwick Ave

6/10/2008



Movement	EBL	EBT	WBT	WBR	SWL	SWR
Lane Configurations		↕↕	↕	↕	↕	↕
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)		2.0	2.0	2.0	2.0	2.0
Lane Util. Factor		0.95	1.00	1.00	1.00	1.00
Frt		1.00	1.00	0.85	1.00	0.85
Flt Protected		0.99	1.00	1.00	0.95	1.00
Satd. Flow (prot)		3353	1776	1509	1787	1599
Flt Permitted		0.90	1.00	1.00	0.95	1.00
Satd. Flow (perm)		3031	1776	1509	1787	1599
Volume (vph)	65	460	200	50	65	40
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	68	484	211	53	68	42
RTOR Reduction (vph)	0	0	0	11	0	36
Lane Group Flow (vph)	0	552	211	42	68	6
Heavy Vehicles (%)	7%	7%	7%	7%	1%	1%
Turn Type	Perm			Perm		Perm
Protected Phases		4	8		6	
Permitted Phases	4			8		6
Actuated Green, G (s)		45.0	45.0	45.0	5.0	5.0
Effective Green, g (s)		48.0	48.0	48.0	8.0	8.0
Actuated g/C Ratio		0.80	0.80	0.80	0.13	0.13
Clearance Time (s)		5.0	5.0	5.0	5.0	5.0
Vehicle Extension (s)		3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)		2425	1421	1207	238	213
v/s Ratio Prot			0.12		c0.04	
v/s Ratio Perm		c0.18		0.03		0.00
v/c Ratio		0.23	0.15	0.04	0.29	0.03
Uniform Delay, d1		1.5	1.4	1.2	23.4	22.6
Progression Factor		1.22	0.86	0.68	1.00	1.00
Incremental Delay, d2		0.2	0.2	0.1	0.7	0.1
Delay (s)		2.0	1.4	0.9	24.1	22.7
Level of Service		A	A	A	C	C
Approach Delay (s)		2.0	1.3		23.5	
Approach LOS		A	A		C	

Intersection Summary




















HCM Average Control Delay	4.3	HCM Level of Service	A
HCM Volume to Capacity ratio	0.23		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	4.0
Intersection Capacity Utilization	38.7%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

# HCM Signalized Intersection Capacity Analysis

100: 2nd Avenue & Spring Street

6/10/2008

												
Movement	NBL	NBT	NBR	SBL	SBT	SBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	2.0	2.0			2.0		2.0	2.0		2.0	2.0	
Lane Util. Factor	1.00	1.00			1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.91			0.96		1.00	0.92		1.00	0.99	
Flt Protected	0.95	1.00			1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1687	1617			1796		1687	1635		1687	1764	
Flt Permitted	0.49	1.00			0.97		0.45	1.00		0.32	1.00	
Satd. Flow (perm)	864	1617			1750		792	1635		571	1764	
Volume (vph)	160	30	45	5	30	15	35	310	345	155	420	20
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	168	32	47	5	32	16	37	326	363	163	442	21
RTOR Reduction (vph)	0	36	0	0	15	0	0	20	0	0	1	0
Lane Group Flow (vph)	168	43	0	0	38	0	37	669	0	163	462	0
Heavy Vehicles (%)	7%	7%	7%	1%	1%	1%	7%	7%	7%	7%	7%	7%
Turn Type	pm+pt			Perm			Perm			Perm		
Protected Phases	3	8			4			2			6	
Permitted Phases	8			4			2			6		
Actuated Green, G (s)	24.9	24.9			6.8		85.1	85.1		85.1	85.1	
Effective Green, g (s)	27.9	27.9			9.8		88.1	88.1		88.1	88.1	
Actuated g/C Ratio	0.23	0.23			0.08		0.73	0.73		0.73	0.73	
Clearance Time (s)	5.0	5.0			5.0		5.0	5.0		5.0	5.0	
Vehicle Extension (s)	3.0	3.0			3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	311	376			143		581	1200		419	1295	
v/s Ratio Prot	c0.07	0.03						c0.41			0.26	
v/s Ratio Perm	0.05				0.02		0.05			0.29		
v/c Ratio	0.54	0.11			0.27		0.06	0.56		0.39	0.36	
Uniform Delay, d1	39.5	36.3			51.7		4.4	7.2		5.9	5.7	
Progression Factor	1.07	1.22			1.00		0.15	0.13		1.00	1.00	
Incremental Delay, d2	1.9	0.1			1.0		0.2	1.6		2.7	0.8	
Delay (s)	44.3	44.5			52.7		0.8	2.5		8.6	6.5	
Level of Service	D	D			D		A	A		A	A	
Approach Delay (s)		44.3			52.7			2.4			7.1	
Approach LOS		D			D			A			A	
<b>Intersection Summary</b>												
HCM Average Control Delay			12.1				HCM Level of Service			B		
HCM Volume to Capacity ratio			0.52									
Actuated Cycle Length (s)			120.0				Sum of lost time (s)			4.0		
Intersection Capacity Utilization			71.5%				ICU Level of Service			C		
Analysis Period (min)			15									

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis  
 1: 2nd Avenue & MD 384 (Colesville Rd.)

6/10/2008



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations	↘	↑↑	↗	↘	↔			↑↑↑	↗	↘	↑↑↑	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	2.0	2.0	2.0	2.0	2.0			2.0	2.0	2.0	2.0	
Lane Util. Factor	1.00	0.95	1.00	0.91	0.91			0.91	1.00	1.00	0.91	
Frbp, ped/bikes	1.00	1.00	0.81	1.00	0.92			1.00	1.00	1.00	0.97	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00			1.00	1.00	1.00	1.00	
Frt	1.00	1.00	0.85	1.00	0.96			1.00	0.85	1.00	0.98	
Flt Protected	0.95	1.00	1.00	0.95	0.99			1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1719	3438	1253	1564	2886			4940	1538	1719	4711	
Flt Permitted	0.95	1.00	1.00	0.95	0.99			1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1719	3438	1253	1564	2886			4940	1538	1719	4711	
Volume (vph)	110	195	195	395	315	140	0	1555	395	25	575	70
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	116	205	205	416	332	147	0	1637	416	26	605	74
RTOR Reduction (vph)	0	0	78	0	21	0	0	0	176	0	10	0
Lane Group Flow (vph)	116	205	127	313	561	0	0	1637	240	26	669	0
Confl. Peds. (#/hr)			122			261			113			146
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%
Turn Type	Split		Perm	Split					Prot		Prot	
Protected Phases	3	3		4	4			6	6	5	2	
Permitted Phases			3									
Actuated Green, G (s)	31.0	31.0	31.0	35.0	35.0			57.6	57.6	2.4	66.0	
Effective Green, g (s)	35.0	35.0	35.0	39.0	39.0			61.6	61.6	6.4	70.0	
Actuated g/C Ratio	0.23	0.23	0.23	0.26	0.26			0.41	0.41	0.04	0.47	
Clearance Time (s)	6.0	6.0	6.0	6.0	6.0			6.0	6.0	6.0	6.0	
Vehicle Extension (s)	4.0	4.0	4.0	4.0	4.0			3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	401	802	292	407	750			2029	632	73	2198	
v/s Ratio Prot	0.07	0.06		c0.20	0.19			c0.33	0.16	0.02	c0.14	
v/s Ratio Perm			c0.10									
v/c Ratio	0.29	0.26	0.43	0.77	0.75			0.81	0.38	0.36	0.30	
Uniform Delay, d1	47.3	46.9	49.1	51.3	51.0			39.0	30.9	69.8	24.9	
Progression Factor	1.00	1.00	1.00	1.00	1.00			0.36	0.12	1.00	1.00	
Incremental Delay, d2	0.5	0.2	1.4	9.0	4.4			2.8	1.3	3.0	0.4	
Delay (s)	47.8	47.1	50.5	60.3	55.4			16.7	5.0	72.8	25.2	
Level of Service	D	D	D	E	E			B	A	E	C	
Approach Delay (s)		48.6			57.1			14.3			27.0	
Approach LOS		D			E			B			C	
<b>Intersection Summary</b>												
HCM Average Control Delay			29.9			HCM Level of Service			C			
HCM Volume to Capacity ratio			0.67									
Actuated Cycle Length (s)			150.0			Sum of lost time (s)		6.0				
Intersection Capacity Utilization			91.7%			ICU Level of Service		F				
Analysis Period (min)			15									
c Critical Lane Group												

# HCM Signalized Intersection Capacity Analysis

## 2: Wayne Ave. #1 & Ramsey Rd

6/10/2008

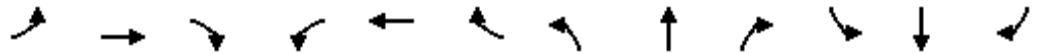


Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕↕			↕↕↕		↕	↕			↕↕	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		2.0			2.0		2.0	2.0			2.0	
Lane Util. Factor		0.95			0.91		1.00	1.00			1.00	
Frbp, ped/bikes		1.00			1.00		1.00	1.00			1.00	
Flpb, ped/bikes		1.00			1.00		0.90	1.00			0.97	
Frt		0.97			1.00		1.00	0.86			0.94	
Flt Protected		1.00			0.99		0.95	1.00			0.98	
Satd. Flow (prot)		3334			4875		1542	1548			1693	
Flt Permitted		0.95			0.67		0.54	1.00			0.79	
Satd. Flow (perm)		3161			3324		869	1548			1368	
Volume (vph)	5	410	95	170	575	10	130	5	130	120	50	120
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	5	432	100	179	605	11	137	5	137	126	53	126
RTOR Reduction (vph)	0	13	0	0	1	0	0	77	0	0	17	0
Lane Group Flow (vph)	0	524	0	0	794	0	137	65	0	0	288	0
Confl. Peds. (#/hr)	233			137			123			44		
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%	5%	5%	5%	1%	1%	1%
Turn Type	Perm			pm+pt			Perm			Perm		
Protected Phases		2		1	6			4			8	
Permitted Phases	2			6			4			8		
Actuated Green, G (s)		48.0			77.0		63.0	63.0			63.0	
Effective Green, g (s)		51.0			80.0		66.0	66.0			66.0	
Actuated g/C Ratio		0.34			0.53		0.44	0.44			0.44	
Clearance Time (s)		5.0			5.0		5.0	5.0			5.0	
Vehicle Extension (s)		0.2			0.2		4.0	4.0			4.0	
Lane Grp Cap (vph)		1075			2052		382	681			602	
v/s Ratio Prot					c0.07			0.04				
v/s Ratio Perm		c0.17			0.14		0.16				c0.21	
v/c Ratio		0.49			0.39		0.36	0.10			0.48	
Uniform Delay, d1		39.2			20.6		27.9	24.6			29.8	
Progression Factor		1.00			1.00		1.00	1.00			1.00	
Incremental Delay, d2		0.1			0.6		2.6	0.3			2.7	
Delay (s)		39.3			21.1		30.5	24.8			32.5	
Level of Service		D			C		C	C			C	
Approach Delay (s)		39.3			21.1			27.6			32.5	
Approach LOS		D			C			C			C	
<b>Intersection Summary</b>												
HCM Average Control Delay			29.0				HCM Level of Service				C	
HCM Volume to Capacity ratio			0.46									
Actuated Cycle Length (s)			150.0				Sum of lost time (s)			6.0		
Intersection Capacity Utilization			67.5%				ICU Level of Service			C		
Analysis Period (min)			15									
c Critical Lane Group												

# HCM Signalized Intersection Capacity Analysis

## 3: Wayne Ave. #1 & Georgia Ave

6/10/2008



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗		↖	↗		↖	↗		↖	↗	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	0.91		1.00	0.91	
Frbp, ped/bikes	1.00	0.97		1.00	0.93		1.00	0.98		1.00	0.98	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.97		1.00	0.94		1.00	0.99		1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1719	3235		1719	3020		1719	4806		1719	4798	
Flt Permitted	0.13	1.00		0.15	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	241	3235		278	3020		1719	4806		1719	4798	
Volume (vph)	235	595	130	135	405	245	180	1865	120	105	1530	150
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	247	626	137	142	426	258	189	1963	126	111	1611	158
RTOR Reduction (vph)	0	15	0	0	76	0	0	6	0	0	9	0
Lane Group Flow (vph)	247	748	0	142	608	0	189	2083	0	111	1760	0
Confl. Peds. (#/hr)			117			116			173			97
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%
Turn Type	pm+pt			pm+pt			Prot			Prot		
Protected Phases	7	4		3	8		1	5		6	2	
Permitted Phases	4			8								
Actuated Green, G (s)	43.0	30.1		32.9	24.0		14.0	52.0		7.0	47.0	
Effective Green, g (s)	45.0	32.1		34.9	26.0		14.0	54.0		9.0	49.0	
Actuated g/C Ratio	0.38	0.27		0.29	0.22		0.12	0.45		0.08	0.41	
Clearance Time (s)	4.0	6.0		4.0	6.0		4.0	6.0		6.0	6.0	
Vehicle Extension (s)	3.0	4.0		3.0	4.0		3.0	0.2		3.0	0.2	
Lane Grp Cap (vph)	275	865		188	654		201	2163		129	1959	
v/s Ratio Prot	c0.11	0.23		0.06	0.20		0.11	c0.43		0.06	c0.37	
v/s Ratio Perm	c0.22			0.16								
v/c Ratio	0.90	0.86		0.76	0.93		0.94	0.96		0.86	0.90	
Uniform Delay, d1	30.8	41.9		34.1	46.1		52.6	32.0		54.9	33.2	
Progression Factor	1.00	1.00		1.00	1.00		1.18	0.53		0.70	0.50	
Incremental Delay, d2	29.1	9.3		15.8	19.9		38.4	9.9		45.2	6.4	
Delay (s)	59.9	51.1		49.9	66.0		100.2	26.7		83.5	23.2	
Level of Service	E	D		D	E		F	C		F	C	
Approach Delay (s)		53.3			63.2			32.8			26.7	
Approach LOS		D			E			C			C	

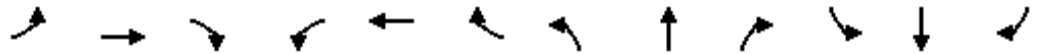
### Intersection Summary

HCM Average Control Delay	38.5	HCM Level of Service	D
HCM Volume to Capacity ratio	0.91		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	92.8%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

# HCM Signalized Intersection Capacity Analysis

65: Wayne Ave. #1 & Dixon Rd

6/10/2008



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑↑			↑↑↑			↑	↑		↑	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		2.0			2.0			2.0	2.0		2.0	
Lane Util. Factor		0.91			0.91			0.95	0.95		1.00	
Frt		0.99			1.00			0.96	0.85		0.93	
Flt Protected		1.00			0.99			0.97	1.00		0.98	
Satd. Flow (prot)		4880			4898			1652	1519		1725	
Flt Permitted		0.92			0.79			0.79	1.00		0.91	
Satd. Flow (perm)		4517			3870			1355	1519		1593	
Volume (vph)	10	600	50	80	640	15	100	5	245	10	5	15
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	11	632	53	84	674	16	105	5	258	11	5	16
RTOR Reduction (vph)	0	4	0	0	1	0	0	16	157	0	12	0
Lane Group Flow (vph)	0	693	0	0	773	0	0	140	55	0	20	0
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%	1%	1%	1%	1%	1%	1%
Turn Type	Perm			pm+pt			Perm		Perm	Perm		
Protected Phases		6		5	2			4				8
Permitted Phases	6			2			4		4	8		
Actuated Green, G (s)		81.0			81.0			27.0	27.0			27.0
Effective Green, g (s)		85.0			85.0			31.0	31.0			31.0
Actuated g/C Ratio		0.71			0.71			0.26	0.26			0.26
Clearance Time (s)		6.0			6.0			6.0	6.0			6.0
Vehicle Extension (s)		3.0			3.0			3.0	3.0			3.0
Lane Grp Cap (vph)		3200			2741			350	392			412
v/s Ratio Prot												
v/s Ratio Perm		0.15			c0.20			c0.10	0.04			0.01
v/c Ratio		0.22			0.28			0.40	0.14			0.05
Uniform Delay, d1		6.0			6.4			36.8	34.2			33.4
Progression Factor		1.00			1.00			0.96	0.88			1.00
Incremental Delay, d2		0.2			0.1			0.8	0.2			0.0
Delay (s)		6.2			6.4			36.2	30.4			33.5
Level of Service		A			A			D	C			C
Approach Delay (s)		6.2			6.4			32.9				33.5
Approach LOS		A			A			C				C
<b>Intersection Summary</b>												
HCM Average Control Delay			12.0				HCM Level of Service			B		
HCM Volume to Capacity ratio			0.31									
Actuated Cycle Length (s)			120.0				Sum of lost time (s)			4.0		
Intersection Capacity Utilization			54.7%				ICU Level of Service			A		
Analysis Period (min)			15									

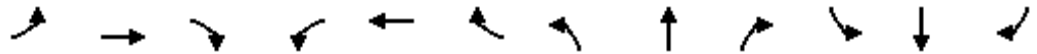
c Critical Lane Group



# HCM Signalized Intersection Capacity Analysis

## 84: Apple Ave & 2nd Avenue

6/10/2008



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕	↗	↖	↕	↕		↕	↕
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		2.0			2.0	2.0	2.0	2.0			2.0	
Lane Util. Factor		1.00			1.00	1.00	1.00	0.95			0.95	
Frt		0.97			1.00	0.85	1.00	0.97			0.99	
Flt Protected		0.98			0.96	1.00	0.95	1.00			0.99	
Satd. Flow (prot)		1773			1810	1599	1719	3347			3359	
Flt Permitted		0.84			0.81	1.00	0.48	1.00			0.76	
Satd. Flow (perm)		1533			1528	1599	868	3347			2598	
Volume (vph)	20	10	10	110	30	110	25	300	65	130	285	25
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	21	11	11	116	32	116	26	316	68	137	300	26
RTOR Reduction (vph)	0	9	0	0	0	92	0	15	0	0	4	0
Lane Group Flow (vph)	0	34	0	0	148	24	26	369	0	0	459	0
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	5%	5%	5%	5%	5%	5%
Turn Type	Perm			Perm		Perm	Perm				Perm	
Protected Phases		2			6			8				4
Permitted Phases	2			6		6	8				4	
Actuated Green, G (s)		9.2			9.2	9.2	40.8	40.8			40.8	
Effective Green, g (s)		12.2			12.2	12.2	43.8	43.8			43.8	
Actuated g/C Ratio		0.20			0.20	0.20	0.73	0.73			0.73	
Clearance Time (s)		5.0			5.0	5.0	5.0	5.0			5.0	
Vehicle Extension (s)		3.0			3.0	3.0	3.0	3.0			3.0	
Lane Grp Cap (vph)		312			311	325	634	2443			1897	
v/s Ratio Prot								0.11				
v/s Ratio Perm		0.02			c0.10	0.01	0.03				c0.18	
v/c Ratio		0.11			0.48	0.07	0.04	0.15			0.24	
Uniform Delay, d1		19.5			21.1	19.3	2.3	2.5			2.7	
Progression Factor		1.00			1.00	1.00	1.00	1.00			1.12	
Incremental Delay, d2		0.2			1.2	0.1	0.1	0.1			0.3	
Delay (s)		19.6			22.2	19.4	2.4	2.6			3.3	
Level of Service		B			C	B	A	A			A	
Approach Delay (s)		19.6			21.0			2.6			3.3	
Approach LOS		B			C			A			A	

### Intersection Summary

HCM Average Control Delay	7.6	HCM Level of Service	A
HCM Volume to Capacity ratio	0.29		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	4.0
Intersection Capacity Utilization	44.6%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis  
 98: 2nd Avenue & Fenwick Ave

6/10/2008



Movement	EBL	EBT	WBT	WBR	SWL	SWR
Lane Configurations		↔↑	↑	↔	↔	↔
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)		2.0	2.0	2.0	2.0	2.0
Lane Util. Factor		0.95	1.00	1.00	1.00	1.00
Frt		1.00	1.00	0.85	1.00	0.85
Flt Protected		0.99	1.00	1.00	0.95	1.00
Satd. Flow (prot)		3402	1810	1538	1787	1599
Flt Permitted		0.82	1.00	1.00	0.95	1.00
Satd. Flow (perm)		2816	1810	1538	1787	1599
Volume (vph)	95	355	360	65	85	145
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	100	374	379	68	89	153
RTOR Reduction (vph)	0	0	0	16	0	128
Lane Group Flow (vph)	0	474	379	52	89	25
Heavy Vehicles (%)	5%	5%	5%	5%	1%	1%
Turn Type	Perm			Perm		Perm
Protected Phases		4	8		6	
Permitted Phases	4			8		6
Actuated Green, G (s)		43.2	43.2	43.2	6.8	6.8
Effective Green, g (s)		46.2	46.2	46.2	9.8	9.8
Actuated g/C Ratio		0.77	0.77	0.77	0.16	0.16
Clearance Time (s)		5.0	5.0	5.0	5.0	5.0
Vehicle Extension (s)		3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)		2168	1394	1184	292	261
v/s Ratio Prot			c0.21		c0.05	
v/s Ratio Perm		0.17		0.03		0.02
v/c Ratio		0.22	0.27	0.04	0.30	0.10
Uniform Delay, d1		1.9	2.0	1.6	22.1	21.3
Progression Factor		1.06	0.79	0.90	1.00	1.00
Incremental Delay, d2		0.2	0.5	0.1	0.6	0.2
Delay (s)		2.2	2.1	1.5	22.7	21.5
Level of Service		A	A	A	C	C
Approach Delay (s)		2.2	2.0		21.9	
Approach LOS		A	A		C	

Intersection Summary




















HCM Average Control Delay	6.2	HCM Level of Service	A
HCM Volume to Capacity ratio	0.27		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	4.0
Intersection Capacity Utilization	46.2%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

# HCM Signalized Intersection Capacity Analysis

100: 2nd Avenue & Spring Street

6/10/2008
























												
Movement	NBL	NBT	NBR	SBL	SBT	SBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	2.0	2.0			2.0		2.0	2.0		2.0	2.0	
Lane Util. Factor	1.00	1.00			1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.87			0.99		1.00	0.95		1.00	1.00	
Flt Protected	0.95	1.00			0.99		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1719	1566			1835		1719	1711		1719	1806	
Flt Permitted	0.43	1.00			0.91		0.47	1.00		0.17	1.00	
Satd. Flow (perm)	783	1566			1698		859	1711		313	1806	
Volume (vph)	410	10	90	25	70	10	15	505	290	90	340	5
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	432	11	95	26	74	11	16	532	305	95	358	5
RTOR Reduction (vph)	0	62	0	0	3	0	0	15	0	0	0	0
Lane Group Flow (vph)	432	44	0	0	108	0	16	822	0	95	363	0
Heavy Vehicles (%)	5%	5%	5%	1%	1%	1%	5%	5%	5%	5%	5%	5%
Turn Type	pm+pt			Perm			Perm			Perm		
Protected Phases	3	8			4			2			6	
Permitted Phases	8			4			2			6		
Actuated Green, G (s)	38.7	38.7			12.7		71.3	71.3		71.3	71.3	
Effective Green, g (s)	41.7	41.7			15.7		74.3	74.3		74.3	74.3	
Actuated g/C Ratio	0.35	0.35			0.13		0.62	0.62		0.62	0.62	
Clearance Time (s)	5.0	5.0			5.0		5.0	5.0		5.0	5.0	
Vehicle Extension (s)	3.0	3.0			3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	459	544			222		532	1059		194	1118	
v/s Ratio Prot	c0.19	0.03						c0.48			0.20	
v/s Ratio Perm	0.14				0.06		0.02			0.30		
v/c Ratio	0.94	0.08			0.48		0.03	0.78		0.49	0.32	
Uniform Delay, d1	35.6	26.3			48.4		8.9	16.7		12.5	10.9	
Progression Factor	0.94	0.91			1.00		1.26	0.90		1.00	1.00	
Incremental Delay, d2	27.4	0.1			1.7		0.1	3.1		8.6	0.8	
Delay (s)	60.9	24.0			50.1		11.2	18.1		21.1	11.7	
Level of Service	E	C			D		B	B		C	B	
Approach Delay (s)		53.6			50.1			18.0			13.6	
Approach LOS		D			D			B			B	
<b>Intersection Summary</b>												
HCM Average Control Delay			28.5				HCM Level of Service			C		
HCM Volume to Capacity ratio			0.75									
Actuated Cycle Length (s)			120.0				Sum of lost time (s)			4.0		
Intersection Capacity Utilization			92.0%				ICU Level of Service			F		
Analysis Period (min)			15									

c Critical Lane Group

# HCM Signalized Intersection Capacity Analysis

## 4: Fenton St & Wayne Ave.


















6/10/2008

												
Movement	NBL	NBT	NBR	SBL	SBT	SBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	2.0	2.0	2.0	2.0	2.0		2.0	2.0		2.0	2.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00		1.00	0.95		1.00	0.95	
Frbp, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Flpb, ped/bikes	1.00	1.00	1.00	0.98	1.00		1.00	1.00		0.99	1.00	
Frt	1.00	1.00	0.85	1.00	0.97		1.00	0.96		1.00	0.99	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1687	1776	1509	1656	1716		1687	3254		1676	3329	
Flt Permitted	0.33	1.00	1.00	0.49	1.00		0.15	1.00		0.23	1.00	
Satd. Flow (perm)	594	1776	1509	853	1716		261	3254		399	3329	
Volume (vph)	125	275	200	25	350	100	50	325	100	375	775	75
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	136	299	217	27	380	109	54	353	109	408	842	82
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	136	299	217	27	489	0	54	462	0	408	924	0
Conf. Peds. (#/hr)	34			17			19			29		
Turn Type	Perm		Perm	Perm			Perm			pm+pt		
Protected Phases		2			6			4		3	8	
Permitted Phases	2		2	6			4			8		
Actuated Green, G (s)	70.5	70.5	70.5	70.5	70.5		24.2	24.2		60.5	59.5	
Effective Green, g (s)	73.5	73.5	73.5	73.5	73.5		27.2	27.2		62.5	62.5	
Actuated g/C Ratio	0.52	0.52	0.52	0.52	0.52		0.19	0.19		0.45	0.45	
Clearance Time (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0		4.0	5.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	312	932	792	448	901		51	632		482	1486	
v/s Ratio Prot		0.17			c0.28			0.14		c0.20	0.28	
v/s Ratio Perm	0.23		0.14	0.03			c0.21			0.18		
v/c Ratio	0.44	0.32	0.27	0.06	0.54		1.06	0.73		0.85	0.62	
Uniform Delay, d1	20.5	19.0	18.4	16.3	22.1		56.4	53.0		42.5	29.7	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.10	1.18	
Incremental Delay, d2	4.4	0.9	0.9	0.3	2.3		143.6	4.3		11.4	0.7	
Delay (s)	24.9	19.9	19.3	16.6	24.4		200.0	57.3		58.1	35.6	
Level of Service	C	B	B	B	C		F	E		E	D	
Approach Delay (s)		20.7			24.0			72.2			42.5	
Approach LOS		C			C			E			D	
<b>Intersection Summary</b>												
HCM Average Control Delay			39.7			HCM Level of Service			D			
HCM Volume to Capacity ratio			0.71									
Actuated Cycle Length (s)			140.0			Sum of lost time (s)			4.0			
Intersection Capacity Utilization			77.7%			ICU Level of Service			D			
Analysis Period (min)			15									
c Critical Lane Group												

# HCM Signalized Intersection Capacity Analysis

## 5: Cedar Ave & Wayne Ave.

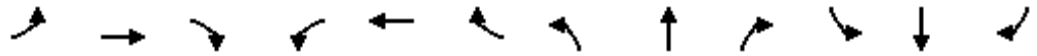
6/10/2008

												
Movement	NBL	NBT	NBR	SBL	SBT	SBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		2.0		2.0		2.0		2.0			2.0	
Lane Util. Factor		1.00		1.00		1.00		0.95			0.95	
Frbp, ped/bikes		0.99		1.00		0.90		1.00			0.98	
Flpb, ped/bikes		0.99		1.00		1.00		1.00			1.00	
Frt		0.97		1.00		0.85		1.00			0.97	
Flt Protected		0.99		0.95		1.00		0.99			1.00	
Satd. Flow (prot)		1676		1687		1360		3349			3212	
Flt Permitted		0.99		0.31		1.00		0.60			1.00	
Satd. Flow (perm)		1676		550		1360		2018			3212	
Volume (vph)	25	125	50	125	0	100	75	425	0	0	1050	300
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	27	136	54	136	0	109	82	462	0	0	1141	326
RTOR Reduction (vph)	0	11	0	0	0	76	0	0	0	0	0	0
Lane Group Flow (vph)	0	206	0	136	0	33	0	544	0	0	1467	0
Confl. Peds. (#/hr)	36		5	5		36	12		6	6		12
Turn Type	Perm		custom		custom		Perm					
Protected Phases		8						2			6	
Permitted Phases	8		4		4		2					
Actuated Green, G (s)		22.9		22.9		22.9		107.1			107.1	
Effective Green, g (s)		25.9		25.9		25.9		110.1			110.1	
Actuated g/C Ratio		0.18		0.18		0.18		0.79			0.79	
Clearance Time (s)		5.0		5.0		5.0		5.0			5.0	
Vehicle Extension (s)		0.2		0.2		0.2		3.0			3.0	
Lane Grp Cap (vph)		310		102		252		1587			2526	
v/s Ratio Prot											c0.46	
v/s Ratio Perm		0.12		c0.25		0.02		0.27				
v/c Ratio		0.67		1.33		0.13		0.34			0.58	
Uniform Delay, d1		53.0		57.0		47.7		4.4			5.9	
Progression Factor		1.00		1.00		1.00		1.36			2.29	
Incremental Delay, d2		4.1		202.3		0.1		0.6			0.5	
Delay (s)		57.2		259.4		47.7		6.5			14.0	
Level of Service		E		F		D		A			B	
Approach Delay (s)		57.2			165.2			6.5			14.0	
Approach LOS		E			F			A			B	
<b>Intersection Summary</b>												
HCM Average Control Delay			31.1				HCM Level of Service				C	
HCM Volume to Capacity ratio			0.72									
Actuated Cycle Length (s)			140.0				Sum of lost time (s)			4.0		
Intersection Capacity Utilization			89.4%				ICU Level of Service			E		
Analysis Period (min)			15									
c Critical Lane Group												

# HCM Signalized Intersection Capacity Analysis

## 6: Wayne Ave. & Dale Dr

6/10/2008



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕↕			↕↕		↕	↕		↕	↕	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		2.0			2.0		2.0	2.0		2.0	2.0	
Lane Util. Factor		0.95			0.95		1.00	1.00		1.00	1.00	
Frbp, ped/bikes		0.98			0.98		1.00	0.99		1.00	0.96	
Flpb, ped/bikes		1.00			1.00		1.00	1.00		1.00	1.00	
Frt		0.97			0.99		1.00	0.98		1.00	0.94	
Flt Protected		1.00			1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		3202			3251		1687	1728		1687	1607	
Flt Permitted		0.79			0.83		0.12	1.00		0.16	1.00	
Satd. Flow (perm)		2542			2717		209	1728		278	1607	
Volume (vph)	25	350	75	100	1100	100	50	350	50	100	275	175
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	27	380	82	109	1196	109	54	380	54	109	299	190
RTOR Reduction (vph)	0	12	0	0	0	0	0	3	0	0	16	0
Lane Group Flow (vph)	0	477	0	0	1414	0	54	431	0	109	473	0
Confl. Peds. (#/hr)	52		30	30		52	41		25	25		41
Turn Type	Perm			Perm			pm+pt			pm+pt		
Protected Phases		6			2		3	8		7	4	
Permitted Phases	6			2			8			4		
Actuated Green, G (s)		81.5			81.5		41.9	39.5		45.1	41.1	
Effective Green, g (s)		84.5			84.5		47.9	42.5		51.1	44.1	
Actuated g/C Ratio		0.60			0.60		0.34	0.30		0.36	0.32	
Clearance Time (s)		5.0			5.0		5.0	5.0		5.0	5.0	
Vehicle Extension (s)		3.0			3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		1534			1640		129	525		172	506	
v/s Ratio Prot							0.02	0.25		c0.03	c0.29	
v/s Ratio Perm		0.19			c0.52		0.13			0.20		
v/c Ratio		0.31			0.86		0.42	0.82		0.63	0.93	
Uniform Delay, d1		13.5			22.9		35.2	45.2		34.0	46.5	
Progression Factor		1.57			1.26		1.00	1.00		1.00	1.00	
Incremental Delay, d2		0.5			5.1		2.2	9.9		7.4	24.5	
Delay (s)		21.8			34.2		37.4	55.1		41.4	71.0	
Level of Service		C			C		D	E		D	E	
Approach Delay (s)		21.8			34.2			53.2			65.6	
Approach LOS		C			C			D			E	

### Intersection Summary

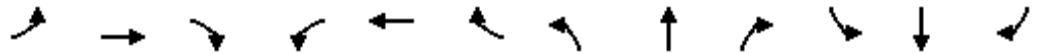
HCM Average Control Delay	41.5	HCM Level of Service	D
HCM Volume to Capacity ratio	0.88		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	6.0
Intersection Capacity Utilization	94.1%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

# HCM Signalized Intersection Capacity Analysis

## 7: Wayne Ave. & Mansfield

6/10/2008



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑			↑↑			↑↓				
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		2.0			2.0			2.0				
Lane Util. Factor		0.95			0.95			1.00				
Frbp, ped/bikes		1.00			1.00			1.00				
Flpb, ped/bikes		1.00			1.00			1.00				
Frt		1.00			1.00			0.93				
Flt Protected		1.00			1.00			0.98				
Satd. Flow (prot)		3367			3372			1615				
Flt Permitted		1.00			0.95			0.98				
Satd. Flow (perm)		3367			3207			1615				
Volume (vph)	0	425	5	10	1350	0	5	0	5	0	0	0
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	462	5	11	1467	0	5	0	5	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	4	0	0	0	0
Lane Group Flow (vph)	0	467	0	0	1478	0	0	6	0	0	0	0
Confl. Peds. (#/hr)	1		22	22			11			5		
Turn Type					Perm			Split				
Protected Phases		2				6		4	4			
Permitted Phases					6							
Actuated Green, G (s)		105.0			105.0			24.0				
Effective Green, g (s)		109.0			109.0			27.0				
Actuated g/C Ratio		0.78			0.78			0.19				
Clearance Time (s)		6.0			6.0			5.0				
Vehicle Extension (s)		0.2			3.0			0.2				
Lane Grp Cap (vph)		2621			2497			311				
v/s Ratio Prot		0.14						c0.00				
v/s Ratio Perm					c0.46							
v/c Ratio		0.18			0.59			0.02				
Uniform Delay, d1		4.0			6.4			45.8				
Progression Factor		0.52			0.62			1.00				
Incremental Delay, d2		0.1			0.3			0.0				
Delay (s)		2.2			4.2			45.8				
Level of Service		A			A			D				
Approach Delay (s)		2.2			4.2			45.8			0.0	
Approach LOS		A			A			D			A	

### Intersection Summary

HCM Average Control Delay	4.0	HCM Level of Service	A
HCM Volume to Capacity ratio	0.48		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	4.0
Intersection Capacity Utilization	54.3%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

# HCM Signalized Intersection Capacity Analysis

## 8: Wayne Ave. & Sligo Creek Pkwy

6/10/2008



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗		↖	↗		↖	↗			↖	↗
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	2.0	2.0		2.0	2.0		2.0	2.0			2.0	2.0
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00			1.00	1.00
Frbp, ped/bikes	1.00	0.99		1.00	1.00		1.00	1.00			1.00	1.00
Flpb, ped/bikes	1.00	1.00		0.99	1.00		1.00	1.00			1.00	1.00
Frt	1.00	0.98		1.00	0.99		1.00	0.99			1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00			0.99	1.00
Satd. Flow (prot)	1687	1725		1666	1757		1687	1758			1763	1509
Flt Permitted	0.05	1.00		0.46	1.00		0.12	1.00			0.76	1.00
Satd. Flow (perm)	83	1725		804	1757		221	1758			1348	1509
Volume (vph)	50	300	50	20	1000	50	175	350	20	50	350	175
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	54	326	54	22	1087	54	190	380	22	54	380	190
RTOR Reduction (vph)	0	4	0	0	1	0	0	1	0	0	0	0
Lane Group Flow (vph)	54	376	0	22	1140	0	190	401	0	0	434	190
Conf. Peds. (#/hr)	14		8	8		14	2		11	11		2
Turn Type	Perm			Perm			pm+pt			Perm		Prot
Protected Phases		2			6		7	4			8	8
Permitted Phases	2			6			4			8		
Actuated Green, G (s)	83.0	83.0		83.0	83.0		47.0	47.0			37.0	37.0
Effective Green, g (s)	86.0	86.0		86.0	86.0		50.0	50.0			40.0	40.0
Actuated g/C Ratio	0.61	0.61		0.61	0.61		0.36	0.36			0.29	0.29
Clearance Time (s)	5.0	5.0		5.0	5.0		5.0	5.0			5.0	5.0
Vehicle Extension (s)	0.2	0.2		0.2	0.2		3.0	3.0			0.2	0.2
Lane Grp Cap (vph)	51	1060		494	1079		163	628			385	431
v/s Ratio Prot		0.22			0.65		c0.07	0.23				0.13
v/s Ratio Perm	c0.65			0.03			0.35				c0.32	
v/c Ratio	1.06	0.35		0.04	1.06		1.17	0.64			1.13	0.44
Uniform Delay, d1	27.0	13.3		10.7	27.0		40.7	37.5			50.0	40.9
Progression Factor	1.12	1.22		0.87	0.72		1.00	1.00			1.00	1.00
Incremental Delay, d2	143.1	0.9		0.1	41.8		122.0	2.1			85.1	0.3
Delay (s)	173.3	17.1		9.5	61.3		162.7	39.6			135.1	41.1
Level of Service	F	B		A	E		F	D			F	D
Approach Delay (s)		36.6			60.3			79.1			106.5	
Approach LOS		D			E			E			F	

### Intersection Summary

HCM Average Control Delay	70.9	HCM Level of Service	E
HCM Volume to Capacity ratio	1.07		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	6.0
Intersection Capacity Utilization	106.6%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group



# HCM Signalized Intersection Capacity Analysis

## 9: Wayne Ave. & Flower Ave

6/10/2008



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕	↗		↕		↖	↖			↕	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		2.0	2.0		2.0		2.0	2.0			2.0	
Lane Util. Factor		1.00	1.00		1.00		1.00	1.00			1.00	
Frbp, ped/bikes		1.00	1.00		0.99		1.00	1.00			0.99	
Flpb, ped/bikes		0.98	1.00		1.00		1.00	1.00			1.00	
Frt		1.00	0.85		0.97		1.00	1.00			0.95	
Flt Protected		0.96	1.00		0.99		0.95	1.00			1.00	
Satd. Flow (prot)		1660	1509		1679		1687	1772			1678	
Flt Permitted		0.69	1.00		0.97		0.31	1.00			0.99	
Satd. Flow (perm)		1188	1509		1640		550	1772			1660	
Volume (vph)	75	10	200	5	25	10	600	450	5	10	300	175
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	82	11	217	5	27	11	652	489	5	11	326	190
RTOR Reduction (vph)	0	0	0	0	9	0	0	0	0	0	14	0
Lane Group Flow (vph)	0	93	217	0	34	0	652	494	0	0	513	0
Confl. Peds. (#/hr)	6		2	2		6	1		4	4		1
Turn Type	Perm		pt+ov	Perm			pm+pt				Perm	
Protected Phases		4	4 5		8		5	2				6
Permitted Phases	4			8			2				6	
Actuated Green, G (s)		13.8	73.8		13.8		117.2	116.2				56.2
Effective Green, g (s)		16.8	76.8		16.8		119.2	119.2				59.2
Actuated g/C Ratio		0.12	0.55		0.12		0.85	0.85				0.42
Clearance Time (s)		5.0			5.0		4.0	5.0				5.0
Vehicle Extension (s)		3.0			3.0		3.0	3.0				3.0
Lane Grp Cap (vph)		143	828		197		939	1509				702
v/s Ratio Prot			0.14				c0.29	0.28				
v/s Ratio Perm		c0.08			0.02		0.30					c0.31
v/c Ratio		0.65	0.26		0.17		0.69	0.33				0.73
Uniform Delay, d1		58.8	16.7		55.4		15.8	2.1				33.7
Progression Factor		0.81	0.53		1.00		1.00	1.00				1.00
Incremental Delay, d2		9.1	0.2		0.4		2.2	0.6				6.6
Delay (s)		56.7	9.0		55.8		18.0	2.7				40.4
Level of Service		E	A		E		B	A				D
Approach Delay (s)		23.3			55.8			11.4				40.4
Approach LOS		C			E			B				D

### Intersection Summary

HCM Average Control Delay	21.7	HCM Level of Service	C
HCM Volume to Capacity ratio	0.69		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	4.0
Intersection Capacity Utilization	81.6%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

# HCM Signalized Intersection Capacity Analysis

## 12: Piney Branch Rd. & Arliss

6/10/2008



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↕		↖	↕			↕		↖	↕	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	2.0	2.0		2.0	2.0			2.0		2.0	2.0	
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00		0.95	0.95	
Frbp, ped/bikes	1.00	1.00		1.00	1.00			1.00		1.00	1.00	
Flpb, ped/bikes	1.00	1.00		0.99	1.00			1.00		1.00	1.00	
Frt	1.00	1.00		1.00	0.96			0.93		1.00	0.97	
Flt Protected	0.95	1.00		0.95	1.00			0.99		0.95	0.96	
Satd. Flow (prot)	1687	3370		1674	3225			1728		1603	1573	
Flt Permitted	0.08	1.00		0.41	1.00			0.99		0.95	0.96	
Satd. Flow (perm)	147	3370		714	3225			1728		1603	1573	
Volume (vph)	15	550	5	10	1200	500	5	5	10	200	5	25
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	16	598	5	11	1304	543	5	5	11	217	5	27
RTOR Reduction (vph)	0	0	0	0	18	0	0	10	0	0	8	0
Lane Group Flow (vph)	16	603	0	11	1829	0	0	11	0	128	113	0
Confl. Peds. (#/hr)	4			5			17			10		
Heavy Vehicles (%)	7%	7%	7%	7%	7%	7%	1%	1%	1%	7%	7%	7%
Turn Type	Perm		Perm		Split		Split					
Protected Phases	6		2		3		3		4		4	
Permitted Phases	6		2									
Actuated Green, G (s)	113.6	113.6		113.6	113.6			4.5		16.9	16.9	
Effective Green, g (s)	116.6	116.6		116.6	116.6			7.5		19.9	19.9	
Actuated g/C Ratio	0.78	0.78		0.78	0.78			0.05		0.13	0.13	
Clearance Time (s)	5.0	5.0		5.0	5.0			5.0		5.0	5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0		3.0	3.0	
Lane Grp Cap (vph)	114	2620		555	2507			86		213	209	
v/s Ratio Prot		0.18			c0.57			c0.01		c0.08	0.07	
v/s Ratio Perm	0.11			0.02								
v/c Ratio	0.14	0.23		0.02	0.73			0.12		0.60	0.54	
Uniform Delay, d1	4.2	4.5		3.8	8.6			68.1		61.3	60.8	
Progression Factor	0.91	0.79		1.05	0.69			1.00		1.00	1.00	
Incremental Delay, d2	2.5	0.2		0.0	1.3			0.6		4.7	2.9	
Delay (s)	6.3	3.8		4.0	7.2			68.7		66.0	63.6	
Level of Service	A	A		A	A			E		E	E	
Approach Delay (s)		3.9			7.2			68.7			64.9	
Approach LOS		A			A			E			E	

### Intersection Summary

HCM Average Control Delay	12.1	HCM Level of Service	B
HCM Volume to Capacity ratio	0.68		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	6.0
Intersection Capacity Utilization	68.9%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

# HCM Signalized Intersection Capacity Analysis

## 13: Piney Branch Rd. & Barron St

6/10/2008


























Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑			↑↑			↑	↑		↑↑	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		2.0			2.0			2.0	2.0		2.0	
Lane Util. Factor		0.95			0.95			1.00	1.00		1.00	
Frt		0.99			1.00			1.00	0.85		0.97	
Flt Protected		1.00			1.00			0.95	1.00		0.96	
Satd. Flow (prot)		3324			3365			1795	1599		1754	
Flt Permitted		0.94			0.88			0.74	1.00		0.72	
Satd. Flow (perm)		3135			2950			1391	1599		1309	
Volume (vph)	5	700	75	50	1475	10	225	10	75	15	0	5
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	5	761	82	54	1603	11	245	11	82	16	0	5
RTOR Reduction (vph)	0	4	0	0	0	0	0	0	63	0	4	0
Lane Group Flow (vph)	0	844	0	0	1668	0	0	256	19	0	17	0
Heavy Vehicles (%)	7%	7%	7%	7%	7%	7%	1%	1%	1%	1%	1%	1%
Turn Type	Perm			Perm			Perm		Perm	Perm		
Protected Phases		2			6			8			4	
Permitted Phases	2			6			8		8	4		
Actuated Green, G (s)		107.8			107.8			31.2	31.2		31.2	
Effective Green, g (s)		111.8			111.8			34.2	34.2		34.2	
Actuated g/C Ratio		0.75			0.75			0.23	0.23		0.23	
Clearance Time (s)		6.0			6.0			5.0	5.0		5.0	
Vehicle Extension (s)		3.0			3.0			3.0	3.0		3.0	
Lane Grp Cap (vph)		2337			2199			317	365		298	
v/s Ratio Prot												
v/s Ratio Perm		0.27			c0.57			c0.18	0.01		0.01	
v/c Ratio		0.36			0.76			0.81	0.05		0.06	
Uniform Delay, d1		6.7			11.2			54.8	45.2		45.3	
Progression Factor		1.04			1.00			1.00	1.00		1.00	
Incremental Delay, d2		0.4			2.5			14.0	0.1		0.1	
Delay (s)		7.3			13.7			68.7	45.3		45.4	
Level of Service		A			B			E	D		D	
Approach Delay (s)		7.3			13.7			63.1			45.4	
Approach LOS		A			B			E			D	
<b>Intersection Summary</b>												
HCM Average Control Delay			17.9			HCM Level of Service			B			
HCM Volume to Capacity ratio			0.76									
Actuated Cycle Length (s)			150.0			Sum of lost time (s)			4.0			
Intersection Capacity Utilization			93.2%			ICU Level of Service			F			
Analysis Period (min)			15									

c Critical Lane Group

# HCM Signalized Intersection Capacity Analysis

## 4: Fenton St & Wayne Ave.

6/10/2008


















												
Movement	NBL	NBT	NBR	SBL	SBT	SBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	2.0	2.0	2.0	2.0	2.0		2.0	2.0		2.0	2.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00		1.00	0.95		1.00	0.95	
Frbp, ped/bikes	1.00	1.00	1.00	1.00	0.98		1.00	0.96		1.00	0.98	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		0.93	1.00		1.00	1.00	
Frt	1.00	1.00	0.85	1.00	0.98		1.00	0.97		1.00	0.99	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1719	1810	1538	1719	1732		1600	3206		1719	3321	
Flt Permitted	0.30	1.00	1.00	0.17	1.00		0.31	1.00		0.11	1.00	
Satd. Flow (perm)	548	1810	1538	315	1732		515	3206		201	3321	
Volume (vph)	75	525	300	75	350	50	50	725	175	300	550	50
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	82	571	326	82	380	54	54	788	190	326	598	54
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	82	571	326	82	434	0	54	978	0	326	652	0
Conf. Peds. (#/hr)	90		112	112		90	71		53	53		71
Turn Type	Perm		Prot	Perm			Perm			pm+pt		
Protected Phases		2	2			6			4		3	8
Permitted Phases	2			6			4				8	
Actuated Green, G (s)	46.9	46.9	46.9	46.9	46.9		40.9	40.9		64.1	63.1	
Effective Green, g (s)	49.9	49.9	49.9	49.9	49.9		43.9	43.9		66.1	66.1	
Actuated g/C Ratio	0.42	0.42	0.42	0.42	0.42		0.37	0.37		0.55	0.55	
Clearance Time (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0		4.0	5.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	228	753	640	131	720		188	1173		366	1829	
v/s Ratio Prot		c0.32	0.21		0.25			0.31		c0.15	0.20	
v/s Ratio Perm	0.15			0.26			0.10			c0.34		
v/c Ratio	0.36	0.76	0.51	0.63	0.60		0.29	0.83		0.89	0.36	
Uniform Delay, d1	24.1	29.9	26.0	27.7	27.3		27.0	34.7		39.3	15.1	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		0.66	0.62	
Incremental Delay, d2	4.4	7.0	2.9	20.5	3.7		0.8	5.2		20.8	0.1	
Delay (s)	28.4	36.9	28.9	48.2	31.0		27.8	40.0		46.6	9.4	
Level of Service	C	D	C	D	C		C	D		D	A	
Approach Delay (s)		33.5			33.8			39.3			21.8	
Approach LOS		C			C			D			C	
<b>Intersection Summary</b>												
HCM Average Control Delay			32.0			HCM Level of Service				C		
HCM Volume to Capacity ratio			0.81									
Actuated Cycle Length (s)			120.0			Sum of lost time (s)			4.0			
Intersection Capacity Utilization			89.8%			ICU Level of Service				E		
Analysis Period (min)			15									

c Critical Lane Group

# HCM Signalized Intersection Capacity Analysis

## 5: Cedar Ave & Wayne Ave.

6/10/2008

												
Movement	NBL	NBT	NBR	SBL	SBT	SBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		2.0		2.0		2.0		2.0			2.0	
Lane Util. Factor		1.00		1.00		1.00		0.95			0.95	
Frbp, ped/bikes		0.99		1.00		1.00		1.00			1.00	
Flpb, ped/bikes		1.00		1.00		1.00		1.00			1.00	
Frt		0.96		1.00		0.85		1.00			0.97	
Flt Protected		0.99		0.95		1.00		0.99			1.00	
Satd. Flow (prot)		1711		1719		1538		3397			3319	
Flt Permitted		0.99		0.36		1.00		0.54			1.00	
Satd. Flow (perm)		1711		645		1538		1872			3319	
Volume (vph)	75	225	125	250	0	200	250	775	0	0	700	175
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	82	245	136	272	0	217	272	842	0	0	761	190
RTOR Reduction (vph)	0	12	0	0	0	121	0	0	0	0	0	0
Lane Group Flow (vph)	0	451	0	272	0	96	0	1114	0	0	951	0
Confl. Peds. (#/hr)			5	5			1					1
Turn Type	Perm		custom		custom		Perm					
Protected Phases		8						2			6	
Permitted Phases	8		4		4		2					
Actuated Green, G (s)		43.0		43.0		43.0		67.0			67.0	
Effective Green, g (s)		46.0		46.0		46.0		70.0			70.0	
Actuated g/C Ratio		0.38		0.38		0.38		0.58			0.58	
Clearance Time (s)		5.0		5.0		5.0		5.0			5.0	
Vehicle Extension (s)		3.0		3.0		3.0		0.2			0.2	
Lane Grp Cap (vph)		656		247		590		1092			1936	
v/s Ratio Prot											0.29	
v/s Ratio Perm		0.26		c0.42		0.06		c0.60				
v/c Ratio		0.69		1.10		0.16		1.13dl			0.49	
Uniform Delay, d1		31.0		37.0		24.3		25.0			14.6	
Progression Factor		1.00		1.00		1.00		0.70			0.75	
Incremental Delay, d2		3.0		87.0		0.1		28.9			0.4	
Delay (s)		34.0		124.0		24.5		46.3			11.3	
Level of Service		C		F		C		D			B	
Approach Delay (s)		34.0			79.8			46.3			11.3	
Approach LOS		C			E			D			B	
<b>Intersection Summary</b>												
HCM Average Control Delay			38.8				HCM Level of Service				D	
HCM Volume to Capacity ratio			1.04									
Actuated Cycle Length (s)			120.0				Sum of lost time (s)			4.0		
Intersection Capacity Utilization			104.6%				ICU Level of Service			G		
Analysis Period (min)			15									
dl Defacto Left Lane. Recode with 1 though lane as a left lane.												
c Critical Lane Group												

# HCM Signalized Intersection Capacity Analysis

## 6: Wayne Ave. & Dale Dr

6/10/2008



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕↕			↕↕		↖	↗		↖	↗	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		2.0			2.0		2.0	2.0		2.0	2.0	
Lane Util. Factor		0.95			0.95		1.00	1.00		1.00	1.00	
Frbp, ped/bikes		1.00			1.00		1.00	0.99		1.00	1.00	
Flpb, ped/bikes		1.00			1.00		1.00	1.00		1.00	1.00	
Frt		0.98			0.97		1.00	0.95		1.00	0.98	
Flt Protected		0.99			0.99		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		3346			3324		1719	1716		1719	1764	
Flt Permitted		0.55			0.55		0.13	1.00		0.12	1.00	
Satd. Flow (perm)		1867			1856		228	1716		214	1764	
Volume (vph)	200	850	150	125	675	175	75	350	150	200	425	75
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	217	924	163	136	734	190	82	380	163	217	462	82
RTOR Reduction (vph)	0	9	0	0	0	0	0	12	0	0	5	0
Lane Group Flow (vph)	0	1295	0	0	1060	0	82	531	0	217	539	0
Conf. Peds. (#/hr)							2		6	6		2
Turn Type	Perm			Perm			pm+pt			pm+pt		
Protected Phases		2			2		3	8		7	4	
Permitted Phases	2			2			8			4		
Actuated Green, G (s)		70.2			70.2		32.0	28.8		38.6	32.6	
Effective Green, g (s)		73.2			73.2		37.0	31.8		42.8	35.6	
Actuated g/C Ratio		0.61			0.61		0.31	0.26		0.36	0.30	
Clearance Time (s)		5.0			5.0		4.0	5.0		5.0	5.0	
Vehicle Extension (s)		3.0			3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		1139			1132		135	455		189	523	
v/s Ratio Prot							0.03	c0.31		c0.09	0.31	
v/s Ratio Perm		c0.69			0.57		0.16			0.32		
v/c Ratio		1.14			0.94		0.61	1.17		1.15	1.03	
Uniform Delay, d1		23.4			21.3		34.1	44.1		57.7	42.2	
Progression Factor		1.09			0.88		1.00	1.00		1.00	1.00	
Incremental Delay, d2		65.2			14.6		7.5	96.2		111.0	47.5	
Delay (s)		90.6			33.3		41.6	140.3		168.7	89.7	
Level of Service		F			C		D	F		F	F	
Approach Delay (s)		90.6			33.3			127.4			112.2	
Approach LOS		F			C			F			F	

### Intersection Summary

HCM Average Control Delay	84.9	HCM Level of Service	F
HCM Volume to Capacity ratio	1.13		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	6.0
Intersection Capacity Utilization	114.1%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

# HCM Signalized Intersection Capacity Analysis

## 7: Wayne Ave. & Mansfield

6/10/2008



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑			↑↑			↑↓				
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		2.0			2.0			2.0				
Lane Util. Factor		0.95			0.95			1.00				
Frbp, ped/bikes		1.00			1.00			0.99				
Flpb, ped/bikes		1.00			1.00			1.00				
Frt		1.00			1.00			0.93				
Flt Protected		1.00			1.00			0.98				
Satd. Flow (prot)		3427			3435			1630				
Flt Permitted		1.00			0.91			0.98				
Satd. Flow (perm)		3427			3143			1630				
Volume (vph)	0	1275	25	15	875	0	5	0	5	0	0	0
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	1386	27	16	951	0	5	0	5	0	0	0
RTOR Reduction (vph)	0	1	0	0	0	0	0	4	0	0	0	0
Lane Group Flow (vph)	0	1412	0	0	967	0	0	6	0	0	0	0
Conf. Peds. (#/hr)			2	2					5			
Turn Type				Perm			Perm					
Protected Phases		6			2			4				
Permitted Phases				2			4					
Actuated Green, G (s)		85.0			85.0			24.0				
Effective Green, g (s)		89.0			89.0			27.0				
Actuated g/C Ratio		0.74			0.74			0.22				
Clearance Time (s)		6.0			6.0			5.0				
Vehicle Extension (s)		0.2			0.2			3.0				
Lane Grp Cap (vph)		2542			2331			367				
v/s Ratio Prot		c0.41										
v/s Ratio Perm					0.31			0.00				
v/c Ratio		0.56			0.41			0.02				
Uniform Delay, d1		6.8			5.8			36.2				
Progression Factor		0.57			0.91			1.00				
Incremental Delay, d2		0.1			0.4			0.0				
Delay (s)		3.9			5.7			36.2				
Level of Service		A			A			D				
Approach Delay (s)		3.9			5.7			36.2			0.0	
Approach LOS		A			A			D			A	

### Intersection Summary

HCM Average Control Delay	4.8	HCM Level of Service	A
HCM Volume to Capacity ratio	0.43		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	4.0
Intersection Capacity Utilization	62.7%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

# HCM Signalized Intersection Capacity Analysis

## 8: Wayne Ave. & Sligo Creek Pkwy

6/10/2008



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗		↖	↗		↖	↗			↖	↗
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	2.0	2.0		2.0	2.0		2.0	2.0			2.0	2.0
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00			1.00	1.00
Frbp, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00			1.00	1.00
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00			1.00	1.00
Frt	1.00	0.98		1.00	0.99		1.00	0.99			1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00			0.99	1.00
Satd. Flow (prot)	1719	1770		1719	1799		1719	1790			1787	1538
Flt Permitted	0.24	1.00		0.06	1.00		0.11	1.00			0.68	1.00
Satd. Flow (perm)	439	1770		103	1799		207	1790			1234	1538
Volume (vph)	300	875	150	25	600	25	100	325	25	100	350	175
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	326	951	163	27	652	27	109	353	27	109	380	190
RTOR Reduction (vph)	0	5	0	0	1	0	0	2	0	0	0	0
Lane Group Flow (vph)	326	1109	0	27	678	0	109	378	0	0	489	190
Conf. Peds. (#/hr)	11			10			10			7		
Turn Type	Perm			Perm			pm+pt			Perm		Prot
Protected Phases		2			6		7	4			8	8
Permitted Phases	2			6			4			8		
Actuated Green, G (s)	67.0	67.0		67.0	67.0		43.0	43.0			35.0	35.0
Effective Green, g (s)	70.0	70.0		70.0	70.0		46.0	46.0			38.0	38.0
Actuated g/C Ratio	0.58	0.58		0.58	0.58		0.38	0.38			0.32	0.32
Clearance Time (s)	5.0	5.0		5.0	5.0		5.0	5.0			5.0	5.0
Vehicle Extension (s)	0.2	0.2		0.2	0.2		3.0	3.0			3.0	3.0
Lane Grp Cap (vph)	256	1033		60	1049		155	686			391	487
v/s Ratio Prot		0.63			0.38		c0.04	0.21				0.12
v/s Ratio Perm	c0.74			0.26			0.23				c0.40	
v/c Ratio	1.27	1.07		0.45	0.65		0.70	0.55			1.25	0.39
Uniform Delay, d1	25.0	25.0		14.1	16.7		28.8	28.9			41.0	32.0
Progression Factor	0.79	0.79		0.57	0.53		1.00	1.00			1.00	1.00
Incremental Delay, d2	146.5	48.1		16.3	2.2		13.5	1.0			132.4	0.5
Delay (s)	166.4	67.9		24.4	11.0		42.3	29.9			173.4	32.5
Level of Service	F	E		C	B		D	C			F	C
Approach Delay (s)		90.2			11.5			32.6			133.9	
Approach LOS		F			B			C			F	

### Intersection Summary

HCM Average Control Delay	73.9	HCM Level of Service	E
HCM Volume to Capacity ratio	1.22		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	6.0
Intersection Capacity Utilization	116.9%	ICU Level of Service	H
Analysis Period (min)	15		

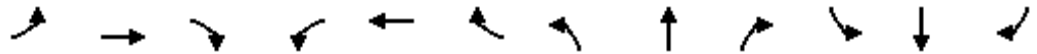
c Critical Lane Group



# HCM Signalized Intersection Capacity Analysis

## 9: Wayne Ave. & Flower Ave

6/10/2008



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕	↗		↕		↖	↖			↕	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		2.0	2.0		2.0		2.0	2.0			2.0	
Lane Util. Factor		1.00	1.00		1.00		1.00	1.00			1.00	
Frbp, ped/bikes		1.00	0.99		0.99		1.00	1.00			0.99	
Flpb, ped/bikes		0.99	1.00		1.00		1.00	1.00			1.00	
Frt		1.00	0.85		0.94		1.00	1.00			0.96	
Flt Protected		0.96	1.00		0.99		0.95	1.00			1.00	
Satd. Flow (prot)		1729	1517		1662		1719	1804			1715	
Flt Permitted		0.71	1.00		0.93		0.26	1.00			1.00	
Satd. Flow (perm)		1269	1517		1566		476	1804			1710	
Volume (vph)	200	50	475	10	20	25	375	575	10	5	475	225
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	217	54	516	11	22	27	408	625	11	5	516	245
RTOR Reduction (vph)	0	0	0	0	21	0	0	1	0	0	13	0
Lane Group Flow (vph)	0	271	516	0	39	0	408	635	0	0	753	0
Confl. Peds. (#/hr)	2		4	4		2	6		4	4		6
Turn Type	Perm		pm+ov	Perm		pm+pt				Perm		
Protected Phases		4	5		8		5	2			6	
Permitted Phases	4		4	8		2				6		
Actuated Green, G (s)		25.6	44.1		25.6		84.4	84.4			61.9	
Effective Green, g (s)		28.6	49.1		28.6		87.4	87.4			64.9	
Actuated g/C Ratio		0.24	0.41		0.24		0.73	0.73			0.54	
Clearance Time (s)		5.0	4.0		5.0		4.0	5.0			5.0	
Vehicle Extension (s)		3.0	3.0		3.0		3.0	3.0			3.0	
Lane Grp Cap (vph)		302	646		373		559	1314			925	
v/s Ratio Prot			c0.14				0.12	0.35				
v/s Ratio Perm		c0.21	0.20		0.03		0.41				c0.44	
v/c Ratio		0.90	0.80		0.11		0.73	0.48			0.81	
Uniform Delay, d1		44.3	31.1		35.7		11.6	6.8			22.6	
Progression Factor		0.96	0.55		1.00		1.00	1.00			1.00	
Incremental Delay, d2		3.6	0.7		0.1		4.8	1.3			7.8	
Delay (s)		46.1	17.9		35.8		16.4	8.1			30.4	
Level of Service		D	B		D		B	A			C	
Approach Delay (s)		27.6			35.8			11.3			30.4	
Approach LOS		C			D			B			C	

### Intersection Summary

HCM Average Control Delay	22.2	HCM Level of Service	C
HCM Volume to Capacity ratio	0.82		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	4.0
Intersection Capacity Utilization	100.4%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group

# HCM Signalized Intersection Capacity Analysis

## 12: Piney Branch Rd. & Arliss

6/10/2008



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↕		↖	↕			↕		↖	↕	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	2.0	2.0		2.0	2.0			2.0		2.0	2.0	
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00		0.95	0.95	
Frbp, ped/bikes	1.00	1.00		1.00	1.00			1.00		1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00			1.00		1.00	1.00	
Frt	1.00	1.00		1.00	0.97			0.90		1.00	0.97	
Flt Protected	0.95	1.00		0.95	1.00			0.99		0.95	0.97	
Satd. Flow (prot)	1715	3432		1715	3321			1684		1633	1612	
Flt Permitted	0.16	1.00		0.13	1.00			0.99		0.95	0.97	
Satd. Flow (perm)	291	3432		235	3321			1684		1633	1612	
Volume (vph)	50	1200	15	25	850	250	5	5	25	450	25	50
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor (vph)	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Adj. Flow (vph)	54	1304	16	27	924	272	5	5	27	489	27	54
RTOR Reduction (vph)	0	1	0	0	22	0	0	25	0	0	11	0
Lane Group Flow (vph)	54	1319	0	27	1174	0	0	12	0	289	270	0
Confl. Peds. (#/hr)	10			12			24			40		
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%	1%	1%	1%	5%	5%	5%
Turn Type	Perm		Perm		Split		Split					
Protected Phases	6		2		3		3		4		4	
Permitted Phases	6		2									
Actuated Green, G (s)	45.1	45.1		45.1	45.1			3.0		16.9	16.9	
Effective Green, g (s)	48.1	48.1		48.1	48.1			6.0		19.9	19.9	
Actuated g/C Ratio	0.60	0.60		0.60	0.60			0.08		0.25	0.25	
Clearance Time (s)	5.0	5.0		5.0	5.0			5.0		5.0	5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0		3.0	3.0	
Lane Grp Cap (vph)	175	2063		141	1997			126		406	401	
v/s Ratio Prot		c0.38			0.35			c0.01		c0.18	0.17	
v/s Ratio Perm	0.19			0.12								
v/c Ratio	0.31	0.64		0.19	0.59			0.10		0.71	0.67	
Uniform Delay, d1	7.8	10.3		7.2	9.8			34.5		27.4	27.1	
Progression Factor	0.62	0.57		0.74	0.65			1.00		1.00	1.00	
Incremental Delay, d2	3.8	1.3		2.6	1.1			0.3		5.8	4.4	
Delay (s)	8.7	7.1		7.9	7.5			34.8		33.2	31.5	
Level of Service	A	A		A	A			C		C	C	
Approach Delay (s)		7.2			7.5			34.8			32.4	
Approach LOS		A			A			C			C	

### Intersection Summary

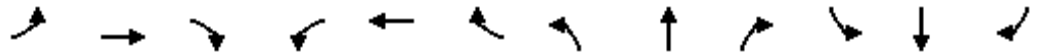
HCM Average Control Delay	12.1	HCM Level of Service	B
HCM Volume to Capacity ratio	0.60		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	6.0
Intersection Capacity Utilization	69.5%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

# HCM Signalized Intersection Capacity Analysis

## 13: Piney Branch Rd. & Barron St

6/10/2008



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↕		↖	↕			↕	↖		↕	↖
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	2.0	2.0		2.0	2.0			2.0	2.0		2.0	
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00	1.00		1.00	
Frt	1.00	0.98		1.00	1.00			1.00	0.85		0.98	
Flt Protected	0.95	1.00		0.95	1.00			0.95	1.00		0.96	
Satd. Flow (prot)	1719	3378		1719	3427			1794	1599		1782	
Flt Permitted	0.95	1.00		0.95	1.00			0.74	1.00		0.78	
Satd. Flow (perm)	1719	3378		1719	3427			1399	1599		1443	
Volume (vph)	10	1525	200	20	1100	25	175	5	100	25	5	5
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor (vph)	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Adj. Flow (vph)	11	1658	217	22	1196	27	190	5	109	27	5	5
RTOR Reduction (vph)	0	10	0	0	1	0	0	0	83	0	4	0
Lane Group Flow (vph)	11	1865	0	22	1222	0	0	195	26	0	33	0
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%	1%	1%	1%	1%	1%	1%
Turn Type	Prot		Prot		Perm		Perm		Perm			
Protected Phases	5	2		1	6			8			4	
Permitted Phases							8		8		4	
Actuated Green, G (s)	1.3	45.4		2.5	46.6			16.1	16.1		16.1	
Effective Green, g (s)	4.3	49.4		5.5	50.6			19.1	19.1		19.1	
Actuated g/C Ratio	0.05	0.62		0.07	0.63			0.24	0.24		0.24	
Clearance Time (s)	5.0	6.0		5.0	6.0			5.0	5.0		5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0	3.0		3.0	
Lane Grp Cap (vph)	92	2086		118	2168			334	382		345	
v/s Ratio Prot	0.01	c0.55		0.01	c0.36							
v/s Ratio Perm								c0.14	0.02		0.02	
v/c Ratio	0.12	0.89		0.19	0.56			0.58	0.07		0.10	
Uniform Delay, d1	36.0	13.1		35.1	8.4			26.9	23.6		23.7	
Progression Factor	1.01	1.09		1.00	1.00			1.00	1.00		1.00	
Incremental Delay, d2	0.5	5.4		0.8	1.1			2.6	0.1		0.1	
Delay (s)	36.9	19.7		35.9	9.5			29.5	23.6		23.8	
Level of Service	D	B		D	A			C	C		C	
Approach Delay (s)		19.8			9.9			27.4			23.8	
Approach LOS		B			A			C			C	

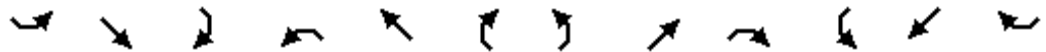
### Intersection Summary

HCM Average Control Delay	16.9	HCM Level of Service	B
HCM Volume to Capacity ratio	0.78		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	6.0
Intersection Capacity Utilization	68.1%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

# HCM Signalized Intersection Capacity Analysis

20: Harkins Rd & Ellin Rd

6/11/2008



Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00		0.97	1.00		1.00	0.95	
Frt	1.00	1.00	0.85	1.00	0.92		1.00	0.97		1.00	0.95	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1703	1792	1524	1703	1658		3303	1738		1703	3251	
Flt Permitted	0.75	1.00	1.00	0.72	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1346	1792	1524	1295	1658		3303	1738		1703	3251	
Volume (vph)	20	50	150	5	5	5	755	315	80	250	345	150
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	21	53	158	5	5	5	795	332	84	263	363	158
RTOR Reduction (vph)	0	0	139	0	4	0	0	9	0	0	53	0
Lane Group Flow (vph)	21	53	19	5	6	0	795	407	0	263	468	0
Heavy Vehicles (%)	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%
Turn Type	Perm		Perm	Perm			Prot			Prot		
Protected Phases		8			4		5	2		1	6	
Permitted Phases	8		8	4								
Actuated Green, G (s)	5.8	5.8	5.8	5.8	5.8		18.5	24.2		11.0	16.7	
Effective Green, g (s)	6.8	6.8	6.8	6.8	6.8		19.5	25.2		12.0	17.7	
Actuated g/C Ratio	0.12	0.12	0.12	0.12	0.12		0.35	0.45		0.21	0.32	
Clearance Time (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0		5.0	5.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	163	218	185	157	201		1150	782		365	1028	
v/s Ratio Prot		c0.03			0.00		c0.24	c0.23		0.15	0.14	
v/s Ratio Perm	0.02		0.01	0.00								
v/c Ratio	0.13	0.24	0.10	0.03	0.03		0.69	0.52		0.72	0.46	
Uniform Delay, d1	22.0	22.3	21.9	21.7	21.7		15.7	11.1		20.4	15.3	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.4	0.6	0.2	0.1	0.1		1.8	0.6		6.8	0.3	
Delay (s)	22.3	22.9	22.1	21.8	21.7		17.5	11.7		27.3	15.6	
Level of Service	C	C	C	C	C		B	B		C	B	
Approach Delay (s)		22.3			21.8			15.5			19.5	
Approach LOS		C			C			B			B	

## Intersection Summary

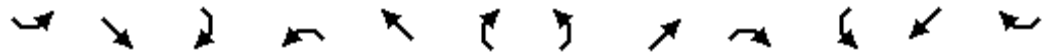
HCM Average Control Delay	17.7	HCM Level of Service	B
HCM Volume to Capacity ratio	0.53		
Actuated Cycle Length (s)	56.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	53.6%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

# HCM Signalized Intersection Capacity Analysis

20: Harkins Rd & Ellin Rd

6/11/2008



Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00		0.97	1.00		1.00	0.95	
Frt	1.00	1.00	0.85	1.00	0.92		1.00	1.00		1.00	0.99	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1752	1845	1568	1787	1721		3400	1842		1752	3486	
Flt Permitted	0.37	1.00	1.00	0.75	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	683	1845	1568	1419	1721		3400	1842		1752	3486	
Volume (vph)	165	5	600	65	145	190	265	475	5	5	405	15
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	174	5	632	68	153	200	279	500	5	5	426	16
RTOR Reduction (vph)	0	0	229	0	61	0	0	1	0	0	3	0
Lane Group Flow (vph)	174	5	403	68	292	0	279	504	0	5	439	0
Heavy Vehicles (%)	3%	3%	3%	1%	1%	1%	3%	3%	3%	3%	3%	3%
Turn Type	Perm		Perm	Perm			Prot			Prot		
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4		4	8								
Actuated Green, G (s)	18.8	18.8	18.8	18.8	18.8		9.2	28.2		0.7	19.7	
Effective Green, g (s)	19.8	19.8	19.8	19.8	19.8		10.2	29.2		1.7	20.7	
Actuated g/C Ratio	0.32	0.32	0.32	0.32	0.32		0.16	0.47		0.03	0.33	
Clearance Time (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0		5.0	5.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	216	583	495	448	543		553	858		48	1151	
v/s Ratio Prot		0.00			0.17		c0.08	c0.27		0.00	0.13	
v/s Ratio Perm	0.25		c0.26	0.05								
v/c Ratio	0.81	0.01	0.81	0.15	0.54		0.50	0.59		0.10	0.38	
Uniform Delay, d1	19.7	14.7	19.8	15.4	17.7		23.9	12.3		29.8	16.1	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	19.2	0.0	9.9	0.2	1.0		0.7	1.0		1.0	0.2	
Delay (s)	38.9	14.7	29.6	15.6	18.7		24.7	13.4		30.7	16.3	
Level of Service	D	B	C	B	B		C	B		C	B	
Approach Delay (s)		31.5			18.2			17.4			16.5	
Approach LOS		C			B			B			B	

## Intersection Summary

HCM Average Control Delay	22.0	HCM Level of Service	C
HCM Volume to Capacity ratio	0.64		
Actuated Cycle Length (s)	62.7	Sum of lost time (s)	8.0
Intersection Capacity Utilization	71.2%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

# HCM Signalized Intersection Capacity Analysis

## 21: Jones Bridge Rd & MD 355

6/10/2008



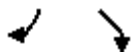
Movement	EBL	EBT	EBR	WBL	WBT	WBR2	NBL2	NBL	NBT	NBR	SBL	SBT
Lane Configurations		↑↑	↑	↑	↑↑	↑	↑	↑	↑↑↑	↑	↑	↑↑↑
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	2000
Total Lost time (s)		4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor		0.95	1.00	0.91	0.91	1.00	1.00	1.00	0.91	1.00	1.00	0.91
Frbp, ped/bikes		1.00	0.80	1.00	1.00	0.98	1.00	1.00	1.00	0.96	1.00	1.00
Flpb, ped/bikes		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		1.00	0.85	1.00	1.00	0.85	1.00	1.00	1.00	0.85	1.00	0.99
Flt Protected		0.98	1.00	0.95	0.97	1.00	0.95	0.95	1.00	1.00	0.95	1.00
Satd. Flow (prot)		3354	1232	1564	3207	1506	1719	902	4940	1481	1719	5152
Flt Permitted		0.98	1.00	0.95	0.97	1.00	0.95	0.95	1.00	1.00	0.10	1.00
Satd. Flow (perm)		3354	1232	1564	3207	1506	1719	902	4940	1481	173	5152
Volume (vph)	30	30	30	850	360	245	105	10	1325	340	260	2695
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	32	32	32	895	379	258	111	11	1395	358	274	2837
RTOR Reduction (vph)	0	0	30	0	0	102	0	0	0	126	0	0
Lane Group Flow (vph)	0	64	2	448	826	156	111	11	1395	232	274	3000
Confl. Peds. (#/hr)			92			6				36		
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%	5%	100%	5%	5%	5%	5%
Turn Type	Split		Perm	Split		Perm	Prot	Prot		Perm	pm+pt	
Protected Phases	3	3		4	4		1	9	5		6	2
Permitted Phases			3			4				5		2
Actuated Green, G (s)		8.7	8.7	36.0	36.0	36.0	8.0	5.9	74.4	74.4	109.4	96.4
Effective Green, g (s)		9.7	9.7	37.0	37.0	37.0	9.0	6.9	75.4	75.4	110.4	97.4
Actuated g/C Ratio		0.05	0.05	0.21	0.21	0.21	0.05	0.04	0.42	0.42	0.61	0.54
Clearance Time (s)		5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Vehicle Extension (s)		3.0	3.0	3.0	3.0	3.0	3.0	3.0	8.0	8.0	3.0	8.0
Lane Grp Cap (vph)		181	66	321	659	310	86	35	2069	620	372	2788
v/s Ratio Prot		c0.02		c0.29	0.26		c0.06	0.01	0.28		0.13	c0.58
v/s Ratio Perm			0.00			0.10				0.16	0.32	
v/c Ratio		0.35	0.03	1.40	1.33dl	0.50	1.29	0.31	0.67	0.37	0.74	1.08
Uniform Delay, d1		82.1	80.7	71.5	71.5	63.3	85.5	84.2	42.4	36.1	49.6	41.3
Progression Factor		1.00	1.00	1.05	1.05	1.17	1.05	1.02	0.93	0.75	1.00	1.00
Incremental Delay, d2		1.2	0.2	193.0	124.2	1.1	188.2	4.5	1.6	1.5	7.4	41.7
Delay (s)		83.3	80.8	268.1	199.3	75.1	278.1	90.6	40.9	28.7	57.0	83.0
Level of Service		F	F	F	F	E	F	F	D	C	E	F
Approach Delay (s)		82.5			198.5				52.9			80.8
Approach LOS		F			F				D			F

### Intersection Summary

HCM Average Control Delay	99.7	HCM Level of Service	F
HCM Volume to Capacity ratio	1.09		
Actuated Cycle Length (s)	180.0	Sum of lost time (s)	20.0
Intersection Capacity Utilization	117.3%	ICU Level of Service	H
Analysis Period (min)	15		

dl Defacto Left Lane. Recode with 1 though lane as a left lane.

c Critical Lane Group



Movement	SBR	SER
<b>Intersection Summary</b>		
Line Configurations		
Ideal Flow (vphpl)	1900	1900
Total Lost time (s)		4.0
Lane Util. Factor		1.00
Frbp, ped/bikes		1.00
Flpb, ped/bikes		1.00
Frt		0.86
Flt Protected		1.00
Satd. Flow (prot)		822
Flt Permitted		1.00
Satd. Flow (perm)		822
Volume (vph)	155	10
Peak-hour factor, PHF	0.95	0.95
Adj. Flow (vph)	163	11
RTOR Reduction (vph)	0	0
Lane Group Flow (vph)	0	11
Confl. Peds. (#/hr)	3	
Heavy Vehicles (%)	5%	100%
Turn Type		Over
Protected Phases		9
Permitted Phases		
Actuated Green, G (s)		5.9
Effective Green, g (s)		6.9
Actuated g/C Ratio		0.04
Clearance Time (s)		5.0
Vehicle Extension (s)		3.0
Lane Grp Cap (vph)		32
v/s Ratio Prot		c0.01
v/s Ratio Perm		
v/c Ratio		0.34
Uniform Delay, d1		84.3
Progression Factor		1.00
Incremental Delay, d2		6.3
Delay (s)		90.7
Level of Service		F
Approach Delay (s)		
Approach LOS		
<b>Intersection Summary</b>		

HCM Signalized Intersection Capacity Analysis  
 84: Jones Bridge Rd & Kensington Parkway

6/10/2008



Movement	EBL2	EBL	EBT	EBR2	WBT	WBR	WBR2	NBT	NBR	NBR2	SBT	SBR
Lane Configurations	↖	↗	↕		↕	↗		↕	↖	↗	↕	↕
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0		4.0	4.0		4.0			4.0	
Lane Util. Factor	0.91	0.95	0.95		0.91	0.91		0.91			0.91	
Frt	1.00	1.00	0.95		0.99	0.85		0.99			0.97	
Flt Protected	0.95	0.95	1.00		1.00	1.00		1.00			1.00	
Satd. Flow (prot)	1564	1516	3280		3272	1400		4908			4782	
Flt Permitted	0.95	0.95	1.00		1.00	1.00		1.00			1.00	
Satd. Flow (perm)	1564	1516	3280		3272	1400		4908			4782	
Volume (vph)	335	10	350	155	570	275	5	1785	30	50	3570	970
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	353	11	368	163	600	289	5	1879	32	53	3758	1021
RTOR Reduction (vph)	0	0	3	0	0	0	0	0	0	0	33	0
Lane Group Flow (vph)	235	129	528	0	627	267	0	1964	0	0	4746	0
Heavy Vehicles (%)	5%	100%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%
Turn Type	Prot	Prot						Perm				
Protected Phases	3	3	8!		4!			2			2	
Permitted Phases						4						2
Actuated Green, G (s)	10.0	10.0	35.0		19.0	19.0		89.0			89.0	
Effective Green, g (s)	11.0	11.0	36.0		21.0	21.0		91.0			91.0	
Actuated g/C Ratio	0.07	0.07	0.24		0.14	0.14		0.61			0.61	
Clearance Time (s)	5.0	5.0	5.0		6.0	6.0		6.0			6.0	
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0		5.0			5.0	
Lane Grp Cap (vph)	115	111	787		458	196		2978			2901	
v/s Ratio Prot	c0.15	0.09	0.16		c0.19			0.40			c0.99	
v/s Ratio Perm						0.19						
v/c Ratio	2.04	1.16	0.67		1.37	1.36		0.66			1.64	
Uniform Delay, d1	69.5	69.5	51.6		64.5	64.5		19.3			29.5	
Progression Factor	1.00	1.00	1.00		1.00	1.00		1.00			1.00	
Incremental Delay, d2	498.4	135.5	2.3		179.5	192.3		1.2			287.8	
Delay (s)	567.9	205.0	53.9		244.0	256.8		20.5			317.3	
Level of Service	F	F	D		F	F		C			F	
Approach Delay (s)			210.7		247.8			20.5			317.3	
Approach LOS			F		F			C			F	

Intersection Summary

HCM Average Control Delay	231.0	HCM Level of Service	F
HCM Volume to Capacity ratio	1.61		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	149.4%	ICU Level of Service	H
Analysis Period (min)	15		

! Phase conflict between lane groups.

c Critical Lane Group



HCM Signalized Intersection Capacity Analysis  
 84: Jones Bridge Rd & Kensington Parkway

6/10/2008





















Movement	NWL	SWL	SWR
Lane Configurations	↖	↖	↖
Ideal Flow (vphpl)	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0
Lane Util. Factor	1.00	1.00	1.00
Frt	1.00	1.00	0.85
Flt Protected	0.95	0.95	1.00
Satd. Flow (prot)	1719	1719	1538
Flt Permitted	0.95	0.95	1.00
Satd. Flow (perm)	1719	1719	1538
Volume (vph)	10	175	105
Peak-hour factor, PHF	0.95	0.95	0.95
Adj. Flow (vph)	11	184	111
RTOR Reduction (vph)	0	0	0
Lane Group Flow (vph)	11	184	111
Heavy Vehicles (%)	5%	5%	5%
Turn Type			Prot
Protected Phases	4!	1	1
Permitted Phases			
Actuated Green, G (s)	19.0	9.0	9.0
Effective Green, g (s)	21.0	11.0	11.0
Actuated g/C Ratio	0.14	0.07	0.07
Clearance Time (s)	6.0	6.0	6.0
Vehicle Extension (s)	3.0	3.0	3.0
Lane Grp Cap (vph)	241	126	113
v/s Ratio Prot	0.01	c0.11	0.07
v/s Ratio Perm			
v/c Ratio	0.05	1.46	0.98
Uniform Delay, d1	55.8	69.5	69.4
Progression Factor	1.00	1.00	1.00
Incremental Delay, d2	0.1	245.4	78.7
Delay (s)	55.9	314.9	148.1
Level of Service	E	F	F
Approach Delay (s)	55.9	252.1	
Approach LOS	E	F	
Intersection Summary			

# HCM Signalized Intersection Capacity Analysis

86: Jones Bridge Rd & Jones Mill Rd

6/10/2008

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0		4.0			4.0			4.0	
Lane Util. Factor	1.00	1.00	1.00		1.00			1.00			1.00	
Frt	1.00	1.00	0.85		1.00			1.00			0.97	
Flt Protected	0.95	1.00	1.00		1.00			0.96			1.00	
Satd. Flow (prot)	1719	950	1538		950			1734			1757	
Flt Permitted	0.95	1.00	1.00		1.00			0.96			1.00	
Satd. Flow (perm)	1719	950	1538		950			1734			1757	
Volume (vph)	50	10	550	0	10	0	890	125	0	0	615	170
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	53	11	579	0	11	0	937	132	0	0	647	179
RTOR Reduction (vph)	0	0	263	0	0	0	0	0	0	0	7	0
Lane Group Flow (vph)	53	11	316	0	11	0	0	1069	0	0	819	0
Heavy Vehicles (%)	5%	100%	5%	5%	100%	5%	5%	5%	5%	5%	5%	5%
Turn Type	Prot	custom					Split					
Protected Phases	3	3	9	6		9		2	2			4
Permitted Phases												
Actuated Green, G (s)	12.6	20.6	57.2		8.0			57.2			46.2	
Effective Green, g (s)	12.6	21.6	59.2		9.0			59.2			47.2	
Actuated g/C Ratio	0.09	0.15	0.41		0.06			0.41			0.33	
Clearance Time (s)	4.0		6.0		5.0			6.0			5.0	
Vehicle Extension (s)	3.0		3.0		3.0			3.0			4.0	
Lane Grp Cap (vph)	150	143	632		59			713			576	
v/s Ratio Prot	c0.03	0.01	0.21		c0.01			c0.62			c0.47	
v/s Ratio Perm												
v/c Ratio	0.35	0.08	0.50		0.19			1.50			1.42	
Uniform Delay, d1	61.9	52.6	31.4		64.0			42.4			48.4	
Progression Factor	1.00	1.00	1.00		1.00			0.29			1.00	
Incremental Delay, d2	1.4	0.2	2.8		6.9			227.9			200.1	
Delay (s)	63.3	52.9	34.2		70.9			240.4			248.5	
Level of Service	E	D	C		E			F			F	
Approach Delay (s)		36.9			70.9			240.4			248.5	
Approach LOS		D			E			F			F	
<b>Intersection Summary</b>												
HCM Average Control Delay			191.0			HCM Level of Service		F				
HCM Volume to Capacity ratio			1.27									
Actuated Cycle Length (s)			144.0			Sum of lost time (s)		16.0				
Intersection Capacity Utilization			118.0%			ICU Level of Service		H				
Analysis Period (min)			15									
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis  
 152: Jones Bridge Rd & Manor Rd

6/10/2008

	→	↘	↙	←	↖	↗
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑	↗	↘	↑	↘	↗
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (prot)	1810	1538	1719	1810	1719	1538
Flt Permitted	1.00	1.00	0.48	1.00	0.95	1.00
Satd. Flow (perm)	1810	1538	875	1810	1719	1538
Volume (vph)	315	20	320	810	75	240
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	332	21	337	853	79	253
RTOR Reduction (vph)	0	14	0	0	0	0
Lane Group Flow (vph)	332	7	337	853	79	253
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%
Turn Type		Perm pm+pt			pm+ov	
Protected Phases	2		1	6	4	1
Permitted Phases		2	6			4
Actuated Green, G (s)	14.5	14.5	31.6	30.6	4.4	16.5
Effective Green, g (s)	15.5	15.5	31.6	31.6	5.4	17.5
Actuated g/C Ratio	0.34	0.34	0.70	0.70	0.12	0.39
Clearance Time (s)	5.0	5.0	4.0	5.0	5.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	623	530	841	1271	206	735
v/s Ratio Prot	0.18		0.11	c0.47	0.05	c0.09
v/s Ratio Perm		0.00	0.17			0.07
v/c Ratio	0.53	0.01	0.40	0.67	0.38	0.34
Uniform Delay, d1	11.8	9.7	4.3	3.8	18.3	9.7
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.9	0.0	0.3	1.4	1.2	0.3
Delay (s)	12.7	9.7	4.6	5.2	19.5	10.0
Level of Service	B	A	A	A	B	A
Approach Delay (s)	12.5			5.0	12.2	
Approach LOS	B			A	B	

Intersection Summary

HCM Average Control Delay	7.7	HCM Level of Service	A
HCM Volume to Capacity ratio	0.58		
Actuated Cycle Length (s)	45.0	Sum of lost time (s)	4.0
Intersection Capacity Utilization	53.5%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis  
 154: Jones Bridge Rd & Platt Ridge Rd

6/10/2008



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑		↵	↑↑	↵	↵
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0		4.0	4.0	4.0	
Lane Util. Factor	0.95		1.00	0.95	1.00	
Frt	0.99		1.00	1.00	1.00	
Flt Protected	1.00		0.95	1.00	0.95	
Satd. Flow (prot)	3414		1719	3438	1787	
Flt Permitted	1.00		0.28	1.00	0.95	
Satd. Flow (perm)	3414		511	3438	1787	
Volume (vph)	815	40	50	1630	5	0
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	858	42	53	1716	5	0
RTOR Reduction (vph)	2	0	0	0	0	0
Lane Group Flow (vph)	898	0	53	1716	5	0
Heavy Vehicles (%)	5%	5%	5%	5%	1%	1%
Turn Type			pm+pt			Perm
Protected Phases	2		1	6	3	
Permitted Phases			6			3
Actuated Green, G (s)	59.8		68.9	68.9	1.5	
Effective Green, g (s)	60.8		69.9	69.9	2.5	
Actuated g/C Ratio	0.76		0.87	0.87	0.03	
Clearance Time (s)	5.0		4.0	5.0	5.0	
Vehicle Extension (s)	3.0		3.0	3.0	3.0	
Lane Grp Cap (vph)	2582		521	2989	56	
v/s Ratio Prot	0.26		0.01	c0.50	c0.00	
v/s Ratio Perm			0.08			
v/c Ratio	0.35		0.10	0.57	0.09	
Uniform Delay, d1	3.2		1.0	1.4	37.8	
Progression Factor	1.00		1.00	1.00	1.00	
Incremental Delay, d2	0.1		0.1	0.3	0.7	
Delay (s)	3.3		1.1	1.6	38.5	
Level of Service	A		A	A	D	
Approach Delay (s)	3.3			1.6	38.5	
Approach LOS	A			A	D	

Intersection Summary

HCM Average Control Delay	2.3	HCM Level of Service	A
HCM Volume to Capacity ratio	0.56		
Actuated Cycle Length (s)	80.4	Sum of lost time (s)	8.0
Intersection Capacity Utilization	55.1%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis  
 156: Jones Bridge Rd & Glenbrook Pkwy

6/10/2008



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↕		↖	↕			↕			↕	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0			4.0			4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00			1.00	
Frt	1.00	1.00		1.00	0.99			0.93			0.94	
Flt Protected	0.95	1.00		0.95	1.00			0.98			0.97	
Satd. Flow (prot)	1719	3438		1719	3396			1711			1723	
Flt Permitted	0.11	1.00		0.37	1.00			0.85			0.81	
Satd. Flow (perm)	199	3438		676	3396			1491			1437	
Volume (vph)	15	695	0	5	1425	125	10	0	10	60	0	45
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	16	732	0	5	1500	132	11	0	11	63	0	47
RTOR Reduction (vph)	0	0	0	0	4	0	0	10	0	0	37	0
Lane Group Flow (vph)	16	732	0	5	1628	0	0	12	0	0	73	0
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%	1%	1%	1%	1%	1%	1%
Turn Type	pm+pt			Perm			Perm			Perm		
Protected Phases	5	2			6			4			8	
Permitted Phases	2			6			4			8		
Actuated Green, G (s)	72.6	72.6		67.3	67.3			8.4			8.4	
Effective Green, g (s)	73.6	73.6		68.3	68.3			8.4			8.4	
Actuated g/C Ratio	0.82	0.82		0.76	0.76			0.09			0.09	
Clearance Time (s)	4.0	5.0		5.0	5.0			4.0			4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0			3.0	
Lane Grp Cap (vph)	185	2812		513	2577			139			134	
v/s Ratio Prot	0.00	c0.21			c0.48							
v/s Ratio Perm	0.07			0.01				0.01			c0.05	
v/c Ratio	0.09	0.26		0.01	0.63			0.09			0.54	
Uniform Delay, d1	3.8	1.9		2.6	5.0			37.3			39.0	
Progression Factor	1.46	2.10		1.00	1.00			1.00			1.00	
Incremental Delay, d2	0.2	0.2		0.0	1.2			0.3			4.4	
Delay (s)	5.7	4.2		2.7	6.2			37.6			43.4	
Level of Service	A	A		A	A			D			D	
Approach Delay (s)		4.2			6.2			37.6			43.4	
Approach LOS		A			A			D			D	

Intersection Summary

HCM Average Control Delay	7.5	HCM Level of Service	A
HCM Volume to Capacity ratio	0.62		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	58.0%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis  
 160: Jones Bridge Rd & Grier Rd

6/10/2008



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↖	↗↗	↗↗	↖	↖	↖
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0			
Lane Util. Factor		0.95	0.95			
Frt		1.00	1.00			
Flt Protected		1.00	1.00			
Satd. Flow (prot)		3438	3438			
Flt Permitted		1.00	1.00			
Satd. Flow (perm)		3438	3438			
Volume (vph)	0	820	1645	0	0	0
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	863	1732	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	0	863	1732	0	0	0
Heavy Vehicles (%)	5%	5%	5%	5%	1%	1%
Turn Type	pm+pt			pm+ov		pm+ov
Protected Phases	5	2	6	4	4	5
Permitted Phases	2			6		4
Actuated Green, G (s)		120.0	120.0			
Effective Green, g (s)		120.0	120.0			
Actuated g/C Ratio		1.00	1.00			
Clearance Time (s)		6.0	6.0			
Vehicle Extension (s)		3.0	3.0			
Lane Grp Cap (vph)		3438	3438			
v/s Ratio Prot		0.25	c0.50			
v/s Ratio Perm						
v/c Ratio		0.25	0.50			
Uniform Delay, d1		0.0	0.0			
Progression Factor		1.00	1.00			
Incremental Delay, d2		0.0	0.1			
Delay (s)		0.0	0.1			
Level of Service		A	A			
Approach Delay (s)		0.0	0.1		0.0	
Approach LOS		A	A		A	

Intersection Summary

HCM Average Control Delay	0.1	HCM Level of Service	A
HCM Volume to Capacity ratio	0.50		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	0.0
Intersection Capacity Utilization	48.8%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

# HCM Signalized Intersection Capacity Analysis

## 21: Jones Bridge Rd & MD 355

6/10/2008



Movement	EBL	EBT	EBR	WBL	WBT	WBR2	NBL2	NBL	NBT	NBR	SBL	SBT
Lane Configurations		↕↕	↗	↖	↕↕	↗	↖	↖	↕↕↕	↗	↖	↕↕↕
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	2000
Total Lost time (s)		4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor		0.95	1.00	0.91	0.91	1.00	1.00	1.00	0.91	1.00	1.00	0.91
Frbp, ped/bikes		1.00	0.80	1.00	1.00	0.97	1.00	1.00	1.00	0.96	1.00	1.00
Flpb, ped/bikes		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		1.00	0.85	1.00	1.00	0.85	1.00	1.00	1.00	0.85	1.00	1.00
Flt Protected		0.98	1.00	0.95	0.96	1.00	0.95	0.95	1.00	1.00	0.95	1.00
Satd. Flow (prot)		3433	1256	1595	3211	1520	1752	902	5036	1501	1752	5288
Flt Permitted		0.98	1.00	0.95	0.96	1.00	0.95	0.95	1.00	1.00	0.07	1.00
Satd. Flow (perm)		3433	1256	1595	3211	1520	1752	902	5036	1501	125	5288
Volume (vph)	275	385	85	410	20	290	10	10	2450	875	630	2085
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	289	405	89	432	21	305	11	11	2579	921	663	2195
RTOR Reduction (vph)	0	0	16	0	0	276	0	0	0	183	0	0
Lane Group Flow (vph)	0	694	73	216	237	29	11	11	2579	738	663	2227
Conf. Peds. (#/hr)			92			6				36		
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%	3%	100%	3%	3%	3%	3%
Turn Type	Split		Perm	Split		Perm	Prot	Prot		Perm	pm+pt	
Protected Phases	3	3		4	4		1	9!	5		6	2
Permitted Phases			3			4				5		2
Actuated Green, G (s)		31.0	31.0	16.0	16.0	16.0	2.0	5.2	60.8	60.8	100.8	100.8
Effective Green, g (s)		32.0	32.0	17.0	17.0	17.0	3.0	6.2	61.8	61.8	101.8	101.8
Actuated g/C Ratio		0.18	0.18	0.09	0.09	0.09	0.02	0.03	0.34	0.34	0.57	0.57
Clearance Time (s)		5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Vehicle Extension (s)		3.0	3.0	3.0	3.0	3.0	3.0	3.0	8.0	8.0	3.0	8.0
Lane Grp Cap (vph)		610	223	151	303	144	29	31	1729	515	459	2991
v/s Ratio Prot		c0.20		c0.14	0.07		0.01	c0.01	c0.51		c0.34	0.42
v/s Ratio Perm			0.06			0.02				0.49	0.47	
v/c Ratio		1.14	0.33	1.43	1.38dl	0.20	0.38	0.35	1.49	1.43	1.44	0.74
Uniform Delay, d1		74.0	64.6	81.5	79.7	75.2	87.6	84.9	59.1	59.1	65.0	29.3
Progression Factor		1.00	1.00	0.98	0.98	1.60	1.07	1.10	0.85	0.75	1.00	1.00
Incremental Delay, d2		80.7	0.9	226.0	11.8	0.7	3.7	3.1	222.6	199.8	212.0	1.7
Delay (s)		154.7	65.4	305.7	90.0	120.8	97.7	96.7	272.6	244.0	277.1	31.1
Level of Service		F	E	F	F	F	F	F	F	F	F	C
Approach Delay (s)		144.5			163.9				264.0			87.5
Approach LOS		F			F				F			F

### Intersection Summary

HCM Average Control Delay	178.5	HCM Level of Service	F
HCM Volume to Capacity ratio	1.33		
Actuated Cycle Length (s)	180.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	138.8%	ICU Level of Service	H
Analysis Period (min)	15		
dl Defacto Left Lane. Recode with 1 though lane as a left lane.			
! Phase conflict between lane groups.			
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis  
 21: Jones Bridge Rd & MD 355

6/10/2008



Movement	SBR	SEL
<b>Intersection Summary</b>		
<b>Lane Configurations</b>		
Ideal Flow (vphpl)	1900	1900
Total Lost time (s)		4.0
Lane Util. Factor		1.00
Frbp, ped/bikes		1.00
Flpb, ped/bikes		1.00
Frt		1.00
Flt Protected		0.95
Satd. Flow (prot)		902
Flt Permitted		0.95
Satd. Flow (perm)		902
Volume (vph)	30	10
Peak-hour factor, PHF	0.95	0.95
Adj. Flow (vph)	32	11
RTOR Reduction (vph)	0	0
Lane Group Flow (vph)	0	11
Confl. Peds. (#/hr)	3	
Heavy Vehicles (%)	3%	100%
<b>Turn Type</b>		
Protected Phases		9!
Permitted Phases		
Actuated Green, G (s)		5.2
Effective Green, g (s)		6.2
Actuated g/C Ratio		0.03
Clearance Time (s)		5.0
Vehicle Extension (s)		3.0
Lane Grp Cap (vph)		31
v/s Ratio Prot		0.01
v/s Ratio Perm		
v/c Ratio		0.35
Uniform Delay, d1		84.9
Progression Factor		1.00
Incremental Delay, d2		6.9
Delay (s)		91.8
Level of Service		F
Approach Delay (s)		91.8
Approach LOS		F
<b>Intersection Summary</b>		



HCM Signalized Intersection Capacity Analysis  
 84: Jones Bridge Rd & Kensington Parkway

6/10/2008



Movement	EBL2	EBL	EBT	EBR2	WBT	WBR	WBR2	NBT	NBR	NBR2	SBT	SBR
Lane Configurations	↖	↗	↕		↕	↗		↕	↖	↗	↕	↕
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0		4.0	4.0		4.0			4.0	
Lane Util. Factor	0.91	0.95	0.95		0.91	0.91		0.91			0.91	
Frt	1.00	1.00	0.98		0.94	0.85		1.00			0.98	
Flt Protected	0.95	0.95	1.00		1.00	1.00		1.00			1.00	
Satd. Flow (prot)	1595	1665	3429		3168	1427		5012			4930	
Flt Permitted	0.95	0.95	1.00		1.00	1.00		1.00			1.00	
Satd. Flow (perm)	1595	1665	3429		3168	1427		5012			4930	
Volume (vph)	1330	80	775	130	285	350	15	3025	20	80	2330	380
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	1400	84	816	137	300	368	16	3184	21	84	2453	400
RTOR Reduction (vph)	0	0	3	0	0	0	0	0	0	0	15	0
Lane Group Flow (vph)	726	758	950	0	480	204	0	3289	0	0	2838	0
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%
Turn Type	Prot	Prot						Perm				
Protected Phases	3!	3!	8!		4!			2			2	
Permitted Phases						4						2
Actuated Green, G (s)	44.0	44.0	66.0		16.0	16.0		64.0			64.0	
Effective Green, g (s)	45.0	45.0	67.0		18.0	18.0		66.0			66.0	
Actuated g/C Ratio	0.30	0.30	0.45		0.12	0.12		0.44			0.44	
Clearance Time (s)	5.0	5.0	5.0		6.0	6.0		6.0			6.0	
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0		5.0			5.0	
Lane Grp Cap (vph)	479	500	1532		380	171		2205			2169	
v/s Ratio Prot	0.46	c0.46	0.28		c0.15			c0.66			0.58	
v/s Ratio Perm						0.14						
v/c Ratio	1.52	1.52	0.62		1.26	1.19		1.49			1.31	
Uniform Delay, d1	52.5	52.5	31.8		66.0	66.0		42.0			42.0	
Progression Factor	1.00	1.00	1.00		1.00	1.00		1.00			1.00	
Incremental Delay, d2	242.6	242.3	0.8		137.9	130.2		223.7			142.2	
Delay (s)	295.1	294.8	32.5		203.9	196.2		265.7			184.2	
Level of Service	F	F	C		F	F		F			F	
Approach Delay (s)			192.3		201.6			265.7			184.2	
Approach LOS			F		F			F			F	

Intersection Summary

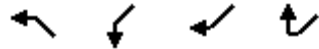
HCM Average Control Delay	215.9	HCM Level of Service	F
HCM Volume to Capacity ratio	1.45		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	135.7%	ICU Level of Service	H
Analysis Period (min)	15		

! Phase conflict between lane groups.

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis  
 84: Jones Bridge Rd & Kensington Parkway

6/10/2008



Movement	NWL	SWL	SWR	SWR2
Lane Configurations	↖	↖	↗	
Ideal Flow (vphpl)	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	
Lane Util. Factor	1.00	1.00	1.00	
Frt	1.00	1.00	0.85	
Flt Protected	0.95	0.95	1.00	
Satd. Flow (prot)	902	1752	1568	
Flt Permitted	0.95	0.95	1.00	
Satd. Flow (perm)	902	1752	1568	
Volume (vph)	10	50	45	5
Peak-hour factor, PHF	0.95	0.95	0.95	0.95
Adj. Flow (vph)	11	53	47	5
RTOR Reduction (vph)	0	0	0	0
Lane Group Flow (vph)	11	53	52	0
Heavy Vehicles (%)	100%	3%	3%	3%
Turn Type			Prot	
Protected Phases	8!	1	1	
Permitted Phases				
Actuated Green, G (s)	66.0	3.0	3.0	
Effective Green, g (s)	67.0	5.0	5.0	
Actuated g/C Ratio	0.45	0.03	0.03	
Clearance Time (s)	5.0	6.0	6.0	
Vehicle Extension (s)	3.0	3.0	3.0	
Lane Grp Cap (vph)	403	58	52	
v/s Ratio Prot	0.01	0.03	c0.03	
v/s Ratio Perm				
v/c Ratio	0.03	0.91	1.00	
Uniform Delay, d1	23.2	72.3	72.5	
Progression Factor	1.00	1.00	1.00	
Incremental Delay, d2	0.0	86.9	124.8	
Delay (s)	23.3	159.2	197.3	
Level of Service	C	F	F	
Approach Delay (s)	23.3	178.1		
Approach LOS	C	F		
<b>Intersection Summary</b>				

# HCM Signalized Intersection Capacity Analysis

86: Jones Bridge Rd & Jones Mill Rd

6/10/2008

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0		4.0			4.0			4.0	
Lane Util. Factor	1.00	1.00	1.00		1.00			1.00			1.00	
Frt	1.00	1.00	0.85		1.00			1.00			0.95	
Flt Protected	0.95	1.00	1.00		1.00			0.97			1.00	
Satd. Flow (prot)	1752	950	1568		950			1792			1753	
Flt Permitted	0.95	1.00	1.00		1.00			0.97			1.00	
Satd. Flow (perm)	1752	950	1568		950			1792			1753	
Volume (vph)	240	10	755	0	10	0	695	480	0	0	155	90
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	253	11	795	0	11	0	732	505	0	0	163	95
RTOR Reduction (vph)	0	0	269	0	0	0	0	0	0	0	15	0
Lane Group Flow (vph)	253	11	527	0	11	0	0	1237	0	0	243	0
Heavy Vehicles (%)	3%	100%	3%	3%	100%	3%	3%	3%	3%	3%	3%	3%
Turn Type	Prot	custom					Split					
Protected Phases	3	8	6 8		8		2	2			4	
Permitted Phases												
Actuated Green, G (s)	23.0	10.0	88.0		10.0			72.0			18.0	
Effective Green, g (s)	23.0	12.0	90.0		12.0			74.0			19.0	
Actuated g/C Ratio	0.16	0.08	0.62		0.08			0.51			0.13	
Clearance Time (s)	4.0	6.0			6.0			6.0			5.0	
Vehicle Extension (s)	3.0	3.0			3.0			3.0			4.0	
Lane Grp Cap (vph)	280	79	980		79			921			231	
v/s Ratio Prot	c0.14	0.01	c0.34		0.01			c0.69			c0.14	
v/s Ratio Perm												
v/c Ratio	0.90	0.14	0.54		0.14			1.34			1.05	
Uniform Delay, d1	59.4	61.2	15.2		61.2			35.0			62.5	
Progression Factor	1.00	1.00	1.00		1.00			0.40			1.00	
Incremental Delay, d2	29.9	3.7	2.1		3.7			160.2			73.8	
Delay (s)	89.4	64.9	17.4		64.9			174.1			136.3	
Level of Service	F	E	B		E			F			F	
Approach Delay (s)		35.0			64.9			174.1			136.3	
Approach LOS		D			E			F			F	
<b>Intersection Summary</b>												
HCM Average Control Delay			112.4			HCM Level of Service		F				
HCM Volume to Capacity ratio			1.15									
Actuated Cycle Length (s)			144.0			Sum of lost time (s)		16.0				
Intersection Capacity Utilization			107.3%			ICU Level of Service		G				
Analysis Period (min)			15									
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis  
 152: Jones Bridge Rd & Manor Rd

6/10/2008

	→	↘	↙	←	↖	↗
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑	↗	↘	↑	↘	↗
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (prot)	1845	1568	1752	1845	1752	1568
Flt Permitted	1.00	1.00	0.14	1.00	0.95	1.00
Satd. Flow (perm)	1845	1568	256	1845	1752	1568
Volume (vph)	915	20	100	590	50	290
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	963	21	105	621	53	305
RTOR Reduction (vph)	0	7	0	0	0	0
Lane Group Flow (vph)	963	14	105	621	53	305
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%
Turn Type		Perm pm+pt			pm+ov	
Protected Phases	2		1	6	4	1
Permitted Phases		2	6			4
Actuated Green, G (s)	40.6	40.6	53.7	52.7	4.4	12.5
Effective Green, g (s)	41.6	41.6	53.7	53.7	5.4	13.5
Actuated g/C Ratio	0.62	0.62	0.80	0.80	0.08	0.20
Clearance Time (s)	5.0	5.0	4.0	5.0	5.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	1144	972	385	1477	141	409
v/s Ratio Prot	c0.52		0.03	0.34	0.03	c0.09
v/s Ratio Perm		0.01	0.19			0.10
v/c Ratio	0.84	0.01	0.27	0.42	0.38	0.75
Uniform Delay, d1	10.1	4.9	13.7	2.0	29.3	25.2
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	5.8	0.0	0.4	0.2	1.7	7.2
Delay (s)	15.9	4.9	14.1	2.2	30.9	32.4
Level of Service	B	A	B	A	C	C
Approach Delay (s)	15.7			3.9	32.2	
Approach LOS	B			A	C	
<b>Intersection Summary</b>						
HCM Average Control Delay			14.4		HCM Level of Service	B
HCM Volume to Capacity ratio			0.81			
Actuated Cycle Length (s)			67.1		Sum of lost time (s)	8.0
Intersection Capacity Utilization			72.8%		ICU Level of Service	C
Analysis Period (min)			15			
c Critical Lane Group						

HCM Signalized Intersection Capacity Analysis  
 154: Jones Bridge Rd & Platt Ridge Rd

6/10/2008



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑		↵	↑↑	↵	↵
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0		4.0	4.0	4.0	4.0
Lane Util. Factor	0.95		1.00	0.95	1.00	1.00
Frt	1.00		1.00	1.00	1.00	0.85
Flt Protected	1.00		0.95	1.00	0.95	1.00
Satd. Flow (prot)	3504		1752	3505	1787	1599
Flt Permitted	1.00		0.04	1.00	0.95	1.00
Satd. Flow (perm)	3504		75	3505	1787	1599
Volume (vph)	2295	5	5	745	15	20
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	2416	5	5	784	16	21
RTOR Reduction (vph)	0	0	0	0	0	20
Lane Group Flow (vph)	2421	0	5	784	16	1
Heavy Vehicles (%)	3%	3%	3%	3%	1%	1%
Turn Type			pm+pt			Perm
Protected Phases	2		1	6	3	
Permitted Phases			6			3
Actuated Green, G (s)	97.8		102.8	102.8	2.6	2.6
Effective Green, g (s)	98.8		103.8	103.8	3.6	3.6
Actuated g/C Ratio	0.86		0.90	0.90	0.03	0.03
Clearance Time (s)	5.0		4.0	5.0	5.0	5.0
Vehicle Extension (s)	3.0		3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	3000		82	3153	56	50
v/s Ratio Prot	c0.69		0.00	c0.22	c0.01	
v/s Ratio Perm			0.05			0.00
v/c Ratio	0.81		0.06	0.25	0.29	0.01
Uniform Delay, d1	3.9		7.9	0.8	54.6	54.2
Progression Factor	1.00		1.00	1.00	1.00	1.00
Incremental Delay, d2	1.7		0.3	0.0	2.8	0.1
Delay (s)	5.5		8.2	0.8	57.4	54.3
Level of Service	A		A	A	E	D
Approach Delay (s)	5.5			0.8	55.7	
Approach LOS	A			A	E	

Intersection Summary

HCM Average Control Delay	5.0	HCM Level of Service	A
HCM Volume to Capacity ratio	0.79		
Actuated Cycle Length (s)	115.4	Sum of lost time (s)	12.0
Intersection Capacity Utilization	73.6%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis  
 156: Jones Bridge Rd & Glenbrook Pkwy

6/10/2008

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0			4.0			4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00			1.00	
Frt	1.00	1.00		1.00	0.98			0.94			0.93	
Flt Protected	0.95	1.00		0.95	1.00			0.98			0.98	
Satd. Flow (prot)	1752	3504		1752	3447			1727			1710	
Flt Permitted	0.33	1.00		0.07	1.00			0.91			0.84	
Satd. Flow (perm)	611	3504		124	3447			1605			1470	
Volume (vph)	10	1895	5	5	605	75	5	1	5	125	0	130
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	11	1995	5	5	637	79	5	1	5	132	0	137
RTOR Reduction (vph)	0	0	0	0	8	0	0	4	0	0	46	0
Lane Group Flow (vph)	11	2000	0	5	708	0	0	7	0	0	223	0
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%	1%	1%	1%	1%	1%	1%
Turn Type	pm+pt			Perm			Perm			Perm		
Protected Phases	5	2			6			4			8	
Permitted Phases	2			6			4			8		
Actuated Green, G (s)	63.4	63.4		58.6	58.6			17.6			17.6	
Effective Green, g (s)	64.4	64.4		59.6	59.6			17.6			17.6	
Actuated g/C Ratio	0.72	0.72		0.66	0.66			0.20			0.20	
Clearance Time (s)	4.0	5.0		5.0	5.0			4.0			4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0			3.0	
Lane Grp Cap (vph)	447	2507		82	2283			314			287	
v/s Ratio Prot	0.00	c0.57			0.21							
v/s Ratio Perm	0.02			0.04				0.00			c0.15	
v/c Ratio	0.02	0.80		0.06	0.31			0.02			0.78	
Uniform Delay, d1	4.0	8.5		5.4	6.5			29.2			34.3	
Progression Factor	1.01	1.32		1.00	1.00			1.00			1.00	
Incremental Delay, d2	0.0	0.3		1.4	0.4			0.0			12.4	
Delay (s)	4.1	11.5		6.8	6.8			29.3			46.8	
Level of Service	A	B		A	A			C			D	
Approach Delay (s)		11.4			6.8			29.3			46.8	
Approach LOS		B			A			C			D	
<b>Intersection Summary</b>												
HCM Average Control Delay			13.6			HCM Level of Service					B	
HCM Volume to Capacity ratio			0.79									
Actuated Cycle Length (s)			90.0			Sum of lost time (s)				8.0		
Intersection Capacity Utilization			78.7%			ICU Level of Service					D	
Analysis Period (min)			15									
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis  
 160: Jones Bridge Rd & Grier Rd

6/10/2008



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↖	↑↑	↗↗	↑	↙	↘
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0		4.0	4.0
Lane Util. Factor		0.95	0.95		1.00	1.00
Frt		1.00	1.00		1.00	0.85
Flt Protected		1.00	1.00		0.95	1.00
Satd. Flow (prot)		3505	3505		1787	1599
Flt Permitted		1.00	1.00		0.95	1.00
Satd. Flow (perm)		3505	3505		1787	1599
Volume (vph)	0	2085	800	0	160	60
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	2195	842	0	168	63
RTOR Reduction (vph)	0	0	0	0	0	49
Lane Group Flow (vph)	0	2195	842	0	168	14
Heavy Vehicles (%)	3%	3%	3%	3%	1%	1%
Turn Type	pm+pt			pm+ov		pm+ov
Protected Phases	5	2	6	4	4	5
Permitted Phases	2			6		4
Actuated Green, G (s)		59.3	51.9		13.2	16.6
Effective Green, g (s)		61.3	53.9		15.2	18.6
Actuated g/C Ratio		0.73	0.64		0.18	0.22
Clearance Time (s)		6.0	6.0		6.0	4.0
Vehicle Extension (s)		3.0	3.0		3.0	3.0
Lane Grp Cap (vph)		2543	2236		321	428
v/s Ratio Prot		c0.63	0.24		c0.09	0.00
v/s Ratio Perm						0.01
v/c Ratio		0.86	0.38		0.52	0.03
Uniform Delay, d1		8.5	7.3		31.4	25.9
Progression Factor		1.00	1.00		1.00	1.00
Incremental Delay, d2		3.3	0.1		1.5	0.0
Delay (s)		11.8	7.4		32.9	25.9
Level of Service		B	A		C	C
Approach Delay (s)		11.8	7.4		31.0	
Approach LOS		B	A		C	

Intersection Summary

HCM Average Control Delay	12.0	HCM Level of Service	B
HCM Volume to Capacity ratio	0.80		
Actuated Cycle Length (s)	84.5	Sum of lost time (s)	8.0
Intersection Capacity Utilization	73.2%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

# HCM Signalized Intersection Capacity Analysis

## 15: Harkins Rd & Lanham Dr West

6/11/2008

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0			4.0		4.0	4.0	4.0
Lane Util. Factor	1.00	1.00		1.00	1.00			1.00		1.00	1.00	1.00
Frt	1.00	0.95		1.00	0.95			0.96		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00			0.98		0.95	1.00	1.00
Satd. Flow (prot)	1787	1793		1787	1796			1767		1787	1881	1599
Flt Permitted	0.95	1.00		0.95	1.00			0.89		0.75	1.00	1.00
Satd. Flow (perm)	1787	1793		1787	1796			1600		1407	1881	1599
Volume (vph)	5	175	80	75	150	65	5	5	5	200	190	5
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	5	184	84	79	158	68	5	5	5	211	200	5
RTOR Reduction (vph)	0	19	0	0	16	0	0	4	0	0	0	4
Lane Group Flow (vph)	5	249	0	79	210	0	0	11	0	211	200	1
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%
Turn Type	Prot			Prot			Perm			Perm		Perm
Protected Phases	7	4		3	8			2			6	
Permitted Phases							2			6		6
Actuated Green, G (s)	0.8	10.7		4.2	15.1			9.8		9.8	9.8	9.8
Effective Green, g (s)	0.8	11.7		5.2	16.1			10.8		10.8	10.8	10.8
Actuated g/C Ratio	0.02	0.29		0.13	0.41			0.27		0.27	0.27	0.27
Clearance Time (s)	4.0	5.0		5.0	5.0			5.0		5.0	5.0	5.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	36	528		234	728			435		383	512	435
v/s Ratio Prot	0.00	c0.14		c0.04	0.12						0.11	
v/s Ratio Perm								0.01		c0.15		0.00
v/c Ratio	0.14	0.47		0.34	0.29			0.03		0.55	0.39	0.00
Uniform Delay, d1	19.1	11.5		15.7	7.9			10.6		12.4	11.8	10.5
Progression Factor	1.00	1.00		1.00	1.00			1.00		1.00	1.00	1.00
Incremental Delay, d2	1.8	0.7		0.9	0.2			0.0		1.7	0.5	0.0
Delay (s)	20.9	12.1		16.5	8.2			10.6		14.1	12.3	10.5
Level of Service	C	B		B	A			B		B	B	B
Approach Delay (s)		12.3			10.3			10.6			13.2	
Approach LOS		B			B			B			B	
<b>Intersection Summary</b>												
HCM Average Control Delay			12.0			HCM Level of Service				B		
HCM Volume to Capacity ratio			0.48									
Actuated Cycle Length (s)			39.7			Sum of lost time (s)		12.0				
Intersection Capacity Utilization			46.0%			ICU Level of Service				A		
Analysis Period (min)			15									

c Critical Lane Group



# HCM Signalized Intersection Capacity Analysis

## 15: Harkins Rd & Lanham Dr West

6/11/2008



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗		↖	↗			↕		↖	↗	↗
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0			4.0		4.0	4.0	4.0
Lane Util. Factor	1.00	1.00		1.00	1.00			1.00		1.00	1.00	1.00
Frt	1.00	1.00		1.00	0.95			0.97		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00			0.99		0.95	1.00	1.00
Satd. Flow (prot)	1787	1876		1787	1785			1805		1787	1881	1599
Flt Permitted	0.95	1.00		0.95	1.00			0.96		0.47	1.00	1.00
Satd. Flow (perm)	1787	1876		1787	1785			1739		876	1881	1599
Volume (vph)	5	270	5	5	230	120	55	220	90	75	5	5
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	5	284	5	5	242	126	58	232	95	79	5	5
RTOR Reduction (vph)	0	1	0	0	21	0	0	15	0	0	0	3
Lane Group Flow (vph)	5	288	0	5	347	0	0	371	0	79	5	2
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%
Turn Type	Prot		Prot		Perm			Perm		Perm		Perm
Protected Phases	7	4		3	8			2			6	
Permitted Phases							2			6		6
Actuated Green, G (s)	0.7	14.3		0.7	15.3			14.0		14.0	14.0	14.0
Effective Green, g (s)	0.7	15.3		1.7	16.3			15.0		15.0	15.0	15.0
Actuated g/C Ratio	0.02	0.35		0.04	0.37			0.34		0.34	0.34	0.34
Clearance Time (s)	4.0	5.0		5.0	5.0			5.0		5.0	5.0	5.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	28	652		69	661			593		299	641	545
v/s Ratio Prot	c0.00	0.15		0.00	c0.19						0.00	
v/s Ratio Perm								c0.21		0.09		0.00
v/c Ratio	0.18	0.44		0.07	0.53			0.62		0.26	0.01	0.00
Uniform Delay, d1	21.4	11.1		20.4	10.8			12.1		10.5	9.6	9.6
Progression Factor	1.00	1.00		1.00	1.00			1.00		1.00	1.00	1.00
Incremental Delay, d2	3.0	0.5		0.4	0.8			2.1		0.5	0.0	0.0
Delay (s)	24.4	11.5		20.8	11.6			14.2		11.0	9.6	9.6
Level of Service	C	B		C	B			B		B	A	A
Approach Delay (s)		11.8			11.7			14.2			10.8	
Approach LOS		B			B			B			B	

### Intersection Summary

HCM Average Control Delay	12.5	HCM Level of Service	B
HCM Volume to Capacity ratio	0.50		
Actuated Cycle Length (s)	44.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	53.7%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

# HCM Signalized Intersection Capacity Analysis

## 2: MD 193 & Carroll Ave

6/10/2008



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↕↕↕			↕↕↕		↖	↕		↖	↕	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	2.0	2.0			2.0		2.0	2.0		2.0	2.0	
Lane Util. Factor	1.00	0.91			0.91		1.00	1.00		1.00	1.00	
Frt	1.00	0.98			1.00		1.00	0.98		1.00	0.98	
Flt Protected	0.95	1.00			1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1703	4810			4869		1703	1760		1703	1748	
Flt Permitted	0.09	1.00			1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	156	4810			4869		1703	1760		1703	1748	
Volume (vph)	25	1675	215	0	1915	65	185	145	20	100	540	105
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	26	1763	226	0	2016	68	195	153	21	105	568	111
RTOR Reduction (vph)	0	14	0	0	3	0	0	4	0	0	6	0
Lane Group Flow (vph)	26	1975	0	0	2081	0	195	170	0	105	673	0
Heavy Vehicles (%)	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%
Turn Type	Perm						Split			Split		
Protected Phases	6			2			3	3	4		4	
Permitted Phases	6											
Actuated Green, G (s)	42.0	42.0			42.0		23.0	23.0		37.0	37.0	
Effective Green, g (s)	46.0	46.0			46.0		27.0	27.0		41.0	41.0	
Actuated g/C Ratio	0.38	0.38			0.38		0.22	0.22		0.34	0.34	
Clearance Time (s)	6.0	6.0			6.0		6.0	6.0		6.0	6.0	
Vehicle Extension (s)	3.0	3.0			3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	60	1844			1866		383	396		582	597	
v/s Ratio Prot		0.41			c0.43		c0.11	0.10		0.06	c0.38	
v/s Ratio Perm	0.17											
v/c Ratio	0.43	1.07			1.12		0.51	0.43		0.18	1.13	
Uniform Delay, d1	27.4	37.0			37.0		40.7	39.9		27.7	39.5	
Progression Factor	0.42	0.48			1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	9.0	37.2			59.9		4.8	3.4		0.1	77.2	
Delay (s)	20.6	54.9			96.9		45.5	43.3		27.9	116.7	
Level of Service	C	D			F		D	D		C	F	
Approach Delay (s)		54.5			96.9			44.4			104.8	
Approach LOS		D			F			D			F	

### Intersection Summary

HCM Average Control Delay	78.1	HCM Level of Service	E
HCM Volume to Capacity ratio	0.96		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	6.0
Intersection Capacity Utilization	102.4%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group

# HCM Signalized Intersection Capacity Analysis

5: MD 193 & MD 320

6/10/2008



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↕↕↗		↖	↕↕↗		↖	↕↕		↖	↕↕	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lane Util. Factor	1.00	0.91		1.00	0.91		1.00	0.95		1.00	0.95	
Frt	1.00	0.99		1.00	1.00		1.00	0.94		1.00	0.95	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1703	4833		1703	4886		1703	3199		1703	3219	
Flt Permitted	0.95	1.00		0.95	1.00		0.09	1.00		0.39	1.00	
Satd. Flow (perm)	1703	4833		1703	4886		164	3199		695	3219	
Volume (vph)	245	1615	145	260	1925	20	215	360	245	30	950	545
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	258	1700	153	274	2026	21	226	379	258	32	1000	574
RTOR Reduction (vph)	0	9	0	0	1	0	0	96	0	0	66	0
Lane Group Flow (vph)	258	1844	0	274	2046	0	226	541	0	32	1508	0
Heavy Vehicles (%)	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%
Turn Type	Prot			Prot			pm+pt			pm+pt		
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases							8			4		
Actuated Green, G (s)	12.0	38.4		12.0	38.4		49.8	49.8		45.6	44.6	
Effective Green, g (s)	14.0	41.4		14.0	41.4		52.8	52.8		47.6	47.6	
Actuated g/C Ratio	0.12	0.34		0.12	0.34		0.44	0.44		0.40	0.40	
Clearance Time (s)	4.0	5.0		4.0	5.0		4.0	5.0		4.0	5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	199	1667		199	1686		188	1408		308	1277	
v/s Ratio Prot	0.15	c0.38		c0.16	c0.42		c0.09	0.17		0.00	c0.47	
v/s Ratio Perm							0.44			0.04		
v/c Ratio	1.30	1.11		1.38	1.21		1.20	0.38		0.10	1.18	
Uniform Delay, d1	53.0	39.3		53.0	39.3		57.7	22.6		24.4	36.2	
Progression Factor	1.00	1.00		0.74	0.56		1.00	1.00		1.00	1.00	
Incremental Delay, d2	165.3	57.1		172.5	96.7		130.6	0.8		0.1	89.6	
Delay (s)	218.3	96.4		211.6	118.6		188.3	23.4		24.5	125.8	
Level of Service	F	F		F	F		F	C		C	F	
Approach Delay (s)		111.3			129.6			66.6			123.8	
Approach LOS		F			F			E			F	

## Intersection Summary

HCM Average Control Delay	114.8	HCM Level of Service	F
HCM Volume to Capacity ratio	1.19		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	6.0
Intersection Capacity Utilization	120.2%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

# HCM Signalized Intersection Capacity Analysis

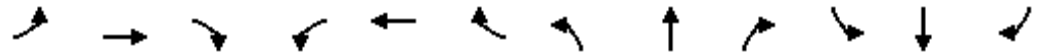
14: MD 193 & MD 193 West SC

6/10/2008

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	2.0	2.0		2.0	2.0			2.0	2.0	2.0	2.0	
Lane Util. Factor	1.00	0.91		1.00	0.91			1.00	1.00	1.00	1.00	
Frt	1.00	1.00		1.00	1.00			1.00	0.85	1.00	0.89	
Flt Protected	0.95	1.00		0.95	1.00			0.96	1.00	0.95	1.00	
Satd. Flow (prot)	1703	4887		1703	4880			1814	1599	1787	1666	
Flt Permitted	0.08	1.00		0.08	1.00			0.81	1.00	0.66	1.00	
Satd. Flow (perm)	151	4887		150	4880			1519	1599	1236	1666	
Volume (vph)	65	1715	15	25	1910	35	45	15	20	15	5	15
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	68	1805	16	26	2011	37	47	16	21	16	5	16
RTOR Reduction (vph)	0	1	0	0	1	0	0	0	17	0	13	0
Lane Group Flow (vph)	68	1820	0	26	2047	0	0	63	4	16	8	0
Heavy Vehicles (%)	6%	6%	6%	6%	6%	6%	1%	1%	1%	1%	1%	1%
Turn Type	Perm			pm+pt			Perm		Perm	Perm		
Protected Phases		2		1	6			3				3
Permitted Phases	2			6			3	3	3	3		
Actuated Green, G (s)	99.0	99.0		114.0	114.0			26.0	26.0	26.0	26.0	
Effective Green, g (s)	102.0	102.0		117.0	117.0			29.0	29.0	29.0	29.0	
Actuated g/C Ratio	0.68	0.68		0.78	0.78			0.19	0.19	0.19	0.19	
Clearance Time (s)	5.0	5.0		5.0	5.0			5.0	5.0	5.0	5.0	
Lane Grp Cap (vph)	103	3323		252	3806			294	309	239	322	
v/s Ratio Prot		0.37		0.01	c0.42							0.00
v/s Ratio Perm	c0.45			0.07				c0.04	0.00	0.01		
v/c Ratio	0.66	0.55		0.10	0.54			0.21	0.01	0.07	0.03	
Uniform Delay, d1	13.9	12.2		6.7	6.3			50.9	48.9	49.4	49.0	
Progression Factor	1.00	1.00		0.89	0.75			1.00	1.00	1.00	1.00	
Incremental Delay, d2	28.6	0.7		0.1	0.0			1.7	0.1	0.5	0.1	
Delay (s)	42.5	12.9		6.0	4.8			52.6	49.0	50.0	49.2	
Level of Service	D	B		A	A			D	D	D	D	
Approach Delay (s)		14.0			4.8			51.7			49.5	
Approach LOS		B			A			D			D	
<b>Intersection Summary</b>												
HCM Average Control Delay			10.4			HCM Level of Service				B		
HCM Volume to Capacity ratio			0.56									
Actuated Cycle Length (s)			150.0			Sum of lost time (s)			6.0			
Intersection Capacity Utilization			76.8%			ICU Level of Service				D		
Analysis Period (min)			15									
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis  
 15: MD 193 & MD 193 East SC

6/10/2008



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↕↕↕		↖	↕↕↕		↖	↕		↖	↕↕	↖
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	2.0
Lane Util. Factor	1.00	0.91		1.00	0.91		1.00	1.00		0.95	0.95	1.00
Frt	1.00	1.00		1.00	1.00		1.00	0.92		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	0.96	1.00
Satd. Flow (prot)	1703	4875		1703	4879		1787	1740		1698	1712	1599
Flt Permitted	0.06	1.00		0.17	1.00		0.71	1.00		0.75	0.81	1.00
Satd. Flow (perm)	104	4875		307	4879		1335	1740		1342	1442	1599
Volume (vph)	30	1340	35	20	1930	40	5	5	5	65	5	15
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	32	1411	37	21	2032	42	5	5	5	68	5	16
RTOR Reduction (vph)	0	2	0	0	1	0	0	4	0	0	0	13
Lane Group Flow (vph)	32	1446	0	21	2073	0	5	6	0	34	39	3
Heavy Vehicles (%)	6%	6%	6%	6%	6%	6%	1%	1%	1%	1%	1%	1%
Turn Type	custom			Perm			Perm			Perm		Perm
Protected Phases	1	6			2			3				3
Permitted Phases	6 1	6		2	2		3	3		3		3
Actuated Green, G (s)	114.0	114.0		99.0	99.0		26.0	26.0		26.0	26.0	26.0
Effective Green, g (s)	117.0	117.0		102.0	102.0		29.0	29.0		29.0	29.0	29.0
Actuated g/C Ratio	0.78	0.78		0.68	0.68		0.19	0.19		0.19	0.19	0.19
Clearance Time (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	5.0
Lane Grp Cap (vph)	220	3803		209	3318		258	336		259	279	309
v/s Ratio Prot	0.01	c0.30			c0.42			0.00				0.00
v/s Ratio Perm	0.10			0.07			0.00			0.03	c0.03	0.00
v/c Ratio	0.15	0.38		0.10	0.62		0.02	0.02		0.13	0.14	0.01
Uniform Delay, d1	8.8	5.2		8.2	13.4		49.0	49.0		50.1	50.2	48.9
Progression Factor	2.70	0.68		1.00	1.00		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	0.1	0.0		1.0	0.9		0.1	0.1		1.0	1.0	0.1
Delay (s)	24.0	3.5		9.2	14.2		49.1	49.1		51.1	51.2	49.0
Level of Service	C	A		A	B		D	D		D	D	D
Approach Delay (s)		4.0			14.2			49.1			50.8	
Approach LOS		A			B			D			D	
























Intersection Summary

HCM Average Control Delay	11.1	HCM Level of Service	B
HCM Volume to Capacity ratio	0.50		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	6.0
Intersection Capacity Utilization	81.5%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

# HCM Signalized Intersection Capacity Analysis

91: MD 193 & MD 212

6/10/2008

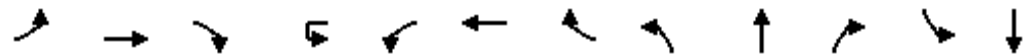
												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Lane Util. Factor	1.00	0.91	1.00	0.97	0.91		0.97	1.00	1.00	1.00	0.95	
Frt	1.00	1.00	0.85	1.00	0.99		1.00	1.00	0.85	1.00	0.98	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1703	4893	1524	3303	4826		3303	1792	1524	1703	3322	
Flt Permitted	0.17	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	299	4893	1524	3303	4826		3303	1792	1524	1703	3322	
Volume (vph)	80	900	555	720	1245	125	780	520	395	155	485	95
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	84	947	584	758	1311	132	821	547	416	163	511	100
RTOR Reduction (vph)	0	0	0	0	10	0	0	0	251	0	13	0
Lane Group Flow (vph)	84	947	584	758	1433	0	821	547	165	163	598	0
Heavy Vehicles (%)	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%
Turn Type	pm+pt		Free	Prot			Split		Perm	Split		
Protected Phases	1	6		5	2		4	4		3	3	
Permitted Phases	6		Free						4			
Actuated Green, G (s)	25.6	20.0	120.0	25.0	39.4		34.0	34.0	34.0	19.0	19.0	
Effective Green, g (s)	31.6	24.0	120.0	27.0	43.4		36.0	36.0	36.0	21.0	21.0	
Actuated g/C Ratio	0.26	0.20	1.00	0.22	0.36		0.30	0.30	0.30	0.18	0.18	
Clearance Time (s)	5.0	7.0		5.0	7.0		5.0	5.0	5.0	5.0	5.0	
Vehicle Extension (s)	2.5	5.0		2.5	5.0		2.5	2.5	2.5	2.5	2.5	
Lane Grp Cap (vph)	168	979	1524	743	1745		991	538	457	298	581	
v/s Ratio Prot	0.03	c0.19		c0.23	0.30		0.25	c0.31		0.10	c0.18	
v/s Ratio Perm	0.10		0.38						0.11			
v/c Ratio	0.50	0.97	0.38	1.02	0.82		0.83	1.02	0.36	0.55	1.03	
Uniform Delay, d1	34.7	47.6	0.0	46.5	34.8		39.1	42.0	33.0	45.2	49.5	
Progression Factor	1.18	0.92	1.00	1.16	0.86		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	1.6	21.0	0.7	34.4	3.6		5.7	43.1	0.4	1.6	44.9	
Delay (s)	42.6	64.5	0.7	88.2	33.4		44.8	85.1	33.3	46.8	94.4	
Level of Service	D	E	A	F	C		D	F	C	D	F	
Approach Delay (s)		40.3			52.3			54.5			84.4	
Approach LOS		D			D			D			F	
<b>Intersection Summary</b>												
HCM Average Control Delay			53.8	HCM Level of Service				D				
HCM Volume to Capacity ratio			1.01									
Actuated Cycle Length (s)			120.0	Sum of lost time (s)				12.0				
Intersection Capacity Utilization			90.0%	ICU Level of Service				E				
Analysis Period (min)			15									

c Critical Lane Group

# HCM Signalized Intersection Capacity Analysis

105: MD 193 & 23rd Ave

6/10/2008



Movement	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations		↑↑↑			↓	↑↑↑			↑	↑		
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		3.0			3.0	3.0			3.0	3.0		
Lane Util. Factor		0.91			1.00	0.91			1.00	1.00		
Frt		0.98			1.00	1.00			1.00	0.85		
Flt Protected		1.00			0.95	1.00			0.95	1.00		
Satd. Flow (prot)		4818			1703	4879			1796	1599		
Flt Permitted		1.00			0.13	1.00			0.95	1.00		
Satd. Flow (perm)		4818			226	4879			1796	1599		
Volume (vph)	0	1225	140	30	105	1950	40	200	10	115	0	0
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	1289	147	32	111	2053	42	211	11	121	0	0
RTOR Reduction (vph)	0	20	0	0	0	3	0	0	0	91	0	0
Lane Group Flow (vph)	0	1416	0	0	143	2092	0	0	222	30	0	0
Heavy Vehicles (%)	6%	6%	6%	6%	6%	6%	6%	1%	1%	1%	1%	1%
Turn Type				custom	pm+pt			Perm		Perm		
Protected Phases		6			5	2			4			
Permitted Phases		6		5	2			4		4		
Actuated Green, G (s)		25.7			36.1	36.1			11.9	11.9		
Effective Green, g (s)		28.7			39.1	39.1			14.9	14.9		
Actuated g/C Ratio		0.48			0.65	0.65			0.25	0.25		
Clearance Time (s)		6.0			5.0	6.0			6.0	6.0		
Vehicle Extension (s)		5.0			3.0	5.0			3.0	3.0		
Lane Grp Cap (vph)		2305			329	3179			446	397		
v/s Ratio Prot		0.29			0.05	0.43						
v/s Ratio Perm					0.23				0.12	0.02		
v/c Ratio		0.61			0.43	0.66			0.50	0.08		
Uniform Delay, d1		11.6			6.2	6.4			19.3	17.3		
Progression Factor		0.66			0.89	0.89			1.00	1.00		
Incremental Delay, d2		0.7			0.6	0.7			0.9	0.1		
Delay (s)		8.4			6.1	6.4			20.2	17.4		
Level of Service		A			A	A			C	B		
Approach Delay (s)		8.4				6.3			19.2			8.2
Approach LOS		A				A			B			A

## Intersection Summary

HCM Average Control Delay	8.2	HCM Level of Service	A
HCM Volume to Capacity ratio	0.61		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	6.0
Intersection Capacity Utilization	76.8%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group


























<b>Movement</b>	<b>SBR</b>
Lane Configurations	7
Ideal Flow (vphpl)	1900
Total Lost time (s)	3.0
Lane Util. Factor	1.00
Frt	0.86
Flt Protected	1.00
Satd. Flow (prot)	1627
Flt Permitted	1.00
Satd. Flow (perm)	1627
Volume (vph)	5
Peak-hour factor, PHF	0.95
Adj. Flow (vph)	5
RTOR Reduction (vph)	3
Lane Group Flow (vph)	2
Heavy Vehicles (%)	1%
Turn Type	custom
Protected Phases	
Permitted Phases	6
Actuated Green, G (s)	25.7
Effective Green, g (s)	28.7
Actuated g/C Ratio	0.48
Clearance Time (s)	6.0
Vehicle Extension (s)	5.0
Lane Grp Cap (vph)	778
v/s Ratio Prot	
v/s Ratio Perm	0.00
v/c Ratio	0.00
Uniform Delay, d1	8.2
Progression Factor	1.00
Incremental Delay, d2	0.0
Delay (s)	8.2
Level of Service	A
Approach Delay (s)	
Approach LOS	
<b>Intersection Summary</b>	



HCM Signalized Intersection Capacity Analysis  
 107: MD 193 & West Park Dr.

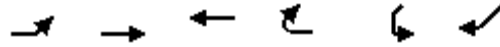
6/10/2008

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		 			 							
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95		1.00	1.00		1.00	1.00	
Frt	1.00	1.00	0.85	1.00	1.00		1.00	0.87		1.00	0.90	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1703	3406	1524	1703	3398		1787	1632		1787	1687	
Flt Permitted	0.04	1.00	1.00	0.17	1.00		0.75	1.00		0.53	1.00	
Satd. Flow (perm)	78	3406	1524	305	3398		1405	1632		1001	1687	
Volume (vph)	25	1260	25	50	2095	30	20	10	80	30	5	10
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	26	1326	26	53	2205	32	21	11	84	32	5	11
RTOR Reduction (vph)	0	0	6	0	1	0	0	75	0	0	10	0
Lane Group Flow (vph)	26	1326	20	53	2236	0	21	20	0	32	6	0
Heavy Vehicles (%)	6%	6%	6%	6%	6%	6%	1%	1%	1%	1%	1%	1%
Turn Type	pm+pt		Perm	pm+pt		Perm			Perm		Perm	
Protected Phases	1	6		5	2			8			4	
Permitted Phases	6		6	2		8				4		
Actuated Green, G (s)	92.0	88.5	88.5	94.6	89.8		9.7	9.7		9.7	9.7	
Effective Green, g (s)	97.0	91.5	91.5	99.6	92.8		12.7	12.7		12.7	12.7	
Actuated g/C Ratio	0.81	0.76	0.76	0.83	0.77		0.11	0.11		0.11	0.11	
Clearance Time (s)	5.0	6.0	6.0	5.0	6.0		6.0	6.0		6.0	6.0	
Vehicle Extension (s)	3.0	5.0	5.0	3.0	5.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	138	2597	1162	332	2628		149	173		106	179	
v/s Ratio Prot	c0.01	0.39		c0.01	c0.66			0.01			0.00	
v/s Ratio Perm	0.14		0.01	0.12		0.01				c0.03		
v/c Ratio	0.19	0.51	0.02	0.16	0.85		0.14	0.11		0.30	0.03	
Uniform Delay, d1	13.3	5.5	3.4	3.1	9.0		48.7	48.6		49.6	48.1	
Progression Factor	3.30	0.46	0.00	1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.6	0.6	0.0	0.2	3.7		0.4	0.3		1.6	0.1	
Delay (s)	44.4	3.2	0.0	3.3	12.7		49.1	48.9		51.2	48.2	
Level of Service	D	A	A	A	B		D	D		D	D	
Approach Delay (s)		3.9			12.5			48.9			50.2	
Approach LOS		A			B			D			D	
<b>Intersection Summary</b>												
HCM Average Control Delay			11.0			HCM Level of Service			B			
HCM Volume to Capacity ratio			0.76									
Actuated Cycle Length (s)			120.0			Sum of lost time (s)			9.0			
Intersection Capacity Utilization			73.9%			ICU Level of Service			D			
Analysis Period (min)			15									

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis  
 109: MD 193 & Campus Dr.

6/10/2008



Movement	EBL	EBT	WBT	WBR	SWL	SWR
Lane Configurations	↔↔	↑	↕↕			↔↔
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0	3.0			3.0
Lane Util. Factor	0.97	1.00	0.95			0.88
Frt	1.00	1.00	1.00			0.85
Flt Protected	0.95	1.00	1.00			1.00
Satd. Flow (prot)	3303	1792	3406			2682
Flt Permitted	0.95	1.00	1.00			1.00
Satd. Flow (perm)	3303	1792	3406			2682
Volume (vph)	955	435	555	0	0	1590
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	1005	458	584	0	0	1674
RTOR Reduction (vph)	0	0	0	0	0	98
Lane Group Flow (vph)	1005	458	584	0	0	1576
Heavy Vehicles (%)	6%	6%	6%	6%	6%	6%
Turn Type	Free					
Protected Phases	1 2 5 6		3 4			1 2 5 6
Permitted Phases	Free					
Actuated Green, G (s)	146.0	248.0	90.0			146.0
Effective Green, g (s)	149.0	248.0	93.0			149.0
Actuated g/C Ratio	0.60	1.00	0.38			0.60
Clearance Time (s)						
Vehicle Extension (s)						
Lane Grp Cap (vph)	1984	1792	1277			1611
v/s Ratio Prot	0.30		c0.17			c0.59
v/s Ratio Perm		0.26				
v/c Ratio	0.51	0.26	0.46			0.98
Uniform Delay, d1	28.4	0.0	58.5			47.9
Progression Factor	1.00	1.00	0.27			0.58
Incremental Delay, d2	0.2	0.3	0.0			3.2
Delay (s)	28.6	0.3	15.7			31.2
Level of Service	C	A	B			C
Approach Delay (s)		19.8	15.7		31.2	
Approach LOS		B	B		C	
<b>Intersection Summary</b>						
HCM Average Control Delay			24.3		HCM Level of Service	C
HCM Volume to Capacity ratio			0.78			
Actuated Cycle Length (s)			248.0		Sum of lost time (s)	6.0
Intersection Capacity Utilization			77.6%		ICU Level of Service	D
Analysis Period (min)			15			

c Critical Lane Group

# HCM Signalized Intersection Capacity Analysis

111: MD 193 & Adelphi Rd.

6/10/2008

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0		3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0
Lane Util. Factor	1.00	0.95		0.97	0.95	1.00		0.91	1.00	1.00	0.91	1.00
Frt	1.00	1.00		1.00	1.00	0.85		1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00		1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1703	3406		3303	3406	1524		4893	1524	1703	4893	1524
Flt Permitted	0.95	1.00		0.95	1.00	1.00		1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1703	3406		3303	3406	1524		4893	1524	1703	4893	1524
Volume (vph)	120	830	0	645	1510	170	0	775	430	240	1130	80
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	126	874	0	679	1589	179	0	816	453	253	1189	84
RTOR Reduction (vph)	0	0	0	0	0	65	0	0	0	0	0	42
Lane Group Flow (vph)	126	874	0	679	1589	114	0	816	453	253	1189	42
Heavy Vehicles (%)	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%
Turn Type	Prot			Prot		Perm			Free	Prot		Perm
Protected Phases	6	2 6		1	5			4		3	7 8	
Permitted Phases						5		4	Free			7 8
Actuated Green, G (s)	35.0	90.0		51.0	105.0	105.0		51.0	248.0	34.0	92.0	92.0
Effective Green, g (s)	38.0	93.0		53.0	108.0	108.0		54.0	248.0	36.0	93.0	93.0
Actuated g/C Ratio	0.15	0.38		0.21	0.44	0.44		0.22	1.00	0.15	0.38	0.38
Clearance Time (s)	6.0			5.0	6.0	6.0		6.0		5.0		
Vehicle Extension (s)	3.0			3.0	4.0	4.0		3.5		3.0		
Lane Grp Cap (vph)	261	1277		706	1483	664		1065	1524	247	1835	572
v/s Ratio Prot	0.07	c0.26		0.21	c0.47			c0.17		c0.15	0.24	
v/s Ratio Perm						0.07			0.30			0.03
v/c Ratio	0.48	0.68		0.96	1.07	0.17		0.77	0.30	1.02	0.65	0.07
Uniform Delay, d1	96.0	65.2		96.5	70.0	42.7		91.1	0.0	106.0	64.0	49.8
Progression Factor	0.70	0.56		1.00	1.00	1.00		0.32	1.00	1.00	1.00	1.00
Incremental Delay, d2	1.2	1.5		24.7	45.1	0.2		1.9	0.3	63.7	0.8	0.1
Delay (s)	68.6	38.2		121.2	115.1	42.9		31.1	0.3	169.7	64.8	49.9
Level of Service	E	D		F	F	D		C	A	F	E	D
Approach Delay (s)		42.0			111.5			20.1			81.4	
Approach LOS		D			F			C			F	
<b>Intersection Summary</b>												
HCM Average Control Delay			74.4				HCM Level of Service			E		
HCM Volume to Capacity ratio			0.93									
Actuated Cycle Length (s)			248.0				Sum of lost time (s)		9.0			
Intersection Capacity Utilization			90.0%				ICU Level of Service		E			
Analysis Period (min)			15									

c Critical Lane Group

# HCM Signalized Intersection Capacity Analysis

113: Campus Dr. & Adelphi Rd.

6/10/2008



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑	↑	↑	↑	↑	↑	↑↑↑	↑	↑↑	↑↑	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Lane Util. Factor		0.95	1.00	1.00	1.00	1.00	1.00	0.91	1.00	0.97	0.95	
Frt		1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	
Flt Protected		1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)		3406	1524	1703	1792	1524	1703	4893	1524	3303	3406	
Flt Permitted		1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)		3406	1524	1703	1792	1524	1703	4893	1524	3303	3406	
Volume (vph)	0	225	210	150	305	100	250	1105	155	275	1495	0
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	237	221	158	321	105	263	1163	163	289	1574	0
RTOR Reduction (vph)	0	0	175	0	0	53	0	0	117	0	0	0
Lane Group Flow (vph)	0	237	46	158	321	53	263	1163	46	289	1574	0
Heavy Vehicles (%)	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%
Turn Type			Perm	Split		Perm	Prot		Perm	Prot		
Protected Phases		2		6	6		3	8		1	7	1
Permitted Phases			2			6			8			
Actuated Green, G (s)		49.0	49.0	35.0	35.0	35.0	34.0	66.0	66.0	75.0	108.0	
Effective Green, g (s)		52.0	52.0	38.0	38.0	38.0	36.0	69.0	69.0	77.0	110.0	
Actuated g/C Ratio		0.21	0.21	0.15	0.15	0.15	0.15	0.28	0.28	0.31	0.44	
Clearance Time (s)		6.0	6.0	6.0	6.0	6.0	5.0	6.0	6.0			
Vehicle Extension (s)		4.0	4.0	3.0	3.0	3.0	3.0	3.5	3.5			
Lane Grp Cap (vph)		714	320	261	275	234	247	1361	424	1026	1511	
v/s Ratio Prot		c0.07		0.09	c0.18		c0.15	0.24		0.09	c0.46	
v/s Ratio Perm			0.03			0.03			0.03			
v/c Ratio		0.33	0.14	0.61	1.17	0.22	1.06	0.85	0.11	0.28	1.04	
Uniform Delay, d1		83.2	79.9	98.0	105.0	92.1	106.0	84.7	66.6	64.6	69.0	
Progression Factor		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.47	0.42	
Incremental Delay, d2		0.4	0.3	3.9	107.3	0.5	75.4	5.6	0.1	0.1	30.2	
Delay (s)		83.6	80.2	101.9	212.3	92.6	181.4	90.3	66.7	30.7	59.3	
Level of Service		F	F	F	F	F	F	F	E	C	E	
Approach Delay (s)		81.9			160.9			103.0			54.8	
Approach LOS		F			F			F			D	

## Intersection Summary

HCM Average Control Delay	88.4	HCM Level of Service	F
HCM Volume to Capacity ratio	0.91		
Actuated Cycle Length (s)	248.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	97.7%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

# HCM Signalized Intersection Capacity Analysis

1621: MD 193 & MD 650

6/10/2008



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↵	↑↑↑		↵	↑↑↑		↵↵	↑↑↑		↵	↑↑↑	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lane Util. Factor	1.00	0.91		1.00	0.91		0.97	0.91		1.00	0.91	
Frt	1.00	0.95		1.00	0.98		1.00	0.99		1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1703	4655		1703	4779		3303	4837		1703	4831	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1703	4655		1703	4779		3303	4837		1703	4831	
Volume (vph)	100	1115	535	210	1455	270	300	950	80	210	2250	210
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	105	1174	563	221	1532	284	316	1000	84	221	2368	221
RTOR Reduction (vph)	0	58	0	0	18	0	0	6	0	0	7	0
Lane Group Flow (vph)	105	1679	0	221	1798	0	316	1078	0	221	2582	0
Heavy Vehicles (%)	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%
Turn Type	Prot			Prot			Prot			Prot		
Protected Phases	7	4		3	8		1	6		5	2	
Permitted Phases												
Actuated Green, G (s)	6.0	39.0		12.0	45.0		15.7	54.1		22.4	60.8	
Effective Green, g (s)	9.0	43.0		15.0	49.0		18.7	58.6		25.4	65.3	
Actuated g/C Ratio	0.06	0.29		0.10	0.33		0.12	0.39		0.17	0.44	
Clearance Time (s)	5.0	6.0		5.0	6.0		5.0	6.5		5.0	6.5	
Vehicle Extension (s)	3.0	5.0		3.0	5.0		3.0	5.0		3.0	5.0	
Lane Grp Cap (vph)	102	1334		170	1561		412	1890		288	2103	
v/s Ratio Prot	0.06	c0.36		c0.13	c0.38		c0.10	0.22		0.13	c0.53	
v/s Ratio Perm												
v/c Ratio	1.03	1.26		1.30	1.15		0.77	0.57		0.77	1.23	
Uniform Delay, d1	70.5	53.5		67.5	50.5		63.5	35.8		59.5	42.4	
Progression Factor	0.83	0.77		0.81	0.74		0.93	0.74		1.14	0.82	
Incremental Delay, d2	90.4	121.8		165.0	74.7		8.0	1.2		1.1	102.8	
Delay (s)	149.1	162.9		219.5	112.1		66.7	27.9		68.7	137.5	
Level of Service	F	F		F	F		E	C		E	F	
Approach Delay (s)		162.1			123.8			36.6			132.1	
Approach LOS		F			F			D			F	

## Intersection Summary

HCM Average Control Delay	120.3	HCM Level of Service	F
HCM Volume to Capacity ratio	1.17		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	6.0
Intersection Capacity Utilization	115.2%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

# HCM Signalized Intersection Capacity Analysis

1629: MD 193 & 15th Ave

6/10/2008



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↑↑↑		↔	↑↑↑		↔	↔		↔	↔	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	2.0	2.0		3.0	2.0		2.0	3.0		3.0	3.0	
Lane Util. Factor	1.00	0.91		1.00	0.91		1.00	1.00		1.00	1.00	
Frt	1.00	1.00		1.00	0.99		1.00	0.92		1.00	0.85	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1703	4893		1703	4850		1787	1740		1787	1602	
Flt Permitted	0.05	1.00		0.16	1.00		0.65	1.00		0.76	1.00	
Satd. Flow (perm)	90	4893		293	4850		1225	1740		1423	1602	
Volume (vph)	60	1315	0	5	1920	120	1	1	1	220	1	85
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	63	1384	0	5	2021	126	1	1	1	232	1	89
RTOR Reduction (vph)	0	0	0	0	4	0	0	1	0	0	69	0
Lane Group Flow (vph)	63	1384	0	5	2143	0	1	1	0	232	21	0
Heavy Vehicles (%)	6%	6%	6%	6%	6%	6%	1%	1%	1%	1%	1%	1%
Turn Type	pm+pt		pm+pt		Perm		Perm		Perm		Perm	
Protected Phases	5	2		1	6			8				4
Permitted Phases	2			6			8			4		
Actuated Green, G (s)	83.7	77.9		76.5	75.3		23.9	23.9		23.9	23.9	
Effective Green, g (s)	88.1	81.9		79.5	77.3		27.9	26.9		26.9	26.9	
Actuated g/C Ratio	0.73	0.68		0.66	0.64		0.23	0.22		0.22	0.22	
Clearance Time (s)	5.0	6.0		5.0	4.0		6.0	6.0		6.0	6.0	
Vehicle Extension (s)	3.0	5.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	184	3339		232	3124		285	390		319	359	
v/s Ratio Prot	c0.03	0.28		0.00	c0.44			0.00			0.01	
v/s Ratio Perm	0.22			0.01			0.00			c0.16		
v/c Ratio	0.34	0.41		0.02	0.69		0.00	0.00		0.73	0.06	
Uniform Delay, d1	12.1	8.4		7.1	13.6		35.4	36.1		43.1	36.6	
Progression Factor	1.00	1.00		0.41	0.45		1.00	1.00		1.00	1.00	
Incremental Delay, d2	1.1	0.4		0.0	0.7		0.0	0.0		8.0	0.1	
Delay (s)	13.2	8.8		2.9	6.9		35.4	36.1		51.2	36.7	
Level of Service	B	A		A	A		D	D		D	D	
Approach Delay (s)		9.0			6.9			35.9			47.1	
Approach LOS		A			A			D			D	

## Intersection Summary

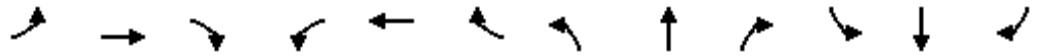
HCM Average Control Delay	11.0	HCM Level of Service	B
HCM Volume to Capacity ratio	0.66		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	7.0
Intersection Capacity Utilization	72.8%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

# HCM Signalized Intersection Capacity Analysis

## 2: MD 193 & Carroll Ave

6/10/2008



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations	↖	↑↑↑			↑↑↑		↖	↗		↖	↗		
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)	2.0	2.0			2.0		2.0	2.0		2.0	2.0		
Lane Util. Factor	1.00	0.91			0.91		1.00	1.00		1.00	1.00		
Frt	1.00	0.99			0.99		1.00	0.98		1.00	0.98		
Flt Protected	0.95	1.00			1.00		0.95	1.00		0.95	1.00		
Satd. Flow (prot)	1736	4920			4942		1736	1789		1736	1794		
Flt Permitted	0.06	1.00			1.00		0.95	1.00		0.95	1.00		
Satd. Flow (perm)	112	4920			4942		1736	1789		1736	1794		
Volume (vph)	40	2230	220	0	2225	145	285	340	55	120	225	30	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	
Adj. Flow (vph)	42	2347	232	0	2342	153	300	358	58	126	237	32	
RTOR Reduction (vph)	0	10	0	0	6	0	0	5	0	0	4	0	
Lane Group Flow (vph)	42	2569	0	0	2489	0	300	412	0	126	265	0	
Heavy Vehicles (%)	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	
Turn Type	Perm						Split			Split			
Protected Phases	6				2		3	3		4	4		
Permitted Phases	6												
Actuated Green, G (s)	61.0	61.0			61.0			26.0	26.0			15.0	15.0
Effective Green, g (s)	65.0	65.0			65.0			30.0	30.0			19.0	19.0
Actuated g/C Ratio	0.54	0.54			0.54			0.25	0.25			0.16	0.16
Clearance Time (s)	6.0	6.0			6.0			6.0	6.0			6.0	6.0
Vehicle Extension (s)	3.0	3.0			3.0			3.0	3.0			3.0	3.0
Lane Grp Cap (vph)	61	2665			2677			434	447			275	284
v/s Ratio Prot	c0.52				0.50			0.17	c0.23			0.07	c0.15
v/s Ratio Perm	0.37												
v/c Ratio	0.69	0.96			0.93			0.69	0.92			0.46	0.93
Uniform Delay, d1	20.1	26.4			25.4			40.8	43.8			45.8	49.9
Progression Factor	0.82	0.84			1.00			1.00	1.00			1.00	1.00
Incremental Delay, d2	5.6	1.5			7.2			8.7	26.7			1.2	35.7
Delay (s)	22.1	23.6			32.6			49.5	70.6			47.0	85.6
Level of Service	C	C			C			D	E			D	F
Approach Delay (s)	23.6				32.6			61.7				73.3	
Approach LOS	C				C			E				E	

### Intersection Summary

HCM Average Control Delay	34.8	HCM Level of Service	C
HCM Volume to Capacity ratio	0.93		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	6.0
Intersection Capacity Utilization	90.8%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis  
 5: MD 193 & MD 320

6/10/2008

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lane Util. Factor	1.00	0.91		1.00	0.91		1.00	0.95		1.00	0.95	
Frt	1.00	0.98		1.00	1.00		1.00	0.97		1.00	0.96	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1736	4910		1736	4967		1736	3351		1736	3337	
Flt Permitted	0.95	1.00		0.95	1.00		0.13	1.00		0.14	1.00	
Satd. Flow (perm)	1736	4910		1736	4967		245	3351		263	3337	
Volume (vph)	280	2115	245	330	2145	60	350	970	290	75	590	205
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	295	2226	258	347	2258	63	368	1021	305	79	621	216
RTOR Reduction (vph)	0	12	0	0	2	0	0	23	0	0	28	0
Lane Group Flow (vph)	295	2472	0	347	2319	0	368	1303	0	79	809	0
Heavy Vehicles (%)	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%
Turn Type	Prot		Prot		pm+pt		pm+pt					
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases							8			4		
Actuated Green, G (s)	15.0	48.2		15.0	48.2		42.8	36.4		27.2	24.8	
Effective Green, g (s)	17.0	51.2		17.0	51.2		45.8	39.4		32.2	27.8	
Actuated g/C Ratio	0.14	0.43		0.14	0.43		0.38	0.33		0.27	0.23	
Clearance Time (s)	4.0	5.0		4.0	5.0		4.0	5.0		4.0	5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	246	2095		246	2119		292	1100		125	773	
v/s Ratio Prot	0.17	c0.50		c0.20	c0.47		c0.17	c0.39		0.02	0.24	
v/s Ratio Perm							0.31			0.15		
v/c Ratio	1.20	1.18		1.41	1.09		1.26	1.18		0.63	1.05	
Uniform Delay, d1	51.5	34.4		51.5	34.4		34.8	40.3		36.9	46.1	
Progression Factor	1.00	1.00		0.97	0.47		1.00	1.00		1.00	1.00	
Incremental Delay, d2	122.0	86.3		195.0	46.3		141.8	92.5		10.0	45.0	
Delay (s)	173.5	120.7		244.7	62.3		176.6	132.8		46.9	91.1	
Level of Service	F	F		F	E		F	F		D	F	
Approach Delay (s)		126.3			86.0			142.4			87.3	
Approach LOS		F			F			F			F	
<b>Intersection Summary</b>												
HCM Average Control Delay			111.9			HCM Level of Service				F		
HCM Volume to Capacity ratio			1.19									
Actuated Cycle Length (s)			120.0			Sum of lost time (s)			4.0			
Intersection Capacity Utilization			120.2%			ICU Level of Service				H		
Analysis Period (min)			15									

c Critical Lane Group



# HCM Signalized Intersection Capacity Analysis

14: MD 193 & MD 193 West SC

6/10/2008

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	2.0	2.0		2.0	2.0			2.0	2.0	2.0	2.0	
Lane Util. Factor	1.00	0.91		1.00	0.91			1.00	1.00	1.00	1.00	
Frt	1.00	1.00		1.00	1.00			1.00	0.85	1.00	0.92	
Flt Protected	0.95	1.00		0.95	1.00			0.98	1.00	0.95	1.00	
Satd. Flow (prot)	1736	4977		1736	4978			1835	1599	1787	1740	
Flt Permitted	0.05	1.00		0.04	1.00			0.85	1.00	0.63	1.00	
Satd. Flow (perm)	89	4977		73	4978			1602	1599	1189	1740	
Volume (vph)	30	2235	30	30	2350	30	30	30	30	30	30	30
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	32	2353	32	32	2474	32	32	32	32	32	32	32
RTOR Reduction (vph)	0	1	0	0	1	0	0	0	27	0	15	0
Lane Group Flow (vph)	32	2384	0	32	2505	0	0	64	5	32	49	0
Heavy Vehicles (%)	4%	4%	4%	4%	4%	4%	1%	1%	1%	1%	1%	1%
Turn Type	Perm			pm+pt			Perm		Perm	Perm		
Protected Phases		2		1	6			3				3
Permitted Phases	2			6			3	3	3	3		
Actuated Green, G (s)	105.0	105.0		120.0	120.0			20.0	20.0	20.0	20.0	
Effective Green, g (s)	108.0	108.0		123.0	123.0			23.0	23.0	23.0	23.0	
Actuated g/C Ratio	0.72	0.72		0.82	0.82			0.15	0.15	0.15	0.15	
Clearance Time (s)	5.0	5.0		5.0	5.0			5.0	5.0	5.0	5.0	
Lane Grp Cap (vph)	64	3583		204	4082			246	245	182	267	
v/s Ratio Prot		c0.48		0.01	c0.50							0.03
v/s Ratio Perm	0.36			0.12				c0.04	0.00	0.03		
v/c Ratio	0.50	0.67		0.16	0.61			0.26	0.02	0.18	0.18	
Uniform Delay, d1	9.2	11.3		9.8	4.9			56.0	53.9	55.3	55.3	
Progression Factor	1.00	1.00		4.60	0.22			1.00	1.00	1.00	1.00	
Incremental Delay, d2	25.3	1.0		0.1	0.1			2.6	0.2	2.1	1.5	
Delay (s)	34.5	12.3		45.0	1.2			58.6	54.1	57.4	56.8	
Level of Service	C	B		D	A			E	D	E	E	
Approach Delay (s)		12.6			1.7			57.1			57.0	
Approach LOS		B			A			E			E	
<b>Intersection Summary</b>												
HCM Average Control Delay			8.9			HCM Level of Service			A			
HCM Volume to Capacity ratio			0.59									
Actuated Cycle Length (s)			150.0			Sum of lost time (s)			6.0			
Intersection Capacity Utilization			87.2%			ICU Level of Service			E			
Analysis Period (min)			15									
c Critical Lane Group												

# HCM Signalized Intersection Capacity Analysis

15: MD 193 & MD 193 East SC

6/10/2008



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↕↕↕		↖	↕↕↕		↖	↕		↖	↕↕	↖
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	2.0
Lane Util. Factor	1.00	0.91		1.00	0.91		1.00	1.00		0.95	0.95	1.00
Frt	1.00	1.00		1.00	0.99		1.00	0.87		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	0.97	1.00
Satd. Flow (prot)	1736	4977		1736	4949		1787	1638		1698	1731	1599
Flt Permitted	0.04	1.00		0.06	1.00		0.68	1.00		0.48	0.76	1.00
Satd. Flow (perm)	73	4977		107	4949		1281	1638		862	1364	1599
Volume (vph)	45	2220	30	70	2145	115	95	15	95	55	15	40
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	47	2337	32	74	2258	121	100	16	100	58	16	42
RTOR Reduction (vph)	0	1	0	0	4	0	0	19	0	0	0	36
Lane Group Flow (vph)	47	2368	0	74	2375	0	100	97	0	29	45	6
Heavy Vehicles (%)	4%	4%	4%	4%	4%	4%	1%	1%	1%	1%	1%	1%
Turn Type	custom			Perm			Perm			Perm		Perm
Protected Phases	1	6			2			3				3
Permitted Phases	6 1	6		2	2		3	3		3		3
Actuated Green, G (s)	120.0	120.0		105.0	105.0		20.0	20.0		20.0	20.0	20.0
Effective Green, g (s)	123.0	123.0		108.0	108.0		23.0	23.0		23.0	23.0	23.0
Actuated g/C Ratio	0.82	0.82		0.72	0.72		0.15	0.15		0.15	0.15	0.15
Clearance Time (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	5.0
Lane Grp Cap (vph)	204	4081		77	3563		196	251		132	209	245
v/s Ratio Prot	0.02	c0.48			0.48			0.06				
v/s Ratio Perm	0.17			c0.69			c0.08			0.03	0.03	0.00
v/c Ratio	0.23	0.58		0.96	0.67		0.51	0.38		0.22	0.22	0.03
Uniform Delay, d1	11.3	4.6		19.1	11.3		58.3	57.1		55.6	55.6	54.0
Progression Factor	3.08	0.50		1.00	1.00		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	0.2	0.1		92.2	1.0		9.2	4.4		3.8	2.3	0.2
Delay (s)	35.0	2.4		111.2	12.3		67.5	61.5		59.4	57.9	54.2
Level of Service	C	A		F	B		E	E		E	E	D
Approach Delay (s)		3.0			15.3			64.3			57.0	
Approach LOS		A			B			E			E	































## Intersection Summary

HCM Average Control Delay	12.6	HCM Level of Service	B
HCM Volume to Capacity ratio	0.85		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	6.0
Intersection Capacity Utilization	87.3%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

# HCM Signalized Intersection Capacity Analysis

91: MD 193 & MD 212

6/10/2008

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		  		 	  		 				 	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Lane Util. Factor	1.00	0.91	1.00	0.97	0.91		0.97	1.00	1.00	1.00	0.95	
Frt	1.00	1.00	0.85	1.00	0.99		1.00	1.00	0.85	1.00	0.98	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1736	4988	1553	3367	4913		3367	1827	1553	1736	3397	
Flt Permitted	0.11	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	198	4988	1553	3367	4913		3367	1827	1553	1736	3397	
Volume (vph)	140	1650	665	670	1575	175	800	635	670	270	479	80
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	147	1737	700	705	1658	184	842	668	705	284	504	84
RTOR Reduction (vph)	0	0	0	0	11	0	0	0	178	0	11	0
Lane Group Flow (vph)	147	1737	700	705	1831	0	842	668	527	284	577	0
Heavy Vehicles (%)	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%
Turn Type	pm+pt		Free	Prot			Split		Perm	Split		
Protected Phases	1	6		5	2		4	4		3	3	
Permitted Phases	6		Free						4			
Actuated Green, G (s)	38.0	33.0	120.0	18.0	46.0		33.0	33.0	33.0	14.0	14.0	
Effective Green, g (s)	44.0	37.0	120.0	20.0	50.0		35.0	35.0	35.0	16.0	16.0	
Actuated g/C Ratio	0.37	0.31	1.00	0.17	0.42		0.29	0.29	0.29	0.13	0.13	
Clearance Time (s)	5.0	7.0		5.0	7.0		5.0	5.0	5.0	5.0	5.0	
Vehicle Extension (s)	2.5	5.0		2.5	5.0		2.5	2.5	2.5	2.5	2.5	
Lane Grp Cap (vph)	162	1538	1553	561	2047		982	533	453	231	453	
v/s Ratio Prot	0.05	c0.35		c0.21	0.37		0.25	c0.37		0.16	c0.17	
v/s Ratio Perm	0.28		0.45						0.34			
v/c Ratio	0.91	1.13	0.45	1.26	0.89		0.86	1.25	1.16	1.23	1.27	
Uniform Delay, d1	30.0	41.5	0.0	50.0	32.5		40.1	42.5	42.5	52.0	52.0	
Progression Factor	1.50	0.80	1.00	0.97	1.17		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	35.1	64.7	0.7	126.5	5.2		7.4	128.8	95.5	135.1	139.3	
Delay (s)	80.1	97.9	0.7	175.0	43.3		47.6	171.3	138.0	187.1	191.3	
Level of Service	F	F	A	F	D		D	F	F	F	F	
Approach Delay (s)		70.5			79.8			113.7			189.9	
Approach LOS		E			E			F			F	
<b>Intersection Summary</b>												
HCM Average Control Delay			97.7			HCM Level of Service				F		
HCM Volume to Capacity ratio			1.21									
Actuated Cycle Length (s)			120.0			Sum of lost time (s)			12.0			
Intersection Capacity Utilization			112.7%			ICU Level of Service				H		
Analysis Period (min)			15									

c Critical Lane Group

# HCM Signalized Intersection Capacity Analysis

105: MD 193 & 23rd Ave

6/10/2008


























Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑↑		↑	↑↑↑			↑	↑			↑
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		3.0		3.0	3.0			3.0	3.0			3.0
Lane Util. Factor		0.91		1.00	0.91			1.00	1.00			1.00
Frt		0.98		1.00	1.00			1.00	0.85			0.86
Flt Protected		1.00		0.95	1.00			0.95	1.00			1.00
Satd. Flow (prot)		4895		1736	4976			1793	1599			1627
Flt Permitted		1.00		0.06	1.00			0.95	1.00			1.00
Satd. Flow (perm)		4895		103	4976			1793	1599			1627
Volume (vph)	0	2240	315	185	1995	30	400	5	145	0	0	75
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	2358	332	195	2100	32	421	5	153	0	0	79
RTOR Reduction (vph)	0	15	0	0	1	0	0	0	111	0	0	34
Lane Group Flow (vph)	0	2675	0	195	2131	0	0	426	42	0	0	45
Heavy Vehicles (%)	4%	4%	4%	4%	4%	4%	1%	1%	1%	1%	1%	1%
Turn Type				pm+pt			Perm		Perm			custom
Protected Phases		6		5	2			4				
Permitted Phases		6		2			4		4			6
Actuated Green, G (s)		64.8		79.7	79.7			28.3	28.3			64.8
Effective Green, g (s)		67.8		82.7	82.7			31.3	31.3			67.8
Actuated g/C Ratio		0.56		0.69	0.69			0.26	0.26			0.56
Clearance Time (s)		6.0		5.0	6.0			6.0	6.0			6.0
Vehicle Extension (s)		5.0		3.0	5.0			3.0	3.0			5.0
Lane Grp Cap (vph)		2766		233	3429			468	417			919
v/s Ratio Prot		c0.55		c0.08	0.43							
v/s Ratio Perm				0.49				0.24	0.03			0.03
v/c Ratio		0.97		0.84	0.62			0.91	0.10			0.05
Uniform Delay, d1		25.0		38.5	10.1			43.0	33.7			11.7
Progression Factor		0.48		0.81	1.42			1.00	1.00			1.00
Incremental Delay, d2		1.6		15.1	0.5			21.7	0.1			0.1
Delay (s)		13.5		46.3	14.9			64.7	33.8			11.8
Level of Service		B		D	B			E	C			B
Approach Delay (s)		13.5			17.6			56.5			11.8	
Approach LOS		B			B			E			B	
<b>Intersection Summary</b>												
HCM Average Control Delay			19.5			HCM Level of Service			B			
HCM Volume to Capacity ratio			0.94									
Actuated Cycle Length (s)			120.0			Sum of lost time (s)			9.0			
Intersection Capacity Utilization			93.0%			ICU Level of Service			F			
Analysis Period (min)			15									

c Critical Lane Group

# HCM Signalized Intersection Capacity Analysis

107: MD 193 & West Park Dr.

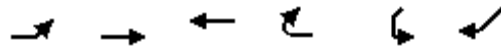
6/10/2008

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		 			 							
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95		1.00	1.00		1.00	1.00	
Frt	1.00	1.00	0.85	1.00	1.00		1.00	0.86		1.00	0.90	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1736	3471	1553	1736	3454		1787	1612		1787	1696	
Flt Permitted	0.04	1.00	1.00	0.04	1.00		0.74	1.00		0.53	1.00	
Satd. Flow (perm)	81	3471	1553	81	3454		1385	1612		1004	1696	
Volume (vph)	25	2260	40	35	2095	69	25	5	95	80	10	20
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	26	2379	42	37	2205	73	26	5	100	84	11	21
RTOR Reduction (vph)	0	0	10	0	2	0	0	64	0	0	18	0
Lane Group Flow (vph)	26	2379	32	37	2276	0	26	41	0	84	14	0
Heavy Vehicles (%)	4%	4%	4%	4%	4%	4%	1%	1%	1%	1%	1%	1%
Turn Type	pm+pt		Perm	pm+pt		Perm				Perm		
Protected Phases	1	6		5	2			8			4	
Permitted Phases	6		6	2		8				4		
Actuated Green, G (s)	90.6	87.6	87.6	90.6	87.6		12.4	12.4		12.4	12.4	
Effective Green, g (s)	95.6	90.6	90.6	95.6	90.6		15.4	15.4		15.4	15.4	
Actuated g/C Ratio	0.80	0.76	0.76	0.80	0.76		0.13	0.13		0.13	0.13	
Clearance Time (s)	5.0	6.0	6.0	5.0	6.0		6.0	6.0		6.0	6.0	
Vehicle Extension (s)	3.0	5.0	5.0	3.0	5.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	133	2621	1173	133	2608		178	207		129	218	
v/s Ratio Prot	0.01	c0.69		c0.01	0.66			0.03			0.01	
v/s Ratio Perm	0.15		0.02	0.21		0.02				c0.08		
v/c Ratio	0.20	0.91	0.03	0.28	0.87		0.15	0.20		0.65	0.06	
Uniform Delay, d1	17.3	11.4	3.7	22.4	10.6		46.5	46.8		49.7	46.0	
Progression Factor	1.85	0.65	0.00	1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.3	2.9	0.0	1.1	4.4		0.4	0.5		11.2	0.1	
Delay (s)	32.2	10.3	0.0	23.5	15.0		46.8	47.3		60.9	46.1	
Level of Service	C	B	A	C	B		D	D		E	D	
Approach Delay (s)		10.4			15.1			47.2			56.8	
Approach LOS		B			B			D			E	
<b>Intersection Summary</b>												
HCM Average Control Delay			14.6			HCM Level of Service			B			
HCM Volume to Capacity ratio			0.84									
Actuated Cycle Length (s)			120.0			Sum of lost time (s)			9.0			
Intersection Capacity Utilization			80.2%			ICU Level of Service			D			
Analysis Period (min)			15									

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis  
 109: MD 193 & Campus Dr.

6/10/2008
































Movement	EBL	EBT	WBT	WBR	SWL	SWR
Lane Configurations	↗↘	↑	↗↘			↗↘
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0	3.0			3.0
Lane Util. Factor	0.97	1.00	0.95			0.88
Frt	1.00	1.00	1.00			0.85
Flt Protected	0.95	1.00	1.00			1.00
Satd. Flow (prot)	3367	1827	3471			2733
Flt Permitted	0.95	1.00	1.00			1.00
Satd. Flow (perm)	3367	1827	3471			2733
Volume (vph)	1745	635	840	0	0	1405
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	1837	668	884	0	0	1479
RTOR Reduction (vph)	0	0	0	0	0	45
Lane Group Flow (vph)	1837	668	884	0	0	1434
Heavy Vehicles (%)	4%	4%	4%	4%	4%	4%
Turn Type	Free					
Protected Phases	1 2 5 6		3 4			1 2 5 6
Permitted Phases	Free					
Actuated Green, G (s)	138.0	248.0	98.0			138.0
Effective Green, g (s)	141.0	248.0	101.0			141.0
Actuated g/C Ratio	0.57	1.00	0.41			0.57
Clearance Time (s)						
Vehicle Extension (s)						
Lane Grp Cap (vph)	1914	1827	1414			1554
v/s Ratio Prot	c0.55		c0.25			0.52
v/s Ratio Perm		0.37				
v/c Ratio	0.96	0.37	0.63			0.92
Uniform Delay, d1	50.8	0.0	58.4			48.5
Progression Factor	1.00	1.00	0.69			0.50
Incremental Delay, d2	12.3	0.6	0.1			1.1
Delay (s)	63.1	0.6	40.4			25.4
Level of Service	E	A	D			C
Approach Delay (s)		46.4	40.4		25.4	
Approach LOS		D	D		C	
<b>Intersection Summary</b>						
HCM Average Control Delay			39.0		HCM Level of Service	D
HCM Volume to Capacity ratio			0.82			
Actuated Cycle Length (s)			248.0		Sum of lost time (s)	6.0
Intersection Capacity Utilization			79.7%		ICU Level of Service	D
Analysis Period (min)			15			

c Critical Lane Group

# HCM Signalized Intersection Capacity Analysis

111: MD 193 & Adelphi Rd.

6/10/2008

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		 		 	 			  			  	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0		3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0
Lane Util. Factor	1.00	0.95		0.97	0.95	1.00		0.91	1.00	1.00	0.91	1.00
Frt	1.00	1.00		1.00	1.00	0.85		1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00		1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1736	3471		3367	3471	1553		4988	1553	1736	4988	1553
Flt Permitted	0.95	1.00		0.95	1.00	1.00		1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1736	3471		3367	3471	1553		4988	1553	1736	4988	1553
Volume (vph)	125	1620	0	470	1215	365	0	1465	745	135	1105	195
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	132	1705	0	495	1279	384	0	1542	784	142	1163	205
RTOR Reduction (vph)	0	0	0	0	0	174	0	0	0	0	0	105
Lane Group Flow (vph)	132	1705	0	495	1279	210	0	1542	784	142	1163	100
Heavy Vehicles (%)	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%
Turn Type	Prot			Prot		Perm			Free	Prot		Perm
Protected Phases	6	2 6		1	5			4		3	7 8	
Permitted Phases						5		4	Free			7 8
Actuated Green, G (s)	58.0	105.0		28.0	74.0	74.0		66.0	248.0	27.0	100.0	100.0
Effective Green, g (s)	61.0	108.0		30.0	77.0	77.0		69.0	248.0	29.0	101.0	101.0
Actuated g/C Ratio	0.25	0.44		0.12	0.31	0.31		0.28	1.00	0.12	0.41	0.41
Clearance Time (s)	6.0			5.0	6.0	6.0		6.0		5.0		
Vehicle Extension (s)	3.0			3.0	4.0	4.0		3.5		3.0		
Lane Grp Cap (vph)	427	1512		407	1078	482		1388	1553	203	2031	632
v/s Ratio Prot	0.08	c0.49		c0.15	c0.37			c0.31		c0.08	0.23	
v/s Ratio Perm						0.14			0.50			0.06
v/c Ratio	0.31	1.13		1.22	1.19	0.44		1.11	0.50	0.70	0.57	0.16
Uniform Delay, d1	76.3	70.0		109.0	85.5	68.2		89.5	0.0	105.3	56.8	46.6
Progression Factor	0.41	0.32		1.00	1.00	1.00		0.38	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.1	60.5		117.8	93.4	0.9		51.1	0.1	10.1	0.4	0.1
Delay (s)	31.4	82.8		226.8	178.9	69.1		85.4	0.1	115.4	57.2	46.7
Level of Service	C	F		F	F	E		F	A	F	E	D
Approach Delay (s)		79.1			170.4			56.7			61.3	
Approach LOS		E			F			E			E	
<b>Intersection Summary</b>												
HCM Average Control Delay			94.2				HCM Level of Service		F			
HCM Volume to Capacity ratio			1.09									
Actuated Cycle Length (s)			248.0				Sum of lost time (s)		9.0			
Intersection Capacity Utilization			107.3%				ICU Level of Service		G			
Analysis Period (min)			15									

c Critical Lane Group

# HCM Signalized Intersection Capacity Analysis

113: Campus Dr. & Adelphi Rd.

6/10/2008



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑	↑	↑	↑	↑	↑	↑↑↑	↑	↑↑	↑↑	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Lane Util. Factor		0.95	1.00	1.00	1.00	1.00	1.00	0.91	1.00	0.97	0.95	
Frt		1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	
Flt Protected		1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)		3471	1553	1736	1827	1553	1736	4988	1553	3367	3471	
Flt Permitted		1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)		3471	1553	1736	1827	1553	1736	4988	1553	3367	3471	
Volume (vph)	0	270	365	225	590	445	250	1765	250	275	1295	0
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	284	384	237	621	468	263	1858	263	289	1363	0
RTOR Reduction (vph)	0	0	231	0	0	121	0	0	118	0	0	0
Lane Group Flow (vph)	0	284	153	237	621	347	263	1858	145	289	1363	0
Heavy Vehicles (%)	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%
Turn Type			Perm	Split		Perm	Prot		Perm	Prot		
Protected Phases		2		6	6		3	8			1	7
Permitted Phases			2			6			8			
Actuated Green, G (s)		41.0	41.0	58.0	58.0	58.0	27.0	79.0	79.0	47.0	100.0	
Effective Green, g (s)		44.0	44.0	61.0	61.0	61.0	29.0	82.0	82.0	49.0	102.0	
Actuated g/C Ratio		0.18	0.18	0.25	0.25	0.25	0.12	0.33	0.33	0.20	0.41	
Clearance Time (s)		6.0	6.0	6.0	6.0	6.0	5.0	6.0	6.0			
Vehicle Extension (s)		4.0	4.0	3.0	3.0	3.0	3.0	3.5	3.5			
Lane Grp Cap (vph)		616	276	427	449	382	203	1649	513	665	1428	
v/s Ratio Prot		0.08		0.14	c0.34		c0.15	c0.37		0.09	c0.39	
v/s Ratio Perm			c0.10			0.22			0.09			
v/c Ratio		0.46	0.55	0.56	1.38	0.91	1.30	1.13	0.28	0.43	0.95	
Uniform Delay, d1		91.4	93.0	81.6	93.5	90.8	109.5	83.0	61.3	87.3	70.8	
Progression Factor		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.56	0.44	
Incremental Delay, d2		0.7	2.8	1.6	185.8	24.7	164.4	65.5	0.4	0.3	10.1	
Delay (s)		92.1	95.8	83.2	279.3	115.5	273.9	148.5	61.7	49.4	41.3	
Level of Service		F	F	F	F	F	F	F	E	D	D	
Approach Delay (s)		94.2			186.5			152.7			42.7	
Approach LOS		F			F			F			D	

## Intersection Summary

HCM Average Control Delay	123.5	HCM Level of Service	F
HCM Volume to Capacity ratio	1.07		
Actuated Cycle Length (s)	248.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	96.3%	ICU Level of Service	F
Analysis Period (min)	15		
































c Critical Lane Group



# HCM Signalized Intersection Capacity Analysis

1621: MD 193 & MD 650

6/10/2008

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		  			  		 	  		  	  	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lane Util. Factor	1.00	0.91		1.00	0.91		0.97	0.91		1.00	0.91	
Frt	1.00	0.97		1.00	0.98		1.00	0.99		1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1736	4842		1736	4898		3367	4917		1736	4938	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1736	4842		1736	4898		3367	4917		1736	4938	
Volume (vph)	135	1740	420	265	1795	245	535	2120	220	360	1270	90
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	142	1832	442	279	1889	258	563	2232	232	379	1337	95
RTOR Reduction (vph)	0	27	0	0	12	0	0	8	0	0	5	0
Lane Group Flow (vph)	142	2247	0	279	2135	0	563	2456	0	379	1427	0
Heavy Vehicles (%)	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%
Turn Type	Prot			Prot			Prot			Prot		
Protected Phases	7	4		3	8		1	6		5	2	
Permitted Phases												
Actuated Green, G (s)	7.0	45.0		14.0	52.0		23.0	50.5		18.0	45.5	
Effective Green, g (s)	10.0	49.0		17.0	56.0		26.0	55.0		21.0	50.0	
Actuated g/C Ratio	0.07	0.33		0.11	0.37		0.17	0.37		0.14	0.33	
Clearance Time (s)	5.0	6.0		5.0	6.0		5.0	6.5		5.0	6.5	
Vehicle Extension (s)	3.0	5.0		3.0	5.0		3.0	5.0		3.0	5.0	
Lane Grp Cap (vph)	116	1582		197	1829		584	1803		243	1646	
v/s Ratio Prot	0.08	c0.46		c0.16	c0.44		0.17	c0.50		c0.22	0.29	
v/s Ratio Perm												
v/c Ratio	1.22	1.42		1.42	1.17		0.96	1.36		1.56	0.87	
Uniform Delay, d1	70.0	50.5		66.5	47.0		61.5	47.5		64.5	46.9	
Progression Factor	0.85	0.78		0.87	0.81		0.71	0.70		0.79	0.68	
Incremental Delay, d2	145.2	192.0		208.8	80.3		20.1	165.1		268.4	5.5	
Delay (s)	204.7	231.6		266.9	118.3		64.0	198.4		319.1	37.6	
Level of Service	F	F		F	F		E	F		F	D	
Approach Delay (s)		230.0			135.3			173.4			96.5	
Approach LOS		F			F			F			F	
<b>Intersection Summary</b>												
HCM Average Control Delay			163.6			HCM Level of Service				F		
HCM Volume to Capacity ratio			1.39									
Actuated Cycle Length (s)			150.0			Sum of lost time (s)			6.0			
Intersection Capacity Utilization			136.8%			ICU Level of Service			H			
Analysis Period (min)			15									

c Critical Lane Group

# HCM Signalized Intersection Capacity Analysis

1629: MD 193 & 15th Ave

6/10/2008



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↑↑↑		↖	↑↑↑		↖	↗		↖	↗	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	2.0	2.0			2.0		2.0	3.0		3.0	3.0	
Lane Util. Factor	1.00	0.91			0.91		1.00	1.00		1.00	1.00	
Frt	1.00	1.00			0.98		1.00	0.92		1.00	0.85	
Flt Protected	0.95	1.00			1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1736	4988			4904		1787	1740		1787	1602	
Flt Permitted	0.06	1.00			1.00		0.65	1.00		0.76	1.00	
Satd. Flow (perm)	109	4988			4904		1227	1740		1423	1602	
Volume (vph)	225	2130	0	0	2220	280	1	1	1	375	1	95
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	237	2242	0	0	2337	295	1	1	1	395	1	100
RTOR Reduction (vph)	0	0	0	0	13	0	0	1	0	0	60	0
Lane Group Flow (vph)	237	2242	0	0	2619	0	1	1	0	395	41	0
Heavy Vehicles (%)	4%	4%	4%	4%	4%	4%	1%	1%	1%	1%	1%	1%
Turn Type	pm+pt		pm+pt		Perm		Perm		Perm		Perm	
Protected Phases	5	2		1	6			8				4
Permitted Phases	2			6			8			4		
Actuated Green, G (s)	76.0	76.0			63.0		32.0	32.0		32.0	32.0	
Effective Green, g (s)	80.0	80.0			65.0		36.0	35.0		35.0	35.0	
Actuated g/C Ratio	0.67	0.67			0.54		0.30	0.29		0.29	0.29	
Clearance Time (s)	5.0	6.0			4.0		6.0	6.0		6.0	6.0	
Vehicle Extension (s)	3.0	5.0			3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	249	3325			2656		368	508		415	467	
v/s Ratio Prot	c0.10	0.45			c0.53			0.00			0.03	
v/s Ratio Perm	0.53						0.00			c0.28		
v/c Ratio	0.95	0.67			0.99		0.00	0.00		0.95	0.09	
Uniform Delay, d1	40.8	12.1			27.1		29.4	30.1		41.7	30.9	
Progression Factor	1.00	1.00			0.58		1.00	1.00		1.00	1.00	
Incremental Delay, d2	43.6	1.1			9.8		0.0	0.0		31.9	0.1	
Delay (s)	84.4	13.2			25.5		29.4	30.1		73.6	31.0	
Level of Service	F	B			C		C	C		E	C	
Approach Delay (s)		20.0			25.5			29.9			64.9	
Approach LOS		C			C			C			E	

## Intersection Summary

HCM Average Control Delay	26.6	HCM Level of Service	C
HCM Volume to Capacity ratio	0.96		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	7.0
Intersection Capacity Utilization	99.0%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

# HCM Signalized Intersection Capacity Analysis

## 3: River Rd. & MD 201

6/11/2008



Movement	EBL	EBT	EBR	WBL2	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR2
Lane Configurations	↘	↖	↗		↘		↘	↕	↗		↖↖↖	↗
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0	3.0		3.0		3.0	3.0	3.0		3.0	3.0
Lane Util. Factor	0.95	0.95	1.00		1.00		1.00	0.95	1.00		0.91	1.00
Frt	1.00	1.00	0.85		0.95		1.00	1.00	0.85		1.00	0.85
Flt Protected	0.95	0.96	1.00		0.98		0.95	1.00	1.00		1.00	1.00
Satd. Flow (prot)	1618	1629	1524		1767		1703	3406	1524		4893	1524
Flt Permitted	0.95	0.96	1.00		0.98		0.05	1.00	1.00		0.94	1.00
Satd. Flow (perm)	1618	1629	1524		1767		86	3406	1524		4579	1524
Volume (vph)	90	5	125	5	5	5	455	1370	5	5	2135	455
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Growth Factor (vph)	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Adj. Flow (vph)	95	5	132	5	5	5	479	1442	5	5	2247	479
RTOR Reduction (vph)	0	0	0	0	5	0	0	0	1	0	0	92
Lane Group Flow (vph)	49	51	132	0	10	0	479	1442	4	0	2252	387
Heavy Vehicles (%)	6%	6%	6%	1%	1%	1%	6%	6%	6%	6%	6%	6%
Turn Type	Split		Perm	Split			pm+pt		Perm	Perm		Perm
Protected Phases	4	4		3	3		1	6		2		2
Permitted Phases			4!				6		6	2		2
Actuated Green, G (s)	16.1	16.1	16.1		2.2		124.7	124.7	124.7		77.3	77.3
Effective Green, g (s)	18.6	18.6	18.6		4.7		127.7	127.7	127.7		80.3	80.3
Actuated g/C Ratio	0.12	0.12	0.12		0.03		0.80	0.80	0.80		0.50	0.50
Clearance Time (s)	5.5	5.5	5.5		5.5		5.0	6.0	6.0		6.0	6.0
Vehicle Extension (s)	3.0	3.0	3.0		3.0		3.0	3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	188	189	177		52		517	2718	1216		2298	765
v/s Ratio Prot	0.03	0.03			c0.01		c0.26	0.42				
v/s Ratio Perm			c0.09				0.48		0.00		c0.49	0.25
v/c Ratio	0.26	0.27	0.75		0.20		0.93	0.53	0.00		0.98	0.51
Uniform Delay, d1	64.4	64.5	68.4		75.8		50.4	5.7	3.3		39.1	26.6
Progression Factor	1.00	1.00	1.00		1.00		0.85	0.24	0.21		0.70	0.62
Incremental Delay, d2	0.7	0.8	15.6		1.8		18.2	0.6	0.0		12.8	1.9
Delay (s)	65.2	65.3	84.1		77.6		61.1	1.9	0.7		40.1	18.5
Level of Service	E	E	F		E		E	A	A		D	B
Approach Delay (s)		75.9			77.6			16.6			36.3	
Approach LOS		E			E			B			D	

### Intersection Summary

HCM Average Control Delay	30.6	HCM Level of Service	C
HCM Volume to Capacity ratio	0.91		
Actuated Cycle Length (s)	160.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	95.5%	ICU Level of Service	F
Analysis Period (min)	15		

! Phase conflict between lane groups.






















c Critical Lane Group



Movement	NER2
Lane Configurations	7
Ideal Flow (vphpl)	1900
Total Lost time (s)	3.0
Lane Util. Factor	1.00
Frt	0.86
Flt Protected	1.00
Satd. Flow (prot)	822
Flt Permitted	1.00
Satd. Flow (perm)	822
Volume (vph)	10
Peak-hour factor, PHF	0.95
Growth Factor (vph)	100%
Adj. Flow (vph)	11
RTOR Reduction (vph)	10
Lane Group Flow (vph)	1
Heavy Vehicles (%)	100%
Turn Type	custom
Protected Phases	4!
Permitted Phases	
Actuated Green, G (s)	16.1
Effective Green, g (s)	18.6
Actuated g/C Ratio	0.12
Clearance Time (s)	5.5
Vehicle Extension (s)	3.0
Lane Grp Cap (vph)	96
v/s Ratio Prot	0.00
v/s Ratio Perm	
v/c Ratio	0.01
Uniform Delay, d1	62.6
Progression Factor	1.00
Incremental Delay, d2	0.1
Delay (s)	62.6
Level of Service	E
Approach Delay (s)	
Approach LOS	
<b>Intersection Summary</b>	

HCM Signalized Intersection Capacity Analysis  
4: Shopping Center & MD 201

6/11/2008

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		3.0	3.0		3.0		3.0	3.0	3.0	3.0	3.0	
Lane Util. Factor		1.00	1.00		1.00		1.00	0.95	1.00	1.00	0.91	
Frt		1.00	0.85		0.91		1.00	1.00	0.85	1.00	1.00	
Flt Protected		0.96	1.00		0.99		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)		1812	1599		1690		1703	3406	1524	1703	4892	
Flt Permitted		0.84	1.00		0.92		0.07	1.00	1.00	0.07	1.00	
Satd. Flow (perm)		1582	1599		1570		122	3406	1524	133	4892	
Volume (vph)	15	5	15	15	5	40	25	1775	15	15	2330	5
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Growth Factor (vph)	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Adj. Flow (vph)	16	5	16	16	5	42	26	1868	16	16	2453	5
RTOR Reduction (vph)	0	0	14	0	37	0	0	0	3	0	0	0
Lane Group Flow (vph)	0	21	2	0	26	0	26	1868	13	16	2458	0
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	6%	6%	6%	6%	6%	6%
Turn Type	Perm		Perm	Perm			pm+pt		Perm	pm+pt		
Protected Phases		8			4		5	2		1	6	
Permitted Phases	8		8	4			2		2	6		
Actuated Green, G (s)		6.4	6.4		6.4		57.1	55.1	55.1	55.1	54.1	
Effective Green, g (s)		9.4	9.4		9.4		62.6	58.6	58.6	60.6	57.6	
Actuated g/C Ratio		0.12	0.12		0.12		0.78	0.73	0.73	0.76	0.72	
Clearance Time (s)		6.0	6.0		6.0		5.0	6.5	6.5	5.0	6.5	
Vehicle Extension (s)		3.0	3.0		3.0		3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)		186	188		184		175	2495	1116	160	3522	
v/s Ratio Prot							c0.01	c0.55		0.00	0.50	
v/s Ratio Perm		0.01	0.00		c0.02		0.11		0.01	0.07		
v/c Ratio		0.11	0.01		0.14		0.15	0.75	0.01	0.10	0.70	
Uniform Delay, d1		31.6	31.2		31.7		4.9	6.3	2.9	5.6	6.3	
Progression Factor		1.00	1.00		1.00		0.72	1.32	0.56	0.96	1.56	
Incremental Delay, d2		0.3	0.0		0.4		0.3	1.6	0.0	0.1	0.5	
Delay (s)		31.8	31.2		32.0		3.9	9.9	1.6	5.5	10.4	
Level of Service		C	C		C		A	A	A	A	B	
Approach Delay (s)		31.6			32.0			9.8			10.3	
Approach LOS		C			C			A			B	
<b>Intersection Summary</b>												
HCM Average Control Delay			10.6				HCM Level of Service				B	
HCM Volume to Capacity ratio			0.64									
Actuated Cycle Length (s)			80.0				Sum of lost time (s)				9.0	
Intersection Capacity Utilization			68.5%				ICU Level of Service				C	
Analysis Period (min)			15									
c Critical Lane Group												

# HCM Signalized Intersection Capacity Analysis

5: MD 410 & MD 201

6/11/2008

Movement	EBL	EBT	EBR	WBL	WBT	WBR2	NBL2	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Util. Factor	0.97	0.95	1.00	1.00	0.95	1.00	0.97	0.95	1.00	1.00	0.95	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3303	3406	1524	1703	3406	1524	3303	3406	1524	1703	3406	1524
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3303	3406	1524	1703	3406	1524	3303	3406	1524	1703	3406	1524
Volume (vph)	345	955	365	50	1675	575	405	895	40	125	1815	335
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Growth Factor (vph)	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Adj. Flow (vph)	363	1005	384	53	1763	605	426	942	42	132	1911	353
RTOR Reduction (vph)	0	0	124	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	363	1005	260	53	1763	605	426	942	42	132	1911	353
Heavy Vehicles (%)	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%
Turn Type	Prot		Perm	Prot		Free	Prot		Free	Prot		custom
Protected Phases	3	8		7	4		5	2!		1!		6
Permitted Phases			8			Free			Free			2 3 4!
Actuated Green, G (s)	15.0	58.0	58.0	4.0	48.0	160.0	13.0	60.4	160.0	15.6	63.0	134.4
Effective Green, g (s)	17.0	61.0	61.0	6.0	50.0	160.0	15.0	63.4	160.0	17.6	66.0	136.4
Actuated g/C Ratio	0.11	0.38	0.38	0.04	0.31	1.00	0.09	0.40	1.00	0.11	0.41	0.85
Clearance Time (s)	5.0	6.0	6.0	5.0	5.0		5.0	6.0		5.0	6.0	
Vehicle Extension (s)	3.0	5.0	5.0	3.0	5.0		3.0	5.0		3.0	5.0	
Lane Grp Cap (vph)	351	1299	581	64	1064	1524	310	1350	1524	187	1405	1299
v/s Ratio Prot	c0.11	0.30		0.03	c0.52		c0.13	0.28		0.08	c0.56	
v/s Ratio Perm			0.17			c0.40			0.03			0.23
v/c Ratio	1.03	0.77	0.45	0.83	1.66	0.40	1.37	0.70	0.03	0.71	1.36	0.27
Uniform Delay, d1	71.5	43.4	36.9	76.5	55.0	0.0	72.5	40.3	0.0	68.7	47.0	2.3
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.28	0.83	1.00	0.99	0.65	2.29
Incremental Delay, d2	57.1	4.5	2.5	56.0	299.8	0.8	185.9	2.7	0.0	9.0	165.7	0.1
Delay (s)	128.6	48.0	39.4	132.5	354.8	0.8	278.7	36.0	0.0	76.8	196.1	5.3
Level of Service	F	D	D	F	F	A	F	D	A	E	F	A
Approach Delay (s)		62.8			261.5			108.3			161.4	
Approach LOS		E			F			F			F	

## Intersection Summary

HCM Average Control Delay	160.6	HCM Level of Service	F
HCM Volume to Capacity ratio	1.40		
Actuated Cycle Length (s)	160.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	138.7%	ICU Level of Service	H
Analysis Period (min)	15		

! Phase conflict between lane groups.

c Critical Lane Group



Movement	SEL
Lane Configurations	↕
Ideal Flow (vphpl)	1900
Total Lost time (s)	3.0
Lane Util. Factor	1.00
Frt	1.00
Flt Protected	0.95
Satd. Flow (prot)	902
Flt Permitted	0.95
Satd. Flow (perm)	902
Volume (vph)	10
Peak-hour factor, PHF	0.95
Growth Factor (vph)	100%
Adj. Flow (vph)	11
RTOR Reduction (vph)	0
Lane Group Flow (vph)	11
Heavy Vehicles (%)	100%
Turn Type	
Protected Phases	5!
Permitted Phases	
Actuated Green, G (s)	13.0
Effective Green, g (s)	15.0
Actuated g/C Ratio	0.09
Clearance Time (s)	5.0
Vehicle Extension (s)	3.0
Lane Grp Cap (vph)	85
v/s Ratio Prot	0.01
v/s Ratio Perm	
v/c Ratio	0.13
Uniform Delay, d1	66.5
Progression Factor	1.00
Incremental Delay, d2	0.7
Delay (s)	67.2
Level of Service	E
Approach Delay (s)	67.2
Approach LOS	E
<b>Intersection Summary</b>	

# HCM Signalized Intersection Capacity Analysis

## 3: River Rd. & MD 201

6/11/2008



Movement	EBL	EBT	EBR	WBL2	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR2
Lane Configurations	↖	↗	↘		↖		↖	↗	↘		↖↗↘	↖
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0	3.0		3.0		3.0	3.0	3.0		3.0	3.0
Lane Util. Factor	0.95	0.95	1.00		1.00		1.00	0.95	1.00		0.91	1.00
Frt	1.00	1.00	0.85		0.95		1.00	1.00	0.85		1.00	0.85
Flt Protected	0.95	0.95	1.00		0.98		0.95	1.00	1.00		1.00	1.00
Satd. Flow (prot)	1665	1671	1568		1767		1752	3505	1568		5035	1568
Flt Permitted	0.95	0.95	1.00		0.98		0.07	1.00	1.00		0.88	1.00
Satd. Flow (perm)	1665	1671	1568		1767		128	3505	1568		4415	1568
Volume (vph)	330	5	365	5	5	5	150	2115	5	5	1715	65
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Growth Factor (vph)	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Adj. Flow (vph)	347	5	384	5	5	5	158	2226	5	5	1805	68
RTOR Reduction (vph)	0	0	0	0	5	0	0	0	1	0	0	14
Lane Group Flow (vph)	174	178	384	0	10	0	158	2226	4	0	1810	54
Heavy Vehicles (%)	3%	3%	3%	1%	1%	1%	3%	3%	3%	3%	3%	3%
Turn Type	Split		Perm	Split			pm+pt		Perm	Perm		Perm
Protected Phases	4	4		3	3		1	6			2	
Permitted Phases			4!				6		6	2		2
Actuated Green, G (s)	40.9	40.9	40.9		3.3		118.8	118.8	118.8		101.9	101.9
Effective Green, g (s)	43.4	43.4	43.4		5.8		121.8	121.8	121.8		104.9	104.9
Actuated g/C Ratio	0.24	0.24	0.24		0.03		0.68	0.68	0.68		0.58	0.58
Clearance Time (s)	5.5	5.5	5.5		5.5		5.0	6.0	6.0		6.0	6.0
Vehicle Extension (s)	3.0	3.0	3.0		3.0		3.0	3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	401	403	378		57		212	2372	1061		2573	914
v/s Ratio Prot	0.10	0.11			c0.01		0.06	c0.64				
v/s Ratio Perm			c0.24				0.45		0.00		0.41	0.03
v/c Ratio	0.43	0.44	1.02		0.18		0.75	0.94	0.00		0.70	0.06
Uniform Delay, d1	57.9	58.0	68.3		84.8		34.7	25.8	9.4		26.6	16.2
Progression Factor	1.00	1.00	1.00		1.00		1.64	0.19	0.14		0.65	0.67
Incremental Delay, d2	0.8	0.8	50.4		1.5		7.7	5.4	0.0		1.5	0.1
Delay (s)	58.6	58.8	118.7		86.3		64.4	10.1	1.3		18.7	11.0
Level of Service	E	E	F		F		E	B	A		B	B
Approach Delay (s)		90.0			86.3			13.7			18.4	
Approach LOS		F			F			B			B	

### Intersection Summary

HCM Average Control Delay	26.9	HCM Level of Service	C
HCM Volume to Capacity ratio	0.93		
Actuated Cycle Length (s)	180.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	117.6%	ICU Level of Service	H
Analysis Period (min)	15		

! Phase conflict between lane groups.

c Critical Lane Group

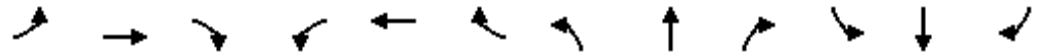




Movement	NER2
Lane Configurations	7
Ideal Flow (vphpl)	1900
Total Lost time (s)	3.0
Lane Util. Factor	1.00
Frt	0.86
Flt Protected	1.00
Satd. Flow (prot)	822
Flt Permitted	1.00
Satd. Flow (perm)	822
Volume (vph)	10
Peak-hour factor, PHF	0.95
Growth Factor (vph)	100%
Adj. Flow (vph)	11
RTOR Reduction (vph)	8
Lane Group Flow (vph)	3
Heavy Vehicles (%)	100%
Turn Type	custom
Protected Phases	4!
Permitted Phases	
Actuated Green, G (s)	40.9
Effective Green, g (s)	43.4
Actuated g/C Ratio	0.24
Clearance Time (s)	5.5
Vehicle Extension (s)	3.0
Lane Grp Cap (vph)	198
v/s Ratio Prot	0.00
v/s Ratio Perm	
v/c Ratio	0.01
Uniform Delay, d1	52.0
Progression Factor	1.00
Incremental Delay, d2	0.0
Delay (s)	52.0
Level of Service	D
Approach Delay (s)	
Approach LOS	
<b>Intersection Summary</b>	

HCM Signalized Intersection Capacity Analysis  
4: Shopping Center & MD 201

6/11/2008



Movement	EBL	EBT	EBR	WBL	WBT	WBR2	NBL2	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕	↗		↕		↘	↕↕	↗	↘	↕↕↕	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		3.0	3.0		3.0		3.0	3.0	3.0	3.0	3.0	
Lane Util. Factor		1.00	1.00		1.00		1.00	0.95	1.00	1.00	0.91	
Frt		1.00	0.85		0.91		1.00	1.00	0.85	1.00	1.00	
Flt Protected		0.96	1.00		0.99		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)		1800	1599		1686		1752	3505	1568	1752	5034	
Flt Permitted		0.53	1.00		0.92		0.07	1.00	1.00	0.04	1.00	
Satd. Flow (perm)		989	1599		1573		138	3505	1568	65	5034	
Volume (vph)	45	5	40	15	5	45	80	2180	35	100	1980	5
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Growth Factor (vph)	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Adj. Flow (vph)	47	5	42	16	5	47	84	2295	37	105	2084	5
RTOR Reduction (vph)	0	0	38	0	43	0	0	0	3	0	0	0
Lane Group Flow (vph)	0	52	4	0	25	0	84	2295	34	105	2089	0
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	3%	3%	3%	3%	3%	3%
Turn Type	Perm		Perm	Perm			pm+pt		Perm	pm+pt		
Protected Phases		8			4		5	2		1	6!	
Permitted Phases	8		8	4			2		2	6		
Actuated Green, G (s)		12.9	12.9		12.9		146.0	138.4	138.4	153.2	142.0	
Effective Green, g (s)		15.9	15.9		15.9		151.5	141.9	141.9	158.1	145.5	
Actuated g/C Ratio		0.09	0.09		0.09		0.84	0.79	0.79	0.88	0.81	
Clearance Time (s)		6.0	6.0		6.0		5.0	6.5	6.5	5.0	6.5	
Vehicle Extension (s)		3.0	3.0		3.0		3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)		87	141		139		202	2763	1236	181	4069	
v/s Ratio Prot							0.02	c0.65		c0.04	0.41	
v/s Ratio Perm		c0.05	0.00		0.02		0.33		0.02	0.47		
v/c Ratio		0.60	0.03		0.18		0.42	0.83	0.03	0.58	0.51	
Uniform Delay, d1		79.0	75.0		76.0		4.5	11.7	4.1	50.6	5.7	
Progression Factor		1.00	1.00		1.00		4.14	1.30	0.00	0.86	0.85	
Incremental Delay, d2		10.6	0.1		0.6		0.1	0.3	0.0	3.1	0.3	
Delay (s)		89.5	75.1		76.6		18.7	15.4	0.0	46.4	5.1	
Level of Service		F	E		E		B	B	A	D	A	
Approach Delay (s)		83.1			76.6			15.3			7.1	
Approach LOS		F			E			B			A	

Intersection Summary

HCM Average Control Delay	13.7	HCM Level of Service	B
HCM Volume to Capacity ratio	0.79		
Actuated Cycle Length (s)	180.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	86.3%	ICU Level of Service	E
Analysis Period (min)	15		

! Phase conflict between lane groups.

c Critical Lane Group



Movement	SER
Lane Configurations	↗
Ideal Flow (vphpl)	1900
Total Lost time (s)	3.0
Lane Util. Factor	1.00
Frt	0.86
Flt Protected	1.00
Satd. Flow (prot)	822
Flt Permitted	1.00
Satd. Flow (perm)	822
Volume (vph)	10
Peak-hour factor, PHF	0.95
Growth Factor (vph)	100%
Adj. Flow (vph)	11
RTOR Reduction (vph)	0
Lane Group Flow (vph)	11
Heavy Vehicles (%)	100%
Turn Type	custom
Protected Phases	6!
Permitted Phases	
Actuated Green, G (s)	142.0
Effective Green, g (s)	145.5
Actuated g/C Ratio	0.81
Clearance Time (s)	6.5
Vehicle Extension (s)	3.0
Lane Grp Cap (vph)	664
v/s Ratio Prot	0.01
v/s Ratio Perm	
v/c Ratio	0.02
Uniform Delay, d1	3.4
Progression Factor	1.00
Incremental Delay, d2	0.0
Delay (s)	3.4
Level of Service	A
Approach Delay (s)	
Approach LOS	
Intersection Summary	

# HCM Signalized Intersection Capacity Analysis

## 5: MD 410 & MD 201

6/11/2008



Movement	EBL	EBT	EBR	WBL	WBT	WBR2	NBL2	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖↗	↖↗	↖	↖	↖↗	↖	↖↗	↖↗	↖	↖	↖↗	↖
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	11	11	11	11	11	11	11	11	11	11	11	11
Total Lost time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Util. Factor	0.97	0.95	1.00	1.00	0.95	1.00	0.97	0.95	1.00	1.00	0.95	1.00
Fr <sub>t</sub>	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Fl <sub>t</sub> Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3286	3388	1516	1694	3388	1516	3286	3388	1516	1694	3388	1516
Fl <sub>t</sub> Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3286	3388	1516	1694	3388	1516	3286	3388	1516	1694	3388	1516
Volume (vph)	665	1595	495	155	1630	325	455	1305	55	415	1430	190
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Growth Factor (vph)	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Adj. Flow (vph)	700	1679	521	163	1716	342	479	1374	58	437	1505	200
RTOR Reduction (vph)	0	0	129	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	700	1679	392	163	1716	342	479	1374	58	437	1505	200
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%
Turn Type	Prot		Perm	Prot		Free	Prot		Free	Prot		custom
Protected Phases	3	8		7	4		5	2		1!	6!	
Permitted Phases			8			Free			Free			2 3 4
Actuated Green, G (s)	23.0	70.0	70.0	10.0	57.0	180.0	16.0	50.0	180.0	28.0	62.0	141.0
Effective Green, g (s)	25.0	73.0	73.0	12.0	60.0	180.0	18.0	53.0	180.0	30.0	65.0	144.0
Actuated g/C Ratio	0.14	0.41	0.41	0.07	0.33	1.00	0.10	0.29	1.00	0.17	0.36	0.80
Clearance Time (s)	5.0	6.0	6.0	5.0	6.0		5.0	6.0		5.0	6.0	
Vehicle Extension (s)	3.0	3.5	3.5	3.0	3.5		3.0	5.0		3.0	5.0	
Lane Grp Cap (vph)	456	1374	615	113	1129	1516	329	998	1516	282	1223	1213
v/s Ratio Prot	c0.21	0.50		0.10	c0.51		0.15	c0.41		c0.26	0.44	
v/s Ratio Perm			0.26			0.23			0.04			0.13
v/c Ratio	1.54	1.22	0.64	1.44	1.52	0.23	1.46	1.38	0.04	1.55	1.23	0.16
Uniform Delay, d <sub>1</sub>	77.5	53.5	42.9	84.0	60.0	0.0	81.0	63.5	0.0	75.0	57.5	4.1
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.35	0.76	1.00	1.08	1.07	0.13
Incremental Delay, d <sub>2</sub>	251.6	106.6	2.3	241.9	238.5	0.3	216.1	173.8	0.0	262.2	110.2	0.1
Delay (s)	329.1	160.1	45.2	325.9	298.5	0.3	325.7	222.3	0.0	343.2	172.0	0.6
Level of Service	F	F	D	F	F	A	F	F	A	F	F	A
Approach Delay (s)		180.3			254.6			241.5			190.9	
Approach LOS		F			F			F			F	

### Intersection Summary

HCM Average Control Delay	213.3	HCM Level of Service	F
HCM Volume to Capacity ratio	1.48		
Actuated Cycle Length (s)	180.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	145.6%	ICU Level of Service	H
Analysis Period (min)	15		

! Phase conflict between lane groups.

c Critical Lane Group


























Movement	SEL
Lane Configurations	7
Ideal Flow (vphpl)	1900
Lane Width	12
Total Lost time (s)	3.0
Lane Util. Factor	1.00
Fr <sub>t</sub>	1.00
Fl <sub>t</sub> Protected	0.95
Satd. Flow (prot)	902
Fl <sub>t</sub> Permitted	0.95
Satd. Flow (perm)	902
Volume (vph)	10
Peak-hour factor, PHF	0.95
Growth Factor (vph)	100%
Adj. Flow (vph)	11
RTOR Reduction (vph)	0
Lane Group Flow (vph)	11
Heavy Vehicles (%)	100%
Turn Type	
Protected Phases	1!
Permitted Phases	
Actuated Green, G (s)	28.0
Effective Green, g (s)	30.0
Actuated g/C Ratio	0.17
Clearance Time (s)	5.0
Vehicle Extension (s)	3.0
Lane Grp Cap (vph)	150
v/s Ratio Prot	0.01
v/s Ratio Perm	
v/c Ratio	0.07
Uniform Delay, d <sub>1</sub>	63.3
Progression Factor	1.00
Incremental Delay, d <sub>2</sub>	0.2
Delay (s)	63.5
Level of Service	E
Approach Delay (s)	63.5
Approach LOS	E
Intersection Summary	

# HCM Signalized Intersection Capacity Analysis

1601: MD 410 & 62nd Pl.

6/10/2008

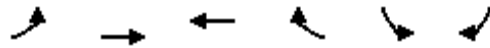
													
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations		 			 			 			 		
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)	4.0	4.0		4.0	4.0			4.0			4.0		
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00			1.00		
Frt	1.00	1.00		1.00	1.00			0.94			0.97		
Flt Protected	0.95	1.00		0.95	1.00			0.97			0.96		
Satd. Flow (prot)	1703	3404		1703	3399			1726			1757		
Flt Permitted	0.05	1.00		0.14	1.00			0.97			0.96		
Satd. Flow (perm)	95	3404		254	3399			1726			1757		
Volume (vph)	30	1400	5	5	2235	30	65	0	45	55	0	15	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	
Adj. Flow (vph)	32	1474	5	5	2353	32	68	0	47	58	0	16	
RTOR Reduction (vph)	0	0	0	0	1	0	0	25	0	0	10	0	
Lane Group Flow (vph)	32	1479	0	5	2384	0	0	90	0	0	64	0	
Heavy Vehicles (%)	6%	6%	6%	6%	6%	6%	1%	1%	1%	1%	1%	1%	
Turn Type	Perm		Perm		Split		Split						
Protected Phases	6		2		3		3		4		4		
Permitted Phases	6		2										
Actuated Green, G (s)	73.1	73.1		73.1	73.1			6.9			4.0		
Effective Green, g (s)	75.1	75.1		75.1	75.1			7.9			5.0		
Actuated g/C Ratio	0.75	0.75		0.75	0.75			0.08			0.05		
Clearance Time (s)	6.0	6.0		6.0	6.0			5.0			5.0		
Vehicle Extension (s)	6.0	6.0		6.0	6.0			3.0			3.0		
Lane Grp Cap (vph)	71	2556		191	2553			136			88		
v/s Ratio Prot		0.43			c0.70			c0.05			c0.04		
v/s Ratio Perm	0.34			0.02									
v/c Ratio	0.45	0.58		0.03	0.93			0.66			0.72		
Uniform Delay, d1	4.7	5.5		3.2	10.4			44.8			46.8		
Progression Factor	1.00	1.00		0.33	0.29			1.00			1.00		
Incremental Delay, d2	19.3	1.0		0.1	4.3			11.5			25.1		
Delay (s)	24.0	6.4		1.2	7.3			56.3			72.0		
Level of Service	C	A		A	A			E			E		
Approach Delay (s)		6.8			7.3			56.3			72.0		
Approach LOS		A			A			E			E		
<b>Intersection Summary</b>													
HCM Average Control Delay			9.7	HCM Level of Service				A					
HCM Volume to Capacity ratio			0.90										
Actuated Cycle Length (s)			100.0	Sum of lost time (s)				12.0					
Intersection Capacity Utilization			75.9%	ICU Level of Service				D					
Analysis Period (min)			15										

c Critical Lane Group

# HCM Signalized Intersection Capacity Analysis

1602: MD 410 & 64th Ave.

6/10/2008



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↖	↑↑	↗		↙	↘
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0		4.0	4.0
Lane Util. Factor	1.00	0.95	0.95		1.00	1.00
Frt	1.00	1.00	0.99		1.00	0.85
Flt Protected	0.95	1.00	1.00		0.95	1.00
Satd. Flow (prot)	1703	3406	3384		1787	1599
Flt Permitted	0.05	1.00	1.00		0.95	1.00
Satd. Flow (perm)	89	3406	3384		1787	1599
Volume (vph)	30	1470	2175	95	100	95
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	32	1547	2289	100	105	100
RTOR Reduction (vph)	0	0	3	0	0	19
Lane Group Flow (vph)	32	1547	2386	0	105	81
Heavy Vehicles (%)	6%	6%	6%	6%	1%	1%
Turn Type	Perm			Perm		
Protected Phases		6	2		4	
Permitted Phases	6					4
Actuated Green, G (s)	79.8	79.8	79.8		10.2	10.2
Effective Green, g (s)	80.8	80.8	80.8		11.2	11.2
Actuated g/C Ratio	0.81	0.81	0.81		0.11	0.11
Clearance Time (s)	5.0	5.0	5.0		5.0	5.0
Vehicle Extension (s)	6.0	6.0	6.0		3.0	3.0
Lane Grp Cap (vph)	72	2752	2734		200	179
v/s Ratio Prot		0.45	c0.71		c0.06	
v/s Ratio Perm	0.36					0.05
v/c Ratio	0.44	0.56	0.87		0.52	0.45
Uniform Delay, d1	2.9	3.4	6.3		41.9	41.5
Progression Factor	1.13	0.81	0.27		1.00	1.00
Incremental Delay, d2	15.5	0.7	2.0		2.5	1.8
Delay (s)	18.7	3.4	3.7		44.4	43.4
Level of Service	B	A	A		D	D
Approach Delay (s)		3.7	3.7		43.9	
Approach LOS		A	A		D	

## Intersection Summary

HCM Average Control Delay	5.7	HCM Level of Service	A
HCM Volume to Capacity ratio	0.83		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	75.7%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis  
 1603: MD 410 & BW Parkway S/B Ramps

6/10/2008



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑↑	↑	↑	↑↑					↑↑		↑
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0	4.0	4.0					4.0		4.0
Lane Util. Factor		0.91	1.00	1.00	0.95					0.97		1.00
Frt		1.00	0.85	1.00	1.00					1.00		0.85
Flt Protected		1.00	1.00	0.95	1.00					0.95		1.00
Satd. Flow (prot)		4893	1524	1703	3406					3303		1524
Flt Permitted		1.00	1.00	0.10	1.00					0.95		1.00
Satd. Flow (perm)		4893	1524	172	3406					3303		1524
Volume (vph)	0	1375	195	320	1950	0	0	0	0	105	0	320
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	1447	205	337	2053	0	0	0	0	111	0	337
RTOR Reduction (vph)	0	0	110	0	0	0	0	0	0	0	0	12
Lane Group Flow (vph)	0	1447	95	337	2053	0	0	0	0	111	0	325
Heavy Vehicles (%)	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%
Turn Type		Perm pm+pt						custom		custom		
Protected Phases		6		5	2							
Permitted Phases			6	2						4		4
Actuated Green, G (s)		45.5	45.5	66.8	66.8					23.2		23.2
Effective Green, g (s)		46.5	46.5	67.8	67.8					24.2		24.2
Actuated g/C Ratio		0.46	0.46	0.68	0.68					0.24		0.24
Clearance Time (s)		5.0	5.0	4.0	5.0					5.0		5.0
Vehicle Extension (s)		6.0	6.0	3.0	6.0					3.0		3.0
Lane Grp Cap (vph)		2275	709	381	2309					799		369
v/s Ratio Prot		0.30		0.15	c0.60							
v/s Ratio Perm			0.06	0.45						0.03		c0.21
v/c Ratio		0.64	0.13	0.88	0.89					0.14		0.88
Uniform Delay, d1		20.3	15.3	26.3	13.1					29.7		36.5
Progression Factor		0.73	0.61	1.13	0.28					1.00		1.00
Incremental Delay, d2		1.2	0.3	12.9	3.3					0.1		20.9
Delay (s)		15.9	9.7	42.6	7.0					29.8		57.4
Level of Service		B	A	D	A					C		E
Approach Delay (s)		15.1			12.0			0.0			50.6	
Approach LOS		B			B			A			D	

Intersection Summary

HCM Average Control Delay	17.0	HCM Level of Service	B
HCM Volume to Capacity ratio	0.89		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	80.4%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group



HCM Signalized Intersection Capacity Analysis  
 1604: MD 410 & BW Parkway N/B Ramps

6/10/2008

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations													
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)	4.0	4.0			4.0	4.0	4.0		4.0				
Lane Util. Factor	1.00	0.95			0.91	1.00	0.97		1.00				
Frt	1.00	1.00			1.00	0.85	1.00		0.85				
Flt Protected	0.95	1.00			1.00	1.00	0.95		1.00				
Satd. Flow (prot)	1703	3406			4893	1524	3303		1524				
Flt Permitted	0.07	1.00			1.00	1.00	0.95		1.00				
Satd. Flow (perm)	129	3406			4893	1524	3303		1524				
Volume (vph)	315	1225	0	0	1960	315	370	0	70	0	0	0	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	
Adj. Flow (vph)	332	1289	0	0	2063	332	389	0	74	0	0	0	
RTOR Reduction (vph)	0	0	0	0	0	161	0	0	63	0	0	0	
Lane Group Flow (vph)	332	1289	0	0	2063	171	389	0	11	0	0	0	
Heavy Vehicles (%)	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%	
Turn Type	pm+pt				Perm				custom				
Protected Phases	1	6			2								
Permitted Phases	6					2	4		4				
Actuated Green, G (s)	75.5	75.5			50.6	50.6	14.5		14.5				
Effective Green, g (s)	76.5	76.5			51.6	51.6	15.5		15.5				
Actuated g/C Ratio	0.76	0.76			0.52	0.52	0.16		0.16				
Clearance Time (s)	4.0	5.0			5.0	5.0	5.0		5.0				
Vehicle Extension (s)	3.0	6.0			6.0	6.0	3.0		3.0				
Lane Grp Cap (vph)	428	2606			2525	786	512		236				
v/s Ratio Prot	c0.16	0.38			c0.42								
v/s Ratio Perm	0.43					0.11	c0.12		0.01				
v/c Ratio	0.78	0.49			0.82	0.22	0.76		0.05				
Uniform Delay, d1	28.0	4.4			20.2	13.2	40.5		36.0				
Progression Factor	1.06	3.02			0.68	0.65	1.00		1.00				
Incremental Delay, d2	7.1	0.6			1.6	0.3	6.4		0.1				
Delay (s)	36.8	14.0			15.3	8.9	46.9		36.1				
Level of Service	D	B			B	A	D		D				
Approach Delay (s)		18.6			14.4			45.1			0.0		
Approach LOS		B			B			D			A		
<b>Intersection Summary</b>													
HCM Average Control Delay			19.1									HCM Level of Service	B
HCM Volume to Capacity ratio			0.80										
Actuated Cycle Length (s)			100.0									Sum of lost time (s)	12.0
Intersection Capacity Utilization			80.4%									ICU Level of Service	D
Analysis Period (min)			15										
c	Critical Lane Group												

# HCM Signalized Intersection Capacity Analysis

1605: MD 410 & 67th. Ave.

6/10/2008



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕↕			↕↕		↖	↗			↕↕	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0		4.0	4.0			4.0	
Lane Util. Factor		0.95			0.95		1.00	1.00			1.00	
Frt		1.00			1.00		1.00	0.86			0.94	
Flt Protected		1.00			1.00		0.95	1.00			0.98	
Satd. Flow (prot)		3399			3403		1787	1618			1734	
Flt Permitted		0.94			0.94		0.82	1.00			0.88	
Satd. Flow (perm)		3208			3196		1549	1618			1557	
Volume (vph)	5	1215	15	15	2025	5	175	5	65	15	5	15
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	5	1279	16	16	2132	5	184	5	68	16	5	16
RTOR Reduction (vph)	0	1	0	0	0	0	0	57	0	0	13	0
Lane Group Flow (vph)	0	1299	0	0	2153	0	184	16	0	0	24	0
Heavy Vehicles (%)	6%	6%	6%	6%	6%	6%	1%	1%	1%	1%	1%	1%
Turn Type	Perm			Perm			Perm				Perm	
Protected Phases		6			2			8				4
Permitted Phases	6			2			8				4	
Actuated Green, G (s)		75.3			75.3		14.7	14.7			14.7	
Effective Green, g (s)		76.3			76.3		15.7	15.7			15.7	
Actuated g/C Ratio		0.76			0.76		0.16	0.16			0.16	
Clearance Time (s)		5.0			5.0		5.0	5.0			5.0	
Vehicle Extension (s)		6.0			6.0		3.0	3.0			3.0	
Lane Grp Cap (vph)		2448			2439		243	254			244	
v/s Ratio Prot								0.01				
v/s Ratio Perm		0.41			c0.67		c0.12				0.02	
v/c Ratio		0.53			0.88		0.76	0.06			0.10	
Uniform Delay, d1		4.7			8.6		40.3	35.9			36.1	
Progression Factor		1.22			0.40		1.00	1.00			1.00	
Incremental Delay, d2		0.7			2.8		12.6	0.1			0.2	
Delay (s)		6.5			6.2		53.0	36.0			36.3	
Level of Service		A			A		D	D			D	
Approach Delay (s)		6.5			6.2		48.1				36.3	
Approach LOS		A			A		D				D	

## Intersection Summary

HCM Average Control Delay	9.5	HCM Level of Service	A
HCM Volume to Capacity ratio	0.86		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	89.7%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis  
 1606: MD 410 & Riverdale Rd.

6/10/2008



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑		↵	↑↑	↵↵	↵
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0		4.0	4.0	4.0	4.0
Lane Util. Factor	0.95		1.00	0.95	0.97	1.00
Frt	0.91		1.00	1.00	1.00	0.85
Flt Protected	1.00		0.95	1.00	0.95	1.00
Satd. Flow (prot)	3113		1703	3406	3303	1524
Flt Permitted	1.00		0.09	1.00	0.95	1.00
Satd. Flow (perm)	3113		167	3406	3303	1524
Volume (vph)	620	830	345	950	1140	315
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	653	874	363	1000	1200	332
RTOR Reduction (vph)	242	0	0	0	0	222
Lane Group Flow (vph)	1285	0	363	1000	1200	110
Heavy Vehicles (%)	6%	6%	6%	6%	6%	6%
Turn Type			pm+pt			Perm
Protected Phases	6		5	2	4	
Permitted Phases			2			4
Actuated Green, G (s)	38.0		58.0	58.0	32.0	32.0
Effective Green, g (s)	39.0		59.0	59.0	33.0	33.0
Actuated g/C Ratio	0.39		0.59	0.59	0.33	0.33
Clearance Time (s)	5.0		5.0	5.0	5.0	5.0
Vehicle Extension (s)	6.0		3.0	6.0	3.0	3.0
Lane Grp Cap (vph)	1214		344	2010	1090	503
v/s Ratio Prot	0.41		c0.17	0.29	c0.36	
v/s Ratio Perm			c0.45			0.07
v/c Ratio	1.06		1.06	0.50	1.10	0.22
Uniform Delay, d1	30.5		38.7	11.9	33.5	24.2
Progression Factor	0.93		1.00	1.00	1.00	1.00
Incremental Delay, d2	41.6		63.8	0.9	59.2	0.2
Delay (s)	70.0		102.5	12.8	92.7	24.4
Level of Service	E		F	B	F	C
Approach Delay (s)	70.0			36.7	77.9	
Approach LOS	E			D	E	

Intersection Summary

HCM Average Control Delay	62.5	HCM Level of Service	E
HCM Volume to Capacity ratio	1.05		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	105.5%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group

# HCM Signalized Intersection Capacity Analysis

1601: MD 410 & 62nd Pl.

6/10/2008



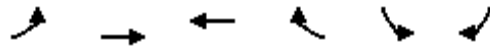
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗		↖	↗			↕			↕	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0			4.0			4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00			1.00	
Frt	1.00	0.99		1.00	1.00			0.97			0.96	
Flt Protected	0.95	1.00		0.95	1.00			0.96			0.97	
Satd. Flow (prot)	1752	3484		1752	3496			1760			1742	
Flt Permitted	0.06	1.00		0.06	1.00			0.96			0.97	
Satd. Flow (perm)	117	3484		117	3496			1760			1742	
Volume (vph)	30	2305	95	25	2210	40	80	0	20	120	0	55
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	32	2426	100	26	2326	42	84	0	21	126	0	58
RTOR Reduction (vph)	0	3	0	0	2	0	0	10	0	0	18	0
Lane Group Flow (vph)	32	2523	0	26	2367	0	0	95	0	0	166	0
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%	1%	1%	1%	1%	1%	1%
Turn Type	Perm		Perm		Split		Split					
Protected Phases	6		2		3		3		4		4	
Permitted Phases	6		2									
Actuated Green, G (s)	61.0	61.0		61.0	61.0			5.0			8.0	
Effective Green, g (s)	63.0	63.0		63.0	63.0			6.0			9.0	
Actuated g/C Ratio	0.70	0.70		0.70	0.70			0.07			0.10	
Clearance Time (s)	6.0	6.0		6.0	6.0			5.0			5.0	
Vehicle Extension (s)	6.0	6.0		6.0	6.0			3.0			3.0	
Lane Grp Cap (vph)	82	2439		82	2447			117			174	
v/s Ratio Prot		c0.72			0.68			c0.05			c0.10	
v/s Ratio Perm	0.27			0.22								
v/c Ratio	0.39	1.03		0.32	0.97			0.81			0.95	
Uniform Delay, d1	5.6	13.5		5.2	12.5			41.4			40.3	
Progression Factor	1.00	1.00		0.98	0.95			1.00			1.00	
Incremental Delay, d2	13.4	27.8		5.4	7.7			32.3			54.4	
Delay (s)	19.0	41.3		10.5	19.6			73.8			94.7	
Level of Service	B	D		B	B			E			F	
Approach Delay (s)		41.0			19.5			73.8			94.7	
Approach LOS		D			B			E			F	
<b>Intersection Summary</b>												
HCM Average Control Delay			33.7	HCM Level of Service				C				
HCM Volume to Capacity ratio			1.01									
Actuated Cycle Length (s)			90.0	Sum of lost time (s)				12.0				
Intersection Capacity Utilization			83.8%	ICU Level of Service				E				
Analysis Period (min)			15									

c Critical Lane Group

# HCM Signalized Intersection Capacity Analysis

1602: MD 410 & 64th Ave.

6/10/2008



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↖	↑↑	↗		↖	↗
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0		4.0	4.0
Lane Util. Factor	1.00	0.95	0.95		1.00	1.00
Frt	1.00	1.00	0.99		1.00	0.85
Flt Protected	0.95	1.00	1.00		0.95	1.00
Satd. Flow (prot)	1752	3505	3479		1787	1599
Flt Permitted	0.05	1.00	1.00		0.95	1.00
Satd. Flow (perm)	97	3505	3479		1787	1599
Volume (vph)	100	2345	2195	115	80	80
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	105	2468	2311	121	84	84
RTOR Reduction (vph)	0	0	4	0	0	25
Lane Group Flow (vph)	105	2468	2428	0	84	59
Heavy Vehicles (%)	3%	3%	3%	3%	1%	1%
Turn Type	Perm			Perm		
Protected Phases		6	2		4	
Permitted Phases	6					4
Actuated Green, G (s)	75.0	75.0	75.0		5.0	5.0
Effective Green, g (s)	76.0	76.0	76.0		6.0	6.0
Actuated g/C Ratio	0.84	0.84	0.84		0.07	0.07
Clearance Time (s)	5.0	5.0	5.0		5.0	5.0
Vehicle Extension (s)	6.0	6.0	6.0		3.0	3.0
Lane Grp Cap (vph)	82	2960	2938		119	107
v/s Ratio Prot		0.70	0.70		c0.05	
v/s Ratio Perm	c1.08					0.04
v/c Ratio	1.28	0.83	0.83		0.71	0.55
Uniform Delay, d1	7.0	3.7	3.6		41.1	40.7
Progression Factor	0.75	0.30	0.77		1.00	1.00
Incremental Delay, d2	134.7	0.3	1.2		17.3	5.7
Delay (s)	139.9	1.4	4.0		58.5	46.4
Level of Service	F	A	A		E	D
Approach Delay (s)		7.0	4.0		52.4	
Approach LOS		A	A		D	

## Intersection Summary

HCM Average Control Delay	7.1	HCM Level of Service	A
HCM Volume to Capacity ratio	1.24		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	94.2%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis  
 1603: MD 410 & BW Parkway S/B Ramps

6/10/2008



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑↑	↑	↑	↑↑					↑↑		↑
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0	4.0	4.0					4.0		4.0
Lane Util. Factor		0.91	1.00	1.00	0.95					0.97		1.00
Frt		1.00	0.85	1.00	1.00					1.00		0.85
Flt Protected		1.00	1.00	0.95	1.00					0.95		1.00
Satd. Flow (prot)		5036	1568	1752	3505					3400		1568
Flt Permitted		1.00	1.00	0.09	1.00					0.95		1.00
Satd. Flow (perm)		5036	1568	168	3505					3400		1568
Volume (vph)	0	2035	390	345	1910	0	0	0	0	225	0	395
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	2142	411	363	2011	0	0	0	0	237	0	416
RTOR Reduction (vph)	0	0	228	0	0	0	0	0	0	0	0	13
Lane Group Flow (vph)	0	2142	183	363	2011	0	0	0	0	237	0	403
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%
Turn Type			Perm pm+pt							custom		custom
Protected Phases		6		5	2							
Permitted Phases			6	2						4		4
Actuated Green, G (s)		39.0	39.0	58.0	58.0					22.0		22.0
Effective Green, g (s)		40.0	40.0	59.0	59.0					23.0		23.0
Actuated g/C Ratio		0.44	0.44	0.66	0.66					0.26		0.26
Clearance Time (s)		5.0	5.0	4.0	5.0					5.0		5.0
Vehicle Extension (s)		6.0	6.0	3.0	6.0					3.0		3.0
Lane Grp Cap (vph)		2238	697	374	2298					869		401
v/s Ratio Prot		0.43		c0.16	0.57							
v/s Ratio Perm			0.12	c0.48						0.07		c0.26
v/c Ratio		0.96	0.26	0.97	0.88					0.27		1.01
Uniform Delay, d1		24.2	15.7	28.0	12.5					26.8		33.5
Progression Factor		0.68	0.63	1.82	1.00					1.00		1.00
Incremental Delay, d2		7.0	0.5	30.5	3.7					0.2		46.4
Delay (s)		23.5	10.4	81.6	16.3					27.0		79.9
Level of Service		C	B	F	B					C		E
Approach Delay (s)		21.4			26.2			0.0			60.7	
Approach LOS		C			C			A			E	

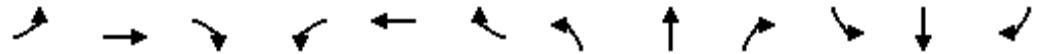
Intersection Summary

HCM Average Control Delay	28.1	HCM Level of Service	C
HCM Volume to Capacity ratio	0.96		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	83.9%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis  
 1604: MD 410 & BW Parkway N/B Ramps

6/10/2008



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↘	↑↑			↑↑↑	↗	↘↘		↗			
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0			4.0	4.0	4.0		4.0			
Lane Util. Factor	1.00	0.95			0.91	1.00	0.97		1.00			
Frt	1.00	1.00			1.00	0.85	1.00		0.85			
Flt Protected	0.95	1.00			1.00	1.00	0.95		1.00			
Satd. Flow (prot)	1752	3505			5036	1568	3400		1568			
Flt Permitted	0.08	1.00			1.00	1.00	0.95		1.00			
Satd. Flow (perm)	141	3505			5036	1568	3400		1568			
Volume (vph)	200	2060	0	0	1875	170	380	0	275	0	0	0
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	211	2168	0	0	1974	179	400	0	289	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	83	0	0	11	0	0	0
Lane Group Flow (vph)	211	2168	0	0	1974	96	400	0	278	0	0	0
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%
Turn Type	pm+pt				Perm			custom	custom			
Protected Phases	1	6			2							
Permitted Phases	6					2	4		4			
Actuated Green, G (s)	61.6	61.6			47.4	47.4	18.4		18.4			
Effective Green, g (s)	62.6	62.6			48.4	48.4	19.4		19.4			
Actuated g/C Ratio	0.70	0.70			0.54	0.54	0.22		0.22			
Clearance Time (s)	4.0	5.0			5.0	5.0	5.0		5.0			
Vehicle Extension (s)	3.0	6.0			6.0	6.0	3.0		3.0			
Lane Grp Cap (vph)	281	2438			2708	843	733		338			
v/s Ratio Prot	0.09	c0.62			0.39							
v/s Ratio Perm	0.44					0.06	0.12		c0.18			
v/c Ratio	0.75	0.89			0.73	0.11	0.55		0.82			
Uniform Delay, d1	21.5	10.9			15.8	10.2	31.4		33.7			
Progression Factor	2.25	1.15			0.74	0.61	1.00		1.00			
Incremental Delay, d2	3.7	2.5			0.5	0.1	0.8		14.8			
Delay (s)	52.2	15.0			12.2	6.3	32.2		48.5			
Level of Service	D	B			B	A	C		D			
Approach Delay (s)		18.3			11.8			39.0			0.0	
Approach LOS		B			B			D			A	

Intersection Summary

HCM Average Control Delay	18.4	HCM Level of Service	B
HCM Volume to Capacity ratio	0.87		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	83.9%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

# HCM Signalized Intersection Capacity Analysis

1605: MD 410 & 67th. Ave.

6/10/2008



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕↕			↕↕		↗	↘			↕↕	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0		4.0	4.0			4.0	
Lane Util. Factor		0.95			0.95		1.00	1.00			1.00	
Frt		1.00			1.00		1.00	0.86			0.96	
Flt Protected		1.00			1.00		0.95	1.00			0.98	
Satd. Flow (prot)		3499			3496		1787	1609			1767	
Flt Permitted		0.95			0.77		0.75	1.00			0.91	
Satd. Flow (perm)		3323			2702		1407	1609			1626	
Volume (vph)	5	2305	25	25	1865	25	175	5	125	5	5	5
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	5	2426	26	26	1963	26	184	5	132	5	5	5
RTOR Reduction (vph)	0	1	0	0	1	0	0	12	0	0	4	0
Lane Group Flow (vph)	0	2456	0	0	2014	0	184	125	0	0	11	0
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%	1%	1%	1%	1%	1%	1%
Turn Type	Perm			Perm			Perm				Perm	
Protected Phases		6			2			8				4
Permitted Phases	6			2			8				4	
Actuated Green, G (s)		68.0			68.0		12.0	12.0			12.0	
Effective Green, g (s)		69.0			69.0		13.0	13.0			13.0	
Actuated g/C Ratio		0.77			0.77		0.14	0.14			0.14	
Clearance Time (s)		5.0			5.0		5.0	5.0			5.0	
Vehicle Extension (s)		6.0			6.0		3.0	3.0			3.0	
Lane Grp Cap (vph)		2548			2072		203	232			235	
v/s Ratio Prot								0.08				
v/s Ratio Perm		0.74			c0.75		c0.13				0.01	
v/c Ratio		0.96			0.97		0.91	0.54			0.05	
Uniform Delay, d1		9.4			9.6		37.9	35.7			33.2	
Progression Factor		0.40			0.83		1.00	1.00			1.00	
Incremental Delay, d2		6.2			10.4		37.9	2.4			0.1	
Delay (s)		10.0			18.4		75.8	38.1			33.2	
Level of Service		A			B		E	D			C	
Approach Delay (s)		10.0			18.4			59.7			33.2	
Approach LOS		A			B			E			C	
<b>Intersection Summary</b>												
HCM Average Control Delay			16.9				HCM Level of Service				B	
HCM Volume to Capacity ratio			0.96									
Actuated Cycle Length (s)			90.0				Sum of lost time (s)			8.0		
Intersection Capacity Utilization			93.1%				ICU Level of Service				F	
Analysis Period (min)			15									

c Critical Lane Group



HCM Signalized Intersection Capacity Analysis  
 1606: MD 410 & Riverdale Rd.

6/10/2008



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑		↵	↑↑	↵↵	↵
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0		4.0	4.0	4.0	4.0
Lane Util. Factor	0.95		1.00	0.95	0.97	1.00
Frt	0.92		1.00	1.00	1.00	0.85
Flt Protected	1.00		0.95	1.00	0.95	1.00
Satd. Flow (prot)	3228		1752	3505	3400	1568
Flt Permitted	1.00		0.08	1.00	0.95	1.00
Satd. Flow (perm)	3228		139	3505	3400	1568
Volume (vph)	1105	1225	295	895	870	290
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	1163	1289	311	942	916	305
RTOR Reduction (vph)	222	0	0	0	0	178
Lane Group Flow (vph)	2230	0	311	942	916	128
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%
Turn Type			pm+pt			Perm
Protected Phases	6		5	2	4	
Permitted Phases			2			4
Actuated Green, G (s)	48.0		62.0	62.0	18.0	18.0
Effective Green, g (s)	49.0		63.0	63.0	19.0	19.0
Actuated g/C Ratio	0.54		0.70	0.70	0.21	0.21
Clearance Time (s)	5.0		5.0	5.0	5.0	5.0
Vehicle Extension (s)	6.0		3.0	6.0	3.0	3.0
Lane Grp Cap (vph)	1757		277	2454	718	331
v/s Ratio Prot	c0.69		c0.12	0.27	c0.27	
v/s Ratio Perm			0.66			0.08
v/c Ratio	1.27		1.12	0.38	1.28	0.39
Uniform Delay, d1	20.5		36.8	5.5	35.5	30.5
Progression Factor	0.59		1.00	1.00	1.00	1.00
Incremental Delay, d2	122.7		91.2	0.5	134.8	0.7
Delay (s)	134.9		128.0	6.0	170.3	31.2
Level of Service	F		F	A	F	C
Approach Delay (s)	134.9			36.3	135.5	
Approach LOS	F			D	F	

Intersection Summary

HCM Average Control Delay	110.0	HCM Level of Service	F
HCM Volume to Capacity ratio	1.19		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	121.1%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

# HCM Signalized Intersection Capacity Analysis

7: MD 450 & Finns La.

6/11/2008



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗↖↗		↖	↗↖↗		↖	↗	↖		↖↗	↖
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0		4.0	4.0
Lane Util. Factor	1.00	0.91		1.00	0.91		1.00	1.00	1.00		1.00	1.00
Frt	1.00	0.98		1.00	1.00		1.00	1.00	0.85		1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00		0.97	1.00
Satd. Flow (prot)	1703	4809		1703	4880		1787	1881	1599		1827	1599
Flt Permitted	0.06	1.00		0.20	1.00		0.59	1.00	1.00		0.79	1.00
Satd. Flow (perm)	104	4809		350	4880		1108	1881	1599		1489	1599
Volume (vph)	105	1070	140	75	2450	45	95	45	20	65	45	175
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Growth Factor (vph)	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Adj. Flow (vph)	111	1126	147	79	2579	47	100	47	21	68	47	184
RTOR Reduction (vph)	0	15	0	0	2	0	0	0	18	0	0	3
Lane Group Flow (vph)	111	1258	0	79	2624	0	100	47	3	0	115	181
Heavy Vehicles (%)	6%	6%	6%	6%	6%	6%	1%	1%	1%	1%	1%	1%
Turn Type	pm+pt			pm+pt			Perm		Perm	Perm		pm+ov
Protected Phases	1	6		5	2			8			4	1
Permitted Phases	6			2			8		8	4		4
Actuated Green, G (s)	74.6	67.2		68.0	63.9		11.7	11.7	11.7		11.7	19.1
Effective Green, g (s)	77.6	69.2		71.0	65.9		13.7	13.7	13.7		13.7	22.1
Actuated g/C Ratio	0.78	0.69		0.71	0.66		0.14	0.14	0.14		0.14	0.22
Clearance Time (s)	5.0	6.0		5.0	6.0		6.0	6.0	6.0		6.0	5.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	215	3328		318	3216		152	258	219		204	417
v/s Ratio Prot	c0.04	0.26		0.01	c0.54			0.02				c0.04
v/s Ratio Perm	0.36			0.16			c0.09		0.00		0.08	0.08
v/c Ratio	0.52	0.38		0.25	0.82		0.66	0.18	0.01		0.56	0.43
Uniform Delay, d1	17.8	6.4		4.5	12.6		40.9	38.2	37.3		40.4	33.6
Progression Factor	2.04	0.49		0.16	0.12		1.00	1.00	1.00		1.00	1.00
Incremental Delay, d2	2.0	0.3		0.0	0.2		9.8	0.3	0.0		3.5	0.7
Delay (s)	38.3	3.5		0.8	1.7		50.8	38.5	37.3		43.9	34.3
Level of Service	D	A		A	A		D	D	D		D	C
Approach Delay (s)		6.3			1.7			45.7			38.0	
Approach LOS		A			A			D			D	


































## Intersection Summary

HCM Average Control Delay	7.1	HCM Level of Service	A
HCM Volume to Capacity ratio	0.77		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	76.8%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

# HCM Signalized Intersection Capacity Analysis

9: MD 450 & MD 410

6/11/2008

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		  		  	  			 		 	 	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	0.91	1.00	0.97	0.91	1.00	1.00	0.95	1.00	0.97	0.95	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1703	4893	1524	3303	4893	1524	1703	3406	1524	3303	3406	1524
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1703	4893	1524	3303	4893	1524	1703	3406	1524	3303	3406	1524
Volume (vph)	280	670	455	470	2090	160	770	1065	440	205	745	250
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Growth Factor (vph)	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Adj. Flow (vph)	295	705	479	495	2200	168	811	1121	463	216	784	263
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	207	0	0	172
Lane Group Flow (vph)	295	705	479	495	2200	168	811	1121	256	216	784	91
Heavy Vehicles (%)	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%
Turn Type	Prot		Free	Prot		Free	Prot		Perm	Prot		Perm
Protected Phases	1	6		5	2		3	8		7		4
Permitted Phases			Free			Free			8			4
Actuated Green, G (s)	10.0	26.0	100.0	16.0	32.0	100.0	23.0	31.0	31.0	5.0	13.0	13.0
Effective Green, g (s)	11.0	28.0	100.0	17.0	34.0	100.0	24.0	33.0	33.0	6.0	15.0	15.0
Actuated g/C Ratio	0.11	0.28	1.00	0.17	0.34	1.00	0.24	0.33	0.33	0.06	0.15	0.15
Clearance Time (s)	5.0	6.0		5.0	6.0		5.0	6.0	6.0	5.0	6.0	6.0
Vehicle Extension (s)	3.0	6.0		3.0	6.0		3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	187	1370	1524	562	1664	1524	409	1124	503	198	511	229
v/s Ratio Prot	c0.17	0.14		0.15	c0.45		c0.48	0.33		0.07	c0.23	
v/s Ratio Perm			0.31			0.11			0.17			0.06
v/c Ratio	1.58	0.51	0.31	0.88	1.32	0.11	1.98	1.00	0.51	1.09	1.53	0.40
Uniform Delay, d1	44.5	30.3	0.0	40.5	33.0	0.0	38.0	33.5	27.0	47.0	42.5	38.4
Progression Factor	0.79	0.91	1.00	1.04	0.64	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	282.4	1.3	0.5	11.7	148.2	0.1	451.0	26.0	0.8	90.3	250.1	1.1
Delay (s)	317.7	28.8	0.5	53.7	169.2	0.1	489.0	59.5	27.8	137.3	292.6	39.6
Level of Service	F	C	A	D	F	A	F	E	C	F	F	D
Approach Delay (s)		77.3			139.3			198.8			213.4	
Approach LOS		E			F			F			F	
<b>Intersection Summary</b>												
HCM Average Control Delay	157.3		HCM Level of Service				F					
HCM Volume to Capacity ratio	1.58											
Actuated Cycle Length (s)	100.0				Sum of lost time (s)				16.0			
Intersection Capacity Utilization	132.5%		ICU Level of Service				H					
Analysis Period (min)	15											
c Critical Lane Group												

# HCM Signalized Intersection Capacity Analysis

7: MD 450 & Finns La.

6/11/2008




































Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↖↖↖		↖	↖↖↖		↖	↖	↖		↖	↖
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0		4.0	4.0
Lane Util. Factor	1.00	0.91		1.00	0.91		1.00	1.00	1.00		1.00	1.00
Frt	1.00	0.99		1.00	0.99		1.00	1.00	0.85		1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00		0.97	1.00
Satd. Flow (prot)	1752	4999		1752	5000		1787	1881	1599		1828	1599
Flt Permitted	0.08	1.00		0.08	1.00		0.63	1.00	1.00		0.78	1.00
Satd. Flow (perm)	150	4999		157	5000		1177	1881	1599		1476	1599
Volume (vph)	200	1925	100	130	1485	75	175	75	40	70	50	165
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Growth Factor (vph)	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Adj. Flow (vph)	211	2026	105	137	1563	79	184	79	42	74	53	174
RTOR Reduction (vph)	0	6	0	0	5	0	0	0	33	0	0	7
Lane Group Flow (vph)	211	2125	0	137	1637	0	184	79	9	0	127	167
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%	1%	1%	1%	1%	1%	1%
Turn Type	pm+pt			pm+pt			Perm		Perm	Perm		pm+ov
Protected Phases	1	6		5	2			8			4	1
Permitted Phases	6			2			8		8	4		4
Actuated Green, G (s)	59.8	48.8		52.4	45.1		16.9	16.9	16.9		16.9	27.9
Effective Green, g (s)	62.8	50.8		55.4	47.1		18.9	18.9	18.9		18.9	30.9
Actuated g/C Ratio	0.70	0.56		0.62	0.52		0.21	0.21	0.21		0.21	0.34
Clearance Time (s)	5.0	6.0		5.0	6.0		6.0	6.0	6.0		6.0	5.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	318	2822		244	2617		247	395	336		310	620
v/s Ratio Prot	c0.09	c0.43		0.05	0.33			0.04				0.04
v/s Ratio Perm	0.38			0.29			c0.16		0.01		0.09	0.07
v/c Ratio	0.66	0.75		0.56	0.63		0.74	0.20	0.03		0.41	0.27
Uniform Delay, d1	18.3	14.8		12.3	15.2		33.3	29.3	28.2		30.7	21.4
Progression Factor	2.25	0.25		1.58	0.73		1.00	1.00	1.00		1.00	1.00
Incremental Delay, d2	4.7	1.7		1.1	0.4		11.5	0.3	0.0		0.9	0.2
Delay (s)	45.9	5.4		20.6	11.6		44.8	29.6	28.3		31.6	21.6
Level of Service	D	A		C	B		D	C	C		C	C
Approach Delay (s)		9.0			12.3			38.6			25.8	
Approach LOS		A			B			D			C	

Intersection Summary			
HCM Average Control Delay	13.2	HCM Level of Service	B
HCM Volume to Capacity ratio	0.76		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	73.0%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

# HCM Signalized Intersection Capacity Analysis

9: MD 450 & MD 410

6/11/2008

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		  		 	  			 		 	 	 
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	0.91	1.00	0.97	0.91	1.00	1.00	0.95	1.00	0.97	0.95	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1752	5036	1568	3400	5036	1568	1752	3505	1568	3400	3505	1568
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1752	5036	1568	3400	5036	1568	1752	3505	1568	3400	3505	1568
Volume (vph)	195	1740	665	280	1355	190	555	775	265	135	1025	275
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Growth Factor (vph)	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Adj. Flow (vph)	205	1832	700	295	1426	200	584	816	279	142	1079	289
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	122	0	0	120
Lane Group Flow (vph)	205	1832	700	295	1426	200	584	816	157	142	1079	169
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%
Turn Type	Prot		Free	Prot		Free	Prot		Perm	Prot		Perm
Protected Phases	1	6		5	2		3	8		7		4
Permitted Phases			Free			Free			8			4
Actuated Green, G (s)	7.0	28.0	90.0	6.0	27.0	90.0	17.0	28.0	28.0	6.0	17.0	17.0
Effective Green, g (s)	8.0	30.0	90.0	7.0	29.0	90.0	18.0	30.0	30.0	7.0	19.0	19.0
Actuated g/C Ratio	0.09	0.33	1.00	0.08	0.32	1.00	0.20	0.33	0.33	0.08	0.21	0.21
Clearance Time (s)	5.0	6.0		5.0	6.0		5.0	6.0	6.0	5.0	6.0	6.0
Vehicle Extension (s)	3.0	6.0		3.0	6.0		3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	156	1679	1568	264	1623	1568	350	1168	523	264	740	331
v/s Ratio Prot	c0.12	c0.36		0.09	0.28		c0.33	0.23		0.04	c0.31	
v/s Ratio Perm			c0.45			0.13			0.10			0.11
v/c Ratio	1.31	1.09	0.45	1.12	0.88	0.13	1.67	0.70	0.30	0.54	1.46	0.51
Uniform Delay, d1	41.0	30.0	0.0	41.5	28.8	0.0	36.0	26.1	22.2	39.9	35.5	31.4
Progression Factor	1.27	0.63	1.00	0.76	0.89	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	164.5	47.2	0.5	88.3	6.6	0.2	313.2	1.8	0.3	2.1	213.6	1.3
Delay (s)	216.4	66.2	0.5	120.0	32.1	0.2	349.2	27.9	22.5	42.0	249.1	32.7
Level of Service	F	E	A	F	C	A	F	C	C	D	F	C
Approach Delay (s)		60.7			42.3			138.8			188.2	
Approach LOS		E			D			F			F	
<b>Intersection Summary</b>												
HCM Average Control Delay			97.4			HCM Level of Service				F		
HCM Volume to Capacity ratio			1.30									
Actuated Cycle Length (s)			90.0			Sum of lost time (s)			12.0			
Intersection Capacity Utilization			114.0%			ICU Level of Service				H		
Analysis Period (min)			15									
c Critical Lane Group												

# HCM Signalized Intersection Capacity Analysis

## 9: Battery Lane & Woodmont Ave

6/10/2008



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔		↔	↔		↔	↔	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor		0.95			0.95		1.00	0.95		1.00	0.95	
Frt		0.96			0.99		1.00	0.97		1.00	0.98	
Flt Protected		0.99			0.98		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		3273			3324		1719	3340		1719	3371	
Flt Permitted		0.86			0.56		0.13	1.00		0.58	1.00	
Satd. Flow (perm)		2824			1911		228	3340		1050	3371	
Volume (vph)	85	275	130	60	65	10	35	215	50	75	1270	190
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	89	289	137	63	68	11	37	226	53	79	1337	200
RTOR Reduction (vph)	0	31	0	0	6	0	0	10	0	0	6	0
Lane Group Flow (vph)	0	484	0	0	136	0	37	269	0	79	1531	0
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%
Turn Type	Perm			pm+pt			Perm			Perm		
Protected Phases		4		3	8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)		23.4			23.4		88.6	88.6		88.6	88.6	
Effective Green, g (s)		23.4			23.4		88.6	88.6		88.6	88.6	
Actuated g/C Ratio		0.19			0.19		0.74	0.74		0.74	0.74	
Clearance Time (s)		4.0			4.0		4.0	4.0		4.0	4.0	
Vehicle Extension (s)		3.0			3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		551			373		168	2466		775	2489	
v/s Ratio Prot								0.08			c0.45	
v/s Ratio Perm		c0.17			0.07		0.16			0.08		
v/c Ratio		0.88			0.36		0.22	0.11		0.10	0.62	
Uniform Delay, d1		46.9			41.8		4.9	4.5		4.4	7.5	
Progression Factor		1.00			1.00		0.88	0.67		1.00	1.00	
Incremental Delay, d2		14.7			0.6		3.0	0.1		0.3	1.1	
Delay (s)		61.6			42.5		7.3	3.1		4.7	8.7	
Level of Service		E			D		A	A		A	A	
Approach Delay (s)		61.6			42.5			3.6			8.5	
Approach LOS		E			D			A			A	

### Intersection Summary

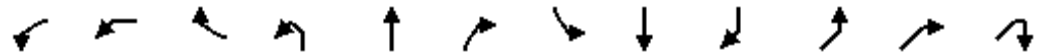
HCM Average Control Delay	20.3	HCM Level of Service	C
HCM Volume to Capacity ratio	0.67		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	75.9%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

# HCM Signalized Intersection Capacity Analysis

## 11: Cordell Ave & Woodmont Ave

6/10/2008



Movement	WBL2	WBL	WBR	NBL	NBT	NBR	SBL	SBT	SBR	NEL	NER	NER2
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0		4.0
Lane Util. Factor	1.00	1.00		1.00	0.95		1.00	0.95		1.00		1.00
Frt	1.00	0.85		1.00	0.97		1.00	0.99		1.00		0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95		1.00
Satd. Flow (prot)	1787	1599		1719	3350		1719	3399		1787		1599
Flt Permitted	0.95	1.00		0.15	1.00		0.56	1.00		0.95		1.00
Satd. Flow (perm)	1787	1599		275	3350		1018	3399		1787		1599
Volume (vph)	30	0	35	5	245	50	70	1285	105	25	0	25
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	32	0	37	5	258	53	74	1353	111	26	0	26
RTOR Reduction (vph)	0	32	0	0	8	0	0	3	0	0	0	22
Lane Group Flow (vph)	32	5	0	5	303	0	74	1461	0	26	0	4
Heavy Vehicles (%)	1%	1%	1%	5%	5%	5%	5%	5%	5%	1%	1%	1%
Turn Type	Perm			Perm			Perm			custom		custom
Protected Phases		8			2			6				
Permitted Phases	8			2			6			4		4
Actuated Green, G (s)	16.0	16.0		94.0	94.0		94.0	94.0		16.0		16.0
Effective Green, g (s)	17.0	17.0		95.0	95.0		95.0	95.0		17.0		17.0
Actuated g/C Ratio	0.14	0.14		0.79	0.79		0.79	0.79		0.14		0.14
Clearance Time (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0		5.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0		3.0
Lane Grp Cap (vph)	253	227		218	2652		806	2691		253		227
v/s Ratio Prot		0.00			0.09			0.43				
v/s Ratio Perm	0.02			0.02			0.07			0.01		0.00
v/c Ratio	0.13	0.02		0.02	0.11		0.09	0.54		0.10		0.02
Uniform Delay, d1	45.0	44.3		2.7	2.9		2.8	4.6		44.9		44.3
Progression Factor	1.00	1.00		0.39	0.33		0.55	0.44		1.00		1.00
Incremental Delay, d2	0.2	0.0		0.2	0.1		0.2	0.6		0.2		0.0
Delay (s)	45.2	44.4		1.2	1.0		1.7	2.6		45.0		44.3
Level of Service	D	D		A	A		A	A		D		D
Approach Delay (s)		44.8			1.0			2.6		44.7		
Approach LOS		D			A			A		D		

### Intersection Summary

HCM Average Control Delay	4.9	HCM Level of Service	A
HCM Volume to Capacity ratio	0.48		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	62.2%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

# HCM Signalized Intersection Capacity Analysis

## 14: St. Elmo Ave & Woodmont Ave

6/10/2008



Movement	WBL	WBR	NBL	NBT	NBR	SBL	SBT	SBR	NEL	NER	NER2
Lane Configurations			↵	↑↑		↵	↑↑		↵		↵
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)			4.0	4.0			4.0		4.0		4.0
Lane Util. Factor			1.00	0.95			0.95		1.00		0.95
Frt			1.00	1.00			0.97		1.00		0.85
Flt Protected			0.95	1.00			1.00		0.95		1.00
Satd. Flow (prot)			1787	3574			3319		1787		1519
Flt Permitted			0.16	1.00			1.00		0.95		1.00
Satd. Flow (perm)			303	3574			3319		1787		1519
Volume (vph)	0	0	20	180	0	0	1030	310	120	0	45
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	0	21	189	0	0	1084	326	126	0	47
RTOR Reduction (vph)	0	0	0	0	0	0	14	0	0	0	40
Lane Group Flow (vph)	0	0	21	189	0	0	1396	0	126	0	7
Heavy Vehicles (%)	2%	2%	1%	1%	1%	5%	5%	5%	1%	1%	1%
Turn Type			Perm			Perm			Prot		custom
Protected Phases				2			6		4		
Permitted Phases			2			6					4
Actuated Green, G (s)			92.8	92.8			92.8		17.2		17.2
Effective Green, g (s)			93.8	93.8			93.8		18.2		18.2
Actuated g/C Ratio			0.78	0.78			0.78		0.15		0.15
Clearance Time (s)			5.0	5.0			5.0		5.0		5.0
Vehicle Extension (s)			3.0	3.0			3.0		3.0		3.0
Lane Grp Cap (vph)			237	2794			2594		271		230
v/s Ratio Prot				0.05			c0.42		c0.07		
v/s Ratio Perm			0.07								0.00
v/c Ratio			0.09	0.07			0.54		0.46		0.03
Uniform Delay, d1			3.1	3.0			4.9		46.5		43.4
Progression Factor			0.73	0.79			0.26		1.00		1.00
Incremental Delay, d2			0.7	0.0			0.7		1.3		0.1
Delay (s)			3.0	2.4			2.0		47.7		43.4
Level of Service			A	A			A		D		D
Approach Delay (s)	0.0			2.5			2.0		46.6		
Approach LOS	A			A			A		D		
<b>Intersection Summary</b>											
HCM Average Control Delay			6.3				HCM Level of Service		A		
HCM Volume to Capacity ratio			0.53								
Actuated Cycle Length (s)			120.0				Sum of lost time (s)		8.0		
Intersection Capacity Utilization			52.6%				ICU Level of Service		A		
Analysis Period (min)			15								

c Critical Lane Group



# HCM Signalized Intersection Capacity Analysis

## 17: Norfolk Ave & Woodmont Ave






















6/10/2008



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗		↖	↗		↖	↕		↖	↗	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95		1.00	0.95	
Frt	1.00	0.92		1.00	0.96		1.00	0.94		1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1787	1734		1787	1808		1719	3242		1719	3412	
Flt Permitted	0.64	1.00		0.49	1.00		0.22	1.00		0.61	1.00	
Satd. Flow (perm)	1204	1734		917	1808		400	3242		1110	3412	
Volume (vph)	30	115	125	100	115	40	20	130	80	85	945	50
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	32	121	132	105	121	42	21	137	84	89	995	53
RTOR Reduction (vph)	0	46	0	0	25	0	0	34	0	0	5	0
Lane Group Flow (vph)	32	207	0	105	138	0	21	187	0	89	1043	0
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	5%	5%	5%	5%	5%	5%
Parking (#/hr)			0									
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	15.4	15.4		15.4	15.4		34.6	34.6		34.6	34.6	
Effective Green, g (s)	16.4	16.4		16.4	16.4		35.6	35.6		35.6	35.6	
Actuated g/C Ratio	0.27	0.27		0.27	0.27		0.59	0.59		0.59	0.59	
Clearance Time (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	329	474		251	494		237	1924		659	2024	
v/s Ratio Prot		c0.12			0.08			0.06			c0.31	
v/s Ratio Perm	0.03			0.11			0.05			0.08		
v/c Ratio	0.10	0.44		0.42	0.28		0.09	0.10		0.14	0.52	
Uniform Delay, d1	16.3	18.0		17.9	17.1		5.2	5.3		5.4	7.1	
Progression Factor	1.00	1.00		1.00	1.00		0.67	0.71		0.55	0.61	
Incremental Delay, d2	0.1	0.6		1.1	0.3		0.6	0.1		0.4	0.8	
Delay (s)	16.4	18.6		19.0	17.5		4.1	3.8		3.3	5.2	
Level of Service	B	B		B	B		A	A		A	A	
Approach Delay (s)		18.4			18.1			3.8			5.0	
Approach LOS		B			B			A			A	
<b>Intersection Summary</b>												
HCM Average Control Delay			8.7				HCM Level of Service			A		
HCM Volume to Capacity ratio			0.49									
Actuated Cycle Length (s)			60.0				Sum of lost time (s)			8.0		
Intersection Capacity Utilization			63.6%				ICU Level of Service			B		
Analysis Period (min)			15									
c Critical Lane Group												

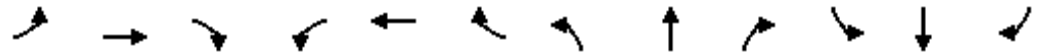
HCM Signalized Intersection Capacity Analysis  
 20: Old Georgetown Rd & Woodmont Ave

6/10/2008

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations			 		 						 	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0		4.0	4.0	4.0						4.0	4.0
Lane Util. Factor	1.00		0.88	1.00	0.95						0.95	1.00
Frt	1.00		0.85	1.00	0.97						1.00	0.85
Flt Protected	0.95		1.00	0.95	1.00						1.00	1.00
Satd. Flow (prot)	1719		2707	1719	3336						3438	1538
Flt Permitted	0.95		1.00	0.95	1.00						1.00	1.00
Satd. Flow (perm)	1719		2707	1719	3336						3438	1538
Volume (vph)	175	0	1540	130	870	215	0	0	0	0	615	50
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	184	0	1621	137	916	226	0	0	0	0	647	53
RTOR Reduction (vph)	0	0	13	17	18	0	0	0	0	0	0	41
Lane Group Flow (vph)	184	0	1608	120	1124	0	0	0	0	0	647	12
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%
Turn Type	Prot		custom	Perm								Perm
Protected Phases	7				8						6	
Permitted Phases			4	8								6
Actuated Green, G (s)	20.0		84.4	59.4	59.4						25.6	25.6
Effective Green, g (s)	21.0		85.4	60.4	60.4						26.6	26.6
Actuated g/C Ratio	0.18		0.71	0.50	0.50						0.22	0.22
Clearance Time (s)	5.0		5.0	5.0	5.0						5.0	5.0
Vehicle Extension (s)	3.0		3.0	3.0	3.0						3.0	3.0
Lane Grp Cap (vph)	301		1926	865	1679						762	341
v/s Ratio Prot	0.11				0.34						c0.19	
v/s Ratio Perm			c0.59	0.07								0.01
v/c Ratio	0.61		0.83	0.14	0.67						0.85	0.03
Uniform Delay, d1	45.7		12.3	15.9	22.3						44.8	36.6
Progression Factor	1.00		1.00	0.21	0.30						0.83	0.83
Incremental Delay, d2	3.6		4.5	0.3	2.1						8.0	0.0
Delay (s)	49.4		16.8	3.6	8.8						45.2	30.5
Level of Service	D		B	A	A						D	C
Approach Delay (s)		20.1			8.3			0.0			44.1	
Approach LOS		C			A			A			D	
<b>Intersection Summary</b>												
HCM Average Control Delay			20.5			HCM Level of Service					C	
HCM Volume to Capacity ratio			0.84									
Actuated Cycle Length (s)			120.0			Sum of lost time (s)				8.0		
Intersection Capacity Utilization			88.1%			ICU Level of Service				E		
Analysis Period (min)			15									
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis  
 25: Edgemoor Lane & Woodmont Ave

6/10/2008



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑			↑↑						↑↑↑↑	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0						4.0	
Lane Util. Factor		0.95			0.95						0.86	
Frt		0.85			1.00						1.00	
Flt Protected		1.00			0.95						1.00	
Satd. Flow (prot)		2922			3266						6197	
Flt Permitted		1.00			0.51						1.00	
Satd. Flow (perm)		2922			1753						6197	
Volume (vph)	0	0	210	60	0	0	0	0	0	145	2120	20
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	0	221	63	0	0	0	0	0	153	2232	21
RTOR Reduction (vph)	0	6	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	215	0	0	63	0	0	0	0	0	2406	0
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%
Turn Type				Perm							Perm	
Protected Phases		4			8							6
Permitted Phases				8							6	
Actuated Green, G (s)		17.0			17.0							93.0
Effective Green, g (s)		18.0			18.0							94.0
Actuated g/C Ratio		0.15			0.15							0.78
Clearance Time (s)		5.0			5.0							5.0
Vehicle Extension (s)		3.0			3.0							3.0
Lane Grp Cap (vph)		438			263							4854
v/s Ratio Prot		c0.07										
v/s Ratio Perm					0.04							0.39
v/c Ratio		0.92dr			0.24							0.50
Uniform Delay, d1		46.8			45.0							4.6
Progression Factor		1.00			0.79							0.93
Incremental Delay, d2		0.9			0.5							0.2
Delay (s)		47.7			35.9							4.5
Level of Service		D			D							A
Approach Delay (s)		47.7			35.9			0.0				4.5
Approach LOS		D			D			A				A
<b>Intersection Summary</b>												
HCM Average Control Delay			8.8			HCM Level of Service					A	
HCM Volume to Capacity ratio			0.49									
Actuated Cycle Length (s)			120.0			Sum of lost time (s)				8.0		
Intersection Capacity Utilization			53.4%			ICU Level of Service				A		
Analysis Period (min)			15									
dr Defacto Right Lane. Recode with 1 though lane as a right lane.												
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis  
 33: Old Georgetown Rd & Edgemoor Lane

6/10/2008





















Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations					←←←		←	↑			↑	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					4.0		4.0	4.0			4.0	
Lane Util. Factor					0.91		1.00	1.00			1.00	
Frt					1.00		1.00	1.00			0.94	
Flt Protected					0.99		0.95	1.00			1.00	
Satd. Flow (prot)					4891		1719	1810			1695	
Flt Permitted					0.99		0.50	1.00			1.00	
Satd. Flow (perm)					4891		901	1810			1695	
Volume (vph)	0	0	0	145	1010	30	130	35	0	0	80	70
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	0	0	153	1063	32	137	37	0	0	84	74
RTOR Reduction (vph)	0	0	0	0	1	0	0	0	0	0	37	0
Lane Group Flow (vph)	0	0	0	0	1247	0	137	37	0	0	121	0
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%
Turn Type				Perm		Perm						
Protected Phases					8			2			6	
Permitted Phases				8		2						
Actuated Green, G (s)					88.7		22.3	22.3			22.3	
Effective Green, g (s)					89.7		22.3	22.3			22.3	
Actuated g/C Ratio					0.75		0.19	0.19			0.19	
Clearance Time (s)					5.0		4.0	4.0			4.0	
Vehicle Extension (s)					3.0		3.0	3.0			3.0	
Lane Grp Cap (vph)					3656		167	336			315	
v/s Ratio Prot								0.02			0.07	
v/s Ratio Perm					0.25		c0.15					
v/c Ratio					0.34		0.82	0.11			0.39	
Uniform Delay, d1					5.1		46.9	40.6			42.8	
Progression Factor					0.11		0.99	0.99			1.00	
Incremental Delay, d2					0.0		24.6	0.1			0.8	
Delay (s)					0.6		70.9	40.4			43.6	
Level of Service					A		E	D			D	
Approach Delay (s)		0.0			0.6			64.4			43.6	
Approach LOS		A			A			E			D	
<b>Intersection Summary</b>												
HCM Average Control Delay			11.9				HCM Level of Service			B		
HCM Volume to Capacity ratio			0.44									
Actuated Cycle Length (s)			120.0				Sum of lost time (s)			8.0		
Intersection Capacity Utilization			48.8%				ICU Level of Service			A		
Analysis Period (min)			15									

c Critical Lane Group

# HCM Signalized Intersection Capacity Analysis

## 9: Battery Lane & Woodmont Ave

6/10/2008

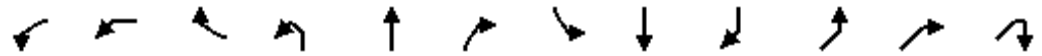
												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor		0.95			0.95		1.00	0.95		1.00	0.95	
Frt		0.97			1.00		1.00	0.98		1.00	0.97	
Flt Protected		0.99			0.98		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		3354			3432		1752	3436		1752	3402	
Flt Permitted		0.79			0.66		0.24	1.00		0.31	1.00	
Satd. Flow (perm)		2693			2315		437	3436		578	3402	
Volume (vph)	90	170	65	60	110	5	70	700	105	50	825	200
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	95	179	68	63	116	5	74	737	111	53	868	211
RTOR Reduction (vph)	0	23	0	0	2	0	0	6	0	0	11	0
Lane Group Flow (vph)	0	319	0	0	182	0	74	842	0	53	1068	0
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%
Turn Type	Perm			pm+pt			Perm			Perm		
Protected Phases		4		3	8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)		17.6			17.6		74.4	74.4		74.4	74.4	
Effective Green, g (s)		17.6			17.6		74.4	74.4		74.4	74.4	
Actuated g/C Ratio		0.18			0.18		0.74	0.74		0.74	0.74	
Clearance Time (s)		4.0			4.0		4.0	4.0		4.0	4.0	
Vehicle Extension (s)		3.0			3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		474			407		325	2556		430	2531	
v/s Ratio Prot								0.25			c0.31	
v/s Ratio Perm		c0.12			0.08		0.17			0.09		
v/c Ratio		0.67			0.45		0.23	0.33		0.12	0.42	
Uniform Delay, d1		38.5			36.8		3.9	4.3		3.6	4.8	
Progression Factor		1.00			1.00		0.63	0.64		1.00	1.00	
Incremental Delay, d2		3.7			0.8		1.6	0.3		0.6	0.5	
Delay (s)		42.3			37.6		4.1	3.1		4.2	5.3	
Level of Service		D			D		A	A		A	A	
Approach Delay (s)		42.3			37.6			3.2			5.2	
Approach LOS		D			D			A			A	
<b>Intersection Summary</b>												
HCM Average Control Delay			11.7				HCM Level of Service			B		
HCM Volume to Capacity ratio			0.47									
Actuated Cycle Length (s)			100.0				Sum of lost time (s)			8.0		
Intersection Capacity Utilization			60.7%				ICU Level of Service			B		
Analysis Period (min)			15									

c Critical Lane Group

# HCM Signalized Intersection Capacity Analysis

## 11: Cordell Ave & Woodmont Ave

6/10/2008



Movement	WBL2	WBL	WBR	NBL	NBT	NBR	SBL	SBT	SBR	NEL	NER	NER2
Lane Configurations	↶	↶		↶	↶		↶	↶		↶		↶
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0		4.0
Lane Util. Factor	1.00	1.00		1.00	0.95		1.00	0.95		1.00		1.00
Frt	1.00	0.85		1.00	0.96		1.00	0.97		1.00		0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95		1.00
Satd. Flow (prot)	1787	1599		1752	3382		1752	3404		1787		1599
Flt Permitted	0.95	1.00		0.28	1.00		0.38	1.00		0.95		1.00
Satd. Flow (perm)	1787	1599		525	3382		709	3404		1787		1599
Volume (vph)	20	0	40	30	490	150	65	715	170	85	0	70
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	21	0	42	32	516	158	68	753	179	89	0	74
RTOR Reduction (vph)	0	35	0	0	16	0	0	11	0	0	0	61
Lane Group Flow (vph)	21	7	0	32	658	0	68	921	0	89	0	13
Heavy Vehicles (%)	1%	1%	1%	3%	3%	3%	3%	3%	3%	1%	1%	1%
Turn Type	Perm			Perm			Perm			custom		custom
Protected Phases		8			2			6				
Permitted Phases	8			2			6			4		4
Actuated Green, G (s)	16.0	16.0		74.0	74.0		74.0	74.0		16.0		16.0
Effective Green, g (s)	17.0	17.0		75.0	75.0		75.0	75.0		17.0		17.0
Actuated g/C Ratio	0.17	0.17		0.75	0.75		0.75	0.75		0.17		0.17
Clearance Time (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0		5.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0		3.0
Lane Grp Cap (vph)	304	272		394	2537		532	2553		304		272
v/s Ratio Prot		0.00			0.19			c0.27				
v/s Ratio Perm	0.01			0.06			0.10			c0.05		0.01
v/c Ratio	0.07	0.03		0.08	0.26		0.13	0.36		0.29		0.05
Uniform Delay, d1	34.9	34.6		3.3	3.9		3.5	4.3		36.2		34.7
Progression Factor	1.00	1.00		0.45	0.47		0.68	0.64		1.00		1.00
Incremental Delay, d2	0.1	0.0		0.4	0.2		0.5	0.4		0.5		0.1
Delay (s)	35.0	34.6		1.9	2.1		2.8	3.1		36.8		34.8
Level of Service	C	C		A	A		A	A		D		C
Approach Delay (s)		34.7			2.0			3.1		35.9		
Approach LOS		C			A			A		D		

### Intersection Summary

HCM Average Control Delay	6.5	HCM Level of Service	A
HCM Volume to Capacity ratio	0.35		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	49.9%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

# HCM Signalized Intersection Capacity Analysis

## 14: St. Elmo Ave & Woodmont Ave

6/10/2008



Movement	WBL	WBR	NBL	NBT	NBR	SBL	SBT	SBR	NEL	NER	NER2
Lane Configurations			↖	↗		↖	↗		↖	↗	↖
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)			4.0	4.0			4.0		4.0		4.0
Lane Util. Factor			1.00	1.00			0.95		1.00		0.95
Frt			1.00	1.00			0.95		1.00		0.85
Flt Protected			0.95	1.00			1.00		0.95		1.00
Satd. Flow (prot)			1752	1845			3334		1787		1519
Flt Permitted			0.31	1.00			1.00		0.95		1.00
Satd. Flow (perm)			566	1845			3334		1787		1519
Volume (vph)	0	0	45	375	0	0	540	260	295	0	50
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	0	47	395	0	0	568	274	311	0	53
RTOR Reduction (vph)	0	0	0	0	0	0	34	0	0	0	41
Lane Group Flow (vph)	0	0	47	395	0	0	808	0	311	0	12
Heavy Vehicles (%)	1%	1%	3%	3%	3%	3%	3%	3%	1%	1%	1%
Turn Type			Perm			Perm			Prot		custom
Protected Phases				2			6		4		
Permitted Phases			2			6					4
Actuated Green, G (s)			68.6	68.6			68.6		21.4		21.4
Effective Green, g (s)			69.6	69.6			69.6		22.4		22.4
Actuated g/C Ratio			0.70	0.70			0.70		0.22		0.22
Clearance Time (s)			5.0	5.0			5.0		5.0		5.0
Vehicle Extension (s)			3.0	3.0			3.0		3.0		3.0
Lane Grp Cap (vph)			394	1284			2320		400		340
v/s Ratio Prot				0.21			c0.24		c0.17		
v/s Ratio Perm			0.08								0.01
v/c Ratio			0.12	0.31			0.35		0.78		0.03
Uniform Delay, d1			5.0	5.9			6.1		36.5		30.3
Progression Factor			0.57	0.59			0.54		1.00		1.00
Incremental Delay, d2			0.6	0.6			0.4		9.2		0.0
Delay (s)			3.4	4.1			3.7		45.6		30.4
Level of Service			A	A			A		D		C
Approach Delay (s)	0.0			4.0			3.7		43.4		
Approach LOS	A			A			A		D		
<b>Intersection Summary</b>											
HCM Average Control Delay			12.5				HCM Level of Service		B		
HCM Volume to Capacity ratio			0.45								
Actuated Cycle Length (s)			100.0				Sum of lost time (s)		8.0		
Intersection Capacity Utilization			53.9%				ICU Level of Service		A		
Analysis Period (min)			15								

c Critical Lane Group

# HCM Signalized Intersection Capacity Analysis

## 17: Norfolk Ave & Woodmont Ave

6/10/2008

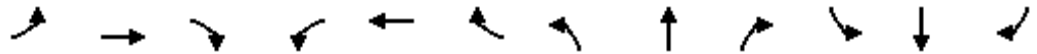


Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗		↖	↗		↖	↗		↖	↗	↖
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	0.95	
Frt	1.00	0.92		1.00	0.95		1.00	0.96		1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1787	1732		1787	1790		1752	1765		1752	3459	
Flt Permitted	0.64	1.00		0.52	1.00		0.44	1.00		0.41	1.00	
Satd. Flow (perm)	1212	1732		982	1790		813	1765		747	3459	
Volume (vph)	45	120	135	65	115	55	60	320	130	80	470	45
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	47	126	142	68	121	58	63	337	137	84	495	47
RTOR Reduction (vph)	0	92	0	0	39	0	0	25	0	0	12	0
Lane Group Flow (vph)	47	176	0	68	140	0	63	449	0	84	530	0
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	3%	3%	3%	3%	3%	3%
Parking (#/hr)			0									
Turn Type	Perm		Perm		Perm		Perm		Perm		Perm	
Protected Phases	4		8		8		2		2		6	
Permitted Phases	4		8		8		2		2		6	
Actuated Green, G (s)	15.0	15.0		15.0	15.0		25.0	25.0		25.0	25.0	
Effective Green, g (s)	16.0	16.0		16.0	16.0		26.0	26.0		26.0	26.0	
Actuated g/C Ratio	0.32	0.32		0.32	0.32		0.52	0.52		0.52	0.52	
Clearance Time (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	388	554		314	573		423	918		388	1799	
v/s Ratio Prot	c0.10				0.08		c0.25				0.15	
v/s Ratio Perm	0.04		0.07		0.08		0.08		0.11			
v/c Ratio	0.12	0.32		0.22	0.24		0.15	0.49		0.22	0.29	
Uniform Delay, d1	12.0	12.9		12.4	12.5		6.2	7.7		6.5	6.8	
Progression Factor	1.00	1.00		1.00	1.00		0.65	0.68		0.73	0.82	
Incremental Delay, d2	0.1	0.3		0.3	0.2		0.7	1.6		1.2	0.4	
Delay (s)	12.2	13.2		12.8	12.8		4.7	6.9		5.9	6.0	
Level of Service	B	B		B	B		A	A		A	A	
Approach Delay (s)	13.0		12.8		6.6		6.0					
Approach LOS	B		B		A		A					
<b>Intersection Summary</b>												
HCM Average Control Delay	8.4		HCM Level of Service		A							
HCM Volume to Capacity ratio	0.42											
Actuated Cycle Length (s)	50.0		Sum of lost time (s)		8.0							
Intersection Capacity Utilization	60.7%		ICU Level of Service		B							
Analysis Period (min)	15											
c Critical Lane Group												



HCM Signalized Intersection Capacity Analysis  
 20: Old Georgetown Rd & Woodmont Ave

6/10/2008



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↘		↗↗	↘	↕↕						↕↕	↗
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0		4.0	4.0	4.0						4.0	4.0
Lane Util. Factor	1.00		0.88	1.00	0.95						0.95	1.00
Frt	1.00		0.85	1.00	0.97						1.00	0.85
Flt Protected	0.95		1.00	0.95	1.00						1.00	1.00
Satd. Flow (prot)	1752		2760	1752	3395						3505	1568
Flt Permitted	0.95		1.00	0.95	1.00						1.00	1.00
Satd. Flow (perm)	1752		2760	1752	3395						3505	1568
Volume (vph)	175	0	905	155	905	240	0	0	0	0	565	135
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	184	0	953	163	953	253	0	0	0	0	595	142
RTOR Reduction (vph)	0	0	21	50	22	0	0	0	0	0	0	109
Lane Group Flow (vph)	184	0	932	113	1184	0	0	0	0	0	595	33
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%
Turn Type	Prot		custom		Perm							Perm
Protected Phases	7					8						6
Permitted Phases			4	8								6
Actuated Green, G (s)	14.8		67.6	47.8	47.8						22.4	22.4
Effective Green, g (s)	15.8		68.6	48.8	48.8						23.4	23.4
Actuated g/C Ratio	0.16		0.69	0.49	0.49						0.23	0.23
Clearance Time (s)	5.0		5.0	5.0	5.0						5.0	5.0
Vehicle Extension (s)	3.0		3.0	3.0	3.0						3.0	3.0
Lane Grp Cap (vph)	277		1893	855	1657						820	367
v/s Ratio Prot	c0.10				c0.35						c0.17	
v/s Ratio Perm			0.34	0.06								0.02
v/c Ratio	0.66		0.49	0.13	0.71						0.73	0.09
Uniform Delay, d1	39.6		7.4	14.0	20.1						35.3	30.0
Progression Factor	1.00		1.00	0.55	0.67						0.79	0.66
Incremental Delay, d2	5.9		0.9	0.3	2.5						3.1	0.1
Delay (s)	45.5		8.4	7.9	16.0						31.0	20.0
Level of Service	D		A	A	B						C	C
Approach Delay (s)		14.4			15.0			0.0			28.9	
Approach LOS		B			B			A			C	

Intersection Summary			
HCM Average Control Delay	17.9	HCM Level of Service	B
HCM Volume to Capacity ratio	0.71		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	68.0%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

# HCM Signalized Intersection Capacity Analysis

## 25: Edgemoor Lane & Woodmont Ave

6/10/2008



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑			↑↑						↑↑↑↑	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0						4.0	
Lane Util. Factor		0.95			0.95						0.86	
Frt		0.85			1.00						0.99	
Flt Protected		1.00			0.95						1.00	
Satd. Flow (prot)		2979			3330						6262	
Flt Permitted		1.00			0.68						1.00	
Satd. Flow (perm)		2979			2378						6262	
Volume (vph)	0	0	110	145	0	0	0	0	0	110	1405	105
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	0	116	153	0	0	0	0	0	116	1479	111
RTOR Reduction (vph)	0	21	0	0	0	0	0	0	0	0	6	0
Lane Group Flow (vph)	0	96	0	0	153	0	0	0	0	0	1700	0
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%
Turn Type				Perm							Perm	
Protected Phases		4			8							6
Permitted Phases				8							6	
Actuated Green, G (s)		17.0			17.0						73.0	
Effective Green, g (s)		18.0			18.0						74.0	
Actuated g/C Ratio		0.18			0.18						0.74	
Clearance Time (s)		5.0			5.0						5.0	
Vehicle Extension (s)		3.0			3.0						3.0	
Lane Grp Cap (vph)		536			428						4634	
v/s Ratio Prot		0.03										
v/s Ratio Perm					c0.06						0.27	
v/c Ratio		0.18			0.36						0.37	
Uniform Delay, d1		34.7			35.9						4.6	
Progression Factor		1.00			0.82						0.74	
Incremental Delay, d2		0.2			0.5						0.2	
Delay (s)		34.9			30.1						3.6	
Level of Service		C			C						A	
Approach Delay (s)		34.9			30.1			0.0			3.6	
Approach LOS		C			C			A			A	

### Intersection Summary

HCM Average Control Delay	7.5	HCM Level of Service	A
HCM Volume to Capacity ratio	0.37		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	45.2%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis  
 33: Old Georgetown Rd & Edgemoor Lane

6/10/2008



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations					←←←		←	↑			↑	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					4.0		4.0	4.0			4.0	
Lane Util. Factor					0.91		1.00	1.00			1.00	
Frt					0.99		1.00	1.00			0.90	
Flt Protected					1.00		0.95	1.00			1.00	
Satd. Flow (prot)					4970		1752	1845			1654	
Flt Permitted					1.00		0.64	1.00			1.00	
Satd. Flow (perm)					4970		1181	1845			1654	
Volume (vph)	0	0	0	115	1110	75	105	30	0	0	25	80
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	0	0	121	1168	79	111	32	0	0	26	84
RTOR Reduction (vph)	0	0	0	0	4	0	0	0	0	0	44	0
Lane Group Flow (vph)	0	0	0	0	1364	0	111	32	0	0	66	0
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%
Turn Type				Perm		Perm						
Protected Phases					8			2			6	
Permitted Phases				8		2						
Actuated Green, G (s)					72.0		19.0	19.0			19.0	
Effective Green, g (s)					73.0		19.0	19.0			19.0	
Actuated g/C Ratio					0.73		0.19	0.19			0.19	
Clearance Time (s)					5.0		4.0	4.0			4.0	
Vehicle Extension (s)					3.0		3.0	3.0			3.0	
Lane Grp Cap (vph)					3628		224	351			314	
v/s Ratio Prot								0.02			0.04	
v/s Ratio Perm					0.27		c0.09					
v/c Ratio					0.38		0.50	0.09			0.21	
Uniform Delay, d1					5.0		36.2	33.4			34.2	
Progression Factor					0.04		0.86	0.87			1.00	
Incremental Delay, d2					0.1		1.7	0.1			0.3	
Delay (s)					0.3		32.9	29.3			34.5	
Level of Service					A		C	C			C	
Approach Delay (s)		0.0			0.3			32.1			34.5	
Approach LOS		A			A			C			C	

Intersection Summary

HCM Average Control Delay	5.4	HCM Level of Service	A
HCM Volume to Capacity ratio	0.40		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	44.6%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group













HCM Signalized Intersection Capacity Analysis  
801: Campus Drive & Adelphi Rd.

Purple Line (UMD)  
7/30/2008

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations		↑↑	↑	↘	↑	↗	↘	↑↑↑	↗	↘↘	↑↑		
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		
Lane Util. Factor		0.95	1.00	1.00	1.00	1.00	1.00	0.91	1.00	0.97	0.95		
Frbp, ped/bikes		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		
Flpb, ped/bikes		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		
Frt		1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00		
Flt Protected		1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		
Satd. Flow (prot)		3539	1583	1770	1863	1583	1770	5085	1583	3433	3539		
Flt Permitted		1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		
Satd. Flow (perm)		3539	1583	1770	1863	1583	1770	5085	1583	3433	3539		
Volume (vph)	0	192	207	95	233	65	208	888	331	357	1225	0	
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	
Adj. Flow (vph)	0	213	230	106	259	72	231	987	368	397	1361	0	
RTOR Reduction (vph)	0	0	169	0	0	44	0	0	275	0	0	0	
Lane Group Flow (vph)	0	213	61	106	259	28	231	987	93	397	1361	0	
Confl. Peds. (#/hr)	49			3			2						
Turn Type			Perm	Split		Perm	Prot		Perm	Prot			
Protected Phases		2		6	6		3	8		17	14		
Permitted Phases			2			6			8				
Actuated Green, G (s)		62.6	62.6	30.0	30.0	30.0	30.0	60.0	60.0	72.4	103.4		
Effective Green, g (s)		65.6	65.6	33.0	33.0	33.0	32.0	63.0	63.0	74.4	105.4		
Actuated g/C Ratio		0.26	0.26	0.13	0.13	0.13	0.13	0.25	0.25	0.30	0.43		
Clearance Time (s)		6.0	6.0	6.0	6.0	6.0	5.0	6.0	6.0				
Vehicle Extension (s)		4.0	4.0	3.0	3.0	3.0	3.0	3.5	3.5				
Lane Grp Cap (vph)		936	419	236	248	211	228	1292	402	1030	1504		
v/s Ratio Prot		c0.06		0.06	c0.14		c0.13	0.19		0.12	c0.38		
v/s Ratio Perm			0.04			0.02			0.06				
v/c Ratio		0.23	0.15	0.45	1.04	0.13	1.01	0.76	0.23	0.39	0.90		
Uniform Delay, d1		71.4	69.8	99.1	107.5	94.9	108.0	85.6	73.3	68.7	66.6		
Progression Factor		0.56	0.66	1.00	1.00	1.00	1.00	1.00	1.00	0.40	0.36		
Incremental Delay, d2		0.1	0.1	1.4	69.2	0.3	63.0	2.8	0.4	0.2	6.3		
Delay (s)		40.3	46.2	100.5	176.7	95.1	171.0	88.4	73.7	27.7	30.0		
Level of Service		D	D	F	F	F	F	F	E	C	C		
Approach Delay (s)		43.3			144.8			97.0			29.5		
Approach LOS		D			F			F			C		
Intersection Summary													
HCM Average Control Delay			68.2		HCM Level of Service					E			
HCM Volume to Capacity ratio			0.75										
Actuated Cycle Length (s)			248.0		Sum of lost time (s)					12.0			
Intersection Capacity Utilization			84.8%		ICU Level of Service					E			
Analysis Period (min)			15										
c Critical Lane Group													

HCM Unsignalized Intersection Capacity Analysis  
 810: Campus Drive & Regents Drive

Purple Line (UMD)  
 7/30/2008

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Right Turn Channelized			Yes			Yes			Yes			Yes
Volume (veh/h)	9	54	19	52	86	277	4	77	39	93	76	11
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	10	59	21	57	93	301	4	84	42	101	83	12
Approach Volume (veh/h)		68			150			88			184	
Crossing Volume (veh/h)		240			98			170			154	
High Capacity (veh/h)		1147			1283			1213			1227	
High v/c (veh/h)		0.06			0.12			0.07			0.15	
Low Capacity (veh/h)		946			1069			1005			1018	
Low v/c (veh/h)		0.07			0.14			0.09			0.18	
Intersection Summary												
Maximum v/c High			0.15									
Maximum v/c Low			0.18									
Intersection Capacity Utilization			67.2%			ICU Level of Service						C

HCM Signalized Intersection Capacity Analysis  
812: Campus Drive & US 1

Purple Line (UMD)  
11/5/2007

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Util. Factor	0.95	0.95	1.00	0.91	0.91	0.88	0.97	0.95	1.00	0.97	0.95	1.00
Frnt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	1.00
Flt Protected	0.95	1.00	1.00	0.95	0.98	1.00	0.95	1.00	1.00	0.95	1.00	0.85
Satd. Flow (prot)	1681	1770	1583	1610	3327	2787	3433	3539	1583	3433	3539	1583
Flt Permitted	0.95	1.00	1.00	0.95	0.98	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1681	1770	1583	1610	3327	2787	3433	3539	1583	3433	3539	1583
Volume (vph)	58	142	72	677	492	490	169	779	148	507	1718	496
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	64	158	80	752	547	544	188	866	164	563	1909	551
RTOR Reduction (vph)	0	0	71	0	0	174	0	0	94	0	0	134
Lane Group Flow (vph)	64	158	9	418	881	370	188	866	70	563	1909	417
Turn Type	Split		Perm	Split		pt+ov	Prot		Perm	Prot		Perm
Protected Phases	4	4		3	3	3.5	1	6		5	2	
Permitted Phases			4						6			2
Actuated Green, G (s)	14.9	14.9	14.9	30.5	30.5	55.6	13.6	57.5	57.5	25.1	69.0	69.0
Effective Green, g (s)	17.4	17.4	17.4	33.0	33.0	60.1	15.6	60.5	60.5	27.1	72.0	72.0
Actuated g/C Ratio	0.12	0.12	0.12	0.22	0.22	0.40	0.10	0.40	0.40	0.18	0.48	0.48
Clearance Time (s)	5.5	5.5	5.5	5.5	5.5		5.0	6.0	6.0	5.0	6.0	6.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	5.0	5.0	3.0	5.0	5.0
Lane Grp Cap (vph)	195	205	184	354	732	1117	357	1427	638	620	1699	760
v/s Ratio Prot	0.04	c0.09		0.26	c0.26	0.13	0.05	0.24		c0.16	c0.54	
v/s Ratio Perm			0.01						0.04			0.26
v/c Ratio	0.33	0.77	0.05	1.18	1.20	0.33	0.53	0.61	0.11	0.91	1.12	0.55
Uniform Delay, d1	60.9	64.4	59.0	58.5	58.5	31.1	63.7	35.4	27.9	60.2	39.0	27.5
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.13	0.94	1.56	1.16	0.77	0.50
Incremental Delay, d2	1.0	16.3	0.1	106.7	104.4	0.2	1.3	1.7	0.3	2.1	56.5	0.3
Delay (s)	61.9	80.6	59.1	165.2	162.9	31.2	73.3	35.1	43.9	71.7	86.4	14.0
Level of Service	E	F	E	F	F	C	E	D	D	E	F	B
Approach Delay (s)		71.0			124.5			42.1			70.5	
Approach LOS		E			F			D			E	
Intersection Summary												
HCM Average Control Delay	80.7			HCM Level of Service						F		
HCM Volume to Capacity ratio	1.08											
Actuated Cycle Length (s)	150.0			Sum of lost time (s)						12.0		
Intersection Capacity Utilization	95.3%			ICU Level of Service						F		
Analysis Period (min)	15											
c Critical Lane Group												





















HCM Signalized Intersection Capacity Analysis  
 200: E. Campus Main Ent & US 1

Purple Line (UMD)  
 11/5/2007

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0		4.0	4.0
Lane Util. Factor	1.00	1.00	0.95		1.00	0.95
Frt	1.00	0.85	0.99		1.00	1.00
Flt Protected	0.95	1.00	1.00		0.95	1.00
Satd. Flow (prot)	1770	1583	3513		1770	3539
Flt Permitted	0.95	1.00	1.00		0.95	1.00
Satd. Flow (perm)	1770	1583	3513		1770	3539
Volume (vph)	76	72	1307	68	116	2480
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	83	78	1421	74	126	2696
RTOR Reduction (vph)	0	71	2	0	0	0
Lane Group Flow (vph)	83	7	1493	0	126	2696
Turn Type		Perm			Prot	
Protected Phases	8		2		1	6
Permitted Phases		8				
Actuated Green, G (s)	12.0	12.0	106.5		15.0	126.5
Effective Green, g (s)	13.5	13.5	108.5		16.0	128.5
Actuated g/C Ratio	0.09	0.09	0.72		0.11	0.86
Clearance Time (s)	5.5	5.5	6.0		5.0	6.0
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	159	142	2541		189	3032
v/s Ratio Prot	c0.05		0.42		0.07	c0.76
v/s Ratio Perm		0.00				
v/c Ratio	0.52	0.05	0.59		0.67	0.89
Uniform Delay, d1	65.2	62.4	10.0		64.4	6.5
Progression Factor	1.00	1.00	1.46		0.83	2.45
Incremental Delay, d2	3.1	0.1	0.9		0.8	0.4
Delay (s)	68.2	62.5	15.5		54.3	16.3
Level of Service	E	E	B		D	B
Approach Delay (s)	65.5		15.5			18.0
Approach LOS	E		B			B
<b>Intersection Summary</b>						
HCM Average Control Delay			18.8		HCM Level of Service	B
HCM Volume to Capacity ratio			0.85			
Actuated Cycle Length (s)			150.0		Sum of lost time (s)	8.0
Intersection Capacity Utilization			79.4%		ICU Level of Service	D
Analysis Period (min)			15			
c Critical Lane Group						

HCM Signalized Intersection Capacity Analysis  
 212: Rossborough Rd. & US 1

Purple Line (UMD)  
 7/30/2008

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0			3.0	3.0	3.0	3.0		3.0	3.0	
Lane Util. Factor	1.00	1.00			1.00	1.00	1.00	0.95		1.00	0.95	
Frt	1.00	0.93			1.00	0.85	1.00	1.00		1.00	0.98	
Flt Protected	0.95	1.00			0.96	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1723			1783	1583	1770	3531		1770	3474	
Flt Permitted	0.73	1.00			0.76	1.00	0.06	1.00		0.22	1.00	
Satd. Flow (perm)	1352	1723			1410	1583	120	3531		412	3474	
Volume (vph)	16	2	2	32	4	293	8	990	16	157	1680	236
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	18	2	2	36	4	326	9	1100	18	174	1867	262
RTOR Reduction (vph)	0	2	0	0	0	292	0	0	0	0	3	0
Lane Group Flow (vph)	18	2	0	0	40	34	9	1118	0	174	2126	0
Turn Type	Perm			Perm		Perm	pm+pt			pm+pt		
Protected Phases		4			8		1	6		5	2	
Permitted Phases	4			8		8	6			2		
Actuated Green, G (s)	11.1	11.1			11.1	11.1	116.8	114.5		127.4	120.6	
Effective Green, g (s)	13.6	13.6			13.6	13.6	121.3	117.5		130.4	123.6	
Actuated g/C Ratio	0.09	0.09			0.09	0.09	0.81	0.78		0.87	0.82	
Clearance Time (s)	5.5	5.5			5.5	5.5	4.5	6.0		4.5	6.0	
Vehicle Extension (s)	3.0	3.0			3.0	3.0	3.0	5.0		3.0	5.0	
Lane Grp Cap (vph)	123	156			128	144	139	2766		448	2863	
v/s Ratio Prot		0.00					0.00	0.32		c0.03	c0.61	
v/s Ratio Perm	0.01				c0.03	0.02	0.05			0.31		
v/c Ratio	0.15	0.01			0.31	0.24	0.06	0.40		0.39	0.74	
Uniform Delay, d1	62.9	62.1			63.8	63.4	6.9	5.2		2.7	6.0	
Progression Factor	1.00	1.00			1.00	1.00	0.95	0.52		1.26	1.73	
Incremental Delay, d2	0.6	0.0			1.4	0.9	0.2	0.4		0.3	0.8	
Delay (s)	63.4	62.1			65.2	64.2	6.8	3.1		3.7	11.2	
Level of Service	E	E			E	E	A	A		A	B	
Approach Delay (s)		63.2			64.3			3.1			10.6	
Approach LOS		E			E			A			B	
Intersection Summary												
HCM Average Control Delay			13.9				HCM Level of Service				B	
HCM Volume to Capacity ratio			0.69									
Actuated Cycle Length (s)			150.0				Sum of lost time (s)			9.0		
Intersection Capacity Utilization			76.8%				ICU Level of Service			D		
Analysis Period (min)			15									
c Critical Lane Group												



HCM Signalized Intersection Capacity Analysis  
 813: Paint Branch Pkwy & Fire Academy

Purple Line (UMD)  
 11/5/2007

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	2.0	2.0		2.0	2.0			2.0			2.0	
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00			1.00	
Flt Protected	1.00	0.97		1.00	0.99			0.98			0.92	
Satd. Flow (prot)	1770	3442		1770	3504			1762			1695	
Flt Permitted	0.13	1.00		0.43	1.00			0.87			0.95	
Satd. Flow (perm)	236	3442		794	3504			1580			1629	
Volume (vph)	220	421	94	50	1245	88	25	6	6	13	6	25
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	220	421	94	50	1245	88	25	6	6	13	6	25
RTOR Reduction (vph)	0	24	0	0	6	0	0	4	0	0	16	0
Lane Group Flow (vph)	220	491	0	50	1327	0	0	33	0	0	28	0
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	45.0	45.0		45.0	45.0			25.0			25.0	
Effective Green, g (s)	48.0	48.0		48.0	48.0			28.0			28.0	
Actuated g/C Ratio	0.60	0.60		0.60	0.60			0.35			0.35	
Clearance Time (s)	5.0	5.0		5.0	5.0			5.0			5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0			3.0	
Lane Grp Cap (vph)	142	2065		476	2102			553			570	
v/s Ratio Prot		0.14			0.38							
v/s Ratio Perm	c0.93			0.06				c0.02			0.02	
v/c Ratio	1.55	0.24		0.11	0.63			0.06			0.05	
Uniform Delay, d1	16.0	7.5		6.8	10.3			17.3			17.2	
Progression Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Incremental Delay, d2	278.9	0.1		0.1	0.6			0.2			0.2	
Delay (s)	294.9	7.5		6.9	10.9			17.5			17.4	
Level of Service	F	A		A	B			B			B	
Approach Delay (s)		93.5			10.8			17.5			17.4	
Approach LOS		F			B			B			B	
Intersection Summary												
HCM Average Control Delay			38.7			HCM Level of Service				D		
HCM Volume to Capacity ratio			0.99									
Actuated Cycle Length (s)			80.0			Sum of lost time (s)				4.0		
Intersection Capacity Utilization		63.7%				ICU Level of Service				B		
Analysis Period (min)			15									
c Critical Lane Group												







HCM Signalized Intersection Capacity Analysis  
 814: Paint Branch Pkwy & Metro Parking Garage

Purple Line (UMD)  
 7/30/2008

	→	↘	↙	←	↖	↗
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑	↗	↘	↑↑	↘	↗
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0			4.0		
Lane Util. Factor	0.95			0.95		
Frt	1.00			1.00		
Flt Protected	1.00			1.00		
Satd. Flow (prot)	3539			3539		
Flt Permitted	1.00			1.00		
Satd. Flow (perm)	3539			3539		
Volume (vph)	440	0	0	1383	0	0
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	478	0	0	1503	0	0
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	478	0	0	1503	0	0
Turn Type		Perm	pm+pt			pm+ov
Protected Phases	2		1	6	8	1
Permitted Phases		2	6			8
Actuated Green, G (s)	40.9			40.9		
Effective Green, g (s)	40.9			40.9		
Actuated g/C Ratio	0.52			0.52		
Clearance Time (s)	4.0			4.0		
Vehicle Extension (s)	3.0			3.0		
Lane Grp Cap (vph)	1828			1828		
v/s Ratio Prot	0.14			c0.42		
v/s Ratio Perm						
v/c Ratio	0.26			0.82		
Uniform Delay, d1	10.7			16.1		
Progression Factor	1.00			1.00		
Incremental Delay, d2	0.3			3.1		
Delay (s)	11.1			19.2		
Level of Service	B			B		
Approach Delay (s)	11.1			19.2	0.0	
Approach LOS	B			B	A	
<b>Intersection Summary</b>						
HCM Average Control Delay		17.2		HCM Level of Service		B
HCM Volume to Capacity ratio		0.82				
Actuated Cycle Length (s)		79.2		Sum of lost time (s)		38.3
Intersection Capacity Utilization		41.6%		ICU Level of Service		A
Analysis Period (min)		15				
c Critical Lane Group						













HCM Signalized Intersection Capacity Analysis  
 815: Paint Branch Pkwy & River Road

Purple Line (UMD)  
 11/5/2007

						
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑	↑	↑↑	↑↑	↑↑	↑
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	2.0	2.0	2.0	2.0	2.0	2.0
Lane Util. Factor	0.95	1.00	0.97	0.95	0.97	1.00
Frbp, ped/bikes	1.00	0.97	1.00	1.00	1.00	0.98
Flpb, ped/bikes	1.00	1.00	0.99	1.00	1.00	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (prot)	3539	1532	3398	3539	3419	1552
Flt Permitted	1.00	1.00	0.49	1.00	0.95	1.00
Satd. Flow (perm)	3539	1532	1755	3539	3419	1552
Volume (vph)	261	215	199	1242	87	269
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	261	215	199	1242	87	269
RTOR Reduction (vph)	0	148	0	0	0	146
Lane Group Flow (vph)	261	67	199	1242	87	123
Confl. Peds. (#/hr)		25	25		5	10
Turn Type		Perm	pm+pt			custom
Protected Phases	4		3	8		
Permitted Phases		4	8		2	2
Actuated Green, G (s)	18.9	18.9	32.1	32.1	30.3	30.3
Effective Green, g (s)	22.9	22.9	36.1	36.1	33.8	33.8
Actuated g/C Ratio	0.31	0.31	0.49	0.49	0.46	0.46
Clearance Time (s)	6.0	6.0	5.5	6.0	5.5	5.5
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	1097	475	1106	1729	1564	710
v/s Ratio Prot	0.07		0.03	c0.35		
v/s Ratio Perm		0.04	0.06		0.03	c0.08
v/c Ratio	0.24	0.14	0.18	0.72	0.06	0.17
Uniform Delay, d1	19.0	18.4	10.4	14.9	11.2	11.8
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.1	0.1	0.1	1.5	0.1	0.5
Delay (s)	19.1	18.5	10.5	16.3	11.2	12.3
Level of Service	B	B	B	B	B	B
Approach Delay (s)	18.9			15.5	12.1	
Approach LOS	B			B	B	
<b>Intersection Summary</b>						
HCM Average Control Delay		15.7			HCM Level of Service	B
HCM Volume to Capacity ratio		0.45				
Actuated Cycle Length (s)		73.9			Sum of lost time (s)	4.0
Intersection Capacity Utilization		63.5%			ICU Level of Service	B
Analysis Period (min)		15				
c Critical Lane Group						













HCM Signalized Intersection Capacity Analysis  
801: Campus Drive & Adelphi Rd.

Purple Line (UMD)  
7/30/2008

													
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations		↑↑	↑	↘	↑	↗	↘	↑↑↑	↗	↘↘	↑↑		
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		
Lane Util. Factor		0.95	1.00	1.00	1.00	1.00	1.00	0.91	1.00	0.97	0.95		
Frbp, ped/bikes		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		
Flpb, ped/bikes		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		
Frt		1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00		
Flt Protected		1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		
Satd. Flow (prot)		3539	1583	1770	1863	1583	1770	5085	1583	3433	3539		
Flt Permitted		1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		
Satd. Flow (perm)		3539	1583	1770	1863	1583	1770	5085	1583	3433	3539		
Volume (vph)	0	185	210	185	214	393	222	1304	180	228	917	0	
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	
Adj. Flow (vph)	0	206	233	206	238	437	247	1449	200	253	1019	0	
RTOR Reduction (vph)	0	0	173	0	0	293	0	0	115	0	0	0	
Lane Group Flow (vph)	0	206	60	206	238	144	247	1449	85	253	1019	0	
Confl. Peds. (#/hr)	17			20			9			3			
Turn Type			Perm	Split		Perm	Prot		Perm	Prot			
Protected Phases		2		6	6		3	8		17	14		
Permitted Phases			2			6			8				
Actuated Green, G (s)		60.0	60.0	30.0	30.0	30.0	25.0	60.0	60.0	73.7	109.7		
Effective Green, g (s)		63.0	63.0	33.0	33.0	33.0	27.0	63.0	63.0	75.7	111.7		
Actuated g/C Ratio		0.26	0.26	0.13	0.13	0.13	0.11	0.26	0.26	0.31	0.45		
Clearance Time (s)		6.0	6.0	6.0	6.0	6.0	5.0	6.0	6.0				
Vehicle Extension (s)		4.0	4.0	3.0	3.0	3.0	3.0	3.5	3.5				
Lane Grp Cap (vph)		904	404	237	249	212	194	1299	404	1053	1602		
v/s Ratio Prot		c0.06		0.12	c0.13		c0.14	c0.28		0.07	c0.29		
v/s Ratio Perm			0.04			0.09			0.05				
v/c Ratio		0.23	0.15	0.87	0.96	0.68	1.27	1.12	0.21	0.24	0.64		
Uniform Delay, d1		72.6	71.1	104.7	106.1	101.8	109.8	91.8	72.3	64.0	51.9		
Progression Factor		0.81	1.19	1.00	1.00	1.00	1.00	1.00	1.00	0.53	0.42		
Incremental Delay, d2		0.0	0.0	26.9	44.5	8.7	156.8	63.0	0.3	0.1	0.7		
Delay (s)		58.9	84.8	131.6	150.6	110.5	266.7	154.9	72.6	34.2	22.5		
Level of Service		E	F	F	F	F	F	F	E	C	C		
Approach Delay (s)		72.6			126.3			160.7			24.8		
Approach LOS		E			F			F			C		
Intersection Summary													
HCM Average Control Delay			106.8		HCM Level of Service					F			
HCM Volume to Capacity ratio			0.71										
Actuated Cycle Length (s)			246.7		Sum of lost time (s)					9.0			
Intersection Capacity Utilization			81.3%		ICU Level of Service					D			
Analysis Period (min)			15										
c Critical Lane Group													

HCM Unsignalized Intersection Capacity Analysis  
 810: Campus Drive & Regents Drive

Purple Line (UMD)  
 7/30/2008

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Right Turn Channelized			Yes			Yes			Yes			Yes
Volume (veh/h)	3	44	3	135	40	203	12	178	52	394	25	10
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	3	48	3	147	43	221	13	193	57	428	27	11
Approach Volume (veh/h)		51			190			207			455	
Crossing Volume (veh/h)		602			210			479			203	
High Capacity (veh/h)		860			1175			949			1181	
High v/c (veh/h)		0.06			0.16			0.22			0.39	
Low Capacity (veh/h)		689			971			768			976	
Low v/c (veh/h)		0.07			0.20			0.27			0.47	
Intersection Summary												
Maximum v/c High			0.39									
Maximum v/c Low			0.47									
Intersection Capacity Utilization			82.3%			ICU Level of Service					E	












HCM Signalized Intersection Capacity Analysis  
812: Campus Drive & US 1

Purple Line (UMD)  
11/5/2007

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Util. Factor	0.95	0.95	1.00	0.91	0.91	0.88	0.97	0.95	1.00	0.97	0.95	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	0.98	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1681	1770	1583	1610	3325	2787	3433	3539	1583	3433	3539	1583
Flt Permitted	0.95	1.00	1.00	0.95	0.98	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1681	1770	1583	1610	3325	2787	3433	3539	1583	3433	3539	1583
Volume (vph)	254	312	142	334	232	851	162	1466	507	470	1280	287
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	282	347	158	371	258	946	180	1629	563	522	1422	319
RTOR Reduction (vph)	0	0	121	0	0	133	0	0	174	0	0	94
Lane Group Flow (vph)	282	347	37	203	426	813	180	1629	389	522	1422	225
Turn Type	Split		Perm	Split		pt+ov	Prot		Perm	Prot		Perm
Protected Phases	4	4		3	3	3 5	1	6		5	2	
Permitted Phases			4						6			2
Actuated Green, G (s)	32.3	32.3	32.3	13.5	13.5	36.7	12.8	59.0	59.0	23.2	69.4	69.4
Effective Green, g (s)	34.8	34.8	34.8	16.0	16.0	41.2	14.8	62.0	62.0	25.2	72.4	72.4
Actuated g/C Ratio	0.23	0.23	0.23	0.11	0.11	0.27	0.10	0.41	0.41	0.17	0.48	0.48
Clearance Time (s)	5.5	5.5	5.5	5.5	5.5		5.0	6.0	6.0	5.0	6.0	6.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	5.0	5.0	3.0	5.0	5.0
Lane Grp Cap (vph)	390	411	367	172	355	765	339	1463	654	577	1708	764
v/s Ratio Prot	0.17	c0.20		0.13	c0.13	c0.29	0.05	c0.46		0.15	0.40	
v/s Ratio Perm			0.02						0.25			0.14
v/c Ratio	0.72	0.84	0.10	1.18	1.20	1.06	0.53	1.11	0.60	0.90	0.83	0.29
Uniform Delay, d1	53.2	55.0	45.3	67.0	67.0	54.4	64.3	44.0	34.2	61.2	33.6	23.4
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.93	1.02	1.23	1.35	0.82	0.95
Incremental Delay, d2	6.5	14.6	0.1	125.4	114.0	50.3	0.1	52.1	0.4	2.1	0.5	0.1
Delay (s)	59.7	69.6	45.4	192.4	181.0	104.7	59.8	96.9	42.4	84.6	28.1	22.4
Level of Service	E	E	D	F	F	F	E	F	D	F	C	C
Approach Delay (s)		61.2			136.7			81.1			40.3	
Approach LOS		E			F			F			D	
Intersection Summary												
HCM Average Control Delay	78.2			HCM Level of Service						E		
HCM Volume to Capacity ratio	1.05											
Actuated Cycle Length (s)	150.0			Sum of lost time (s)						12.0		
Intersection Capacity Utilization	96.7%			ICU Level of Service						F		
Analysis Period (min)	15											
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis  
 200: E. Campus Main Ent & US 1

Purple Line (UMD)  
 11/5/2007

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0		4.0	4.0
Lane Util. Factor	1.00	1.00	0.95		1.00	0.95
Fr <sub>t</sub>	1.00	0.85	0.99		1.00	1.00
Flt Protected	0.95	1.00	1.00		0.95	1.00
Satd. Flow (prot)	1770	1583	3511		1770	3539
Flt Permitted	0.95	1.00	1.00		0.95	1.00
Satd. Flow (perm)	1770	1583	3511		1770	3539
Volume (vph)	117	133	2552	141	113	1769
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	127	145	2774	153	123	1923
RTOR Reduction (vph)	0	72	3	0	0	0
Lane Group Flow (vph)	127	73	2924	0	123	1923
Turn Type		Perm			Prot	
Protected Phases	8		2		1	6
Permitted Phases		8				
Actuated Green, G (s)	14.3	14.3	109.5		9.7	124.7
Effective Green, g (s)	15.8	15.8	111.5		10.7	126.2
Actuated g/C Ratio	0.11	0.11	0.74		0.07	0.84
Clearance Time (s)	5.5	5.5	6.0		5.0	5.5
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	186	167	2610		126	2977
v/s Ratio Prot	c0.07		c0.83		c0.07	0.54
v/s Ratio Perm		0.05				
v/c Ratio	0.68	0.44	1.12		0.98	0.65
Uniform Delay, d <sub>1</sub>	64.7	62.9	19.3		69.5	4.1
Progression Factor	1.00	1.00	1.63		0.86	2.94
Incremental Delay, d <sub>2</sub>	9.9	1.8	54.8		52.2	0.6
Delay (s)	74.6	64.8	86.2		112.3	12.8
Level of Service	E	E	F		F	B
Approach Delay (s)	69.4		86.2			18.8
Approach LOS	E		F			B
<b>Intersection Summary</b>						
HCM Average Control Delay		59.0			HCM Level of Service	E
HCM Volume to Capacity ratio		1.06			Sum of lost time (s)	12.0
Actuated Cycle Length (s)		150.0			ICU Level of Service	F
Intersection Capacity Utilization		97.8%				
Analysis Period (min)		15				
c Critical Lane Group						

HCM Signalized Intersection Capacity Analysis  
 212: Rossborough Rd. & US 1

Purple Line (UMD)  
 7/30/2008

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0			3.0	3.0	3.0	3.0		3.0	3.0	
Lane Util. Factor	1.00	1.00			1.00	1.00	1.00	0.95		1.00	0.95	
Frt	1.00	0.88			1.00	0.85	1.00	0.99		1.00	1.00	
Flt Protected	0.95	1.00			0.96	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1641			1792	1583	1770	3520		1770	3534	
Flt Permitted	0.52	1.00			0.75	1.00	0.09	1.00		0.04	1.00	
Satd. Flow (perm)	960	1641			1398	1583	169	3520		83	3534	
Volume (vph)	67	5	21	118	31	669	45	1800	68	131	1424	14
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	74	6	23	131	34	743	50	2000	76	146	1582	16
RTOR Reduction (vph)	0	17	0	0	0	213	0	2	0	0	0	0
Lane Group Flow (vph)	74	12	0	0	165	530	50	2074	0	146	1598	0
Turn Type	Perm			Perm		Perm	pm+pt			pm+pt		
Protected Phases		4			8		1	6		5	2	
Permitted Phases	4			8		8	6			2		
Actuated Green, G (s)	36.5	36.5			36.5	36.5	89.2	83.9		102.0	92.2	
Effective Green, g (s)	39.0	39.0			39.0	39.0	93.7	86.9		105.0	95.2	
Actuated g/C Ratio	0.26	0.26			0.26	0.26	0.62	0.58		0.70	0.63	
Clearance Time (s)	5.5	5.5			5.5	5.5	4.5	6.0		4.5	6.0	
Vehicle Extension (s)	3.0	3.0			3.0	3.0	3.0	5.0		3.0	5.0	
Lane Grp Cap (vph)	250	427			363	412	178	2039		228	2243	
v/s Ratio Prot		0.01					0.01	c0.59		c0.06	0.45	
v/s Ratio Perm	0.08				0.12	c0.33	0.16			0.38		
v/c Ratio	0.30	0.03			0.45	1.29	0.28	1.02		0.64	0.71	
Uniform Delay, d1	44.5	41.4			46.6	55.5	16.3	31.5		47.5	18.3	
Progression Factor	1.00	1.00			1.00	1.00	1.56	0.41		1.23	1.11	
Incremental Delay, d2	0.7	0.0			0.9	146.1	0.6	21.0		4.6	1.5	
Delay (s)	45.2	41.4			47.5	201.6	26.0	33.9		63.1	21.7	
Level of Service	D	D			D	F	C	C		E	C	
Approach Delay (s)		44.1			173.6			33.7			25.1	
Approach LOS		D			F			C			C	
<b>Intersection Summary</b>												
HCM Average Control Delay			56.9				HCM Level of Service				E	
HCM Volume to Capacity ratio			1.05									
Actuated Cycle Length (s)			150.0				Sum of lost time (s)				9.0	
Intersection Capacity Utilization			110.0%				ICU Level of Service				H	
Analysis Period (min)			15									
c Critical Lane Group												





HCM Signalized Intersection Capacity Analysis  
 814: Paint Branch Pkwy & Metro Parking Garage

Purple Line (UMD)  
 7/30/2008

	→	↘	↙	←	↖	↗
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑	↑	↘	↑↑	↘	↑
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0			4.0		
Lane Util. Factor	0.95			0.95		
Frt	1.00			1.00		
Flt Protected	1.00			1.00		
Satd. Flow (prot)	3539			3539		
Flt Permitted	1.00			1.00		
Satd. Flow (perm)	3539			3539		
Volume (vph)	1282	0	0	849	0	0
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	1393	0	0	923	0	0
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	1393	0	0	923	0	0
Turn Type		Perm	pm+pt			pm+ov
Protected Phases	2		1	6	8	1
Permitted Phases		2	6			8
Actuated Green, G (s)	120.0			120.0		
Effective Green, g (s)	120.0			120.0		
Actuated g/C Ratio	1.00			1.00		
Clearance Time (s)	4.0			4.0		
Vehicle Extension (s)	3.0			3.0		
Lane Grp Cap (vph)	3539			3539		
v/s Ratio Prot	c0.39			0.26		
v/s Ratio Perm						
v/c Ratio	0.39			0.26		
Uniform Delay, d1	0.0			0.0		
Progression Factor	1.00			1.00		
Incremental Delay, d2	0.3			0.2		
Delay (s)	0.3			0.2		
Level of Service	A			A		
Approach Delay (s)	0.3			0.2	0.0	
Approach LOS	A			A	A	

Intersection Summary

HCM Average Control Delay	0.3	HCM Level of Service	A
HCM Volume to Capacity ratio	0.39		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	0.0
Intersection Capacity Utilization	38.8%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

# HCM Signalized Intersection Capacity Analysis

## 815: Paint Branch Pkwy & River Road

Purple Line (UMD)  
11/5/2007

	→	↘	↙	←	↖	↗
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑	↑	↑↑	↑↑	↑↑	↑
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	2.0	2.0	2.0	2.0	2.0	2.0
Lane Util. Factor	0.95	1.00	0.97	0.95	0.97	1.00
Frbp, ped/bikes	1.00	0.98	1.00	1.00	1.00	0.98
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (prot)	3539	1548	3432	3539	3430	1548
Flt Permitted	1.00	1.00	0.13	1.00	0.95	1.00
Satd. Flow (perm)	3539	1548	458	3539	3430	1548
Volume (vph)	989	304	50	568	186	277
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	989	304	50	568	186	277
RTOR Reduction (vph)	0	181	0	0	0	157
Lane Group Flow (vph)	989	123	50	568	186	120
Confl. Peds. (#/hr)		12	12		1	12
Turn Type		Perm	pm+pt		custom	
Protected Phases	4		3	8		
Permitted Phases		4	8		2	2
Actuated Green, G (s)	28.3	28.3	37.1	37.1	31.1	31.1
Effective Green, g (s)	32.3	32.3	41.1	41.1	34.6	34.6
Actuated g/C Ratio	0.41	0.41	0.52	0.52	0.43	0.43
Clearance Time (s)	6.0	6.0	5.5	6.0	5.5	5.5
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	1434	627	490	1825	1489	672
v/s Ratio Prot	c0.28		0.01	c0.16		
v/s Ratio Perm		0.08	0.04		0.05	c0.08
v/c Ratio	0.69	0.20	0.10	0.31	0.12	0.18
Uniform Delay, d1	19.6	15.3	11.9	11.1	13.5	13.8
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	1.4	0.2	0.1	0.1	0.2	0.6
Delay (s)	21.0	15.5	12.0	11.2	13.7	14.4
Level of Service	C	B	B	B	B	B
Approach Delay (s)	19.7			11.3	14.1	
Approach LOS	B			B	B	
<b>Intersection Summary</b>						
HCM Average Control Delay		16.4		HCM Level of Service		B
HCM Volume to Capacity ratio		0.41		Sum of lost time (s)		6.0
Actuated Cycle Length (s)		79.7		ICU Level of Service		B
Intersection Capacity Utilization		56.5%				
Analysis Period (min)		15				
c Critical Lane Group						

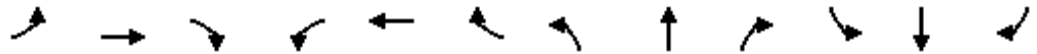
2030 Medium BRT

HCS Results

# HCM Signalized Intersection Capacity Analysis

## 3: Purple Line & 16th Street

6/10/2008















Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑			↑			↑↑↑			↑↑↑	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0			4.0			4.0	
Lane Util. Factor		1.00			1.00			0.91			0.91	
Frt		1.00			1.00			1.00			1.00	
Flt Protected		1.00			1.00			1.00			1.00	
Satd. Flow (prot)		950			950			4848			4848	
Flt Permitted		1.00			1.00			1.00			1.00	
Satd. Flow (perm)		950			950			4848			4848	
Volume (vph)	0	10	0	0	10	0	0	1015	0	0	2290	0
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	11	0	0	11	0	0	1068	0	0	2411	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	11	0	0	11	0	0	1068	0	0	2411	0
Heavy Vehicles (%)	2%	100%	2%	2%	100%	2%	7%	7%	7%	7%	7%	7%
<b>Turn Type</b>												
Protected Phases		4			8			2			6	
Permitted Phases												
Actuated Green, G (s)		3.0			3.0			101.0			101.0	
Effective Green, g (s)		9.0			9.0			103.0			103.0	
Actuated g/C Ratio		0.08			0.08			0.86			0.86	
Clearance Time (s)		10.0			10.0			6.0			6.0	
Vehicle Extension (s)		3.0			3.0			3.0			3.0	
Lane Grp Cap (vph)		71			71			4161			4161	
v/s Ratio Prot		c0.01			0.01			0.22			c0.50	
v/s Ratio Perm												
v/c Ratio		0.15			0.15			0.26			0.58	
Uniform Delay, d1		51.9			51.9			1.5			2.4	
Progression Factor		1.00			1.00			1.00			1.00	
Incremental Delay, d2		1.0			1.0			0.1			0.6	
Delay (s)		53.0			53.0			1.7			3.0	
Level of Service		D			D			A			A	
Approach Delay (s)		53.0			53.0			1.7			3.0	
Approach LOS		D			D			A			A	
<b>Intersection Summary</b>												
HCM Average Control Delay			2.9				HCM Level of Service				A	
HCM Volume to Capacity ratio			0.55									
Actuated Cycle Length (s)			120.0				Sum of lost time (s)			8.0		
Intersection Capacity Utilization			63.4%				ICU Level of Service				B	
Analysis Period (min)			15									

c Critical Lane Group

# HCM Signalized Intersection Capacity Analysis

## 3: Purple Line & 16th Street

6/10/2008

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑			↑			↑↑↑			↑↑↑	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0			4.0			4.0	
Lane Util. Factor		1.00			1.00			0.91			0.91	
Frt		1.00			1.00			1.00			1.00	
Flt Protected		1.00			1.00			1.00			1.00	
Satd. Flow (prot)		950			950			4940			4940	
Flt Permitted		1.00			1.00			1.00			1.00	
Satd. Flow (perm)		950			950			4940			4940	
Volume (vph)	0	10	0	0	10	0	0	2280	0	0	1110	0
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	11	0	0	11	0	0	2400	0	0	1168	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	11	0	0	11	0	0	2400	0	0	1168	0
Heavy Vehicles (%)	2%	100%	2%	2%	100%	2%	5%	5%	5%	5%	5%	5%
<b>Turn Type</b>												
Protected Phases		4			8			2			6	
Permitted Phases												
Actuated Green, G (s)		3.0			3.0			101.0			101.0	
Effective Green, g (s)		9.0			9.0			103.0			103.0	
Actuated g/C Ratio		0.08			0.08			0.86			0.86	
Clearance Time (s)		10.0			10.0			6.0			6.0	
Vehicle Extension (s)		3.0			3.0			3.0			3.0	
Lane Grp Cap (vph)		71			71			4240			4240	
v/s Ratio Prot		c0.01			0.01			c0.49			0.24	
v/s Ratio Perm												
v/c Ratio		0.15			0.15			0.57			0.28	
Uniform Delay, d1		51.9			51.9			2.3			1.6	
Progression Factor		1.00			1.00			1.00			1.00	
Incremental Delay, d2		1.0			1.0			0.6			0.2	
Delay (s)		53.0			53.0			2.9			1.7	
Level of Service		D			D			A			A	
Approach Delay (s)		53.0			53.0			2.9			1.7	
Approach LOS		D			D			A			A	
<b>Intersection Summary</b>												
HCM Average Control Delay			2.8				HCM Level of Service				A	
HCM Volume to Capacity ratio			0.53									
Actuated Cycle Length (s)			120.0				Sum of lost time (s)			8.0		
Intersection Capacity Utilization			63.2%				ICU Level of Service			B		
Analysis Period (min)			15									
c Critical Lane Group												

# HCM Signalized Intersection Capacity Analysis

9: Ellin Rd. & MD 410

6/11/2008



Movement	WBL	WBR	NBT	NBR	SBL2	SBL	SBT	NWL	NWR
Lane Configurations									
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0		4.0		4.0
Lane Util. Factor	0.97	1.00	0.95	1.00	1.00		0.91		1.00
Frt	1.00	0.85	1.00	0.85	1.00		1.00		0.86
Flt Protected	0.95	1.00	1.00	1.00	0.95		1.00		1.00
Satd. Flow (prot)	3303	1524	3406	1524	1703		4893		1550
Flt Permitted	0.95	1.00	1.00	1.00	0.95		1.00		1.00
Satd. Flow (perm)	3303	1524	3406	1524	1703		4893		1550
Volume (vph)	400	125	2150	740	225	0	1470	0	10
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Growth Factor (vph)	100%	100%	100%	100%	100%	100%	100%	100%	100%
Adj. Flow (vph)	421	132	2263	779	237	0	1547	0	11
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	421	132	2263	779	237	0	1547	0	11
Heavy Vehicles (%)	6%	6%	6%	6%	6%	6%	6%	6%	6%
Turn Type		Free		custom		Prot			custom
Protected Phases	4		2	1 4 6!	1!		6		3
Permitted Phases		Free							
Actuated Green, G (s)	10.0	110.0	62.0	94.0	12.0		79.0		1.0
Effective Green, g (s)	11.0	110.0	63.0	95.0	13.0		80.0		7.0
Actuated g/C Ratio	0.10	1.00	0.57	0.86	0.12		0.73		0.06
Clearance Time (s)	5.0		5.0		5.0		5.0		10.0
Vehicle Extension (s)	3.0		6.0		3.0		6.0		3.0
Lane Grp Cap (vph)	330	1524	1951	1316	201		3559		99
v/s Ratio Prot	c0.13		c0.66	0.51	c0.14		0.32		0.01
v/s Ratio Perm		c0.09							
v/c Ratio	1.28	0.09	1.16	0.59	1.18		0.43		0.11
Uniform Delay, d1	49.5	0.0	23.5	2.1	48.5		6.0		48.6
Progression Factor	1.00	1.00	0.66	0.68	1.00		1.00		1.00
Incremental Delay, d2	145.6	0.1	74.9	0.3	120.1		0.4		0.5
Delay (s)	195.1	0.1	90.4	1.8	168.6		6.4		49.1
Level of Service	F	A	F	A	F		A		D
Approach Delay (s)	148.6		67.7				27.9	49.1	
Approach LOS	F		E				C	D	

## Intersection Summary

HCM Average Control Delay	62.8	HCM Level of Service	E
HCM Volume to Capacity ratio	1.05		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	93.3%	ICU Level of Service	F
Analysis Period (min)	15		

! Phase conflict between lane groups.

c Critical Lane Group

# HCM Signalized Intersection Capacity Analysis

9: Ellin Rd. & MD 410

6/11/2008



Movement	WBL	WBR	NBT	NBR	SBL2	SBL	SBT	NWL	NWR
Lane Configurations									
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0		4.0		4.0
Lane Util. Factor	0.97	1.00	0.95	1.00	1.00		0.91		1.00
Frt	1.00	0.85	1.00	0.85	1.00		1.00		0.86
Flt Protected	0.95	1.00	1.00	1.00	0.95		1.00		1.00
Satd. Flow (prot)	3400	1568	3505	1568	1752		5036		822
Flt Permitted	0.95	1.00	1.00	1.00	0.95		1.00		1.00
Satd. Flow (perm)	3400	1568	3505	1568	1752		5036		822
Volume (vph)	745	80	1515	295	130	0	1865	0	10
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Growth Factor (vph)	100%	100%	100%	100%	100%	100%	100%	100%	100%
Adj. Flow (vph)	784	84	1595	311	137	0	1963	0	11
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	784	84	1595	311	137	0	1963	0	11
Heavy Vehicles (%)	3%	3%	3%	3%	3%	100%	3%	3%	100%
Turn Type		Free		custom		Prot			custom
Protected Phases	4			2 1 2 4 6!		1!		6	9
Permitted Phases		Free							
Actuated Green, G (s)	26.0	120.0	62.0	108.0	10.0		77.0		2.0
Effective Green, g (s)	27.0	120.0	63.0	109.0	11.0		78.0		3.0
Actuated g/C Ratio	0.22	1.00	0.52	0.91	0.09		0.65		0.02
Clearance Time (s)	5.0		5.0		5.0		5.0		5.0
Vehicle Extension (s)	3.0		6.0		3.0		6.0		3.0
Lane Grp Cap (vph)	765	1568	1840	1424	161		3273		21
v/s Ratio Prot	c0.23		c0.46	0.20	c0.08		0.39		c0.01
v/s Ratio Perm		0.05							
v/c Ratio	1.02	0.05	0.87	0.22	0.85		0.60		0.52
Uniform Delay, d1	46.5	0.0	24.8	0.6	53.7		12.0		57.8
Progression Factor	1.00	1.00	0.48	0.49	1.00		1.00		1.00
Incremental Delay, d2	39.0	0.1	5.5	0.1	32.6		0.8		21.6
Delay (s)	85.5	0.1	17.4	0.4	86.3		12.9		79.4
Level of Service	F	A	B	A	F		B		E
Approach Delay (s)	77.2		14.6				17.7	79.4	
Approach LOS	E		B				B	E	

## Intersection Summary

HCM Average Control Delay	27.2	HCM Level of Service	C
HCM Volume to Capacity ratio	0.90		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	81.5%	ICU Level of Service	D
Analysis Period (min)	15		

! Phase conflict between lane groups.

c Critical Lane Group



HCM Signalized Intersection Capacity Analysis  
 18: Chevy Chase Lake Dr & MD 185

6/10/2008



Movement	WBL2	WBL	WBR	NBL	NBT	NBR2	SBL	SBT	NET	SWT
Lane Configurations	↙	↙↘		↙	↑↑↑		↙	↑↑↑↘	↑	↑
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0			4.0		4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	1.00			0.91		1.00	0.91	1.00	1.00
Frt	1.00	0.85			1.00		1.00	1.00	1.00	1.00
Flt Protected	0.95	1.00			1.00		0.95	1.00	1.00	1.00
Satd. Flow (prot)	1787	1599			4918		1719	4940	950	950
Flt Permitted	0.95	1.00			1.00		0.07	1.00	1.00	1.00
Satd. Flow (perm)	1787	1599			4918		132	4940	950	950
Volume (vph)	35	0	40	0	1805	55	85	3105	10	10
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	37	0	42	0	1900	58	89	3268	11	11
RTOR Reduction (vph)	0	0	0	0	2	0	0	0	0	0
Lane Group Flow (vph)	37	42	0	0	1956	0	89	3268	11	11
Heavy Vehicles (%)	1%	1%	1%	5%	5%	5%	5%	5%	100%	100%
Turn Type	Split		Perm			pm+pt				
Protected Phases	8	8			6		5	2	7	7
Permitted Phases				6			2			
Actuated Green, G (s)	6.3	6.3			105.1		117.7	117.7	6.0	6.0
Effective Green, g (s)	7.3	7.3			106.1		118.7	118.7	12.0	12.0
Actuated g/C Ratio	0.05	0.05			0.71		0.79	0.79	0.08	0.08
Clearance Time (s)	5.0	5.0			5.0		5.0	5.0	10.0	10.0
Vehicle Extension (s)	3.0	3.0			3.0		3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	87	78			3479		195	3909	76	76
v/s Ratio Prot	0.02	c0.03			0.40		0.03	c0.66	c0.01	0.01
v/s Ratio Perm							0.33			
v/c Ratio	0.43	0.54			0.56		0.46	0.84	0.14	0.14
Uniform Delay, d1	69.3	69.7			10.7		9.0	9.6	64.2	64.2
Progression Factor	1.00	1.00			0.62		1.27	1.66	1.00	1.00
Incremental Delay, d2	3.3	7.0			0.6		1.1	1.4	0.9	0.9
Delay (s)	72.6	76.7			7.2		12.5	17.4	65.1	65.1
Level of Service	E	E			A		B	B	E	E
Approach Delay (s)		74.8			7.2			17.3	65.1	65.1
Approach LOS		E			A			B	E	E

Intersection Summary			
HCM Average Control Delay	14.7	HCM Level of Service	B
HCM Volume to Capacity ratio	0.76		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	90.8%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis  
 18: Chevy Chase Lake Dr & MD 185

6/10/2008



Movement	WBL2	WBL	WBR	NBL	NBT	NBR2	SBL	SBT	NET	SWT
Lane Configurations	↙	↙↘		↙	↑↑↑		↙	↑↑↑↘	↑	↑
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0			4.0		4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	1.00			0.91		1.00	0.91	1.00	1.00
Frt	1.00	0.85			1.00		1.00	1.00	1.00	1.00
Flt Protected	0.95	1.00			1.00		0.95	1.00	1.00	1.00
Satd. Flow (prot)	1787	1599			5027		1752	5036	950	950
Flt Permitted	0.95	1.00			1.00		0.04	1.00	1.00	1.00
Satd. Flow (perm)	1787	1599			5027		66	5036	950	950
Volume (vph)	70	0	75	0	3315	40	55	2125	10	10
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	74	0	79	0	3489	42	58	2237	11	11
RTOR Reduction (vph)	0	0	0	0	1	0	0	0	0	0
Lane Group Flow (vph)	74	79	0	0	3530	0	58	2237	11	11
Heavy Vehicles (%)	1%	1%	1%	3%	3%	3%	3%	3%	100%	100%
Turn Type	Split		Perm			pm+pt				
Protected Phases	8	8			6		5	2	7	7
Permitted Phases				6			2			
Actuated Green, G (s)	9.1	9.1			106.3		114.9	114.9	6.0	6.0
Effective Green, g (s)	10.1	10.1			107.3		115.9	115.9	12.0	12.0
Actuated g/C Ratio	0.07	0.07			0.72		0.77	0.77	0.08	0.08
Clearance Time (s)	5.0	5.0			5.0		5.0	5.0	10.0	10.0
Vehicle Extension (s)	3.0	3.0			3.0		3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	120	108			3596		103	3891	76	76
v/s Ratio Prot	0.04	c0.05			c0.70		0.02	c0.44	c0.01	0.01
v/s Ratio Perm							0.42			
v/c Ratio	0.62	0.73			0.98		0.56	0.57	0.14	0.14
Uniform Delay, d1	68.1	68.6			20.4		44.3	7.0	64.2	64.2
Progression Factor	1.00	1.00			1.21		1.58	1.13	1.00	1.00
Incremental Delay, d2	9.1	22.3			10.6		6.7	0.6	0.9	0.9
Delay (s)	77.1	90.9			35.3		76.6	8.5	65.1	65.1
Level of Service	E	F			D		E	A	E	E
Approach Delay (s)		84.3			35.3			10.2	65.1	65.1
Approach LOS		F			D			B	E	E

Intersection Summary

HCM Average Control Delay	27.1	HCM Level of Service	C
HCM Volume to Capacity ratio	0.88		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	87.9%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

# HCM Signalized Intersection Capacity Analysis

## 2: MD 193 & Carroll Ave

6/10/2008



Movement	EBL2	EBL	EBT	EBR	WBT	WBR	NBL	NBT	NBR2	SBL	SBT	SBR
Lane Configurations	↖	↖	↗↗↗		↗↗↗		↖	↖		↖	↗	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	2.0	2.0	2.0		2.0		2.0	2.0		2.0	2.0	
Lane Util. Factor	1.00	1.00	0.91		0.91		1.00	1.00		1.00	1.00	
Frt	1.00	1.00	0.98		1.00		1.00	0.98		1.00	0.98	
Flt Protected	0.95	0.95	1.00		1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1703	902	4809		4869		1703	1760		1703	1748	
Flt Permitted	0.95	0.95	1.00		1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1703	902	4809		4869		1703	1760		1703	1748	
Volume (vph)	25	10	1650	215	1890	65	185	145	20	100	540	105
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	26	11	1737	226	1989	68	195	153	21	105	568	111
RTOR Reduction (vph)	0	0	14	0	0	0	0	4	0	0	6	0
Lane Group Flow (vph)	26	11	1949	0	2057	0	195	170	0	105	673	0
Heavy Vehicles (%)	6%	100%	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%
Turn Type	Prot	Split					Split			Split		
Protected Phases	1	6!	6		2!		3	3		4	4	
Permitted Phases												
Actuated Green, G (s)	3.0	48.0	48.0		40.0		23.0	23.0		31.0	31.0	
Effective Green, g (s)	6.0	52.0	52.0		44.0		27.0	27.0		35.0	35.0	
Actuated g/C Ratio	0.05	0.43	0.43		0.37		0.22	0.22		0.29	0.29	
Clearance Time (s)	5.0	6.0	6.0		6.0		6.0	6.0		6.0	6.0	
Vehicle Extension (s)	3.0	3.0	3.0		3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	85	391	2084		1785		383	396		497	510	
v/s Ratio Prot	0.02	0.01	c0.41		c0.42		c0.11	0.10		0.06	c0.39	
v/s Ratio Perm												
v/c Ratio	0.31	0.03	0.94		1.15		0.51	0.43		0.21	1.32	
Uniform Delay, d1	55.0	19.5	32.4		38.0		40.7	39.9		32.1	42.5	
Progression Factor	1.21	0.18	0.37		1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.7	0.0	3.6		75.5		1.1	0.8		0.2	157.4	
Delay (s)	67.4	3.6	15.6		113.5		41.8	40.6		32.3	199.9	
Level of Service	E	A	B		F		D	D		C	F	
Approach Delay (s)			16.2		113.5			41.2			177.5	
Approach LOS			B		F			D			F	

### Intersection Summary

HCM Average Control Delay	80.5	HCM Level of Service	F
HCM Volume to Capacity ratio	1.02		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	121.9%	ICU Level of Service	H
Analysis Period (min)	15		

! Phase conflict between lane groups.

c Critical Lane Group



Movement	SWR
Lane Configurations	↗
Ideal Flow (vphpl)	1900
Total Lost time (s)	2.0
Lane Util. Factor	1.00
Frt	0.86
Flt Protected	1.00
Satd. Flow (prot)	822
Flt Permitted	1.00
Satd. Flow (perm)	822
Volume (vph)	10
Peak-hour factor, PHF	0.95
Adj. Flow (vph)	11
RTOR Reduction (vph)	0
Lane Group Flow (vph)	11
Heavy Vehicles (%)	100%
Turn Type	custom
Protected Phases	2!
Permitted Phases	
Actuated Green, G (s)	40.0
Effective Green, g (s)	44.0
Actuated g/C Ratio	0.37
Clearance Time (s)	6.0
Vehicle Extension (s)	3.0
Lane Grp Cap (vph)	301
v/s Ratio Prot	0.01
v/s Ratio Perm	
v/c Ratio	0.04
Uniform Delay, d1	24.4
Progression Factor	1.00
Incremental Delay, d2	0.2
Delay (s)	24.6
Level of Service	C
Approach Delay (s)	
Approach LOS	
Intersection Summary	

# HCM Signalized Intersection Capacity Analysis

5: MD 193 & MD 320

6/10/2008



Movement	EBL2	EBT	EBR	WBL2	WBT	WBR	NBL	NBT	NBR2	SBL	SBT	SBR2
Lane Configurations	↖	↗↖↗		↖	↗↖↗		↖	↗↖		↖	↗↖	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lane Util. Factor	1.00	0.91		1.00	0.91		1.00	0.95		1.00	0.95	
Frt	1.00	0.99		1.00	1.00		1.00	0.94		1.00	0.95	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1703	4833		1703	4886		1703	3212		1703	3219	
Flt Permitted	0.95	1.00		0.95	1.00		0.09	1.00		0.40	1.00	
Satd. Flow (perm)	1703	4833		1703	4886		168	3212		722	3219	
Volume (vph)	245	1615	145	235	1925	20	213	360	220	30	950	545
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	258	1700	153	247	2026	21	224	379	232	32	1000	574
RTOR Reduction (vph)	0	0	0	0	0	0	0	74	0	0	66	0
Lane Group Flow (vph)	258	1853	0	247	2047	0	224	537	0	32	1508	0
Heavy Vehicles (%)	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%
Turn Type	Prot			Prot			pm+pt			pm+pt		
Protected Phases	5	2		1!	6!		3	8		7	4	
Permitted Phases							8			4		
Actuated Green, G (s)	12.0	38.4		13.0	39.4		48.8	48.8		44.6	43.6	
Effective Green, g (s)	14.0	41.4		15.0	42.4		51.8	51.8		46.6	46.6	
Actuated g/C Ratio	0.12	0.34		0.12	0.35		0.43	0.43		0.39	0.39	
Clearance Time (s)	4.0	5.0		4.0	5.0		4.0	5.0		4.0	5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	199	1667		213	1726		188	1387		311	1250	
v/s Ratio Prot	0.15	c0.38		0.15	c0.42		c0.09	0.17		0.00	c0.47	
v/s Ratio Perm							0.43			0.04		
v/c Ratio	1.30	1.11		1.16	1.19		1.19	0.39		0.10	1.21	
Uniform Delay, d1	53.0	39.3		52.5	38.8		57.7	23.3		24.6	36.7	
Progression Factor	1.00	1.00		0.70	0.56		1.00	1.00		1.00	1.00	
Incremental Delay, d2	165.3	59.3		77.0	84.3		126.7	0.8		0.1	100.6	
Delay (s)	218.3	98.6		113.5	105.9		184.4	24.1		24.8	137.3	
Level of Service	F	F		F	F		F	C		C	F	
Approach Delay (s)		113.2			106.7			67.1			135.1	
Approach LOS		F			F			E			F	

## Intersection Summary

HCM Average Control Delay	110.3	HCM Level of Service	F
HCM Volume to Capacity ratio	1.17		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	6.0
Intersection Capacity Utilization	134.6%	ICU Level of Service	H
Analysis Period (min)	15		

! Phase conflict between lane groups.

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis  
 5: MD 193 & MD 320

6/10/2008

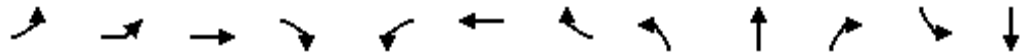


Movement	NER	SWL
Lane Configurations		
Ideal Flow (vphpl)	1900	1900
Total Lost time (s)	2.0	2.0
Lane Util. Factor	1.00	1.00
Frt	0.86	1.00
Flt Protected	1.00	0.95
Satd. Flow (prot)	822	902
Flt Permitted	1.00	0.95
Satd. Flow (perm)	822	902
Volume (vph)	10	10
Peak-hour factor, PHF	0.95	0.95
Adj. Flow (vph)	11	11
RTOR Reduction (vph)	0	0
Lane Group Flow (vph)	11	11
Heavy Vehicles (%)	100%	100%
Turn Type	custom	Prot
Protected Phases	1!	1!
Permitted Phases		
Actuated Green, G (s)	13.0	13.0
Effective Green, g (s)	15.0	15.0
Actuated g/C Ratio	0.12	0.12
Clearance Time (s)	4.0	4.0
Vehicle Extension (s)	3.0	3.0
Lane Grp Cap (vph)	103	113
v/s Ratio Prot	0.01	0.01
v/s Ratio Perm		
v/c Ratio	0.11	0.10
Uniform Delay, d1	46.6	46.5
Progression Factor	1.00	1.00
Incremental Delay, d2	0.5	0.4
Delay (s)	47.0	46.9
Level of Service	D	D
Approach Delay (s)		
Approach LOS		
Intersection Summary		

# HCM Signalized Intersection Capacity Analysis

## 14: MD 193 & MD 193 West SC

6/10/2008



Movement	EBL2	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR2	SBL	SBT
Lane Configurations	↔	↔	↔↔↔		↔	↔↔↔			↕	↕	↔	↔
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	2.0	2.0	2.0		2.0	2.0			2.0	2.0	2.0	2.0
Lane Util. Factor	1.00	1.00	0.91		1.00	0.91			1.00	1.00	1.00	1.00
Frt	1.00	1.00	1.00		1.00	1.00			1.00	0.85	1.00	0.89
Flt Protected	0.95	0.95	1.00		0.95	1.00			0.96	1.00	0.95	1.00
Satd. Flow (prot)	1703	902	4887		1703	4880			1814	1599	1787	1666
Flt Permitted	0.95	0.95	1.00		0.95	1.00			0.81	1.00	0.67	1.00
Satd. Flow (perm)	1703	902	4887		1703	4880			1526	1599	1263	1666
Volume (vph)	65	10	1690	15	25	1885	35	45	15	20	15	5
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	68	11	1779	16	26	1984	37	47	16	21	16	5
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	16	0	12
Lane Group Flow (vph)	68	11	1795	0	26	2021	0	0	63	5	16	9
Heavy Vehicles (%)	6%	100%	6%	6%	6%	6%	6%	1%	1%	1%	1%	1%
Turn Type	Prot	Split			Prot			Perm		Perm	Perm	
Protected Phases	5	2!	2		1	6!			3			3
Permitted Phases								3	3	3	3	
Actuated Green, G (s)	9.8	97.6	97.6		5.4	93.2			32.0	32.0	32.0	32.0
Effective Green, g (s)	12.8	100.6	100.6		8.4	96.2			35.0	35.0	35.0	35.0
Actuated g/C Ratio	0.09	0.67	0.67		0.06	0.64			0.23	0.23	0.23	0.23
Clearance Time (s)	5.0	5.0	5.0		5.0	5.0			5.0	5.0	5.0	5.0
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0			3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	145	605	3278		95	3130			356	373	295	389
v/s Ratio Prot	c0.04	0.01	0.37		0.02	c0.41						0.01
v/s Ratio Perm								c0.04	0.00	0.01		
v/c Ratio	0.47	0.02	0.55		0.27	0.65			0.18	0.01	0.05	0.02
Uniform Delay, d1	65.4	8.2	12.9		67.9	16.5			46.0	44.2	44.6	44.3
Progression Factor	1.00	1.00	1.00		1.42	0.29			1.00	1.00	1.00	1.00
Incremental Delay, d2	2.4	0.1	0.7		0.1	0.1			0.2	0.0	0.1	0.0
Delay (s)	67.7	8.3	13.5		96.2	4.9			46.2	44.2	44.7	44.3
Level of Service	E	A	B		F	A			D	D	D	D
Approach Delay (s)			15.5			6.1			45.7			44.5
Approach LOS			B			A			D			D

### Intersection Summary

HCM Average Control Delay	11.6	HCM Level of Service	B
HCM Volume to Capacity ratio	0.51		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	6.0
Intersection Capacity Utilization	79.7%	ICU Level of Service	D
Analysis Period (min)	15		

! Phase conflict between lane groups.

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis  
 14: MD 193 & MD 193 West SC

6/10/2008

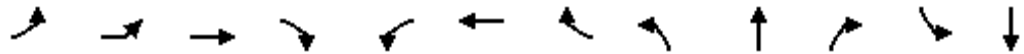


Movement	SBR	SWR
Lane Configurations		
Ideal Flow (vphpl)	1900	1900
Total Lost time (s)		2.0
Lane Util. Factor		1.00
Frt		0.86
Flt Protected		1.00
Satd. Flow (prot)		822
Flt Permitted		1.00
Satd. Flow (perm)		822
Volume (vph)	15	10
Peak-hour factor, PHF	0.95	0.95
Adj. Flow (vph)	16	11
RTOR Reduction (vph)	0	0
Lane Group Flow (vph)	0	11
Heavy Vehicles (%)	1%	100%
Turn Type	custom	
Protected Phases	6!	
Permitted Phases		
Actuated Green, G (s)	93.2	
Effective Green, g (s)	96.2	
Actuated g/C Ratio	0.64	
Clearance Time (s)	5.0	
Vehicle Extension (s)	3.0	
Lane Grp Cap (vph)	527	
v/s Ratio Prot	0.01	
v/s Ratio Perm		
v/c Ratio	0.02	
Uniform Delay, d1	9.8	
Progression Factor	1.00	
Incremental Delay, d2	0.1	
Delay (s)	9.9	
Level of Service	A	
Approach Delay (s)		
Approach LOS		
Intersection Summary		



HCM Signalized Intersection Capacity Analysis  
 15: MD 193 & MD 193 East SC

6/10/2008



Movement	EBL2	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR2	SBL	SBT
Lane Configurations	↖	↖	↑↑↑		↖	↑↑↑		↖	↑		↖	↖
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	2.0	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0
Lane Util. Factor	1.00	1.00	0.91		1.00	0.91		1.00	1.00		0.95	0.95
Frt	1.00	1.00	1.00		1.00	1.00		1.00	0.92		1.00	1.00
Flt Protected	0.95	0.95	1.00		0.95	1.00		0.95	1.00		0.95	0.96
Satd. Flow (prot)	1703	902	4874		1703	4878		1787	1740		1698	1712
Flt Permitted	0.95	0.95	1.00		0.95	1.00		0.72	1.00		0.75	0.81
Satd. Flow (perm)	1703	902	4874		1703	4878		1347	1740		1342	1450
Volume (vph)	30	10	1315	35	20	1905	40	5	5	5	65	5
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	32	11	1384	37	21	2005	42	5	5	5	68	5
RTOR Reduction (vph)	0	0	1	0	0	0	0	0	4	0	0	0
Lane Group Flow (vph)	32	11	1420	0	21	2047	0	5	6	0	34	39
Heavy Vehicles (%)	6%	100%	6%	6%	6%	6%	6%	1%	1%	1%	1%	1%
Turn Type	Prot	Split			Prot			Perm			Perm	
Protected Phases	1	6!	6		5	2!			3			3
Permitted Phases			6			2!		3	3		3	
Actuated Green, G (s)	5.8	97.2	97.2		5.8	97.2		32.0	32.0		32.0	32.0
Effective Green, g (s)	8.8	100.2	100.2		8.8	100.2		35.0	35.0		35.0	35.0
Actuated g/C Ratio	0.06	0.67	0.67		0.06	0.67		0.23	0.23		0.23	0.23
Clearance Time (s)	5.0	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	100	603	3256		100	3259		314	406		313	338
v/s Ratio Prot	c0.02	0.01	0.29		0.01	c0.42			0.00			
v/s Ratio Perm								0.00			0.03	c0.03
v/c Ratio	0.32	0.02	0.44		0.21	0.63		0.02	0.02		0.11	0.12
Uniform Delay, d1	67.7	8.4	11.7		67.3	14.2		44.2	44.2		45.2	45.3
Progression Factor	0.88	0.42	0.28		1.00	1.00		1.00	1.00		1.00	1.00
Incremental Delay, d2	0.2	0.0	0.0		1.0	0.9		0.0	0.0		0.2	0.2
Delay (s)	59.8	3.5	3.3		68.3	15.2		44.3	44.3		45.4	45.5
Level of Service	E	A	A		E	B		D	D		D	D
Approach Delay (s)			4.5			15.7			44.3			45.2
Approach LOS			A			B			D			D

Intersection Summary

HCM Average Control Delay	12.0	HCM Level of Service	B
HCM Volume to Capacity ratio	0.48		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	6.0
Intersection Capacity Utilization	92.7%	ICU Level of Service	F
Analysis Period (min)	15		

! Phase conflict between lane groups.

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis  
 15: MD 193 & MD 193 East SC

6/10/2008

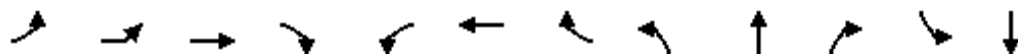


Movement	SBR	SWR
Lane Configurations	↗	↗
Ideal Flow (vphpl)	1900	1900
Total Lost time (s)	2.0	2.0
Lane Util. Factor	1.00	1.00
Frt	0.85	0.86
Flt Protected	1.00	1.00
Satd. Flow (prot)	1599	822
Flt Permitted	1.00	1.00
Satd. Flow (perm)	1599	822
Volume (vph)	15	10
Peak-hour factor, PHF	0.95	0.95
Adj. Flow (vph)	16	11
RTOR Reduction (vph)	12	0
Lane Group Flow (vph)	4	11
Heavy Vehicles (%)	1%	100%
Turn Type	Perm custom	
Protected Phases	2!	
Permitted Phases	3	
Actuated Green, G (s)	32.0	97.2
Effective Green, g (s)	35.0	100.2
Actuated g/C Ratio	0.23	0.67
Clearance Time (s)	5.0	5.0
Vehicle Extension (s)	3.0	3.0
Lane Grp Cap (vph)	373	549
v/s Ratio Prot	0.01	
v/s Ratio Perm	0.00	
v/c Ratio	0.01	0.02
Uniform Delay, d1	44.2	8.4
Progression Factor	1.00	1.00
Incremental Delay, d2	0.0	0.1
Delay (s)	44.2	8.4
Level of Service	D	A
Approach Delay (s)		
Approach LOS		
Intersection Summary		

# HCM Signalized Intersection Capacity Analysis

91: MD 193 & MD 212

6/10/2008



Movement	EBL2	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR2	SBL	SBT
Lane Configurations	↖	↖	↗↗↗	↗	↖↖	↖↖↖		↖↖	↑	↗	↖	↖↖
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	2.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0
Lane Util. Factor	1.00	1.00	0.91	1.00	0.97	0.91		0.97	1.00	1.00	1.00	0.95
Frt	1.00	1.00	1.00	0.85	1.00	0.99		1.00	1.00	0.85	1.00	0.98
Flt Protected	0.95	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00
Satd. Flow (prot)	1703	902	4893	1524	3303	4825		3303	1792	1524	1703	3322
Flt Permitted	0.95	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00
Satd. Flow (perm)	1703	902	4893	1524	3303	4825		3303	1792	1524	1703	3322
Volume (vph)	80	10	875	555	720	1220	125	780	520	395	155	485
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	84	11	921	584	758	1284	132	821	547	416	163	511
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	251	0	13
Lane Group Flow (vph)	84	11	921	584	758	1416	0	821	547	165	163	598
Heavy Vehicles (%)	6%	100%	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%
Turn Type	Prot	Split		Free	Prot			Split		Perm	Split	
Protected Phases	1	6!	6		5	2!		4	4		3	3
Permitted Phases				Free						4		
Actuated Green, G (s)	6.0	20.0	20.0	120.0	25.0	39.0		34.0	34.0	34.0	19.0	19.0
Effective Green, g (s)	8.0	25.0	24.0	120.0	27.0	43.0		36.0	36.0	36.0	21.0	21.0
Actuated g/C Ratio	0.07	0.21	0.20	1.00	0.22	0.36		0.30	0.30	0.30	0.18	0.18
Clearance Time (s)	5.0	7.0	7.0		5.0	7.0		5.0	5.0	5.0	5.0	5.0
Vehicle Extension (s)	2.5	5.0	5.0		2.5	5.0		2.5	2.5	2.5	2.5	2.5
Lane Grp Cap (vph)	114	188	979	1524	743	1729		991	538	457	298	581
v/s Ratio Prot	0.05	0.01	c0.19		c0.23	0.29		0.25	c0.31		0.10	c0.18
v/s Ratio Perm				0.38						0.11		
v/c Ratio	0.74	0.06	0.94	0.38	1.02	0.82		0.83	1.02	0.36	0.55	1.03
Uniform Delay, d1	55.0	38.1	47.3	0.0	46.5	35.0		39.1	42.0	33.0	45.2	49.5
Progression Factor	1.05	0.79	0.91	1.00	1.20	0.82		1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	19.5	0.6	16.8	0.7	34.5	3.6		5.7	43.1	0.4	1.6	44.9
Delay (s)	77.1	30.6	59.9	0.7	90.3	32.1		44.8	85.1	33.3	46.8	94.4
Level of Service	E	C	E	A	F	C		D	F	C	D	F
Approach Delay (s)			39.0			52.4			54.5			84.4
Approach LOS			D			D			D			F

## Intersection Summary

HCM Average Control Delay	53.5	HCM Level of Service	D
HCM Volume to Capacity ratio	1.00		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	102.8%	ICU Level of Service	G
Analysis Period (min)	15		

! Phase conflict between lane groups.

c Critical Lane Group

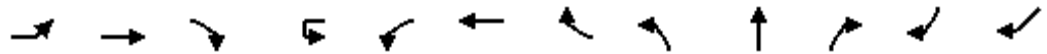


Movement	SBR	SWR
<b>Lane Configurations</b>		
Ideal Flow (vphpl)	1900	1900
Total Lost time (s)		2.0
Lane Util. Factor		1.00
Frt		0.86
Flt Protected		1.00
Satd. Flow (prot)		822
Flt Permitted		1.00
Satd. Flow (perm)		822
Volume (vph)	95	10
Peak-hour factor, PHF	0.95	0.95
Adj. Flow (vph)	100	11
RTOR Reduction (vph)	0	0
Lane Group Flow (vph)	0	11
Heavy Vehicles (%)	6%	100%
Turn Type	custom	
Protected Phases	2!	
Permitted Phases		
Actuated Green, G (s)	39.0	
Effective Green, g (s)	44.0	
Actuated g/C Ratio	0.37	
Clearance Time (s)	7.0	
Vehicle Extension (s)	5.0	
Lane Grp Cap (vph)	301	
v/s Ratio Prot	0.01	
v/s Ratio Perm		
v/c Ratio	0.04	
Uniform Delay, d1	24.4	
Progression Factor	1.00	
Incremental Delay, d2	0.2	
Delay (s)	24.6	
Level of Service	C	
Approach Delay (s)		
Approach LOS		
<b>Intersection Summary</b>		

# HCM Signalized Intersection Capacity Analysis

105: MD 193 & 23rd Ave

6/10/2008



Movement	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR2	SBR	SWR
Lane Configurations	↖	↑↑↑			↗	↑↑↑			↑	↗	↖	↖
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	2.0	3.0			3.0	3.0			3.0	3.0	3.0	2.0
Lane Util. Factor	1.00	0.91			1.00	0.91			1.00	1.00	1.00	1.00
Frt	1.00	0.98			1.00	1.00			1.00	0.85	0.86	0.86
Flt Protected	0.95	1.00			0.95	1.00			0.95	1.00	1.00	1.00
Satd. Flow (prot)	902	4817			1703	4878			1796	1599	1627	822
Flt Permitted	0.95	1.00			0.30	1.00			0.95	1.00	1.00	1.00
Satd. Flow (perm)	902	4817			535	4878			1796	1599	1627	822
Volume (vph)	10	1200	140	30	105	1925	40	200	10	115	5	10
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	11	1263	147	32	111	2026	42	211	11	121	5	11
RTOR Reduction (vph)	0	24	0	0	0	0	0	0	0	92	3	0
Lane Group Flow (vph)	11	1386	0	0	143	2068	0	0	222	29	2	11
Heavy Vehicles (%)	100%	6%	6%	6%	6%	6%	6%	1%	1%	1%	1%	100%
Turn Type	Split			custom	Prot			Perm			Perm custom custom	
Protected Phases	6!	6			5	2!			4			2!
Permitted Phases		6		5				4		4	6	
Actuated Green, G (s)	20.0	20.0			11.4	36.4			11.6	11.6	20.0	36.4
Effective Green, g (s)	24.0	23.0			13.4	39.4			14.6	14.6	23.0	40.4
Actuated g/C Ratio	0.40	0.38			0.22	0.66			0.24	0.24	0.38	0.67
Clearance Time (s)	6.0	6.0			5.0	6.0			6.0	6.0	6.0	6.0
Vehicle Extension (s)	5.0	5.0			3.0	5.0			3.0	3.0	5.0	5.0
Lane Grp Cap (vph)	361	1847			119	3203			437	389	624	553
v/s Ratio Prot	0.01	c0.29				0.42						0.01
v/s Ratio Perm					c0.27				0.12	0.02	0.00	
v/c Ratio	0.03	0.75			1.20	0.65			0.51	0.08	0.00	0.02
Uniform Delay, d1	10.9	16.0			23.3	6.1			19.6	17.5	11.4	3.2
Progression Factor	0.63	0.65			1.35	0.92			1.00	1.00	1.00	1.00
Incremental Delay, d2	0.1	1.8			130.0	0.6			0.9	0.1	0.0	0.1
Delay (s)	7.0	12.2			161.4	6.3			20.5	17.6	11.4	3.3
Level of Service	A	B			F	A			C	B	B	A
Approach Delay (s)		12.2				16.3			19.5			
Approach LOS		B				B			B			

## Intersection Summary

HCM Average Control Delay	15.1	HCM Level of Service	B
HCM Volume to Capacity ratio	0.80		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	96.4%	ICU Level of Service	F
Analysis Period (min)	15		

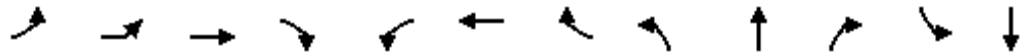
! Phase conflict between lane groups.

c Critical Lane Group

# HCM Signalized Intersection Capacity Analysis

107: MD 193 & W Park Dr

6/10/2008



Movement	EBL2	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR2	SBL	SBT
Lane Configurations	↖	↖	↕	↗	↖	↕	↗	↖	↕		↖	↗
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	2.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0
Lane Util. Factor	1.00	1.00	0.95	1.00	1.00	0.95		1.00	1.00		1.00	1.00
Frt	1.00	1.00	1.00	0.85	1.00	1.00		1.00	0.87		1.00	0.90
Flt Protected	0.95	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00
Satd. Flow (prot)	1703	902	3406	1524	1703	3398		1787	1632		1787	1687
Flt Permitted	0.95	0.95	1.00	1.00	0.95	1.00		0.75	1.00		0.53	1.00
Satd. Flow (perm)	1703	902	3406	1524	1703	3398		1405	1632		1001	1687
Volume (vph)	25	10	1235	25	50	2070	30	20	10	80	30	5
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	26	11	1300	26	53	2179	32	21	11	84	32	5
RTOR Reduction (vph)	0	0	0	7	0	0	0	0	75	0	0	10
Lane Group Flow (vph)	26	11	1300	19	53	2211	0	21	20	0	32	6
Heavy Vehicles (%)	6%	100%	6%	6%	6%	6%	6%	1%	1%	1%	1%	1%
Turn Type	Prot	Split		Perm	Prot			Perm			Perm	
Protected Phases	1	6!	6		5	2!			8			4
Permitted Phases				6				8			4	
Actuated Green, G (s)	4.3	86.2	86.2	86.2	7.1	89.0		9.7	9.7		9.7	9.7
Effective Green, g (s)	6.3	90.2	89.2	89.2	9.1	92.0		12.7	12.7		12.7	12.7
Actuated g/C Ratio	0.05	0.75	0.74	0.74	0.08	0.77		0.11	0.11		0.11	0.11
Clearance Time (s)	5.0	6.0	6.0	6.0	5.0	6.0		6.0	6.0		6.0	6.0
Vehicle Extension (s)	3.0	5.0	5.0	5.0	3.0	5.0		3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	89	678	2532	1133	129	2605		149	173		106	179
v/s Ratio Prot	0.02	0.01	0.38		c0.03	c0.65			0.01			0.00
v/s Ratio Perm				0.01				0.01			c0.03	
v/c Ratio	0.29	0.02	0.51	0.02	0.41	0.85		0.14	0.11		0.30	0.03
Uniform Delay, d1	54.7	3.7	6.4	4.0	52.9	9.4		48.7	48.6		49.6	48.1
Progression Factor	1.10	0.25	0.48	0.00	1.00	1.00		1.00	1.00		1.00	1.00
Incremental Delay, d2	1.4	0.0	0.6	0.0	2.1	3.7		0.4	0.3		1.6	0.1
Delay (s)	61.5	1.0	3.7	0.0	55.0	13.0		49.1	48.9		51.2	48.2
Level of Service	E	A	A	A	E	B		D	D		D	D
Approach Delay (s)			4.7			14.0			48.9			50.2
Approach LOS			A			B			D			D

## Intersection Summary

HCM Average Control Delay	12.2	HCM Level of Service	B
HCM Volume to Capacity ratio	0.76		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	93.2%	ICU Level of Service	F
Analysis Period (min)	15		

! Phase conflict between lane groups.

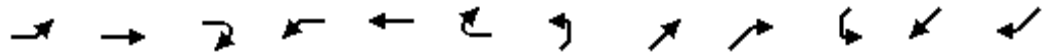
c Critical Lane Group



Movement	SBR	SWR
Lane Configurations		
Ideal Flow (vphpl)	1900	1900
Total Lost time (s)		2.0
Lane Util. Factor		1.00
Frt		0.86
Flt Protected		1.00
Satd. Flow (prot)		822
Flt Permitted		1.00
Satd. Flow (perm)		822
Volume (vph)	10	10
Peak-hour factor, PHF	0.95	0.95
Adj. Flow (vph)	11	11
RTOR Reduction (vph)	0	0
Lane Group Flow (vph)	0	11
Heavy Vehicles (%)	1%	100%
Turn Type	custom	
Protected Phases	2!	
Permitted Phases		
Actuated Green, G (s)	89.0	
Effective Green, g (s)	93.0	
Actuated g/C Ratio	0.78	
Clearance Time (s)	6.0	
Vehicle Extension (s)	5.0	
Lane Grp Cap (vph)	637	
v/s Ratio Prot	0.01	
v/s Ratio Perm		
v/c Ratio	0.02	
Uniform Delay, d1	3.1	
Progression Factor	1.00	
Incremental Delay, d2	0.0	
Delay (s)	3.1	
Level of Service	A	
Approach Delay (s)		
Approach LOS		
Intersection Summary		

HCM Signalized Intersection Capacity Analysis  
 109: MD 193 & Campus Dr.

6/10/2008
































Movement	EBL	EBT	EBR	WBL	WBT	WBR	NEL	NET	NER	SWL	SWT	SWR	
Lane Configurations	↔↔	↑		↔	↑↑				↔			↔↔	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)	3.0	3.0		2.0	3.0				2.0			3.0	
Lane Util. Factor	0.97	1.00		1.00	0.95				1.00			0.88	
Frt	1.00	1.00		1.00	1.00				0.86			0.85	
Flt Protected	0.95	1.00		0.95	1.00				1.00			1.00	
Satd. Flow (prot)	3303	1792		902	3406				822			2682	
Flt Permitted	0.95	1.00		0.95	1.00				1.00			1.00	
Satd. Flow (perm)	3303	1792		902	3406				822			2682	
Volume (vph)	955	410	0	10	530	0	0	0	10	0	0	1590	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	
Adj. Flow (vph)	1005	432	0	11	558	0	0	0	11	0	0	1674	
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	108	
Lane Group Flow (vph)	1005	432	0	11	558	0	0	0	11	0	0	1566	
Heavy Vehicles (%)	6%	6%	6%	100%	6%	6%	6%	6%	100%	6%	6%	6%	
Turn Type	Free			Prot									
Protected Phases	1 2 5 6			3 4!	3 4				3 4!			1 2 5 6	
Permitted Phases	Free!												
Actuated Green, G (s)	145.4	247.4		90.0	90.0				90.0			145.4	
Effective Green, g (s)	148.4	247.4		94.0	93.0				94.0			148.4	
Actuated g/C Ratio	0.60	1.00		0.38	0.38				0.38			0.60	
Clearance Time (s)													
Vehicle Extension (s)													
Lane Grp Cap (vph)	1981	1792		343	1280				312			1609	
v/s Ratio Prot	0.30			0.01	c0.16				0.01			c0.58	
v/s Ratio Perm		0.24											
v/c Ratio	0.51	0.24		0.03	0.44				0.04			0.97	
Uniform Delay, d1	28.5	0.0		48.1	57.6				48.2			47.6	
Progression Factor	1.00	1.00		0.18	0.28				1.00			0.60	
Incremental Delay, d2	0.2	0.3		0.0	0.1				0.0			2.8	
Delay (s)	28.7	0.3		8.5	16.3				48.2			31.3	
Level of Service	C	A		A	B				D			C	
Approach Delay (s)		20.2			16.1			48.2			31.3		
Approach LOS		C			B			D			C		
<b>Intersection Summary</b>													
HCM Average Control Delay	24.7			HCM Level of Service					C				
HCM Volume to Capacity ratio	0.77												
Actuated Cycle Length (s)	247.4			Sum of lost time (s)					6.0				
Intersection Capacity Utilization	76.9%			ICU Level of Service					D				
Analysis Period (min)	15												
! Phase conflict between lane groups.													
c Critical Lane Group													



# HCM Signalized Intersection Capacity Analysis

111: MD 193 & Adelphi Rd.













6/10/2008

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		 		 	 			  			  	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0		3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0
Lane Util. Factor	1.00	0.95		0.97	0.95	1.00		0.91	1.00	1.00	0.91	1.00
Frt	1.00	1.00		1.00	1.00	0.85		1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00		1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1703	3406		3303	3406	1524		4893	1524	1703	4893	1524
Flt Permitted	0.95	1.00		0.95	1.00	1.00		1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1703	3406		3303	3406	1524		4893	1524	1703	4893	1524
Volume (vph)	120	830	0	645	1510	170	0	775	430	240	1130	80
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	126	874	0	679	1589	179	0	816	453	253	1189	84
RTOR Reduction (vph)	0	0	0	0	0	65	0	0	0	0	0	42
Lane Group Flow (vph)	126	874	0	679	1589	114	0	816	453	253	1189	42
Heavy Vehicles (%)	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%
Turn Type	Prot		Prot		Perm		Free		Prot		Perm	
Protected Phases	6	2 6		1	5			4		3	7 8	
Permitted Phases						5		4	Free			7 8
Actuated Green, G (s)	34.4	89.4		51.0	105.0	105.0		51.0	247.4	34.0	92.0	92.0
Effective Green, g (s)	37.4	92.4		53.0	108.0	108.0		54.0	247.4	36.0	93.0	93.0
Actuated g/C Ratio	0.15	0.37		0.21	0.44	0.44		0.22	1.00	0.15	0.38	0.38
Clearance Time (s)	6.0			5.0	6.0	6.0		6.0		5.0		
Vehicle Extension (s)	3.0			3.0	4.0	4.0		3.5		3.0		
Lane Grp Cap (vph)	257	1272		708	1487	665		1068	1524	248	1839	573
v/s Ratio Prot	0.07	c0.26		0.21	c0.47			c0.17		c0.15	0.24	
v/s Ratio Perm						0.07			0.30			0.03
v/c Ratio	0.49	0.69		0.96	1.07	0.17		0.76	0.30	1.02	0.65	0.07
Uniform Delay, d1	96.3	65.3		96.1	69.7	42.4		90.7	0.0	105.7	63.6	49.6
Progression Factor	0.70	0.56		1.00	1.00	1.00		0.32	1.00	1.00	1.00	1.00
Incremental Delay, d2	1.3	1.5		23.9	44.1	0.2		1.9	0.3	62.4	0.8	0.1
Delay (s)	68.9	38.3		120.0	113.8	42.6		30.5	0.3	168.1	64.4	49.6
Level of Service	E	D		F	F	D		C	A	F	E	D
Approach Delay (s)		42.1			110.3			19.7			80.8	
Approach LOS		D			F			B			F	
<b>Intersection Summary</b>												
HCM Average Control Delay			73.8	HCM Level of Service				E				
HCM Volume to Capacity ratio			0.93									
Actuated Cycle Length (s)			247.4	Sum of lost time (s)				9.0				
Intersection Capacity Utilization			91.7%	ICU Level of Service				F				
Analysis Period (min)			15									

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis  
 113: Campus Dr. & Adelphi Rd.

6/10/2008

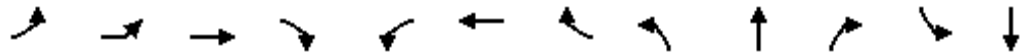
												
Movement	EBT	EBR	EBR2	WBT	NBL	NBT	NBR2	SBL	SBT	NWL2	NWL	NWR
Lane Configurations	↑	↗	↗	↑	↘	↑↑↑	↗	↘↘	↑↑		↘↘	↗
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	2.0	3.0	3.0	2.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	0.91	1.00	0.97	0.95		0.97	1.00
Frt	1.00	0.85	0.85	1.00	1.00	1.00	0.85	1.00	1.00		1.00	0.85
Flt Protected	1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00
Satd. Flow (prot)	950	1524	1524	950	1703	4893	1524	3303	3406		3303	1524
Flt Permitted	1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00
Satd. Flow (perm)	950	1524	1524	950	1703	4893	1524	3303	3406		3303	1524
Volume (vph)	10	200	210	10	250	1105	155	275	1495	150	280	100
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	11	211	221	11	263	1163	163	289	1574	158	295	105
RTOR Reduction (vph)	0	0	167	0	0	0	117	0	0	0	0	0
Lane Group Flow (vph)	11	211	54	11	263	1163	46	289	1574	0	453	105
Heavy Vehicles (%)	100%	6%	6%	100%	6%	6%	6%	6%	6%	6%	6%	6%
Turn Type	Split		Perm		Prot		Perm	Prot		Split		Perm
Protected Phases	2	2		2	3	8		17	14	6		6
Permitted Phases			2				8					6
Actuated Green, G (s)	49.0	49.0	49.0	49.0	34.0	65.8	65.8	75.2	108.0		34.4	34.4
Effective Green, g (s)	53.0	52.0	52.0	53.0	36.0	68.8	68.8	77.2	110.0		37.4	37.4
Actuated g/C Ratio	0.21	0.21	0.21	0.21	0.15	0.28	0.28	0.31	0.44		0.15	0.15
Clearance Time (s)	6.0	6.0	6.0	6.0	5.0	6.0	6.0				6.0	6.0
Vehicle Extension (s)	4.0	4.0	4.0	4.0	3.0	3.5	3.5				3.0	3.0
Lane Grp Cap (vph)	204	320	320	204	248	1361	424	1031	1514		499	230
v/s Ratio Prot	0.01	c0.14		0.01	c0.15	0.24		0.09	c0.46		c0.14	
v/s Ratio Perm			0.04				0.03					0.07
v/c Ratio	0.05	0.66	0.17	0.05	1.06	0.85	0.11	0.28	1.04		0.91	0.46
Uniform Delay, d1	77.3	89.6	80.0	77.3	105.7	84.6	66.5	64.2	68.7		103.3	95.7
Progression Factor	1.02	1.01	1.09	1.00	1.00	1.00	1.00	0.48	0.42		1.00	1.00
Incremental Delay, d2	0.1	5.3	0.3	0.2	74.0	5.6	0.1	0.1	29.6		20.1	1.4
Delay (s)	78.8	95.8	87.4	77.4	179.7	90.1	66.6	30.6	58.6		123.4	97.2
Level of Service	E	F	F	E	F	F	E	C	E		F	F
Approach Delay (s)	91.2			77.4		102.6			54.2		118.5	
Approach LOS	F			E		F			D		F	
<b>Intersection Summary</b>												
HCM Average Control Delay			83.2			HCM Level of Service			F			
HCM Volume to Capacity ratio			0.94									
Actuated Cycle Length (s)			247.4			Sum of lost time (s)			12.0			
Intersection Capacity Utilization			101.6%			ICU Level of Service			G			
Analysis Period (min)			15									

c Critical Lane Group

# HCM Signalized Intersection Capacity Analysis

1621: MD 193 & MD 650

6/10/2008



Movement	EBL2	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR2	SBL	SBT
Lane Configurations	↖	↖	↕↕↕		↖	↕↕↕		↖↖	↕↕↕		↖	↕↕↕
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	2.0	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0
Lane Util. Factor	1.00	1.00	0.91		1.00	0.91		0.97	0.91		1.00	0.91
Frt	1.00	1.00	0.95		1.00	0.98		1.00	0.99		1.00	0.99
Flt Protected	0.95	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00
Satd. Flow (prot)	1703	902	4652		1703	4777		3303	4837		1703	4831
Flt Permitted	0.95	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00
Satd. Flow (perm)	1703	902	4652		1703	4777		3303	4837		1703	4831
Volume (vph)	100	10	1090	535	210	1430	270	300	950	80	210	2250
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	105	11	1147	563	221	1505	284	316	1000	84	221	2368
RTOR Reduction (vph)	0	0	59	0	0	0	0	0	6	0	0	7
Lane Group Flow (vph)	105	11	1651	0	221	1789	0	316	1078	0	221	2582
Heavy Vehicles (%)	6%	100%	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%
Turn Type	Prot	Split			Prot			Prot			Prot	
Protected Phases	7	4!	4		3	8!		1	6		5	2
Permitted Phases												
Actuated Green, G (s)	6.0	39.0	39.0		12.0	45.0		15.8	54.1		22.4	60.7
Effective Green, g (s)	9.0	43.0	43.0		15.0	49.0		18.8	58.6		25.4	65.2
Actuated g/C Ratio	0.06	0.29	0.29		0.10	0.33		0.13	0.39		0.17	0.43
Clearance Time (s)	5.0	6.0	6.0		5.0	6.0		5.0	6.5		5.0	6.5
Vehicle Extension (s)	3.0	5.0	5.0		3.0	5.0		3.0	5.0		3.0	5.0
Lane Grp Cap (vph)	102	259	1334		170	1560		414	1890		288	2100
v/s Ratio Prot	0.06	0.01	c0.35		c0.13	c0.37		0.10	0.22		c0.13	c0.53
v/s Ratio Perm												
v/c Ratio	1.03	0.04	1.24		1.30	1.15		0.76	0.57		0.77	1.23
Uniform Delay, d1	70.5	38.6	53.5		67.5	50.5		63.4	35.8		59.5	42.4
Progression Factor	0.82	0.94	0.81		0.80	0.75		1.10	0.72		1.14	0.82
Incremental Delay, d2	90.9	0.1	112.6		165.1	72.6		7.8	1.2		1.1	103.6
Delay (s)	148.5	36.3	155.8		219.1	110.6		77.6	27.0		68.8	138.5
Level of Service	F	D	F		F	F		E	C		E	F
Approach Delay (s)			154.7			122.5			38.4			133.0
Approach LOS			F			F			D			F

## Intersection Summary

HCM Average Control Delay	118.7	HCM Level of Service	F
HCM Volume to Capacity ratio	1.15		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	4.0
Intersection Capacity Utilization	129.2%	ICU Level of Service	H
Analysis Period (min)	15		

! Phase conflict between lane groups.

c Critical Lane Group




























Movement	SBR	SWR
<b>Line Configurations</b>		
Ideal Flow (vphpl)	1900	1900
Total Lost time (s)		2.0
Lane Util. Factor		1.00
Frt		0.86
Flt Protected		1.00
Satd. Flow (prot)		822
Flt Permitted		1.00
Satd. Flow (perm)		822
Volume (vph)	210	10
Peak-hour factor, PHF	0.95	0.95
Adj. Flow (vph)	221	11
RTOR Reduction (vph)	0	0
Lane Group Flow (vph)	0	11
Heavy Vehicles (%)	6%	100%
Turn Type	custom	
Protected Phases	8!	
Permitted Phases		
Actuated Green, G (s)	45.0	
Effective Green, g (s)	49.0	
Actuated g/C Ratio	0.33	
Clearance Time (s)	6.0	
Vehicle Extension (s)	5.0	
Lane Grp Cap (vph)	269	
v/s Ratio Prot	0.01	
v/s Ratio Perm		
v/c Ratio	0.04	
Uniform Delay, d1	34.5	
Progression Factor	1.00	
Incremental Delay, d2	0.1	
Delay (s)	34.6	
Level of Service	C	
Approach Delay (s)		
Approach LOS		
<b>Intersection Summary</b>		

# HCM Signalized Intersection Capacity Analysis

1629: MD 193 & 15th Ave

6/10/2008

												
Movement	EBL2	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR2	SBL	SBT	SBR
Lane Configurations			  		  							
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	2.0	2.0	2.0	3.0	2.0		2.0	3.0		3.0	3.0	
Lane Util. Factor	1.00	1.00	0.91	1.00	0.91		1.00	1.00		1.00	1.00	
Frt	1.00	1.00	1.00	1.00	0.99		1.00	0.92		1.00	0.85	
Flt Protected	0.95	0.95	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1703	902	4893	1703	4850		1787	1740		1787	1602	
Flt Permitted	0.95	0.95	1.00	0.95	1.00		0.65	1.00		0.76	1.00	
Satd. Flow (perm)	1703	902	4893	1703	4850		1225	1740		1423	1602	
Volume (vph)	60	10	1290	5	1895	120	1	1	1	220	1	85
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	63	11	1358	5	1995	126	1	1	1	232	1	89
RTOR Reduction (vph)	0	0	0	0	0	0	0	1	0	0	69	0
Lane Group Flow (vph)	63	11	1358	5	2121	0	1	1	0	232	21	0
Heavy Vehicles (%)	6%	100%	6%	6%	6%	6%	1%	1%	1%	1%	1%	1%
Turn Type	Prot	Split		Prot			custom	Prot		Perm		
Protected Phases	5	2!	2	1	6!			8				4
Permitted Phases							8			4		
Actuated Green, G (s)	7.9	77.7	77.7	1.4	72.2		23.9	23.9		23.9	23.9	
Effective Green, g (s)	10.9	81.7	81.7	3.4	75.2		27.9	26.9		26.9	26.9	
Actuated g/C Ratio	0.09	0.68	0.68	0.03	0.63		0.23	0.22		0.22	0.22	
Clearance Time (s)	5.0	6.0	6.0	5.0	5.0		6.0	6.0		6.0	6.0	
Vehicle Extension (s)	3.0	5.0	5.0	3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	155	614	3331	48	3039		285	390		319	359	
v/s Ratio Prot	c0.04	0.01	0.28	0.00	c0.44			0.00			0.01	
v/s Ratio Perm							0.00			c0.16		
v/c Ratio	0.41	0.02	0.41	0.10	0.70		0.00	0.00		0.73	0.06	
Uniform Delay, d1	51.5	6.2	8.5	56.8	14.9		35.4	36.1		43.1	36.6	
Progression Factor	1.00	1.00	1.00	1.05	0.47		1.00	1.00		1.00	1.00	
Incremental Delay, d2	1.7	0.1	0.4	0.6	0.8		0.0	0.0		8.0	0.1	
Delay (s)	53.2	6.2	8.8	60.3	7.8		35.4	36.1		51.2	36.7	
Level of Service	D	A	A	E	A		D	D		D	D	
Approach Delay (s)			10.8		7.9			35.9			47.1	
Approach LOS			B		A			D			D	
<b>Intersection Summary</b>												
HCM Average Control Delay			12.2			HCM Level of Service				B		
HCM Volume to Capacity ratio			0.67									
Actuated Cycle Length (s)			120.0			Sum of lost time (s)				7.0		
Intersection Capacity Utilization			92.3%			ICU Level of Service				F		
Analysis Period (min)			15									
! Phase conflict between lane groups.												
c Critical Lane Group												



Movement	SWR
Lane Configurations	↗
Ideal Flow (vphpl)	1900
Total Lost time (s)	2.0
Lane Util. Factor	1.00
Frt	0.86
Flt Protected	1.00
Satd. Flow (prot)	822
Flt Permitted	1.00
Satd. Flow (perm)	822
Volume (vph)	10
Peak-hour factor, PHF	0.95
Adj. Flow (vph)	11
RTOR Reduction (vph)	0
Lane Group Flow (vph)	11
Heavy Vehicles (%)	100%
Turn Type	custom
Protected Phases	6!
Permitted Phases	
Actuated Green, G (s)	72.2
Effective Green, g (s)	75.2
Actuated g/C Ratio	0.63
Clearance Time (s)	5.0
Vehicle Extension (s)	3.0
Lane Grp Cap (vph)	515
v/s Ratio Prot	0.01
v/s Ratio Perm	
v/c Ratio	0.02
Uniform Delay, d1	8.5
Progression Factor	1.00
Incremental Delay, d2	0.1
Delay (s)	8.6
Level of Service	A
Approach Delay (s)	
Approach LOS	
Intersection Summary	

# HCM Signalized Intersection Capacity Analysis

## 2: MD 193 & Carroll Ave

6/10/2008



Movement	EBL2	EBL	EBT	EBR	WBT	WBR	NBL	NBT	NBR2	SBL	SBT	SBR
Lane Configurations	↖	↖	↖↖↖		↖↖↖		↖	↖		↖	↖	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	2.0	2.0	2.0		2.0		2.0	2.0		2.0	2.0	
Lane Util. Factor	1.00	1.00	0.91		0.91		1.00	1.00		1.00	1.00	
Frt	1.00	1.00	0.99		0.99		1.00	0.98		1.00	0.98	
Flt Protected	0.95	0.95	1.00		1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1736	902	4920		4941		1736	1789		1736	1794	
Flt Permitted	0.95	0.95	1.00		1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1736	902	4920		4941		1736	1789		1736	1794	
Volume (vph)	40	10	2205	220	2200	145	285	340	55	120	225	30
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	42	11	2321	232	2316	153	300	358	58	126	237	32
RTOR Reduction (vph)	0	0	10	0	0	0	0	5	0	0	4	0
Lane Group Flow (vph)	42	11	2543	0	2469	0	300	411	0	126	265	0
Heavy Vehicles (%)	4%	100%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%
Turn Type	Prot	Split					Split			Split		
Protected Phases	1	6!	6		2!		3	3		4	4	
Permitted Phases												
Actuated Green, G (s)	4.0	66.0	66.0		57.0		23.0	23.0		13.0	13.0	
Effective Green, g (s)	7.0	70.0	70.0		61.0		27.0	27.0		17.0	17.0	
Actuated g/C Ratio	0.06	0.58	0.58		0.51		0.22	0.22		0.14	0.14	
Clearance Time (s)	5.0	6.0	6.0		6.0		6.0	6.0		6.0	6.0	
Vehicle Extension (s)	3.0	3.0	3.0		3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	101	526	2870		2512		391	403		246	254	
v/s Ratio Prot	0.02	0.01	c0.52		c0.50		0.17	c0.23		0.07	c0.15	
v/s Ratio Perm												
v/c Ratio	0.42	0.02	0.89		0.98		0.77	1.02		0.51	1.04	
Uniform Delay, d1	54.5	10.5	21.6		29.0		43.6	46.5		47.7	51.5	
Progression Factor	1.37	0.28	0.41		1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.3	0.0	0.4		14.4		13.4	50.2		1.8	67.9	
Delay (s)	75.1	2.9	9.3		43.3		57.0	96.7		49.5	119.4	
Level of Service	E	A	A		D		E	F		D	F	
Approach Delay (s)			10.3		43.3			80.1			97.1	
Approach LOS			B		D			F			F	

### Intersection Summary

HCM Average Control Delay	37.1	HCM Level of Service	D
HCM Volume to Capacity ratio	0.98		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	110.3%	ICU Level of Service	H
Analysis Period (min)	15		

! Phase conflict between lane groups.

c Critical Lane Group
































Movement	SWR
Lane Configurations	↗
Ideal Flow (vphpl)	1900
Total Lost time (s)	2.0
Lane Util. Factor	1.00
Frt	0.86
Flt Protected	1.00
Satd. Flow (prot)	822
Flt Permitted	1.00
Satd. Flow (perm)	822
Volume (vph)	10
Peak-hour factor, PHF	0.95
Adj. Flow (vph)	11
RTOR Reduction (vph)	0
Lane Group Flow (vph)	11
Heavy Vehicles (%)	100%
Turn Type	custom
Protected Phases	2!
Permitted Phases	
Actuated Green, G (s)	57.0
Effective Green, g (s)	61.0
Actuated g/C Ratio	0.51
Clearance Time (s)	6.0
Vehicle Extension (s)	3.0
Lane Grp Cap (vph)	418
v/s Ratio Prot	0.01
v/s Ratio Perm	
v/c Ratio	0.03
Uniform Delay, d1	14.7
Progression Factor	1.00
Incremental Delay, d2	0.1
Delay (s)	14.8
Level of Service	B
Approach Delay (s)	
Approach LOS	
Intersection Summary	



# HCM Signalized Intersection Capacity Analysis

5: MD 193 & MD 320

6/10/2008

												
Movement	EBL2	EBT	EBR	WBL2	WBT	WBR	NBL	NBT	NBR2	SBL	SBT	SBR2
Lane Configurations		  			  			 			 	 
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	2.0	2.0		2.0	2.0		2.0	2.0	2.0	2.0	2.0	
Lane Util. Factor	1.00	0.91		1.00	0.91		1.00	0.95	1.00	1.00	0.95	
Frt	1.00	0.98		1.00	1.00		1.00	1.00	0.85	1.00	0.96	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1736	4910		1736	4967		1736	3471	1553	1736	3337	
Flt Permitted	0.95	1.00		0.95	1.00		0.14	1.00	1.00	0.15	1.00	
Satd. Flow (perm)	1736	4910		1736	4967		254	3471	1553	273	3337	
Volume (vph)	280	2115	245	305	2145	60	350	970	265	75	590	205
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	295	2226	258	321	2258	63	368	1021	279	79	621	216
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	169	0	29	0
Lane Group Flow (vph)	295	2484	0	321	2321	0	368	1021	110	79	808	0
Heavy Vehicles (%)	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%
Turn Type	Prot			Prot			pm+pt		Perm	pm+pt		
Protected Phases	5	2		1!	6!		3!	8!		7	4!	
Permitted Phases							8!		8		4	
Actuated Green, G (s)	17.0	47.2		17.0	47.2		41.8	35.4	35.4	26.2	23.8	
Effective Green, g (s)	19.0	50.2		19.0	50.2		44.8	38.4	38.4	31.2	26.8	
Actuated g/C Ratio	0.16	0.42		0.16	0.42		0.37	0.32	0.32	0.26	0.22	
Clearance Time (s)	4.0	5.0		4.0	5.0		4.0	5.0	5.0	4.0	5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	275	2054		275	2078		292	1111	497	125	745	
v/s Ratio Prot	0.17	c0.51		c0.18	0.47		c0.17	0.29		0.02	c0.24	
v/s Ratio Perm							0.30		0.07	0.14		
v/c Ratio	1.07	1.21		1.17	1.12		1.26	0.92	0.22	0.63	1.08	
Uniform Delay, d1	50.5	34.9		50.5	34.9		34.6	39.3	29.9	36.4	46.6	
Progression Factor	1.00	1.00		0.66	1.47		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	74.9	99.0		88.7	55.3		141.8	13.4	1.0	10.0	58.4	
Delay (s)	125.4	133.9		121.9	106.5		176.4	52.7	30.9	46.4	105.0	
Level of Service	F	F		F	F		F	D	C	D	F	
Approach Delay (s)		133.0			108.4			76.4			100.0	
Approach LOS		F			F			E			F	
<b>Intersection Summary</b>												
HCM Average Control Delay			109.1			HCM Level of Service			F			
HCM Volume to Capacity ratio			1.16									
Actuated Cycle Length (s)			120.0			Sum of lost time (s)			8.0			
Intersection Capacity Utilization			137.1%			ICU Level of Service			H			
Analysis Period (min)			15									
! Phase conflict between lane groups.												
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis  
 5: MD 193 & MD 320

6/10/2008

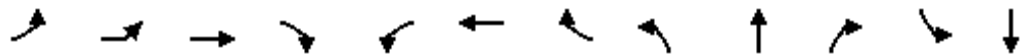


Movement	NER	SWL
Lane Configurations		
Ideal Flow (vphpl)	1900	1900
Total Lost time (s)	2.0	2.0
Lane Util. Factor	1.00	1.00
Frt	0.86	1.00
Flt Protected	1.00	0.95
Satd. Flow (prot)	822	902
Flt Permitted	1.00	0.95
Satd. Flow (perm)	822	902
Volume (vph)	10	10
Peak-hour factor, PHF	0.95	0.95
Adj. Flow (vph)	11	11
RTOR Reduction (vph)	0	0
Lane Group Flow (vph)	11	11
Heavy Vehicles (%)	100%	100%
Turn Type	custom	Prot
Protected Phases	1 8!	1!
Permitted Phases		
Actuated Green, G (s)	57.4	17.0
Effective Green, g (s)	59.4	19.0
Actuated g/C Ratio	0.50	0.16
Clearance Time (s)		4.0
Vehicle Extension (s)		3.0
Lane Grp Cap (vph)	407	143
v/s Ratio Prot	0.01	0.01
v/s Ratio Perm		
v/c Ratio	0.03	0.08
Uniform Delay, d1	15.5	43.0
Progression Factor	1.00	1.00
Incremental Delay, d2	0.0	0.2
Delay (s)	15.5	43.3
Level of Service	B	D
Approach Delay (s)		
Approach LOS		
Intersection Summary		

# HCM Signalized Intersection Capacity Analysis

## 14: MD 193 & MD 193 West SC

6/10/2008



Movement	EBL2	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR2	SBL	SBT
Lane Configurations	↖	↖	↕↕↕		↖	↕↕↕			↕	↖	↖	↕
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	2.0	2.0	2.0		2.0	2.0			2.0	2.0	2.0	2.0
Lane Util. Factor	1.00	1.00	0.91		1.00	0.91			1.00	1.00	1.00	1.00
Frt	1.00	1.00	1.00		1.00	1.00			1.00	0.85	1.00	0.92
Flt Protected	0.95	0.95	1.00		0.95	1.00			0.98	1.00	0.95	1.00
Satd. Flow (prot)	1736	902	4977		1736	4978			1835	1599	1787	1740
Flt Permitted	0.95	0.95	1.00		0.95	1.00			0.86	1.00	0.66	1.00
Satd. Flow (perm)	1736	902	4977		1736	4978			1615	1599	1247	1740
Volume (vph)	30	10	2210	30	30	2325	30	30	30	30	30	30
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	32	11	2326	32	32	2447	32	32	32	32	32	32
RTOR Reduction (vph)	0	0	1	0	0	0	0	0	0	25	0	24
Lane Group Flow (vph)	32	11	2357	0	32	2479	0	0	64	7	32	40
Heavy Vehicles (%)	4%	100%	4%	4%	4%	4%	4%	1%	1%	1%	1%	1%
Turn Type	Prot	Split			Prot			Perm		Perm	Perm	
Protected Phases	5	2!	2		1	6!			3			3
Permitted Phases								3	3	3	3	
Actuated Green, G (s)	14.0	87.0	87.0		19.0	92.0			29.0	29.0	29.0	29.0
Effective Green, g (s)	17.0	90.0	90.0		22.0	95.0			32.0	32.0	32.0	32.0
Actuated g/C Ratio	0.11	0.60	0.60		0.15	0.63			0.21	0.21	0.21	0.21
Clearance Time (s)	5.0	5.0	5.0		5.0	5.0			5.0	5.0	5.0	5.0
Lane Grp Cap (vph)	197	541	2986		255	3153			345	341	266	371
v/s Ratio Prot	c0.02	0.01	0.47		0.02	c0.50						0.02
v/s Ratio Perm								c0.04	0.00	0.03		
v/c Ratio	0.16	0.02	0.79		0.13	0.79			0.19	0.02	0.12	0.11
Uniform Delay, d1	60.1	12.1	22.8		55.6	20.1			48.3	46.6	47.6	47.5
Progression Factor	1.00	1.00	1.00		1.41	0.15			1.00	1.00	1.00	1.00
Incremental Delay, d2	1.8	0.1	2.2		0.1	0.2			1.2	0.1	0.9	0.6
Delay (s)	61.8	12.2	25.0		78.6	3.3			49.5	46.7	48.6	48.1
Level of Service	E	B	C		E	A			D	D	D	D
Approach Delay (s)			25.4			4.2			48.6			48.2
Approach LOS			C			A			D			D

### Intersection Summary

HCM Average Control Delay	15.9	HCM Level of Service	B
HCM Volume to Capacity ratio	0.58		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	6.0
Intersection Capacity Utilization	86.7%	ICU Level of Service	E
Analysis Period (min)	15		

! Phase conflict between lane groups.

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis  
 14: MD 193 & MD 193 West SC

6/10/2008

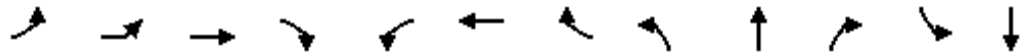


Movement	SBR	SWR
Lane Configurations		
Ideal Flow (vphpl)	1900	1900
Total Lost time (s)		2.0
Lane Util. Factor		1.00
Frt		0.86
Flt Protected		1.00
Satd. Flow (prot)		822
Flt Permitted		1.00
Satd. Flow (perm)		822
Volume (vph)	30	10
Peak-hour factor, PHF	0.95	0.95
Adj. Flow (vph)	32	11
RTOR Reduction (vph)	0	0
Lane Group Flow (vph)	0	11
Heavy Vehicles (%)	1%	100%
Turn Type	custom	
Protected Phases	6!	
Permitted Phases		
Actuated Green, G (s)	92.0	
Effective Green, g (s)	95.0	
Actuated g/C Ratio	0.63	
Clearance Time (s)	5.0	
Lane Grp Cap (vph)	521	
v/s Ratio Prot	0.01	
v/s Ratio Perm		
v/c Ratio	0.02	
Uniform Delay, d1	10.2	
Progression Factor	1.00	
Incremental Delay, d2	0.1	
Delay (s)	10.3	
Level of Service	B	
Approach Delay (s)		
Approach LOS		
<b>Intersection Summary</b>		

# HCM Signalized Intersection Capacity Analysis

15: MD 193 & MD 193 East SC

6/10/2008



Movement	EBL2	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR2	SBL	SBT
Lane Configurations	↖	↖	↕↕↕		↖	↕↕↕		↖	↕		↖	↖
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	2.0	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0
Lane Util. Factor	1.00	1.00	0.91		1.00	0.91		1.00	1.00		0.95	0.95
Frt	1.00	1.00	1.00		1.00	0.99		1.00	0.87		1.00	1.00
Flt Protected	0.95	0.95	1.00		0.95	1.00		0.95	1.00		0.95	0.97
Satd. Flow (prot)	1736	902	4977		1736	4949		1787	1638		1698	1731
Flt Permitted	0.95	0.95	1.00		0.95	1.00		0.70	1.00		0.55	0.81
Satd. Flow (perm)	1736	902	4977		1736	4949		1315	1638		986	1448
Volume (vph)	45	10	2195	30	70	2120	115	95	15	95	55	15
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	47	11	2311	32	74	2232	121	100	16	100	58	16
RTOR Reduction (vph)	0	0	1	0	0	0	0	0	79	0	0	0
Lane Group Flow (vph)	47	11	2342	0	74	2353	0	100	37	0	29	45
Heavy Vehicles (%)	4%	100%	4%	4%	4%	4%	4%	1%	1%	1%	1%	1%
Turn Type	Prot	Split			Prot			Perm			Perm	
Protected Phases	1	6!	6		5	2!		3				3
Permitted Phases			6			2!		3	3		3	
Actuated Green, G (s)	19.0	88.0	88.0		18.0	87.0		29.0	29.0		29.0	29.0
Effective Green, g (s)	22.0	91.0	91.0		21.0	90.0		32.0	32.0		32.0	32.0
Actuated g/C Ratio	0.15	0.61	0.61		0.14	0.60		0.21	0.21		0.21	0.21
Clearance Time (s)	5.0	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0
Lane Grp Cap (vph)	255	547	3019		243	2969		281	349		210	309
v/s Ratio Prot	0.03	0.01	0.47		c0.04	c0.48			0.02			
v/s Ratio Perm								c0.08			0.03	0.03
v/c Ratio	0.18	0.02	0.78		0.30	0.79		0.36	0.11		0.14	0.15
Uniform Delay, d1	56.1	11.7	21.9		57.9	22.9		50.2	47.5		47.8	47.9
Progression Factor	1.43	0.27	0.25		1.00	1.00		1.00	1.00		1.00	1.00
Incremental Delay, d2	0.1	0.0	0.2		3.2	2.3		3.5	0.6		1.4	1.0
Delay (s)	80.6	3.2	5.7		61.2	25.1		53.7	48.1		49.2	48.9
Level of Service	F	A	A		E	C		D	D		D	D
Approach Delay (s)			7.2			26.2			50.7			48.2
Approach LOS			A			C			D			D

## Intersection Summary

HCM Average Control Delay	18.9	HCM Level of Service	B
HCM Volume to Capacity ratio	0.61		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	6.0
Intersection Capacity Utilization	98.5%	ICU Level of Service	F
Analysis Period (min)	15		

! Phase conflict between lane groups.

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis  
 15: MD 193 & MD 193 East SC

6/10/2008

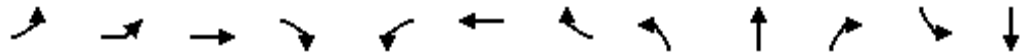


Movement	SBR	SWR
Lane Configurations	↗	↗
Ideal Flow (vphpl)	1900	1900
Total Lost time (s)	2.0	2.0
Lane Util. Factor	1.00	1.00
Frt	0.85	0.86
Flt Protected	1.00	1.00
Satd. Flow (prot)	1599	822
Flt Permitted	1.00	1.00
Satd. Flow (perm)	1599	822
Volume (vph)	40	10
Peak-hour factor, PHF	0.95	0.95
Adj. Flow (vph)	42	11
RTOR Reduction (vph)	33	0
Lane Group Flow (vph)	9	11
Heavy Vehicles (%)	1%	100%
Turn Type	Perm custom	
Protected Phases	2!	
Permitted Phases	3	
Actuated Green, G (s)	29.0	87.0
Effective Green, g (s)	32.0	90.0
Actuated g/C Ratio	0.21	0.60
Clearance Time (s)	5.0	5.0
Lane Grp Cap (vph)	341	493
v/s Ratio Prot	0.01	
v/s Ratio Perm	0.01	
v/c Ratio	0.03	0.02
Uniform Delay, d1	46.7	12.2
Progression Factor	1.00	1.00
Incremental Delay, d2	0.1	0.1
Delay (s)	46.8	12.2
Level of Service	D	B
Approach Delay (s)		
Approach LOS		
<b>Intersection Summary</b>		

# HCM Signalized Intersection Capacity Analysis

91: MD 193 & Riggs Rd

6/10/2008



Movement	EBL2	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR2	SBL	SBT
Lane Configurations	↘	↘	↗↗↗	↗	↘↘	↗↗↗		↘↘	↗	↘	↘	↗↗
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	2.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0
Lane Util. Factor	1.00	1.00	0.91	1.00	0.97	0.91		0.97	1.00	1.00	1.00	0.95
Frt	1.00	1.00	1.00	0.85	1.00	0.98		1.00	1.00	0.85	1.00	0.98
Flt Protected	0.95	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00
Satd. Flow (prot)	1736	902	4988	1553	3367	4912		3367	1827	1553	1736	3397
Flt Permitted	0.95	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00
Satd. Flow (perm)	1736	902	4988	1553	3367	4912		3367	1827	1553	1736	3397
Volume (vph)	140	10	1625	665	670	1550	175	800	635	670	270	479
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	147	11	1711	700	705	1632	184	842	668	705	284	504
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	178	0	11
Lane Group Flow (vph)	147	11	1711	700	705	1816	0	842	668	527	284	577
Heavy Vehicles (%)	4%	100%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%
Turn Type	Prot	Split		Free	Prot			Split		Perm	Split	
Protected Phases	1	6!	6		5	2!		4	4		3	3
Permitted Phases				Free						4		
Actuated Green, G (s)	9.0	33.0	33.0	120.0	18.0	42.0		33.0	33.0	33.0	14.0	14.0
Effective Green, g (s)	11.0	38.0	37.0	120.0	20.0	46.0		35.0	35.0	35.0	16.0	16.0
Actuated g/C Ratio	0.09	0.32	0.31	1.00	0.17	0.38		0.29	0.29	0.29	0.13	0.13
Clearance Time (s)	5.0	7.0	7.0		5.0	7.0		5.0	5.0	5.0	5.0	5.0
Vehicle Extension (s)	2.5	5.0	5.0		2.5	5.0		2.5	2.5	2.5	2.5	2.5
Lane Grp Cap (vph)	159	286	1538	1553	561	1883		982	533	453	231	453
v/s Ratio Prot	0.08	0.01	c0.34		c0.21	0.37		0.25	c0.37		0.16	c0.17
v/s Ratio Perm				0.45						0.34		
v/c Ratio	0.92	0.04	1.11	0.45	1.26	0.96		0.86	1.25	1.16	1.23	1.27
Uniform Delay, d1	54.1	28.4	41.5	0.0	50.0	36.2		40.1	42.5	42.5	52.0	52.0
Progression Factor	1.21	0.75	0.84	1.00	0.99	1.17		1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	39.8	0.2	57.9	0.7	126.5	11.6		7.4	128.8	95.5	135.1	139.3
Delay (s)	105.4	21.4	92.6	0.7	175.9	54.0		47.6	171.3	138.0	187.1	191.3
Level of Service	F	C	F	A	F	D		D	F	F	F	F
Approach Delay (s)			68.0			88.1			113.7			189.9
Approach LOS			E			F			F			F

## Intersection Summary

HCM Average Control Delay	99.5	HCM Level of Service	F
HCM Volume to Capacity ratio	1.21		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	123.3%	ICU Level of Service	H
Analysis Period (min)	15		

! Phase conflict between lane groups.

c Critical Lane Group



Movement	SBR	SWR
<b>Lane Configurations</b>		
Ideal Flow (vphpl)	1900	1900
Total Lost time (s)		2.0
Lane Util. Factor		1.00
Frt		0.86
Flt Protected		1.00
Satd. Flow (prot)		822
Flt Permitted		1.00
Satd. Flow (perm)		822
Volume (vph)	80	10
Peak-hour factor, PHF	0.95	0.95
Adj. Flow (vph)	84	11
RTOR Reduction (vph)	0	0
Lane Group Flow (vph)	0	11
Heavy Vehicles (%)	4%	100%
Turn Type	custom	
Protected Phases	2!	
Permitted Phases		
Actuated Green, G (s)	42.0	
Effective Green, g (s)	47.0	
Actuated g/C Ratio	0.39	
Clearance Time (s)	7.0	
Vehicle Extension (s)	5.0	
Lane Grp Cap (vph)	322	
v/s Ratio Prot	0.01	
v/s Ratio Perm		
v/c Ratio	0.03	
Uniform Delay, d1	22.5	
Progression Factor	1.00	
Incremental Delay, d2	0.2	
Delay (s)	22.7	
Level of Service	C	
Approach Delay (s)		
Approach LOS		
<b>Intersection Summary</b>		



# HCM Signalized Intersection Capacity Analysis

105: MD 193 & 23rd Ave

6/10/2008



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR2	SBR	SWR
Lane Configurations	↗	↑↑↑		↗	↑↑↑			↑	↗	↗	↗
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	2.0	3.0		3.0	3.0			3.0	3.0	3.0	2.0
Lane Util. Factor	1.00	0.91		1.00	0.91			1.00	1.00	1.00	1.00
Frt	1.00	0.98		1.00	1.00			1.00	0.85	0.86	0.86
Flt Protected	0.95	1.00		0.95	1.00			0.95	1.00	1.00	1.00
Satd. Flow (prot)	902	4894		1736	4976			1793	1599	1627	822
Flt Permitted	0.95	1.00		0.95	1.00			0.95	1.00	1.00	1.00
Satd. Flow (perm)	902	4894		1736	4976			1793	1599	1627	822
Volume (vph)	10	2215	315	185	1970	30	400	5	145	75	10
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	11	2332	332	195	2074	32	421	5	153	79	11
RTOR Reduction (vph)	0	15	0	0	0	0	0	0	115	36	0
Lane Group Flow (vph)	11	2649	0	195	2106	0	0	426	38	43	11
Heavy Vehicles (%)	100%	4%	4%	4%	4%	4%	1%	1%	1%	1%	100%
Turn Type	Split		Prot		Perm		Perm custom custom				
Protected Phases	6!	6		5	2!			4			2!
Permitted Phases		6				4		4	6		
Actuated Green, G (s)	63.0	63.0		13.0	81.0			27.0	27.0	63.0	81.0
Effective Green, g (s)	67.0	66.0		15.0	84.0			30.0	30.0	66.0	85.0
Actuated g/C Ratio	0.56	0.55		0.12	0.70			0.25	0.25	0.55	0.71
Clearance Time (s)	6.0	6.0		5.0	6.0			6.0	6.0	6.0	6.0
Vehicle Extension (s)	5.0	5.0		3.0	5.0			3.0	3.0	5.0	5.0
Lane Grp Cap (vph)	504	2692		217	3483			448	400	895	582
v/s Ratio Prot	0.01	c0.54		c0.11	0.42						0.01
v/s Ratio Perm								0.24	0.02	0.03	
v/c Ratio	0.02	0.98		0.90	0.60			0.95	0.10	0.05	0.02
Uniform Delay, d1	11.8	26.5		51.8	9.4			44.3	34.6	12.5	5.2
Progression Factor	0.57	0.49		0.82	1.44			1.00	1.00	1.00	1.00
Incremental Delay, d2	0.0	2.7		24.9	0.5			30.2	0.1	0.1	0.1
Delay (s)	6.8	15.6		67.5	14.0			74.5	34.7	12.6	5.2
Level of Service	A	B		E	B			E	C	B	A
Approach Delay (s)		15.6			18.6			64.0			
Approach LOS		B			B			E			

## Intersection Summary

HCM Average Control Delay	21.7	HCM Level of Service	C
HCM Volume to Capacity ratio	0.96		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	107.8%	ICU Level of Service	G
Analysis Period (min)	15		

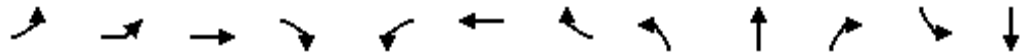
! Phase conflict between lane groups.

c Critical Lane Group

# HCM Signalized Intersection Capacity Analysis

107: MD 193 & W Park Dr

6/10/2008



Movement	EBL2	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR2	SBL	SBT
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	2.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0
Lane Util. Factor	1.00	1.00	0.95	1.00	1.00	0.95		1.00	1.00		1.00	1.00
Frt	1.00	1.00	1.00	0.85	1.00	1.00		1.00	0.86		1.00	0.90
Flt Protected	0.95	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00
Satd. Flow (prot)	1736	902	3471	1553	1736	3454		1787	1612		1787	1696
Flt Permitted	0.95	0.95	1.00	1.00	0.95	1.00		0.74	1.00		0.53	1.00
Satd. Flow (perm)	1736	902	3471	1553	1736	3454		1385	1612		1004	1696
Volume (vph)	25	10	2235	40	35	2070	69	25	5	95	80	10
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	26	11	2353	42	37	2179	73	26	5	100	84	11
RTOR Reduction (vph)	0	0	0	10	0	0	0	0	64	0	0	18
Lane Group Flow (vph)	26	11	2353	32	37	2252	0	26	41	0	84	14
Heavy Vehicles (%)	4%	100%	4%	4%	4%	4%	4%	1%	1%	1%	1%	1%
Turn Type	Prot	Split		Perm	Prot			Perm			Perm	
Protected Phases	1	6!	6		5	2!			8			4
Permitted Phases				6				8			4	
Actuated Green, G (s)	3.0	87.6	87.6	87.6	3.0	87.6		12.4	12.4		12.4	12.4
Effective Green, g (s)	5.0	91.6	90.6	90.6	5.0	90.6		15.4	15.4		15.4	15.4
Actuated g/C Ratio	0.04	0.76	0.76	0.76	0.04	0.76		0.13	0.13		0.13	0.13
Clearance Time (s)	5.0	6.0	6.0	6.0	5.0	6.0		6.0	6.0		6.0	6.0
Vehicle Extension (s)	3.0	5.0	5.0	5.0	3.0	5.0		3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	72	689	2621	1173	72	2608		178	207		129	218
v/s Ratio Prot	0.01	0.01	c0.68		c0.02	0.65			0.03			0.01
v/s Ratio Perm				0.02				0.02			c0.08	
v/c Ratio	0.36	0.02	0.90	0.03	0.51	0.86		0.15	0.20		0.65	0.06
Uniform Delay, d1	55.9	3.4	11.2	3.7	56.3	10.3		46.5	46.8		49.7	46.0
Progression Factor	1.19	0.12	0.71	0.00	1.00	1.00		1.00	1.00		1.00	1.00
Incremental Delay, d2	1.3	0.0	2.4	0.0	6.1	4.1		0.4	0.5		11.2	0.1
Delay (s)	67.7	0.4	10.4	0.0	62.4	14.4		46.8	47.3		60.9	46.1
Level of Service	E	A	B	A	E	B		D	D		E	D
Approach Delay (s)			10.8			15.2			47.2			56.8
Approach LOS			B			B			D			E

## Intersection Summary

HCM Average Control Delay	14.8	HCM Level of Service	B
HCM Volume to Capacity ratio	0.85		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	99.5%	ICU Level of Service	F
Analysis Period (min)	15		

! Phase conflict between lane groups.

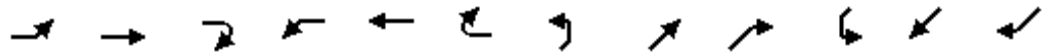
c Critical Lane Group



Movement	SBR	SWR
<b>Lane Configurations</b>		
Ideal Flow (vphpl)	1900	1900
Total Lost time (s)		2.0
Lane Util. Factor		1.00
Frt		0.86
Flt Protected		1.00
Satd. Flow (prot)		822
Flt Permitted		1.00
Satd. Flow (perm)		822
Volume (vph)	20	10
Peak-hour factor, PHF	0.95	0.95
Adj. Flow (vph)	21	11
RTOR Reduction (vph)	0	0
Lane Group Flow (vph)	0	11
Heavy Vehicles (%)	1%	100%
Turn Type	custom	
Protected Phases	2!	
Permitted Phases		
Actuated Green, G (s)	87.6	
Effective Green, g (s)	91.6	
Actuated g/C Ratio	0.76	
Clearance Time (s)	6.0	
Vehicle Extension (s)	5.0	
Lane Grp Cap (vph)	627	
v/s Ratio Prot	0.01	
v/s Ratio Perm		
v/c Ratio	0.02	
Uniform Delay, d1	3.4	
Progression Factor	1.00	
Incremental Delay, d2	0.1	
Delay (s)	3.5	
Level of Service	A	
Approach Delay (s)		
Approach LOS		
<b>Intersection Summary</b>		

HCM Signalized Intersection Capacity Analysis  
 109: MD 193 & Campus Dr.

6/10/2008



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations	↔↔	↑		↔	↑↑				↔			↔↔
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0		2.0	3.0				2.0			3.0
Lane Util. Factor	0.97	1.00		1.00	0.95				1.00			0.88
Frt	1.00	1.00		1.00	1.00				0.86			0.85
Flt Protected	0.95	1.00		0.95	1.00				1.00			1.00
Satd. Flow (prot)	3367	1827		902	3471				822			2733
Flt Permitted	0.95	1.00		0.95	1.00				1.00			1.00
Satd. Flow (perm)	3367	1827		902	3471				822			2733
Volume (vph)	1745	610	0	10	815	0	0	0	10	0	0	1405
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	1837	642	0	11	858	0	0	0	11	0	0	1479
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	52
Lane Group Flow (vph)	1837	642	0	11	858	0	0	0	11	0	0	1427
Heavy Vehicles (%)	4%	4%	4%	100%	4%	4%	4%	4%	100%	4%	4%	4%
Turn Type	Free			Prot								
Protected Phases	1 2 5 6			3 4!	3 4				3 4!			1 2 5 6
Permitted Phases	Free!											
Actuated Green, G (s)	137.0	248.0		99.0	99.0				99.0			137.0
Effective Green, g (s)	140.0	248.0		103.0	102.0				103.0			140.0
Actuated g/C Ratio	0.56	1.00		0.42	0.41				0.42			0.56
Clearance Time (s)												
Vehicle Extension (s)												
Lane Grp Cap (vph)	1901	1827		375	1428				341			1543
v/s Ratio Prot	c0.55			0.01	c0.25				0.01			0.52
v/s Ratio Perm	0.35											
v/c Ratio	0.97	0.35		0.03	0.60				0.03			0.92
Uniform Delay, d1	51.7	0.0		42.9	57.1				43.0			49.2
Progression Factor	1.00	1.00		0.38	0.68				1.00			0.47
Incremental Delay, d2	13.5	0.5		0.0	0.1				0.0			1.1
Delay (s)	65.2	0.5		16.5	39.0				43.0			24.0
Level of Service	E	A		B	D				D			C
Approach Delay (s)	48.5			38.7			43.0				24.0	
Approach LOS	D			D			D				C	
<b>Intersection Summary</b>												
HCM Average Control Delay	39.2			HCM Level of Service				D				
HCM Volume to Capacity ratio	0.81											
Actuated Cycle Length (s)	248.0			Sum of lost time (s)				6.0				
Intersection Capacity Utilization	79.0%			ICU Level of Service				D				
Analysis Period (min)	15											
! Phase conflict between lane groups.												
c Critical Lane Group												

# HCM Signalized Intersection Capacity Analysis

111: MD 193 & Adelphi Rd.

6/10/2008

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0		3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0
Lane Util. Factor	1.00	0.95		0.97	0.95	1.00		0.91	1.00	1.00	0.91	1.00
Frt	1.00	1.00		1.00	1.00	0.85		1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00		1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1736	3471		3367	3471	1553		4988	1553	1736	4988	1553
Flt Permitted	0.95	1.00		0.95	1.00	1.00		1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1736	3471		3367	3471	1553		4988	1553	1736	4988	1553
Volume (vph)	125	1620	0	470	1215	365	0	1465	745	135	1105	195
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	132	1705	0	495	1279	384	0	1542	784	142	1163	205
RTOR Reduction (vph)	0	0	0	0	0	174	0	0	0	0	0	105
Lane Group Flow (vph)	132	1705	0	495	1279	210	0	1542	784	142	1163	100
Heavy Vehicles (%)	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%
Turn Type	Prot			Prot		Perm			Free	Prot		Perm
Protected Phases	6	2 6		1	5			4		3	7 8	
Permitted Phases						5		4	Free			7 8
Actuated Green, G (s)	54.0	104.0		28.0	77.0	77.0		67.0	248.0	27.0	101.0	101.0
Effective Green, g (s)	57.0	107.0		30.0	80.0	80.0		70.0	248.0	29.0	102.0	102.0
Actuated g/C Ratio	0.23	0.43		0.12	0.32	0.32		0.28	1.00	0.12	0.41	0.41
Clearance Time (s)	6.0			5.0	6.0	6.0		6.0		5.0		
Vehicle Extension (s)	3.0			3.0	4.0	4.0		3.5		3.0		
Lane Grp Cap (vph)	399	1498		407	1120	501		1408	1553	203	2052	639
v/s Ratio Prot	0.08	c0.49		c0.15	c0.37			c0.31		c0.08	0.23	
v/s Ratio Perm						0.14			0.50			0.06
v/c Ratio	0.33	1.14		1.22	1.14	0.42		1.10	0.50	0.70	0.57	0.16
Uniform Delay, d1	79.6	70.5		109.0	84.0	65.8		89.0	0.0	105.3	56.0	45.9
Progression Factor	0.42	0.32		1.00	1.00	1.00		0.38	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.1	64.9		117.8	74.9	0.8		44.1	0.1	10.1	0.4	0.1
Delay (s)	33.7	87.2		226.8	158.9	66.6		77.7	0.1	115.4	56.4	46.1
Level of Service	C	F		F	F	E		E	A	F	E	D
Approach Delay (s)		83.3			158.1			51.6			60.5	
Approach LOS		F			F			D			E	

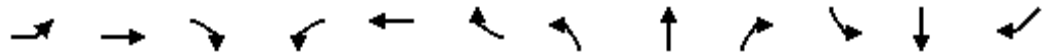
## Intersection Summary

HCM Average Control Delay	90.1	HCM Level of Service	F
HCM Volume to Capacity ratio	1.08		
Actuated Cycle Length (s)	248.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	107.3%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis  
 113: Campus Dr. & Adelphi Rd

6/10/2008



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR2	SBL	SBT	SWR
Lane Configurations	↘	↑	↗		↕	↗	↘	↕	↗	↘	↕	↗
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	2.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	2.0
Lane Util. Factor	1.00	1.00	1.00		0.95	1.00	1.00	0.91	1.00	0.97	0.95	1.00
Frt	1.00	1.00	0.85		1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.86
Flt Protected	0.95	1.00	1.00		0.99	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	902	1827	1553		3422	1553	1736	4988	1553	3367	3471	822
Flt Permitted	0.95	1.00	1.00		0.99	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	902	1827	1553		3422	1553	1736	4988	1553	3367	3471	822
Volume (vph)	10	245	365	225	565	445	250	1765	250	275	1295	10
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	11	258	384	237	595	468	263	1858	263	289	1363	11
RTOR Reduction (vph)	0	0	219	0	0	0	0	0	118	0	0	0
Lane Group Flow (vph)	11	258	165	0	832	468	263	1858	145	289	1363	11
Heavy Vehicles (%)	100%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	100%
Turn Type	Split		Perm	Split		Perm	Prot		Perm	Prot		Over
Protected Phases	2	2		6	6		3	8		17	14	2
Permitted Phases			2			6			8			
Actuated Green, G (s)	44.0	44.0	44.0		54.0	54.0	27.0	81.0	81.0	46.0	101.0	44.0
Effective Green, g (s)	48.0	47.0	47.0		57.0	57.0	29.0	84.0	84.0	48.0	103.0	48.0
Actuated g/C Ratio	0.19	0.19	0.19		0.23	0.23	0.12	0.34	0.34	0.19	0.42	0.19
Clearance Time (s)	6.0	6.0	6.0		6.0	6.0	5.0	6.0	6.0			6.0
Vehicle Extension (s)	4.0	4.0	4.0		3.0	3.0	3.0	3.5	3.5			4.0
Lane Grp Cap (vph)	175	346	294		787	357	203	1689	526	652	1442	159
v/s Ratio Prot	0.01	c0.14			0.24		c0.15	c0.37		0.09	c0.39	0.01
v/s Ratio Perm			0.11			c0.30			0.09			
v/c Ratio	0.06	0.75	0.56		1.06	1.31	1.30	1.10	0.28	0.44	0.95	0.07
Uniform Delay, d1	81.6	94.9	91.2		95.5	95.5	109.5	82.0	59.8	88.2	69.8	81.7
Progression Factor	1.02	1.00	1.01		1.00	1.00	1.00	1.00	1.00	0.57	0.45	1.00
Incremental Delay, d2	0.2	8.6	2.8		48.3	158.7	164.4	54.7	0.3	0.3	9.0	0.3
Delay (s)	83.1	103.8	95.3		143.8	254.2	273.9	136.7	60.2	50.7	40.1	82.0
Level of Service	F	F	F		F	F	F	F	E	D	D	F
Approach Delay (s)		98.4			183.5			143.4			42.0	
Approach LOS		F			F			F			D	

Intersection Summary

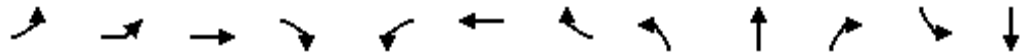
HCM Average Control Delay	119.2	HCM Level of Service	F
HCM Volume to Capacity ratio	1.07		
Actuated Cycle Length (s)	248.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	106.0%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group

# HCM Signalized Intersection Capacity Analysis

1621: MD 193 & MD 650

6/10/2008



Movement	EBL2	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR2	SBL	SBT
Lane Configurations	↘	↘	↑↑↑		↘	↑↑↑		↘↘	↑↑↑		↘	↑↑↑
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	2.0	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0
Lane Util. Factor	1.00	1.00	0.91		1.00	0.91		0.97	0.91		1.00	0.91
Frt	1.00	1.00	0.97		1.00	0.98		1.00	0.99		1.00	0.99
Flt Protected	0.95	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00
Satd. Flow (prot)	1736	902	4840		1736	4896		3367	4917		1736	4938
Flt Permitted	0.95	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00
Satd. Flow (perm)	1736	902	4840		1736	4896		3367	4917		1736	4938
Volume (vph)	135	10	1715	420	265	1770	245	535	2120	220	360	1270
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	142	11	1805	442	279	1863	258	563	2232	232	379	1337
RTOR Reduction (vph)	0	0	28	0	0	0	0	0	8	0	0	5
Lane Group Flow (vph)	142	11	2219	0	279	2121	0	563	2456	0	379	1427
Heavy Vehicles (%)	4%	100%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%
Turn Type	Prot	Split			Prot			Prot			Prot	
Protected Phases	7	4!	4		3	8!		1	6		5	2
Permitted Phases												
Actuated Green, G (s)	7.0	45.0	45.0		14.0	52.0		23.0	50.5		18.0	45.5
Effective Green, g (s)	10.0	49.0	49.0		17.0	56.0		26.0	55.0		21.0	50.0
Actuated g/C Ratio	0.07	0.33	0.33		0.11	0.37		0.17	0.37		0.14	0.33
Clearance Time (s)	5.0	6.0	6.0		5.0	6.0		5.0	6.5		5.0	6.5
Vehicle Extension (s)	3.0	5.0	5.0		3.0	5.0		3.0	5.0		3.0	5.0
Lane Grp Cap (vph)	116	295	1581		197	1828		584	1803		243	1646
v/s Ratio Prot	0.08	0.01	c0.46		c0.16	c0.43		0.17	c0.50		c0.22	0.29
v/s Ratio Perm												
v/c Ratio	1.22	0.04	1.40		1.42	1.16		0.96	1.36		1.56	0.87
Uniform Delay, d1	70.0	34.4	50.5		66.5	47.0		61.5	47.5		64.5	46.9
Progression Factor	0.69	0.83	0.67		0.71	0.62		0.71	0.70		0.79	0.68
Incremental Delay, d2	138.9	0.1	184.1		205.6	76.5		20.1	165.1		268.4	5.5
Delay (s)	186.9	28.7	218.2		252.8	105.7		64.0	198.4		319.1	37.6
Level of Service	F	C	F		F	F		E	F		F	D
Approach Delay (s)			215.4			122.8			173.4			96.5
Approach LOS			F			F			F			F

## Intersection Summary

HCM Average Control Delay	156.7	HCM Level of Service	F
HCM Volume to Capacity ratio	1.38		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	6.0
Intersection Capacity Utilization	146.3%	ICU Level of Service	H
Analysis Period (min)	15		

! Phase conflict between lane groups.

c Critical Lane Group



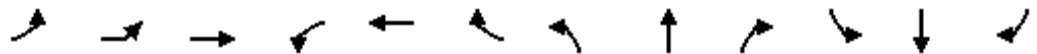
Movement	SBR	SWR
<b>Line Configurations</b>		
Ideal Flow (vphpl)	1900	1900
Total Lost time (s)		2.0
Lane Util. Factor		1.00
Frt		0.86
Flt Protected		1.00
Satd. Flow (prot)		822
Flt Permitted		1.00
Satd. Flow (perm)		822
Volume (vph)	90	10
Peak-hour factor, PHF	0.95	0.95
Adj. Flow (vph)	95	11
RTOR Reduction (vph)	0	0
Lane Group Flow (vph)	0	11
Heavy Vehicles (%)	4%	100%
Turn Type	custom	
Protected Phases	8!	
Permitted Phases		
Actuated Green, G (s)	52.0	
Effective Green, g (s)	56.0	
Actuated g/C Ratio	0.37	
Clearance Time (s)	6.0	
Vehicle Extension (s)	5.0	
Lane Grp Cap (vph)	307	
v/s Ratio Prot	0.01	
v/s Ratio Perm		
v/c Ratio	0.04	
Uniform Delay, d1	29.9	
Progression Factor	1.00	
Incremental Delay, d2	0.1	
Delay (s)	30.0	
Level of Service	C	
Approach Delay (s)		
Approach LOS		
<b>Intersection Summary</b>		



# HCM Signalized Intersection Capacity Analysis

1629: MD 193 & 15th Ave

6/10/2008



Movement	EBL2	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR2	SBL	SBT	SBR
Lane Configurations	↖	↖	↖↖↖	↖	↖↖↖		↖	↑		↖	↗	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	2.0	2.0	2.0		2.0		2.0	3.0		3.0	3.0	
Lane Util. Factor	1.00	1.00	0.91		0.91		1.00	1.00		1.00	1.00	
Frt	1.00	1.00	1.00		0.98		1.00	0.92		1.00	0.85	
Flt Protected	0.95	0.95	1.00		1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1736	902	4988		4903		1787	1740		1787	1602	
Flt Permitted	0.95	0.95	1.00		1.00		0.65	1.00		0.76	1.00	
Satd. Flow (perm)	1736	902	4988		4903		1218	1740		1423	1602	
Volume (vph)	225	10	2105	0	2195	280	1	1	1	375	1	95
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	237	11	2216	0	2311	295	1	1	1	395	1	100
RTOR Reduction (vph)	0	0	0	0	0	0	0	1	0	0	73	0
Lane Group Flow (vph)	237	11	2216	0	2606	0	1	1	0	395	29	0
Heavy Vehicles (%)	4%	100%	4%	4%	4%	4%	1%	1%	1%	1%	1%	1%
Turn Type	Prot	Split		Prot		custom	Prot		Perm			
Protected Phases	5	2!	2	1	6!		8				4	
Permitted Phases							8			4		
Actuated Green, G (s)	13.0	78.0	78.0		62.0		30.0	30.0		30.0	30.0	
Effective Green, g (s)	16.0	82.0	82.0		64.0		34.0	33.0		33.0	33.0	
Actuated g/C Ratio	0.13	0.68	0.68		0.53		0.28	0.28		0.28	0.28	
Clearance Time (s)	5.0	6.0	6.0		4.0		6.0	6.0		6.0	6.0	
Vehicle Extension (s)	3.0	5.0	5.0		3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	231	616	3408		2615		345	479		391	441	
v/s Ratio Prot	c0.14	0.01	0.44		c0.53			0.00			0.02	
v/s Ratio Perm								0.00		c0.28		
v/c Ratio	1.03	0.02	0.65		1.00		0.00	0.00		1.01	0.06	
Uniform Delay, d1	52.0	6.1	10.8		27.9		30.8	31.6		43.5	32.1	
Progression Factor	1.00	1.00	1.00		0.53		1.00	1.00		1.00	1.00	
Incremental Delay, d2	66.1	0.1	1.0		11.0		0.0	0.0		48.1	0.1	
Delay (s)	118.1	6.1	11.8		25.7		30.8	31.6		91.6	32.2	
Level of Service	F	A	B		C		C	C		F	C	
Approach Delay (s)			22.0		25.7			31.3			79.5	
Approach LOS			C		C			C			E	

## Intersection Summary

HCM Average Control Delay	28.8	HCM Level of Service	C
HCM Volume to Capacity ratio	1.00		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	7.0
Intersection Capacity Utilization	105.2%	ICU Level of Service	G
Analysis Period (min)	15		

! Phase conflict between lane groups.

c Critical Lane Group



Movement	SWR
Lane Configurations	↗
Ideal Flow (vphpl)	1900
Total Lost time (s)	2.0
Lane Util. Factor	1.00
Frt	0.86
Flt Protected	1.00
Satd. Flow (prot)	1580
Flt Permitted	1.00
Satd. Flow (perm)	1580
Volume (vph)	10
Peak-hour factor, PHF	0.95
Adj. Flow (vph)	11
RTOR Reduction (vph)	0
Lane Group Flow (vph)	11
Heavy Vehicles (%)	4%
Turn Type	custom
Protected Phases	6!
Permitted Phases	
Actuated Green, G (s)	62.0
Effective Green, g (s)	64.0
Actuated g/C Ratio	0.53
Clearance Time (s)	4.0
Vehicle Extension (s)	3.0
Lane Grp Cap (vph)	843
v/s Ratio Prot	0.01
v/s Ratio Perm	
v/c Ratio	0.01
Uniform Delay, d1	13.2
Progression Factor	1.00
Incremental Delay, d2	0.0
Delay (s)	13.2
Level of Service	B
Approach Delay (s)	
Approach LOS	
Intersection Summary	

HCM Signalized Intersection Capacity Analysis  
4: Shopping Center & MD 201

6/11/2008



Movement	EBL	EBT	EBR	WBL	WBT	WBR2	NBL2	NBL	NBT	NBR	SBL	SBT
Lane Configurations		↕	↗		↕		↗	↗	↑↑	↗	↗	↑↑↗
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		3.0	3.0		3.0		3.0	3.0	3.0	3.0	3.0	3.0
Lane Util. Factor		1.00	1.00		1.00		1.00	1.00	0.95	1.00	1.00	0.91
Frt		1.00	0.85		0.91		1.00	1.00	1.00	0.85	1.00	1.00
Flt Protected		0.96	1.00		0.99		0.95	0.95	1.00	1.00	0.95	1.00
Satd. Flow (prot)		1812	1599		1690		1703	902	3406	1524	1703	4892
Flt Permitted		0.84	1.00		0.92		0.95	0.95	1.00	1.00	0.08	1.00
Satd. Flow (perm)		1582	1599		1570		1703	902	3406	1524	142	4892
Volume (vph)	15	5	15	15	5	40	25	10	1750	15	15	2245
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Growth Factor (vph)	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Adj. Flow (vph)	16	5	16	16	5	42	26	11	1842	16	16	2363
RTOR Reduction (vph)	0	0	14	0	37	0	0	0	0	3	0	0
Lane Group Flow (vph)	0	21	2	0	26	0	26	11	1842	13	16	2368
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	6%	100%	6%	6%	6%	6%
Turn Type	Perm		Perm	Perm			Prot	Split		Perm	pm+pt	
Protected Phases		8			4		5	2!	2		1	6!
Permitted Phases	8		8	4						2		6
Actuated Green, G (s)		6.4	6.4		6.4		3.0	55.1	55.1	55.1	54.1	53.1
Effective Green, g (s)		9.4	9.4		9.4		5.0	58.6	58.6	58.6	59.6	56.6
Actuated g/C Ratio		0.12	0.12		0.12		0.06	0.73	0.73	0.73	0.75	0.71
Clearance Time (s)		6.0	6.0		6.0		5.0	6.5	6.5	6.5	5.0	6.5
Vehicle Extension (s)		3.0	3.0		3.0		3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)		186	188		184		106	661	2495	1116	164	3461
v/s Ratio Prot							c0.02	0.01	c0.54		0.00	0.48
v/s Ratio Perm		0.01	0.00		c0.02					0.01	0.07	
v/c Ratio		0.11	0.01		0.14		0.25	0.02	0.74	0.01	0.10	0.68
Uniform Delay, d1		31.6	31.2		31.7		35.7	2.9	6.2	2.9	5.3	6.6
Progression Factor		1.00	1.00		1.00		1.07	0.75	1.39	0.66	0.96	1.21
Incremental Delay, d2		0.3	0.0		0.4		0.9	0.0	1.5	0.0	0.2	0.6
Delay (s)		31.8	31.2		32.0		39.2	2.2	10.1	1.9	5.3	8.6
Level of Service		C	C		C		D	A	B	A	A	A
Approach Delay (s)		31.6			32.0			10.4				8.6
Approach LOS		C			C			B				A

Intersection Summary

HCM Average Control Delay	9.9	HCM Level of Service	A
HCM Volume to Capacity ratio	0.61		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	6.0
Intersection Capacity Utilization	86.8%	ICU Level of Service	E
Analysis Period (min)	15		

! Phase conflict between lane groups.

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis  
 4: Shopping Center & MD 201

6/11/2008

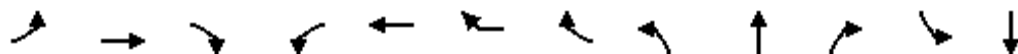


Movement	SBR	SER
<b>Intersection Summary</b>		
Line Configurations		
Ideal Flow (vphpl)	1900	1900
Total Lost time (s)		3.0
Lane Util. Factor		1.00
Frt		0.86
Flt Protected		1.00
Satd. Flow (prot)		822
Flt Permitted		1.00
Satd. Flow (perm)		822
Volume (vph)	5	10
Peak-hour factor, PHF	0.95	0.95
Growth Factor (vph)	100%	100%
Adj. Flow (vph)	5	11
RTOR Reduction (vph)	0	0
Lane Group Flow (vph)	0	11
Heavy Vehicles (%)	6%	100%
Turn Type	custom	
Protected Phases	6!	
Permitted Phases		
Actuated Green, G (s)	53.1	
Effective Green, g (s)	56.6	
Actuated g/C Ratio	0.71	
Clearance Time (s)	6.5	
Vehicle Extension (s)	3.0	
Lane Grp Cap (vph)	582	
v/s Ratio Prot	0.01	
v/s Ratio Perm		
v/c Ratio	0.02	
Uniform Delay, d1	3.5	
Progression Factor	1.00	
Incremental Delay, d2	0.1	
Delay (s)	3.5	
Level of Service	A	
Approach Delay (s)		
Approach LOS		
<b>Intersection Summary</b>		

# HCM Signalized Intersection Capacity Analysis

## 5: MD 410 & MD 201

6/11/2008



Movement	EBL	EBT	EBR	WBL	WBT	WBR	WBR2	NBL2	NBT	NBR	SBL	SBT
Lane Configurations	↖↗	↑↑	↖	↖	↑↑	↖	↖	↖↗	↑↑	↖	↖	↑↑
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Util. Factor	0.97	0.95	1.00	1.00	0.95	1.00	1.00	0.97	0.95	1.00	1.00	0.95
Frt	1.00	1.00	0.85	1.00	1.00	0.85	0.85	1.00	1.00	0.85	1.00	1.00
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Satd. Flow (prot)	3303	3406	1524	1703	3406	808	1524	3303	3406	1524	1703	3406
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Satd. Flow (perm)	3303	3406	1524	1703	3406	808	1524	3303	3406	1524	1703	3406
Volume (vph)	345	955	365	50	1675	10	550	405	895	40	125	1815
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Growth Factor (vph)	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Adj. Flow (vph)	363	1005	384	53	1763	11	579	426	942	42	132	1911
RTOR Reduction (vph)	0	0	201	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	363	1005	183	53	1763	11	579	426	942	42	132	1911
Heavy Vehicles (%)	6%	6%	6%	6%	6%	100%	6%	6%	6%	6%	6%	6%
Turn Type	Prot		Perm	Prot		Over	Free	Prot		Free	Prot	
Protected Phases	3	8		7	4	9		5	2		1	6
Permitted Phases			8				Free			Free		
Actuated Green, G (s)	14.0	51.0	51.0	4.0	42.0	6.0	160.0	18.0	58.2	160.0	13.8	54.0
Effective Green, g (s)	16.0	54.0	54.0	6.0	44.0	8.0	160.0	20.0	61.2	160.0	15.8	57.0
Actuated g/C Ratio	0.10	0.34	0.34	0.04	0.28	0.05	1.00	0.12	0.38	1.00	0.10	0.36
Clearance Time (s)	5.0	6.0	6.0	5.0	5.0	5.0		5.0	6.0		5.0	6.0
Vehicle Extension (s)	3.0	5.0	5.0	3.0	5.0	5.0		3.0	5.0		3.0	5.0
Lane Grp Cap (vph)	330	1150	514	64	937	40	1524	413	1303	1524	168	1213
v/s Ratio Prot	c0.11	0.30		0.03	c0.52	0.01		c0.13	0.28		0.08	c0.56
v/s Ratio Perm			0.12				c0.38			0.03		
v/c Ratio	1.10	0.87	0.36	0.83	1.88	0.28	0.38	1.03	0.72	0.03	0.79	1.58
Uniform Delay, d1	72.0	49.8	39.9	76.5	58.0	73.2	0.0	70.0	42.2	0.0	70.4	51.5
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.21	0.82	1.00	0.89	0.81
Incremental Delay, d2	79.1	9.3	1.9	56.0	400.8	7.7	0.7	50.5	3.2	0.0	16.9	262.0
Delay (s)	151.1	59.1	41.8	132.5	458.8	80.9	0.7	135.4	37.7	0.0	79.8	303.8
Level of Service	F	E	D	F	F	F	A	F	D	A	E	F
Approach Delay (s)		74.4			339.6				66.1			246.9
Approach LOS		E			F				E			F

### Intersection Summary

HCM Average Control Delay	204.8	HCM Level of Service	F
HCM Volume to Capacity ratio	1.45		
Actuated Cycle Length (s)	160.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	142.9%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			



Movement	SBR	SEL
Lane Configurations	↖ ↗	↖ ↗
Ideal Flow (vphpl)	1900	1900
Total Lost time (s)	3.0	3.0
Lane Util. Factor	1.00	1.00
Frt	0.85	1.00
Flt Protected	1.00	0.95
Satd. Flow (prot)	1524	902
Flt Permitted	1.00	0.95
Satd. Flow (perm)	1524	902
Volume (vph)	335	10
Peak-hour factor, PHF	0.95	0.95
Growth Factor (vph)	100%	100%
Adj. Flow (vph)	353	11
RTOR Reduction (vph)	0	0
Lane Group Flow (vph)	353	11
Heavy Vehicles (%)	6%	100%
Turn Type	custom	
Protected Phases		9
Permitted Phases	1 2 3 4	
Actuated Green, G (s)	144.0	6.0
Effective Green, g (s)	146.0	8.0
Actuated g/C Ratio	0.91	0.05
Clearance Time (s)		5.0
Vehicle Extension (s)		5.0
Lane Grp Cap (vph)	1391	45
v/s Ratio Prot		0.01
v/s Ratio Perm	0.23	
v/c Ratio	0.25	0.24
Uniform Delay, d1	0.8	73.1
Progression Factor	2.14	1.00
Incremental Delay, d2	0.1	5.9
Delay (s)	1.8	78.9
Level of Service	A	E
Approach Delay (s)		78.9
Approach LOS		E

Intersection Summary

HCM Signalized Intersection Capacity Analysis  
 4: Shopping Center & MD 201

6/11/2008



Movement	EBL	EBT	EBR	WBL	WBT	WBR2	NBL2	NBL	NBT	NBR	SBL	SBT
Lane Configurations		↕	↗		↕		↖	↖	↕↕	↖	↖	↕↕↕
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		3.0	3.0		3.0		3.0	3.0	3.0	3.0	3.0	3.0
Lane Util. Factor		1.00	1.00		1.00		1.00	1.00	0.95	1.00	1.00	0.91
Frt		1.00	0.85		0.91		1.00	1.00	1.00	0.85	1.00	1.00
Flt Protected		0.96	1.00		0.99		0.95	0.95	1.00	1.00	0.95	1.00
Satd. Flow (prot)		1800	1599		1686		1752	902	3505	1568	1752	5034
Flt Permitted		0.53	1.00		0.92		0.95	0.95	1.00	1.00	0.04	1.00
Satd. Flow (perm)		989	1599		1573		1752	902	3505	1568	73	5034
Volume (vph)	45	5	40	15	5	45	80	10	2155	35	100	1980
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Growth Factor (vph)	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Adj. Flow (vph)	47	5	42	16	5	47	84	11	2268	37	105	2084
RTOR Reduction (vph)	0	0	38	0	43	0	0	0	0	3	0	0
Lane Group Flow (vph)	0	52	4	0	25	0	84	11	2268	34	105	2089
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	3%	100%	3%	3%	3%	3%
Turn Type	Perm		Perm	Perm			Prot	Split		Perm	pm+pt	
Protected Phases		8		4			5	2!	2		1	6!
Permitted Phases	8		8	4						2	6	
Actuated Green, G (s)		12.9	12.9		12.9		12.9	138.5	138.5	138.5	147.8	136.7
Effective Green, g (s)		15.9	15.9		15.9		14.9	142.0	142.0	142.0	153.3	140.2
Actuated g/C Ratio		0.09	0.09		0.09		0.08	0.79	0.79	0.79	0.85	0.78
Clearance Time (s)		6.0	6.0		6.0		5.0	6.5	6.5	6.5	5.0	6.5
Vehicle Extension (s)		3.0	3.0		3.0		3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)		87	141		139		145	712	2765	1237	184	3921
v/s Ratio Prot							c0.05	0.01	c0.65		0.04	0.41
v/s Ratio Perm		c0.05	0.00		0.02					0.02	0.45	
v/c Ratio		0.60	0.03		0.18		0.58	0.02	0.82	0.03	0.57	0.53
Uniform Delay, d1		79.0	75.0		76.0		79.5	4.1	11.4	4.1	45.0	7.5
Progression Factor		1.00	1.00		1.00		1.17	0.13	1.48	0.00	0.77	0.88
Incremental Delay, d2		10.6	0.1		0.6		0.5	0.0	0.3	0.0	3.3	0.4
Delay (s)		89.5	75.1		76.6		93.6	0.5	17.1	0.0	37.9	7.0
Level of Service		F	E		E		F	A	B	A	D	A
Approach Delay (s)		83.1			76.6			19.4				8.5
Approach LOS		F			E			B				A

Intersection Summary		
HCM Average Control Delay	16.4	HCM Level of Service
HCM Volume to Capacity ratio	0.77	
Actuated Cycle Length (s)	180.0	Sum of lost time (s)
Intersection Capacity Utilization	85.6%	ICU Level of Service
Analysis Period (min)	15	

! Phase conflict between lane groups.  
 c Critical Lane Group

HCM Signalized Intersection Capacity Analysis  
 4: Shopping Center & MD 201

6/11/2008



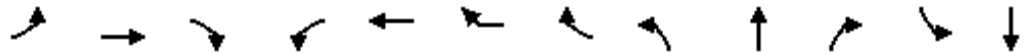
Movement	SBR	SER
<b>Intersection Summary</b>		
Line Configurations		
Ideal Flow (vphpl)	1900	1900
Total Lost time (s)		3.0
Lane Util. Factor		1.00
Frt		0.86
Flt Protected		1.00
Satd. Flow (prot)		822
Flt Permitted		1.00
Satd. Flow (perm)		822
Volume (vph)	5	10
Peak-hour factor, PHF	0.95	0.95
Growth Factor (vph)	100%	100%
Adj. Flow (vph)	5	11
RTOR Reduction (vph)	0	0
Lane Group Flow (vph)	0	11
Heavy Vehicles (%)	3%	100%
Turn Type	custom	
Protected Phases	6!	
Permitted Phases		
Actuated Green, G (s)	136.7	
Effective Green, g (s)	140.2	
Actuated g/C Ratio	0.78	
Clearance Time (s)	6.5	
Vehicle Extension (s)	3.0	
Lane Grp Cap (vph)	640	
v/s Ratio Prot	0.01	
v/s Ratio Perm		
v/c Ratio	0.02	
Uniform Delay, d1	4.5	
Progression Factor	1.00	
Incremental Delay, d2	0.0	
Delay (s)	4.5	
Level of Service	A	
Approach Delay (s)		
Approach LOS		
<b>Intersection Summary</b>		



# HCM Signalized Intersection Capacity Analysis

5: MD 410 & MD 201

6/11/2008



Movement	EBL	EBT	EBR	WBL	WBT	WBR	WBR2	NBL2	NBT	NBR	SBL	SBT
Lane Configurations	↖↗	↕	↖	↖	↕	↖	↖	↖↗	↕	↖	↖	↕
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	11	11	11	11	11	12	11	11	11	11	11	11
Total Lost time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Util. Factor	0.97	0.95	1.00	1.00	0.95	1.00	1.00	0.97	0.95	1.00	1.00	0.95
Fr <sub>t</sub>	1.00	1.00	0.85	1.00	1.00	0.85	0.85	1.00	1.00	0.85	1.00	1.00
Fl <sub>t</sub> Protected	0.95	1.00	1.00	0.95	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Satd. Flow (prot)	3286	3388	1516	1694	3388	808	1516	3286	3388	1516	1694	3388
Fl <sub>t</sub> Permitted	0.95	1.00	1.00	0.95	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Satd. Flow (perm)	3286	3388	1516	1694	3388	808	1516	3286	3388	1516	1694	3388
Volume (vph)	665	1595	495	155	1630	10	300	455	1305	55	415	1430
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Growth Factor (vph)	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Adj. Flow (vph)	700	1679	521	163	1716	11	316	479	1374	58	437	1505
RTOR Reduction (vph)	0	0	214	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	700	1679	307	163	1716	11	316	479	1374	58	437	1505
Heavy Vehicles (%)	3%	3%	3%	3%	3%	100%	3%	3%	3%	3%	3%	3%
Turn Type	Prot		Perm	Prot		custom	Free	Prot		Free	Prot	
Protected Phases	3	8		7	4			5	2		1	6
Permitted Phases			8			9	Free			Free		
Actuated Green, G (s)	21.0	53.6	53.6	18.4	51.0	6.0	180.0	20.0	44.0	180.0	31.0	55.0
Effective Green, g (s)	23.0	56.6	56.6	20.4	54.0	8.0	180.0	22.0	47.0	180.0	33.0	58.0
Actuated g/C Ratio	0.13	0.31	0.31	0.11	0.30	0.04	1.00	0.12	0.26	1.00	0.18	0.32
Clearance Time (s)	5.0	6.0	6.0	5.0	6.0	5.0		5.0	6.0		5.0	6.0
Vehicle Extension (s)	3.0	3.5	3.5	3.0	3.5	3.5		3.0	5.0		3.0	5.0
Lane Grp Cap (vph)	420	1065	477	192	1016	36	1516	402	885	1516	311	1092
v/s Ratio Prot	c0.21	0.50		0.10	c0.51			0.15	c0.41		c0.26	0.44
v/s Ratio Perm			0.20			c0.01	c0.21			0.04		
v/c Ratio	1.67	1.58	0.64	0.85	1.69	0.31	0.21	1.19	1.55	0.04	1.41	1.38
Uniform Delay, d <sub>1</sub>	78.5	61.7	53.0	78.3	63.0	83.3	0.0	79.0	66.5	0.0	73.5	61.0
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.39	0.80	1.00	1.15	1.04
Incremental Delay, d <sub>2</sub>	310.4	264.0	3.1	27.8	314.3	5.6	0.3	101.8	252.4	0.0	198.3	175.2
Delay (s)	388.9	325.7	56.1	106.1	377.3	88.9	0.3	211.7	305.5	0.0	282.9	238.8
Level of Service	F	F	E	F	F	F	A	F	F	A	F	F
Approach Delay (s)		292.5			301.8				272.7			225.6
Approach LOS		F			F				F			F

## Intersection Summary

HCM Average Control Delay	274.8	HCM Level of Service	F
HCM Volume to Capacity ratio	1.51		
Actuated Cycle Length (s)	180.0	Sum of lost time (s)	15.0
Intersection Capacity Utilization	148.1%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

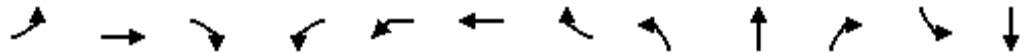


Movement	SBR	SEL
Lane Configurations	↗	↘
Ideal Flow (vphpl)	1900	1900
Lane Width	11	12
Total Lost time (s)	3.0	3.0
Lane Util. Factor	1.00	1.00
Flt	0.85	1.00
Flt Protected	1.00	0.95
Satd. Flow (prot)	1516	902
Flt Permitted	1.00	0.95
Satd. Flow (perm)	1516	902
Volume (vph)	190	10
Peak-hour factor, PHF	0.95	0.95
Growth Factor (vph)	100%	100%
Adj. Flow (vph)	200	11
RTOR Reduction (vph)	0	0
Lane Group Flow (vph)	200	11
Heavy Vehicles (%)	3%	100%
Turn Type	custom	
Protected Phases		9
Permitted Phases	1 2 3 4	
Actuated Green, G (s)	163.0	6.0
Effective Green, g (s)	166.0	8.0
Actuated g/C Ratio	0.92	0.04
Clearance Time (s)		5.0
Vehicle Extension (s)		3.5
Lane Grp Cap (vph)	1398	40
v/s Ratio Prot		0.01
v/s Ratio Perm	0.13	
v/c Ratio	0.14	0.28
Uniform Delay, d1	0.6	83.2
Progression Factor	1.08	1.00
Incremental Delay, d2	0.0	4.4
Delay (s)	0.7	87.6
Level of Service	A	F
Approach Delay (s)		87.6
Approach LOS		F
<b>Intersection Summary</b>		

# HCM Signalized Intersection Capacity Analysis

1601: MD 410 & 62nd Pl.

6/10/2008



Movement	EBL	EBT	EBR	WBL2	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations	↖	↗		↖	↖	↗			↕			↖
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0	4.0			4.0			4.0
Lane Util. Factor	1.00	0.95		1.00	1.00	0.95			1.00			1.00
Frt	1.00	1.00		1.00	1.00	1.00			0.94			0.97
Flt Protected	0.95	1.00		0.95	0.95	1.00			0.97			0.96
Satd. Flow (prot)	1703	3404		1703	902	3399			1726			1757
Flt Permitted	0.95	1.00		0.95	0.95	1.00			0.97			0.96
Satd. Flow (perm)	1703	3404		1703	902	3399			1726			1757
Volume (vph)	30	1375	5	5	10	2210	30	65	0	45	55	0
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	32	1447	5	5	11	2326	32	68	0	47	58	0
RTOR Reduction (vph)	0	0	0	0	0	1	0	0	22	0	0	9
Lane Group Flow (vph)	32	1452	0	5	11	2357	0	0	93	0	0	65
Heavy Vehicles (%)	6%	6%	6%	6%	100%	6%	6%	1%	1%	1%	1%	1%
Turn Type	Prot			Prot	Split			Split			Split	
Protected Phases	1	2!		1	2!	2		3	3		4	4
Permitted Phases												
Actuated Green, G (s)	3.0	73.8		3.0	73.8	73.8			7.5			4.7
Effective Green, g (s)	4.0	75.8		4.0	75.8	75.8			8.5			5.7
Actuated g/C Ratio	0.04	0.69		0.04	0.69	0.69			0.08			0.05
Clearance Time (s)	5.0	6.0		5.0	6.0	6.0			5.0			5.0
Vehicle Extension (s)	3.0	6.0		3.0	6.0	6.0			3.0			3.0
Lane Grp Cap (vph)	62	2346		62	622	2342			133			91
v/s Ratio Prot	c0.02	0.43		0.00	0.01	c0.69			c0.05			c0.04
v/s Ratio Perm												
v/c Ratio	0.52	0.62		0.08	0.02	1.01			0.70			0.71
Uniform Delay, d1	52.0	9.3		51.2	5.4	17.1			49.5			51.3
Progression Factor	1.00	1.00		0.76	0.59	0.37			1.00			1.00
Incremental Delay, d2	7.1	1.2		0.3	0.0	14.3			14.8			22.2
Delay (s)	59.1	10.5		39.3	3.2	20.7			64.3			73.6
Level of Service	E	B		D	A	C			E			E
Approach Delay (s)		11.6				20.7			64.3			73.6
Approach LOS		B				C			E			E

## Intersection Summary

HCM Average Control Delay	19.5	HCM Level of Service	B
HCM Volume to Capacity ratio	0.94		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	83.0%	ICU Level of Service	E
Analysis Period (min)	15		

! Phase conflict between lane groups.

c Critical Lane Group



Movement	SBR2	NER
Lane Configurations		
Ideal Flow (vphpl)	1900	1900
Total Lost time (s)		4.0
Lane Util. Factor		1.00
Frt		0.86
Flt Protected		1.00
Satd. Flow (prot)		822
Flt Permitted		1.00
Satd. Flow (perm)		822
Volume (vph)	15	10
Peak-hour factor, PHF	0.95	0.95
Adj. Flow (vph)	16	11
RTOR Reduction (vph)	0	0
Lane Group Flow (vph)	0	11
Heavy Vehicles (%)	1%	100%
Turn Type		Over
Protected Phases		2!
Permitted Phases		
Actuated Green, G (s)		73.8
Effective Green, g (s)		75.8
Actuated g/C Ratio		0.69
Clearance Time (s)		6.0
Vehicle Extension (s)		6.0
Lane Grp Cap (vph)		566
v/s Ratio Prot		0.01
v/s Ratio Perm		
v/c Ratio		0.02
Uniform Delay, d1		5.4
Progression Factor		1.00
Incremental Delay, d2		0.1
Delay (s)		5.5
Level of Service		A
Approach Delay (s)		
Approach LOS		
Intersection Summary		

# HCM Signalized Intersection Capacity Analysis

1602: MD 410 & 64th Ave.

6/10/2008



Movement	EBL	EBT	EBR	WBL	WBT	WBR	SBL	SBR	SBR2	NEL	NER
Lane Configurations	↖	↗↗		↖	↗↗		↖		↗		↖
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0		4.0		4.0
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00		1.00		1.00
Frt	1.00	1.00		1.00	0.99		1.00		0.85		0.86
Flt Protected	0.95	1.00		0.95	1.00		0.95		1.00		1.00
Satd. Flow (prot)	1703	3406		902	3384		1787		1599		822
Flt Permitted	0.95	1.00		0.95	1.00		0.95		1.00		1.00
Satd. Flow (perm)	1703	3406		902	3384		1787		1599		822
Volume (vph)	30	1445	0	10	2150	95	100	0	95	0	10
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	32	1521	0	11	2263	100	105	0	100	0	11
RTOR Reduction (vph)	0	0	0	0	3	0	0	0	73	0	0
Lane Group Flow (vph)	32	1521	0	11	2360	0	105	0	27	0	11
Heavy Vehicles (%)	6%	6%	6%	100%	6%	6%	1%	1%	1%	1%	100%
Turn Type	Prot		Split			Prot		custom		custom	
Protected Phases	1	6!		2!	2		4				6!
Permitted Phases									4		
Actuated Green, G (s)	3.0	91.3		83.3	83.3		8.7		8.7		91.3
Effective Green, g (s)	4.0	92.3		84.3	84.3		9.7		9.7		92.3
Actuated g/C Ratio	0.04	0.84		0.77	0.77		0.09		0.09		0.84
Clearance Time (s)	5.0	5.0		5.0	5.0		5.0		5.0		5.0
Vehicle Extension (s)	3.0	6.0		6.0	6.0		3.0		3.0		6.0
Lane Grp Cap (vph)	62	2858		691	2593		158		141		690
v/s Ratio Prot	0.02	c0.45		0.01	c0.70		c0.06				0.01
v/s Ratio Perm									0.02		
v/c Ratio	0.52	0.53		0.02	0.91		0.66		0.19		0.02
Uniform Delay, d1	52.0	2.6		3.0	9.9		48.6		46.5		1.4
Progression Factor	0.83	0.45		0.47	0.32		1.00		1.00		1.00
Incremental Delay, d2	5.7	0.6		0.0	2.8		10.1		0.7		0.0
Delay (s)	48.9	1.7		1.4	6.0		58.6		47.2		1.5
Level of Service	D	A		A	A		E		D		A
Approach Delay (s)		2.7			6.0		53.1			1.5	
Approach LOS		A			A		D			A	

## Intersection Summary













HCM Average Control Delay	7.1	HCM Level of Service	A
HCM Volume to Capacity ratio	0.85		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	75.0%	ICU Level of Service	D
Analysis Period (min)	15		

! Phase conflict between lane groups.

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis  
 1603: MD 410 & BW Parkway S/B Ramps

6/10/2008

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑↑	↑	↑	↑↑			↑		↑↑		↑
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0	4.0	4.0			4.0		4.0		4.0
Lane Util. Factor		0.91	1.00	1.00	0.95			1.00		0.97		1.00
Frt		1.00	0.85	1.00	1.00			1.00		1.00		0.85
Flt Protected		1.00	1.00	0.95	1.00			1.00		0.95		1.00
Satd. Flow (prot)		4893	1524	1703	3406			950		3303		1524
Flt Permitted		1.00	1.00	0.95	1.00			1.00		0.95		1.00
Satd. Flow (perm)		4893	1524	1703	3406			950		3303		1524
Volume (vph)	0	1350	195	320	2010	0	0	10	0	105	0	320
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	1421	205	337	2116	0	0	11	0	111	0	337
RTOR Reduction (vph)	0	0	140	0	0	0	0	0	0	0	0	14
Lane Group Flow (vph)	0	1421	65	337	2116	0	0	11	0	111	0	323
Heavy Vehicles (%)	6%	6%	6%	6%	6%	6%	6%	100%	6%	6%	6%	6%
Turn Type			Perm	Prot						Prot		custom
Protected Phases		6		5	2 3!			3!		4		
Permitted Phases			6									4
Actuated Green, G (s)		33.7	33.7	22.5	76.2			10.0		23.8		23.8
Effective Green, g (s)		34.7	34.7	23.5	77.2			11.0		24.8		24.8
Actuated g/C Ratio		0.32	0.32	0.21	0.70			0.10		0.23		0.23
Clearance Time (s)		5.0	5.0	5.0				5.0		5.0		5.0
Vehicle Extension (s)		6.0	6.0	3.0				6.0		3.0		3.0
Lane Grp Cap (vph)		1544	481	364	2390			95		745		344
v/s Ratio Prot		0.29		0.20	c0.62			0.01		0.03		
v/s Ratio Perm			0.04									c0.21
v/c Ratio		0.92	0.13	0.93	0.89			0.12		0.15		0.94
Uniform Delay, d1		36.3	26.9	42.4	12.9			45.1		34.1		41.9
Progression Factor		0.83	0.84	1.68	0.68			1.00		1.00		1.00
Incremental Delay, d2		9.2	0.5	16.1	2.4			2.5		0.1		32.7
Delay (s)		39.2	23.1	87.5	11.3			47.5		34.2		74.5
Level of Service		D	C	F	B			D		C		E
Approach Delay (s)		37.2			21.7			47.5			64.6	
Approach LOS		D			C			D			E	
<b>Intersection Summary</b>												
HCM Average Control Delay			31.6			HCM Level of Service				C		
HCM Volume to Capacity ratio			0.90									
Actuated Cycle Length (s)			110.0			Sum of lost time (s)				8.0		
Intersection Capacity Utilization			82.0%			ICU Level of Service				E		
Analysis Period (min)			15									
! Phase conflict between lane groups.												
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis  
 1604: MD 410 & BW Parkway N/B Ramps

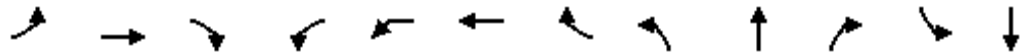
6/10/2008

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0			4.0	4.0	4.0		4.0		4.0	
Lane Util. Factor	1.00	0.95			0.91	1.00	0.97		1.00		1.00	
Frt	1.00	1.00			1.00	0.85	1.00		0.85		1.00	
Flt Protected	0.95	1.00			1.00	1.00	0.95		1.00		1.00	
Satd. Flow (prot)	1703	3406			4893	1524	3303		1524		950	
Flt Permitted	0.95	1.00			1.00	1.00	0.95		1.00		1.00	
Satd. Flow (perm)	1703	3406			4893	1524	3303		1524		950	
Volume (vph)	315	1225	0	0	1875	315	370	0	70	0	10	0
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	332	1289	0	0	1974	332	389	0	74	0	11	0
RTOR Reduction (vph)	0	0	0	0	0	165	0	0	65	0	0	0
Lane Group Flow (vph)	332	1289	0	0	1974	167	389	0	9	0	11	0
Heavy Vehicles (%)	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%	100%	6%
Turn Type	Prot				Perm		Prot	custom				
Protected Phases	1	6 3!			2		4				3!	
Permitted Phases						2			4			
Actuated Green, G (s)	21.9	87.0			45.1	45.1	13.0		13.0		10.0	
Effective Green, g (s)	22.9	88.0			46.1	46.1	14.0		14.0		11.0	
Actuated g/C Ratio	0.21	0.80			0.42	0.42	0.13		0.13		0.10	
Clearance Time (s)	5.0				5.0	5.0	5.0		5.0		5.0	
Vehicle Extension (s)	3.0				6.0	6.0	3.0		3.0		6.0	
Lane Grp Cap (vph)	355	2725			2051	639	420		194		95	
v/s Ratio Prot	c0.19	c0.38			c0.40		c0.12				0.01	
v/s Ratio Perm						0.11			0.01			
v/c Ratio	0.94	0.47			0.96	0.26	0.93		0.05		0.12	
Uniform Delay, d1	42.8	3.5			31.1	20.8	47.5		42.2		45.1	
Progression Factor	1.29	0.74			0.97	1.60	1.00		1.00		1.00	
Incremental Delay, d2	20.7	0.2			8.1	0.5	26.2		0.1		1.5	
Delay (s)	76.0	2.8			38.4	33.8	73.7		42.3		46.6	
Level of Service	E	A			D	C	E		D		D	
Approach Delay (s)		17.8			37.7			68.7			46.6	
Approach LOS		B			D			E			D	
<b>Intersection Summary</b>												
HCM Average Control Delay			33.7				HCM Level of Service				C	
HCM Volume to Capacity ratio			0.87									
Actuated Cycle Length (s)			110.0				Sum of lost time (s)			12.0		
Intersection Capacity Utilization			80.9%				ICU Level of Service				D	
Analysis Period (min)			15									
! Phase conflict between lane groups.												
c Critical Lane Group												

# HCM Signalized Intersection Capacity Analysis

1605: MD 410 & 67th. Ave.

6/10/2008



Movement	EBL	EBT	EBR	WBL2	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations	↖	↗		↖	↖	↗		↖	↗			↖
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0	4.0		4.0	4.0			4.0
Lane Util. Factor	1.00	0.95		1.00	1.00	0.95		1.00	1.00			1.00
Frt	1.00	1.00		1.00	1.00	1.00		1.00	0.86			0.94
Flt Protected	0.95	1.00		0.95	0.95	1.00		0.95	1.00			0.98
Satd. Flow (prot)	1703	3399		1703	902	3404		1787	1618			1734
Flt Permitted	0.95	1.00		0.95	0.95	1.00		0.81	1.00			0.88
Satd. Flow (perm)	1703	3399		1703	902	3404		1515	1618			1561
Volume (vph)	5	1190	15	15	10	2000	5	175	5	65	15	5
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	5	1253	16	16	11	2105	5	184	5	68	16	5
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	57	0	0	13
Lane Group Flow (vph)	5	1269	0	16	11	2110	0	184	16	0	0	24
Heavy Vehicles (%)	6%	6%	6%	6%	100%	6%	6%	1%	1%	1%	1%	1%
Turn Type	Prot		Prot		Split		Perm			Perm		
Protected Phases	1	2!		1	2!	2			8			4
Permitted Phases								8				4
Actuated Green, G (s)	2.0	76.5		2.0	76.5	76.5		16.5	16.5			16.5
Effective Green, g (s)	3.0	77.5		3.0	77.5	77.5		17.5	17.5			17.5
Actuated g/C Ratio	0.03	0.70		0.03	0.70	0.70		0.16	0.16			0.16
Clearance Time (s)	5.0	5.0		5.0	5.0	5.0		5.0	5.0			5.0
Vehicle Extension (s)	3.0	6.0		3.0	6.0	6.0		3.0	3.0			3.0
Lane Grp Cap (vph)	46	2395		46	636	2398		241	257			248
v/s Ratio Prot	0.00	0.37		c0.01	0.01	c0.62			0.01			
v/s Ratio Perm								c0.12				0.02
v/c Ratio	0.11	0.53		0.35	0.02	0.88		0.76	0.06			0.09
Uniform Delay, d1	52.2	7.7		52.5	4.9	12.6		44.3	39.3			39.5
Progression Factor	0.87	0.32		0.90	0.46	0.38		1.00	1.00			1.00
Incremental Delay, d2	0.9	0.8		2.6	0.0	3.0		13.4	0.1			0.2
Delay (s)	46.2	3.2		50.0	2.3	7.9		57.6	39.4			39.7
Level of Service	D	A		D	A	A		E	D			D
Approach Delay (s)		3.4				8.1			52.4			39.7
Approach LOS		A				A			D			D

## Intersection Summary

HCM Average Control Delay	9.9	HCM Level of Service	A
HCM Volume to Capacity ratio	0.84		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	79.7%	ICU Level of Service	D
Analysis Period (min)	15		

! Phase conflict between lane groups.

c Critical Lane Group





Movement	SBR2	NER
Lane Configurations		
Ideal Flow (vphpl)	1900	1900
Total Lost time (s)		4.0
Lane Util. Factor		1.00
Frt		0.86
Flt Protected		1.00
Satd. Flow (prot)		822
Flt Permitted		1.00
Satd. Flow (perm)		822
Volume (vph)	15	10
Peak-hour factor, PHF	0.95	0.95
Adj. Flow (vph)	16	11
RTOR Reduction (vph)	0	0
Lane Group Flow (vph)	0	11
Heavy Vehicles (%)	1%	100%
Turn Type		Over
Protected Phases		2!
Permitted Phases		
Actuated Green, G (s)		76.5
Effective Green, g (s)		77.5
Actuated g/C Ratio		0.70
Clearance Time (s)		5.0
Vehicle Extension (s)		6.0
Lane Grp Cap (vph)		579
v/s Ratio Prot		0.01
v/s Ratio Perm		
v/c Ratio		0.02
Uniform Delay, d1		4.9
Progression Factor		1.00
Incremental Delay, d2		0.1
Delay (s)		4.9
Level of Service		A
Approach Delay (s)		
Approach LOS		
Intersection Summary		

HCM Signalized Intersection Capacity Analysis  
 1606: MD 410 & Veterans Pkwy

6/10/2008



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑		↖	↑↑		↖↖	↑	↖		↑	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0		4.0	4.0		4.0	4.0	4.0		4.0	
Lane Util. Factor		0.95		1.00	0.95		0.97	1.00	1.00		1.00	
Frt		0.91		1.00	1.00		1.00	1.00	0.85		1.00	
Flt Protected		1.00		0.95	1.00		0.95	1.00	1.00		1.00	
Satd. Flow (prot)		3113		1703	3406		3303	950	1524		950	
Flt Permitted		1.00		0.08	1.00		0.95	1.00	1.00		1.00	
Satd. Flow (perm)		3113		149	3406		3303	950	1524		950	
Volume (vph)	0	620	830	345	950	0	1115	10	315	0	10	0
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	653	874	363	1000	0	1174	11	332	0	11	0
RTOR Reduction (vph)	0	220	0	0	0	0	0	0	220	0	0	0
Lane Group Flow (vph)	0	1307	0	363	1000	0	1174	11	112	0	11	0
Heavy Vehicles (%)	6%	6%	6%	6%	6%	6%	6%	100%	6%	6%	100%	6%
Turn Type				pm+pt			Split		Perm			
Protected Phases		6		5	2		4!	4			4!	
Permitted Phases				2					4			
Actuated Green, G (s)		43.0		64.0	64.0		36.0	36.0	36.0		36.0	
Effective Green, g (s)		44.0		65.0	65.0		37.0	37.0	37.0		37.0	
Actuated g/C Ratio		0.40		0.59	0.59		0.34	0.34	0.34		0.34	
Clearance Time (s)		5.0		5.0	5.0		5.0	5.0	5.0		5.0	
Vehicle Extension (s)		6.0		3.0	6.0		3.0	3.0	3.0		3.0	
Lane Grp Cap (vph)		1245		328	2013		1111	320	513		320	
v/s Ratio Prot		0.42		c0.17	0.29		c0.36	0.01			0.01	
v/s Ratio Perm				c0.48					0.07			
v/c Ratio		1.05		1.11	0.50		1.06	0.03	0.22		0.03	
Uniform Delay, d1		33.0		43.1	13.0		36.5	24.5	26.1		24.5	
Progression Factor		0.35		1.00	1.00		1.00	1.00	1.00		1.00	
Incremental Delay, d2		38.6		81.5	0.9		43.3	0.0	0.2		0.0	
Delay (s)		50.2		124.7	13.9		79.8	24.6	26.4		24.6	
Level of Service		D		F	B		E	C	C		C	
Approach Delay (s)		50.2			43.4			67.7			24.6	
Approach LOS		D			D			E			C	

Intersection Summary

HCM Average Control Delay	54.1	HCM Level of Service	D
HCM Volume to Capacity ratio	1.06		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	111.4%	ICU Level of Service	H
Analysis Period (min)	15		

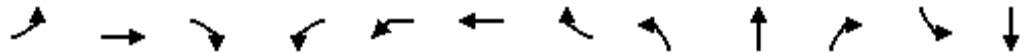
! Phase conflict between lane groups.

c Critical Lane Group

# HCM Signalized Intersection Capacity Analysis

1601: MD 410 & 62nd Pl.

6/10/2008



Movement	EBL	EBT	EBR	WBL2	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations	↔	↕		↔	↔	↕			↕			↕
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0	4.0			4.0			4.0
Lane Util. Factor	1.00	0.95		1.00	1.00	0.95			1.00			1.00
Frt	1.00	0.99		1.00	1.00	1.00			0.97			0.96
Flt Protected	0.95	1.00		0.95	0.95	1.00			0.96			0.97
Satd. Flow (prot)	1752	3484		1752	902	3495			1760			1742
Flt Permitted	0.95	1.00		0.95	0.95	1.00			0.96			0.97
Satd. Flow (perm)	1752	3484		1752	902	3495			1760			1742
Volume (vph)	30	2280	95	25	10	2185	40	80	0	20	120	0
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	32	2400	100	26	11	2300	42	84	0	21	126	0
RTOR Reduction (vph)	0	0	0	0	0	1	0	0	9	0	0	15
Lane Group Flow (vph)	32	2500	0	26	11	2341	0	0	96	0	0	169
Heavy Vehicles (%)	3%	3%	3%	3%	100%	3%	3%	1%	1%	1%	1%	1%
Turn Type	Prot			Prot	Split			Split			Split	
Protected Phases	1	2!		1	2!	2		3	3		4	4
Permitted Phases												
Actuated Green, G (s)	4.0	71.0		4.0	71.0	71.0			5.0			9.0
Effective Green, g (s)	5.0	73.0		5.0	73.0	73.0			6.0			10.0
Actuated g/C Ratio	0.05	0.66		0.05	0.66	0.66			0.05			0.09
Clearance Time (s)	5.0	6.0		5.0	6.0	6.0			5.0			5.0
Vehicle Extension (s)	3.0	6.0		3.0	6.0	6.0			3.0			3.0
Lane Grp Cap (vph)	80	2312		80	599	2319			96			158
v/s Ratio Prot	c0.02	c0.72		0.01	0.01	0.67			c0.05			c0.10
v/s Ratio Perm												
v/c Ratio	0.40	1.08		0.33	0.02	1.01			1.01			1.07
Uniform Delay, d1	51.0	18.5		50.9	6.3	18.5			52.0			50.0
Progression Factor	1.00	1.00		1.11	0.81	0.43			1.00			1.00
Incremental Delay, d2	3.3	45.0		0.9	0.0	14.0			93.2			90.5
Delay (s)	54.3	63.5		57.1	5.1	22.0			145.2			140.5
Level of Service	D	E		E	A	C			F			F
Approach Delay (s)		63.4				22.3			145.2			140.5
Approach LOS		E				C			F			F

## Intersection Summary

HCM Average Control Delay	48.9	HCM Level of Service	D
HCM Volume to Capacity ratio	1.04		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	107.3%	ICU Level of Service	G
Analysis Period (min)	15		

! Phase conflict between lane groups.

c Critical Lane Group



Movement	SBR2	NER
Lane Configurations		
Ideal Flow (vphpl)	1900	1900
Total Lost time (s)		4.0
Lane Util. Factor		1.00
Frt		0.86
Flt Protected		1.00
Satd. Flow (prot)		822
Flt Permitted		1.00
Satd. Flow (perm)		822
Volume (vph)	55	10
Peak-hour factor, PHF	0.95	0.95
Adj. Flow (vph)	58	11
RTOR Reduction (vph)	0	0
Lane Group Flow (vph)	0	11
Heavy Vehicles (%)	1%	100%
Turn Type		Over
Protected Phases		2!
Permitted Phases		
Actuated Green, G (s)		71.0
Effective Green, g (s)		73.0
Actuated g/C Ratio		0.66
Clearance Time (s)		6.0
Vehicle Extension (s)		6.0
Lane Grp Cap (vph)		546
v/s Ratio Prot		0.01
v/s Ratio Perm		
v/c Ratio		0.02
Uniform Delay, d1		6.3
Progression Factor		1.00
Incremental Delay, d2		0.1
Delay (s)		6.4
Level of Service		A
Approach Delay (s)		
Approach LOS		
Intersection Summary		

# HCM Signalized Intersection Capacity Analysis

1602: MD 410 & 64th Ave.

6/10/2008



Movement	EBL	EBT	EBR	WBL	WBT	WBR	SBL	SBR	SBR2	NEL	NER
Lane Configurations	↖	↗↗		↖	↗↗		↖		↖		↖
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0		4.0		4.0
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00		1.00		1.00
Frt	1.00	1.00		1.00	0.99		1.00		0.85		0.86
Flt Protected	0.95	1.00		0.95	1.00		0.95		1.00		1.00
Satd. Flow (prot)	1752	3505		902	3478		1787		1599		822
Flt Permitted	0.95	1.00		0.95	1.00		0.95		1.00		1.00
Satd. Flow (perm)	1752	3505		902	3478		1787		1599		822
Volume (vph)	100	2320	0	10	2170	115	80	0	80	0	10
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	105	2442	0	11	2284	121	84	0	84	0	11
RTOR Reduction (vph)	0	0	0	0	3	0	0	0	78	0	0
Lane Group Flow (vph)	105	2442	0	11	2402	0	84	0	6	0	11
Heavy Vehicles (%)	3%	3%	3%	100%	3%	3%	1%	1%	1%	1%	100%
Turn Type	Prot			Split			Prot		custom		custom
Protected Phases	1	6!		2!	2		4				6!
Permitted Phases									4		
Actuated Green, G (s)	8.0	93.0		80.0	80.0		7.0		7.0		93.0
Effective Green, g (s)	9.0	94.0		81.0	81.0		8.0		8.0		94.0
Actuated g/C Ratio	0.08	0.85		0.74	0.74		0.07		0.07		0.85
Clearance Time (s)	5.0	5.0		5.0	5.0		5.0		5.0		5.0
Vehicle Extension (s)	3.0	6.0		6.0	6.0		3.0		3.0		6.0
Lane Grp Cap (vph)	143	2995		664	2561		130		116		702
v/s Ratio Prot	0.06	c0.70		0.01	c0.69		c0.05				0.01
v/s Ratio Perm									0.00		
v/c Ratio	0.73	0.82		0.02	0.94		0.65		0.05		0.02
Uniform Delay, d1	49.3	3.8		3.9	12.4		49.6		47.5		1.2
Progression Factor	0.70	0.66		0.60	0.46		1.00		1.00		1.00
Incremental Delay, d2	1.8	0.2		0.0	4.0		10.5		0.2		0.0
Delay (s)	36.4	2.8		2.3	9.7		60.2		47.7		1.2
Level of Service	D	A		A	A		E		D		A
Approach Delay (s)		4.2			9.7		53.9			1.2	
Approach LOS		A			A		D			A	

## Intersection Summary

HCM Average Control Delay	8.4	HCM Level of Service	A
HCM Volume to Capacity ratio	0.89		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	94.2%	ICU Level of Service	F
Analysis Period (min)	15		

! Phase conflict between lane groups.

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis  
 1603: MD 410 & BW Parkway S/B Ramps

6/10/2008



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑↑	↑	↑	↑↑			↑		↑↑		↑
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0	4.0	4.0			4.0		4.0		4.0
Lane Util. Factor		0.91	1.00	1.00	0.95			1.00		0.97		1.00
Frt		1.00	0.85	1.00	1.00			1.00		1.00		0.85
Flt Protected		1.00	1.00	0.95	1.00			1.00		0.95		1.00
Satd. Flow (prot)		5036	1568	1752	3505			950		3400		1568
Flt Permitted		1.00	1.00	0.95	1.00			1.00		0.95		1.00
Satd. Flow (perm)		5036	1568	1752	3505			950		3400		1568
Volume (vph)	0	2010	390	345	1970	0	0	10	0	225	0	395
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	2116	411	363	2074	0	0	11	0	237	0	416
RTOR Reduction (vph)	0	0	191	0	0	0	0	0	0	0	0	19
Lane Group Flow (vph)	0	2116	220	363	2074	0	0	11	0	237	0	397
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%	3%	100%	3%	3%	3%	3%
Turn Type			Perm	Prot						Prot		custom
Protected Phases		6		5	2 3!			3!		4		
Permitted Phases			6									4
Actuated Green, G (s)		41.0	41.0	19.0	80.0			10.0		20.0		20.0
Effective Green, g (s)		42.0	42.0	20.0	81.0			11.0		21.0		21.0
Actuated g/C Ratio		0.38	0.38	0.18	0.74			0.10		0.19		0.19
Clearance Time (s)		5.0	5.0	5.0				5.0		5.0		5.0
Vehicle Extension (s)		6.0	6.0	3.0				6.0		3.0		3.0
Lane Grp Cap (vph)		1923	599	319	2581			95		649		299
v/s Ratio Prot		c0.42		c0.21	c0.59			0.01		0.07		
v/s Ratio Perm			0.14									c0.25
v/c Ratio		1.10	0.37	1.14	0.80			0.12		0.37		1.33
Uniform Delay, d1		34.0	24.4	45.0	9.4			45.1		38.7		44.5
Progression Factor		1.02	1.48	1.61	0.65			1.00		1.00		1.00
Incremental Delay, d2		50.4	1.0	75.9	1.2			2.5		0.4		168.2
Delay (s)		85.2	37.2	148.4	7.3			47.5		39.1		212.7
Level of Service		F	D	F	A			D		D		F
Approach Delay (s)		77.4			28.3			47.5			149.7	
Approach LOS		E			C			D			F	

**Intersection Summary**

HCM Average Control Delay	64.5	HCM Level of Service	E
HCM Volume to Capacity ratio	1.10		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	85.6%	ICU Level of Service	E
Analysis Period (min)	15		

! Phase conflict between lane groups.

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis  
 1604: MD 410 & BW Parkway N/B Ramps

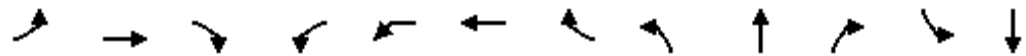
6/10/2008

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0			4.0	4.0	4.0		4.0		4.0	
Lane Util. Factor	1.00	0.95			0.91	1.00	0.97		1.00		1.00	
Frt	1.00	1.00			1.00	0.85	1.00		0.85		1.00	
Flt Protected	0.95	1.00			1.00	1.00	0.95		1.00		1.00	
Satd. Flow (prot)	1752	3505			5036	1568	3400		1568		950	
Flt Permitted	0.95	1.00			1.00	1.00	0.95		1.00		1.00	
Satd. Flow (perm)	1752	3505			5036	1568	3400		1568		950	
Volume (vph)	200	2120	0	0	1850	170	380	0	275	0	10	0
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	211	2232	0	0	1947	179	400	0	289	0	11	0
RTOR Reduction (vph)	0	0	0	0	0	90	0	0	18	0	0	0
Lane Group Flow (vph)	211	2232	0	0	1947	89	400	0	271	0	11	0
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	100%	3%
Turn Type	Prot				Perm		Prot	custom				
Protected Phases	1	3 6!			2		4				3!	
Permitted Phases						2			4			
Actuated Green, G (s)	12.0	84.0			41.0	41.0	16.0		16.0		21.0	
Effective Green, g (s)	13.0	85.0			42.0	42.0	17.0		17.0		22.0	
Actuated g/C Ratio	0.12	0.77			0.38	0.38	0.15		0.15		0.20	
Clearance Time (s)	5.0				5.0	5.0	5.0		5.0		5.0	
Vehicle Extension (s)	3.0				6.0	6.0	3.0		3.0		6.0	
Lane Grp Cap (vph)	207	2708			1923	599	525		242		190	
v/s Ratio Prot	c0.12	c0.64			c0.39		0.12				0.01	
v/s Ratio Perm						0.06			c0.17			
v/c Ratio	1.02	0.82			1.01	0.15	0.76		1.12		0.06	
Uniform Delay, d1	48.5	7.8			34.0	22.3	44.6		46.5		35.6	
Progression Factor	1.32	1.55			1.01	1.38	1.00		1.00		1.00	
Incremental Delay, d2	34.7	0.9			19.0	0.3	6.5		94.2		0.4	
Delay (s)	98.9	13.0			53.3	31.0	51.0		140.7		36.0	
Level of Service	F	B			D	C	D		F		D	
Approach Delay (s)		20.4			51.4			88.6			36.0	
Approach LOS		C			D			F			D	
<b>Intersection Summary</b>												
HCM Average Control Delay			41.9		HCM Level of Service				D			
HCM Volume to Capacity ratio			0.97									
Actuated Cycle Length (s)			110.0		Sum of lost time (s)				12.0			
Intersection Capacity Utilization			82.8%		ICU Level of Service				E			
Analysis Period (min)			15									
! Phase conflict between lane groups.												
c Critical Lane Group												

# HCM Signalized Intersection Capacity Analysis

1605: MD 410 & 67th. Ave.

6/10/2008



Movement	EBL	EBT	EBR	WBL2	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0	4.0		4.0	4.0			4.0
Lane Util. Factor	1.00	0.95		1.00	1.00	0.95		1.00	1.00			1.00
Frt	1.00	1.00		1.00	1.00	1.00		1.00	0.86			0.95
Flt Protected	0.95	1.00		0.95	0.95	1.00		0.95	1.00			0.98
Satd. Flow (prot)	1752	3499		1752	902	3498		1787	1609			1767
Flt Permitted	0.95	1.00		0.95	0.95	1.00		0.75	1.00			0.92
Satd. Flow (perm)	1752	3499		1752	902	3498		1407	1609			1646
Volume (vph)	5	2280	25	25	10	1840	25	175	5	125	5	5
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	5	2400	26	26	11	1937	26	184	5	132	5	5
RTOR Reduction (vph)	0	0	0	0	0	1	0	0	64	0	0	4
Lane Group Flow (vph)	5	2426	0	26	11	1962	0	184	73	0	0	11
Heavy Vehicles (%)	3%	3%	3%	3%	100%	3%	3%	1%	1%	1%	1%	1%
Turn Type	Prot			Prot	Split			Perm			Perm	
Protected Phases	1	2!		1	2!	2			8			4
Permitted Phases								8				4
Actuated Green, G (s)	3.0	75.8		3.0	75.8	75.8		16.2	16.2			16.2
Effective Green, g (s)	4.0	76.8		4.0	76.8	76.8		17.2	17.2			17.2
Actuated g/C Ratio	0.04	0.70		0.04	0.70	0.70		0.16	0.16			0.16
Clearance Time (s)	5.0	5.0		5.0	5.0	5.0		5.0	5.0			5.0
Vehicle Extension (s)	3.0	6.0		3.0	6.0	6.0		3.0	3.0			3.0
Lane Grp Cap (vph)	64	2443		64	630	2442		220	252			257
v/s Ratio Prot	0.00	c0.69		c0.01	0.01	0.56			0.05			
v/s Ratio Perm								c0.13				0.01
v/c Ratio	0.08	0.99		0.41	0.02	0.80		0.84	0.29			0.04
Uniform Delay, d1	51.2	16.3		51.8	5.1	11.4		45.0	41.0			39.4
Progression Factor	0.88	0.56		0.89	0.55	0.50		1.00	1.00			1.00
Incremental Delay, d2	0.3	11.2		2.9	0.0	2.0		23.2	0.6			0.1
Delay (s)	45.4	20.4		49.0	2.8	7.7		68.2	41.6			39.5
Level of Service	D	C		D	A	A		E	D			D
Approach Delay (s)		20.4				8.2			56.9			39.5
Approach LOS		C				A			E			D

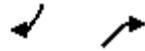
## Intersection Summary

HCM Average Control Delay	17.8	HCM Level of Service	B
HCM Volume to Capacity ratio	0.94		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	102.7%	ICU Level of Service	G
Analysis Period (min)	15		

! Phase conflict between lane groups.

c Critical Lane Group





Movement	SBR2	NER
Lane Configurations		
Ideal Flow (vphpl)	1900	1900
Total Lost time (s)		4.0
Lane Util. Factor		1.00
Frt		0.86
Flt Protected		1.00
Satd. Flow (prot)		822
Flt Permitted		1.00
Satd. Flow (perm)		822
Volume (vph)	5	10
Peak-hour factor, PHF	0.95	0.95
Adj. Flow (vph)	5	11
RTOR Reduction (vph)	0	0
Lane Group Flow (vph)	0	11
Heavy Vehicles (%)	1%	100%
Turn Type		Over
Protected Phases		2!
Permitted Phases		
Actuated Green, G (s)		75.8
Effective Green, g (s)		76.8
Actuated g/C Ratio		0.70
Clearance Time (s)		5.0
Vehicle Extension (s)		6.0
Lane Grp Cap (vph)		574
v/s Ratio Prot		0.01
v/s Ratio Perm		
v/c Ratio		0.02
Uniform Delay, d1		5.1
Progression Factor		1.00
Incremental Delay, d2		0.1
Delay (s)		5.1
Level of Service		A
Approach Delay (s)		
Approach LOS		
Intersection Summary		

HCM Signalized Intersection Capacity Analysis  
 1606: MD 410 & Veterans Pkwy

6/10/2008

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑		↖	↑↑		↖↖	↑	↖		↑	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0		4.0	4.0		4.0	4.0	4.0		4.0	
Lane Util. Factor		0.95		1.00	0.95		0.97	1.00	1.00		1.00	
Frt		0.92		1.00	1.00		1.00	1.00	0.85		1.00	
Flt Protected		1.00		0.95	1.00		0.95	1.00	1.00		1.00	
Satd. Flow (prot)		3231		1752	3505		3400	950	1568		950	
Flt Permitted		1.00		0.06	1.00		0.95	1.00	1.00		1.00	
Satd. Flow (perm)		3231		112	3505		3400	950	1568		950	
Volume (vph)	0	1105	1200	295	895	0	845	10	290	0	10	0
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	1163	1263	311	942	0	889	11	305	0	11	0
RTOR Reduction (vph)	0	178	0	0	0	0	0	0	177	0	0	0
Lane Group Flow (vph)	0	2248	0	311	942	0	889	11	128	0	11	0
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%	3%	100%	3%	3%	100%	3%
Turn Type				pm+pt			Split		Perm			
Protected Phases		6		5	2		4!	4			4!	
Permitted Phases				2					4			
Actuated Green, G (s)		61.0		77.0	77.0		23.0	23.0	23.0		23.0	
Effective Green, g (s)		62.0		78.0	78.0		24.0	24.0	24.0		24.0	
Actuated g/C Ratio		0.56		0.71	0.71		0.22	0.22	0.22		0.22	
Clearance Time (s)		5.0		5.0	5.0		5.0	5.0	5.0		5.0	
Vehicle Extension (s)		6.0		3.0	6.0		3.0	3.0	3.0		3.0	
Lane Grp Cap (vph)		1821		258	2485		742	207	342		207	
v/s Ratio Prot		c0.70		c0.13	0.27		c0.26	0.01			0.01	
v/s Ratio Perm				0.72					0.08			
v/c Ratio		1.23		1.21	0.38		1.20	0.05	0.38		0.05	
Uniform Delay, d1		24.0		45.7	6.4		43.0	34.0	36.6		34.0	
Progression Factor		0.96		1.00	1.00		1.00	1.00	1.00		1.00	
Incremental Delay, d2		107.3		123.2	0.4		102.0	0.1	0.7		0.1	
Delay (s)		130.4		168.8	6.8		145.0	34.1	37.3		34.1	
Level of Service		F		F	A		F	C	D		C	
Approach Delay (s)		130.4			47.0			116.7			34.1	
Approach LOS		F			D			F			C	
<b>Intersection Summary</b>												
HCM Average Control Delay			105.5			HCM Level of Service			F			
HCM Volume to Capacity ratio			1.18									
Actuated Cycle Length (s)			110.0			Sum of lost time (s)			8.0			
Intersection Capacity Utilization			126.2%			ICU Level of Service			H			
Analysis Period (min)			15									
! Phase conflict between lane groups.												
c Critical Lane Group												

# HCM Signalized Intersection Capacity Analysis

9: MD 450 & MD 410

6/11/2008



Movement	EBL	EBT	EBR	WBL	WBT	WBR2	NBL2	NBL	NBT	NBR	SBL	SBT
Lane Configurations	↙	↑↑↑	↘	↙↘	↑↑↑	↙	↙	↙	↑↑	↘	↙↘	↑↑
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	0.91	1.00	0.97	0.91	1.00	1.00	1.00	0.95	1.00	0.97	0.95
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	1.00	0.85	1.00	1.00
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	0.95	1.00	1.00	0.95	1.00
Satd. Flow (prot)	1703	4893	1524	3303	4893	1524	1703	902	3406	1524	3303	3406
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	0.95	1.00	1.00	0.95	1.00
Satd. Flow (perm)	1703	4893	1524	3303	4893	1524	1703	902	3406	1524	3303	3406
Volume (vph)	280	670	455	470	2090	135	770	10	1065	440	180	745
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Growth Factor (vph)	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Adj. Flow (vph)	295	705	479	495	2200	142	811	11	1121	463	189	784
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	208	0	0
Lane Group Flow (vph)	295	705	479	495	2200	142	811	11	1121	255	189	784
Heavy Vehicles (%)	6%	6%	6%	6%	6%	6%	6%	100%	6%	6%	6%	6%
Turn Type	Prot		Free	Prot		Free	Prot	Prot		Perm	Prot	
Protected Phases	1	6		5	2		3	4!	8		7	4!
Permitted Phases			Free			Free				8		
Actuated Green, G (s)	10.0	26.0	100.0	16.0	32.0	100.0	23.0	13.0	31.0	31.0	5.0	13.0
Effective Green, g (s)	11.0	28.0	100.0	17.0	34.0	100.0	24.0	15.0	33.0	33.0	6.0	15.0
Actuated g/C Ratio	0.11	0.28	1.00	0.17	0.34	1.00	0.24	0.15	0.33	0.33	0.06	0.15
Clearance Time (s)	5.0	6.0		5.0	6.0		5.0	6.0	6.0	6.0	5.0	6.0
Vehicle Extension (s)	3.0	6.0		3.0	6.0		3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	187	1370	1524	562	1664	1524	409	135	1124	503	198	511
v/s Ratio Prot	c0.17	0.14		0.15	c0.45		c0.48	0.01	0.33		0.06	c0.23
v/s Ratio Perm			0.31			0.09				0.17		
v/c Ratio	1.58	0.51	0.31	0.88	1.32	0.09	1.98	0.08	1.00	0.51	0.95	1.53
Uniform Delay, d1	44.5	30.3	0.0	40.5	33.0	0.0	38.0	36.6	33.5	27.0	46.9	42.5
Progression Factor	0.79	0.91	1.00	1.04	0.62	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	282.4	1.3	0.5	11.6	148.2	0.1	451.0	0.3	26.0	0.8	50.6	250.1
Delay (s)	317.7	28.7	0.5	53.6	168.6	0.1	489.0	36.8	59.5	27.8	97.4	292.6
Level of Service	F	C	A	D	F	A	F	D	E	C	F	F
Approach Delay (s)		77.2			140.1				198.0			232.0
Approach LOS		E			F				F			F

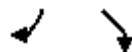
Intersection Summary			
HCM Average Control Delay	160.0	HCM Level of Service	F
HCM Volume to Capacity ratio	1.58		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	142.5%	ICU Level of Service	H
Analysis Period (min)	15		

! Phase conflict between lane groups.  
 c Critical Lane Group

# HCM Signalized Intersection Capacity Analysis

9: MD 450 & MD 410

6/11/2008



Movement	SBR	SER
Lane Configurations	↑	↑
Ideal Flow (vphpl)	1900	1900
Total Lost time (s)	4.0	4.0
Lane Util. Factor	1.00	1.00
Frt	0.85	0.86
Flt Protected	1.00	1.00
Satd. Flow (prot)	1524	822
Flt Permitted	1.00	1.00
Satd. Flow (perm)	1524	822
Volume (vph)	250	10
Peak-hour factor, PHF	0.95	0.95
Growth Factor (vph)	100%	100%
Adj. Flow (vph)	263	11
RTOR Reduction (vph)	0	0
Lane Group Flow (vph)	263	11
Heavy Vehicles (%)	6%	100%
Turn Type	Perm	Over
Protected Phases		4!
Permitted Phases	4!	
Actuated Green, G (s)	13.0	13.0
Effective Green, g (s)	15.0	15.0
Actuated g/C Ratio	0.15	0.15
Clearance Time (s)	6.0	6.0
Vehicle Extension (s)	3.0	3.0
Lane Grp Cap (vph)	229	123
v/s Ratio Prot		0.01
v/s Ratio Perm	0.17	
v/c Ratio	1.15	0.09
Uniform Delay, d1	42.5	36.6
Progression Factor	1.00	1.00
Incremental Delay, d2	105.4	0.3
Delay (s)	147.9	36.9
Level of Service	F	D
Approach Delay (s)		
Approach LOS		
<b>Intersection Summary</b>		

# HCM Signalized Intersection Capacity Analysis

9: MD 450 & MD 410

6/11/2008



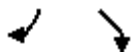
Movement	EBL	EBT	EBR	WBL	WBT	WBR2	NBL2	NBL	NBT	NBR	SBL	SBT
Lane Configurations	↙	↑↑↑	↘	↙↘	↑↑↑	↙	↙	↙	↑↑	↘	↙↘	↑↑
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	0.91	1.00	0.97	0.91	1.00	1.00	1.00	0.95	1.00	0.97	0.95
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	1.00	0.85	1.00	1.00
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	0.95	1.00	1.00	0.95	1.00
Satd. Flow (prot)	1752	5036	1568	3400	5036	1568	1752	902	3505	1568	3400	3505
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	0.95	1.00	1.00	0.95	1.00
Satd. Flow (perm)	1752	5036	1568	3400	5036	1568	1752	902	3505	1568	3400	3505
Volume (vph)	195	1740	665	280	1355	165	555	10	775	265	195	1025
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Growth Factor (vph)	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Adj. Flow (vph)	205	1832	700	295	1426	174	584	11	816	279	205	1079
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	115	0	0
Lane Group Flow (vph)	205	1832	700	295	1426	174	584	11	816	164	205	1079
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%	3%	100%	3%	3%	3%	3%
Turn Type	Prot		Free	Prot		Free	Prot	Prot		Perm	Prot	
Protected Phases	1	6		5	2		3	4!	8		7	4!
Permitted Phases			Free			Free				8		
Actuated Green, G (s)	7.0	28.0	90.0	6.0	27.0	90.0	17.0	17.0	28.0	28.0	6.0	17.0
Effective Green, g (s)	8.0	30.0	90.0	7.0	29.0	90.0	18.0	19.0	30.0	30.0	7.0	19.0
Actuated g/C Ratio	0.09	0.33	1.00	0.08	0.32	1.00	0.20	0.21	0.33	0.33	0.08	0.21
Clearance Time (s)	5.0	6.0		5.0	6.0		5.0	6.0	6.0	6.0	5.0	6.0
Vehicle Extension (s)	3.0	6.0		3.0	6.0		3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	156	1679	1568	264	1623	1568	350	190	1168	523	264	740
v/s Ratio Prot	c0.12	c0.36		0.09	0.28		c0.33	0.01	0.23		0.06	c0.31
v/s Ratio Perm			c0.45			0.11				0.10		
v/c Ratio	1.31	1.09	0.45	1.12	0.88	0.11	1.67	0.06	0.70	0.31	0.78	1.46
Uniform Delay, d1	41.0	30.0	0.0	41.5	28.8	0.0	36.0	28.4	26.1	22.3	40.7	35.5
Progression Factor	1.27	0.63	1.00	0.75	0.89	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	164.5	47.2	0.5	88.2	6.5	0.1	313.2	0.1	1.8	0.3	13.3	213.6
Delay (s)	216.4	66.2	0.5	119.4	32.3	0.1	349.2	28.5	27.9	22.7	54.1	249.1
Level of Service	F	E	A	F	C	A	F	C	C	C	D	F
Approach Delay (s)		60.7			42.9			138.1				188.2
Approach LOS		E			D			F				F

## Intersection Summary

HCM Average Control Delay	98.3	HCM Level of Service	F
HCM Volume to Capacity ratio	1.30		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	124.0%	ICU Level of Service	H
Analysis Period (min)	15		

! Phase conflict between lane groups.

c Critical Lane Group



Movement	SBR	SER
Lane Configurations	↗	↗
Ideal Flow (vphpl)	1900	1900
Total Lost time (s)	4.0	4.0
Lane Util. Factor	1.00	1.00
Frt	0.85	0.86
Flt Protected	1.00	1.00
Satd. Flow (prot)	1568	822
Flt Permitted	1.00	1.00
Satd. Flow (perm)	1568	822
Volume (vph)	275	10
Peak-hour factor, PHF	0.95	0.95
Growth Factor (vph)	100%	100%
Adj. Flow (vph)	289	11
RTOR Reduction (vph)	0	0
Lane Group Flow (vph)	289	11
Heavy Vehicles (%)	3%	100%
Turn Type	Perm	Over
Protected Phases		4!
Permitted Phases	4!	
Actuated Green, G (s)	17.0	17.0
Effective Green, g (s)	19.0	19.0
Actuated g/C Ratio	0.21	0.21
Clearance Time (s)	6.0	6.0
Vehicle Extension (s)	3.0	3.0
Lane Grp Cap (vph)	331	174
v/s Ratio Prot		0.01
v/s Ratio Perm	0.18	
v/c Ratio	0.87	0.06
Uniform Delay, d1	34.3	28.4
Progression Factor	1.00	1.00
Incremental Delay, d2	21.5	0.2
Delay (s)	55.9	28.5
Level of Service	E	C
Approach Delay (s)		
Approach LOS		

Intersection Summary

# HCM Signalized Intersection Capacity Analysis

## 12: Piney Branch Rd. & Arliss

6/10/2008



Movement	EBL	EBT	EBR2	WBL	WBT	WBR	NBL	NBT	NBR	SBL2	SBL	SBT
Lane Configurations	↘	↑↑		↘	↑↑			↕		↘	↘	↗
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	2.0	2.0		2.0	2.0			2.0		2.0	2.0	2.0
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00		1.00	1.00	1.00
Frbp, ped/bikes	1.00	1.00		1.00	1.00			1.00		1.00	1.00	1.00
Flpb, ped/bikes	1.00	1.00		0.99	1.00			1.00		1.00	1.00	1.00
Frt	1.00	1.00		1.00	0.96			0.93		1.00	1.00	0.87
Flt Protected	0.95	1.00		0.95	1.00			0.99		0.95	0.95	1.00
Satd. Flow (prot)	1687	3370		1675	3230			1728		1687	902	1551
Flt Permitted	0.08	1.00		0.40	1.00			0.99		0.95	0.74	1.00
Satd. Flow (perm)	138	3370		705	3230			1728		1687	706	1551
Volume (vph)	15	550	5	10	1200	475	5	5	10	175	10	5
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	16	598	5	11	1304	516	5	5	11	190	11	5
RTOR Reduction (vph)	0	0	0	0	19	0	0	0	0	0	0	23
Lane Group Flow (vph)	16	603	0	11	1801	0	0	21	0	190	11	9
Conf. Peds. (#/hr)	4			5			17			10		
Heavy Vehicles (%)	7%	7%	7%	7%	7%	7%	1%	1%	1%	7%	100%	7%
Turn Type	Perm			Perm			Split			Split	Perm	
Protected Phases		6!			2!		3	3		4		4
Permitted Phases	6			2!							4	
Actuated Green, G (s)	108.1	108.1		108.1	108.1			5.0		21.9	21.9	21.9
Effective Green, g (s)	111.1	111.1		111.1	111.1			8.0		24.9	24.9	24.9
Actuated g/C Ratio	0.74	0.74		0.74	0.74			0.05		0.17	0.17	0.17
Clearance Time (s)	5.0	5.0		5.0	5.0			5.0		5.0	5.0	5.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	102	2496		522	2392			92		280	117	257
v/s Ratio Prot		0.18			c0.56			c0.01		c0.11		0.01
v/s Ratio Perm	0.12			0.02							0.02	
v/c Ratio	0.16	0.24		0.02	0.75			0.23		0.68	0.09	0.04
Uniform Delay, d1	5.7	6.1		5.1	11.4			68.0		58.8	53.0	52.5
Progression Factor	0.82	0.78		0.98	0.66			1.00		1.00	1.00	1.00
Incremental Delay, d2	3.2	0.2		0.1	1.6			1.3		6.4	0.4	0.1
Delay (s)	7.9	5.0		5.1	9.1			69.3		65.2	53.3	52.5
Level of Service	A	A		A	A			E		E	D	D
Approach Delay (s)		5.1			9.0			69.3				62.9
Approach LOS		A			A			E				E

### Intersection Summary

HCM Average Control Delay	13.2	HCM Level of Service	B
HCM Volume to Capacity ratio	0.70		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	6.0
Intersection Capacity Utilization	80.6%	ICU Level of Service	D
Analysis Period (min)	15		

! Phase conflict between lane groups.

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis  
 12: Piney Branch Rd. & Arliss

6/10/2008



Movement	SBR	NWR
Lane Configurations		
Ideal Flow (vphpl)	1900	1900
Total Lost time (s)		2.0
Lane Util. Factor		1.00
Frbp, ped/bikes		1.00
Flpb, ped/bikes		1.00
Frt		0.86
Flt Protected		1.00
Satd. Flow (prot)		822
Flt Permitted		1.00
Satd. Flow (perm)		822
Volume (vph)	25	10
Peak-hour factor, PHF	0.92	0.92
Adj. Flow (vph)	27	11
RTOR Reduction (vph)	0	0
Lane Group Flow (vph)	0	11
Confl. Peds. (#/hr)		
Heavy Vehicles (%)	7%	100%
Turn Type	custom	
Protected Phases	2!	
Permitted Phases		
Actuated Green, G (s)	108.1	
Effective Green, g (s)	111.1	
Actuated g/C Ratio	0.74	
Clearance Time (s)	5.0	
Vehicle Extension (s)	3.0	
Lane Grp Cap (vph)	609	
v/s Ratio Prot	0.01	
v/s Ratio Perm		
v/c Ratio	0.02	
Uniform Delay, d1	5.1	
Progression Factor	1.00	
Incremental Delay, d2	0.1	
Delay (s)	5.2	
Level of Service	A	
Approach Delay (s)		
Approach LOS		

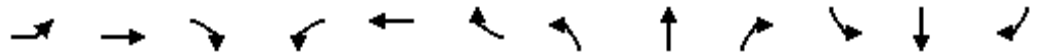
Intersection Summary



# HCM Signalized Intersection Capacity Analysis

## 13: Piney Branch Rd. & Barron St

6/10/2008



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR2	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	2.0	2.0			2.0			2.0	2.0		2.0	
Lane Util. Factor	1.00	0.95			0.95			1.00	1.00		1.00	
Frt	1.00	0.98			1.00			1.00	0.85		0.97	
Flt Protected	0.95	1.00			1.00			0.95	1.00		0.96	
Satd. Flow (prot)	902	3323			3365			1795	1599		1754	
Flt Permitted	0.95	1.00			0.88			0.74	1.00		0.72	
Satd. Flow (perm)	902	3323			2958			1391	1599		1309	
Volume (vph)	10	675	75	50	1450	10	225	10	75	15	0	5
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	11	734	82	54	1576	11	245	11	82	16	0	5
RTOR Reduction (vph)	0	4	0	0	0	0	0	0	63	0	4	0
Lane Group Flow (vph)	11	812	0	0	1641	0	0	256	19	0	17	0
Heavy Vehicles (%)	100%	7%	7%	7%	7%	7%	1%	1%	1%	1%	1%	1%
Turn Type	Prot			Perm			Perm		Perm	Perm		
Protected Phases	6!	2			6!			8				4
Permitted Phases				6			8		8		4	
Actuated Green, G (s)	107.8	107.8			107.8			31.2	31.2		31.2	
Effective Green, g (s)	111.8	111.8			111.8			34.2	34.2		34.2	
Actuated g/C Ratio	0.75	0.75			0.75			0.23	0.23		0.23	
Clearance Time (s)	6.0	6.0			6.0			5.0	5.0		5.0	
Vehicle Extension (s)	3.0	3.0			3.0			3.0	3.0		3.0	
Lane Grp Cap (vph)	672	2477			2205			317	365		298	
v/s Ratio Prot	0.01	0.24										
v/s Ratio Perm					c0.55			c0.18	0.01		0.01	
v/c Ratio	0.02	0.33			0.74			0.81	0.05		0.06	
Uniform Delay, d1	4.9	6.4			10.9			54.8	45.2		45.3	
Progression Factor	0.60	0.78			1.00			1.00	1.00		1.00	
Incremental Delay, d2	0.0	0.3			2.3			14.0	0.1		0.1	
Delay (s)	3.0	5.3			13.3			68.7	45.3		45.4	
Level of Service	A	A			B			E	D		D	
Approach Delay (s)		5.3			13.3			63.1			45.4	
Approach LOS		A			B			E			D	

### Intersection Summary

HCM Average Control Delay	17.1	HCM Level of Service	B
HCM Volume to Capacity ratio	0.75		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	4.0
Intersection Capacity Utilization	92.5%	ICU Level of Service	F
Analysis Period (min)	15		

! Phase conflict between lane groups.

c Critical Lane Group



Movement	SWR
Lane Configurations	↗
Ideal Flow (vphpl)	1900
Total Lost time (s)	2.0
Lane Util. Factor	1.00
Frt	0.86
Flt Protected	1.00
Satd. Flow (prot)	822
Flt Permitted	1.00
Satd. Flow (perm)	822
Volume (vph)	10
Peak-hour factor, PHF	0.92
Adj. Flow (vph)	11
RTOR Reduction (vph)	0
Lane Group Flow (vph)	11
Heavy Vehicles (%)	100%
Turn Type	Over
Protected Phases	6!
Permitted Phases	
Actuated Green, G (s)	107.8
Effective Green, g (s)	111.8
Actuated g/C Ratio	0.75
Clearance Time (s)	6.0
Vehicle Extension (s)	3.0
Lane Grp Cap (vph)	613
v/s Ratio Prot	0.01
v/s Ratio Perm	
v/c Ratio	0.02
Uniform Delay, d1	4.9
Progression Factor	1.00
Incremental Delay, d2	0.1
Delay (s)	5.0
Level of Service	A
Approach Delay (s)	
Approach LOS	
Intersection Summary	

# HCM Signalized Intersection Capacity Analysis

## 12: Piney Branch Rd. & Arliss

6/10/2008



Movement	EBL	EBT	EBR2	WBL	WBT	WBR	NBL	NBT	NBR	SBL2	SBL	SBT
Lane Configurations	↘	↑↑		↘	↑↑			↕		↘	↘	↗
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	2.0	2.0		2.0	2.0			2.0		2.0	2.0	2.0
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00		1.00	1.00	1.00
Frbp, ped/bikes	1.00	1.00		1.00	1.00			1.00		1.00	1.00	1.00
Flpb, ped/bikes	1.00	1.00		1.00	1.00			1.00		1.00	1.00	1.00
Frt	1.00	1.00		1.00	0.97			0.90		1.00	1.00	0.90
Flt Protected	0.95	1.00		0.95	1.00			0.99		0.95	0.95	1.00
Satd. Flow (prot)	1715	3432		1719	3330			1684		1719	902	1629
Flt Permitted	0.16	1.00		0.12	1.00			0.99		0.95	0.95	1.00
Satd. Flow (perm)	285	3432		214	3330			1684		1719	902	1629
Volume (vph)	50	1200	15	25	850	225	5	5	25	425	10	25
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor (vph)	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Adj. Flow (vph)	54	1304	16	27	924	245	5	5	27	462	11	27
RTOR Reduction (vph)	0	1	0	0	21	0	0	0	0	0	0	39
Lane Group Flow (vph)	54	1319	0	27	1148	0	0	37	0	462	11	42
Confl. Peds. (#/hr)	10			12			24			40		
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%	1%	1%	1%	5%	100%	5%
Turn Type	Perm			Perm			Split			Split	Split	
Protected Phases		6!			2!		3	3		4	4	4
Permitted Phases	6			2!								
Actuated Green, G (s)	42.6	42.6		42.6	42.6			3.4		19.0	19.0	19.0
Effective Green, g (s)	45.6	45.6		45.6	45.6			6.4		22.0	22.0	22.0
Actuated g/C Ratio	0.57	0.57		0.57	0.57			0.08		0.28	0.28	0.28
Clearance Time (s)	5.0	5.0		5.0	5.0			5.0		5.0	5.0	5.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	162	1956		122	1898			135		473	248	448
v/s Ratio Prot		c0.38			0.34			c0.02		c0.27	0.01	0.03
v/s Ratio Perm	0.19			0.13								
v/c Ratio	0.33	0.67		0.22	0.61			0.27		0.98	0.04	0.09
Uniform Delay, d1	9.1	12.0		8.5	11.3			34.6		28.7	21.3	21.6
Progression Factor	0.63	0.58		1.00	1.00			1.00		1.00	1.00	1.00
Incremental Delay, d2	4.6	1.6		4.1	1.4			1.1		35.0	0.1	0.1
Delay (s)	10.3	8.5		12.6	12.7			35.7		63.8	21.4	21.7
Level of Service	B	A		B	B			D		E	C	C
Approach Delay (s)		8.6			12.7			35.7				56.8
Approach LOS		A			B			D				E

### Intersection Summary

HCM Average Control Delay	18.9	HCM Level of Service	B
HCM Volume to Capacity ratio	0.72		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	6.0
Intersection Capacity Utilization	87.6%	ICU Level of Service	E
Analysis Period (min)	15		

! Phase conflict between lane groups.

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis  
 12: Piney Branch Rd. & Arliss

6/10/2008



Movement	SBR	NWR
Lane Configurations		
Ideal Flow (vphpl)	1900	1900
Total Lost time (s)		2.0
Lane Util. Factor		1.00
Frbp, ped/bikes		1.00
Flpb, ped/bikes		1.00
Frt		0.86
Flt Protected		1.00
Satd. Flow (prot)		822
Flt Permitted		1.00
Satd. Flow (perm)		822
Volume (vph)	50	10
Peak-hour factor, PHF	0.92	0.92
Growth Factor (vph)	100%	100%
Adj. Flow (vph)	54	11
RTOR Reduction (vph)	0	0
Lane Group Flow (vph)	0	11
Confl. Peds. (#/hr)		
Heavy Vehicles (%)	5%	100%
Turn Type	custom	
Protected Phases	2!	
Permitted Phases		
Actuated Green, G (s)	42.6	
Effective Green, g (s)	45.6	
Actuated g/C Ratio	0.57	
Clearance Time (s)	5.0	
Vehicle Extension (s)	3.0	
Lane Grp Cap (vph)	469	
v/s Ratio Prot	0.01	
v/s Ratio Perm		
v/c Ratio	0.02	
Uniform Delay, d1	7.5	
Progression Factor	1.00	
Incremental Delay, d2	0.1	
Delay (s)	7.6	
Level of Service	A	
Approach Delay (s)		
Approach LOS		
<b>Intersection Summary</b>		

# HCM Signalized Intersection Capacity Analysis

## 13: Piney Branch Rd. & Barron St

6/10/2008



Movement	EBL	EBT	EBR	WBT	WBR	NBL	NBT	NBR2	SBL	SBT	SBR	SWR
Lane Configurations	↔	↕		↕			↕	↕		↕		↕
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	2.0	2.0		2.0			2.0	2.0		2.0		2.0
Lane Util. Factor	1.00	0.95		0.95			1.00	1.00		1.00		1.00
Frt	1.00	0.98		1.00			1.00	0.85		0.98		0.86
Flt Protected	0.95	1.00		1.00			0.95	1.00		0.96		1.00
Satd. Flow (prot)	902	3378		3426			1794	1599		1782		822
Flt Permitted	0.95	1.00		1.00			0.74	1.00		0.78		1.00
Satd. Flow (perm)	902	3378		3426			1388	1599		1436		822
Volume (vph)	10	1500	200	1075	25	175	5	100	25	5	5	10
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor (vph)	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Adj. Flow (vph)	11	1630	217	1168	27	190	5	109	27	5	5	11
RTOR Reduction (vph)	0	9	0	0	0	0	0	28	0	4	0	0
Lane Group Flow (vph)	11	1838	0	1195	0	0	195	81	0	33	0	11
Heavy Vehicles (%)	100%	5%	5%	5%	5%	1%	1%	1%	1%	1%	1%	100%
Turn Type	Prot			Perm			Perm		Perm		Over	
Protected Phases	6!	2		6!			8	8		4		6!
Permitted Phases						8		8	4			
Actuated Green, G (s)	61.8	61.8		61.8			17.2	17.2		17.2		61.8
Effective Green, g (s)	65.8	65.8		65.8			20.2	20.2		20.2		65.8
Actuated g/C Ratio	0.73	0.73		0.73			0.22	0.22		0.22		0.73
Clearance Time (s)	6.0	6.0		6.0			5.0	5.0		5.0		6.0
Vehicle Extension (s)	3.0	3.0		3.0			3.0	3.0		3.0		3.0
Lane Grp Cap (vph)	659	2470		2505			312	359		322		601
v/s Ratio Prot	0.01	c0.54		0.35								0.01
v/s Ratio Perm							c0.14	0.05		0.02		
v/c Ratio	0.02	0.74		0.48			0.62	0.23		0.10		0.02
Uniform Delay, d1	3.3	7.1		5.0			31.5	28.5		27.7		3.3
Progression Factor	1.00	1.00		1.00			1.00	1.00		1.00		1.00
Incremental Delay, d2	0.0	2.1		0.7			3.9	0.3		0.1		0.1
Delay (s)	3.3	9.2		5.6			35.4	28.8		27.8		3.4
Level of Service	A	A		A			D	C		C		A
Approach Delay (s)		9.2		5.6			33.0			27.8		
Approach LOS		A		A			C			C		

### Intersection Summary

HCM Average Control Delay	10.3	HCM Level of Service	B
HCM Volume to Capacity ratio	0.71		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	4.0
Intersection Capacity Utilization	78.1%	ICU Level of Service	D
Analysis Period (min)	15		

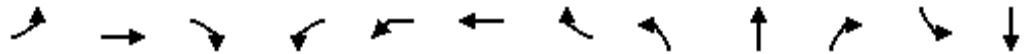
! Phase conflict between lane groups.

c Critical Lane Group

# HCM Signalized Intersection Capacity Analysis

## 4: Wayne Ave. & Fenton St

6/10/2008



Movement	EBL	EBT	EBR	WBL2	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations	↘	↑	↗	↘	↘	↑	↗	↘	↑	↗	↘	↑
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frbp, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	0.99	1.00	1.00	1.00	1.00	1.00	1.00	0.99	1.00
Frt	1.00	1.00	0.85	1.00	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.97
Flt Protected	0.95	1.00	1.00	0.95	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Satd. Flow (prot)	1687	1776	1509	1678	1687	1776	1509	1687	1776	1509	1665	1716
Flt Permitted	0.20	1.00	1.00	0.22	0.95	1.00	1.00	0.20	1.00	1.00	0.41	1.00
Satd. Flow (perm)	350	1776	1509	396	1687	1776	1509	359	1776	1509	725	1716
Volume (vph)	50	300	100	375	10	750	75	125	275	200	25	350
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	1.00	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	54	326	109	408	10	815	82	136	299	217	27	380
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	54	326	109	408	10	815	82	136	299	217	27	489
Conf. Peds. (#/hr)	19			29				34			17	
Turn Type	Perm		Permcust		Prot		Perm	Perm		Perm	Perm	
Protected Phases		4		3	9	8 9			2			6
Permitted Phases	4		4	8			8 9	2		2		6
Actuated Green, G (s)	17.3	17.3	17.3	36.0	5.0	45.0	45.0	30.0	30.0	30.0	30.0	30.0
Effective Green, g (s)	20.3	20.3	20.3	38.0	13.0	53.0	53.0	33.0	33.0	33.0	33.0	33.0
Actuated g/C Ratio	0.23	0.23	0.23	0.42	0.14	0.59	0.59	0.37	0.37	0.37	0.37	0.37
Clearance Time (s)	5.0	5.0	5.0	4.0	10.0			5.0	5.0	5.0	5.0	5.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0			3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	79	401	340	391	244	1046	889	132	651	553	266	629
v/s Ratio Prot		0.18		c0.18	0.01	c0.46			0.17			0.28
v/s Ratio Perm	0.15		0.07	c0.26			0.05	c0.38		0.14	0.04	
v/c Ratio	0.68	0.81	0.32	1.04	0.04	0.78	0.09	1.03	0.46	0.39	0.10	0.78
Uniform Delay, d1	31.9	33.0	29.1	31.6	33.1	14.1	8.0	28.5	21.7	21.1	18.7	25.2
Progression Factor	1.00	1.00	1.00	0.69	0.64	0.30	0.32	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	21.7	11.9	0.5	53.3	0.1	3.1	0.0	86.6	2.3	2.1	0.8	9.2
Delay (s)	53.6	44.9	29.6	75.2	21.2	7.3	2.6	115.1	24.0	23.2	19.5	34.4
Level of Service	D	D	C	E	C	A	A	F	C	C	B	C
Approach Delay (s)		42.5				28.2			42.7			33.6
Approach LOS		D				C			D			C

### Intersection Summary

HCM Average Control Delay	34.7	HCM Level of Service	C
HCM Volume to Capacity ratio	0.96		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	4.0
Intersection Capacity Utilization	88.8%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis  
 4: Wayne Ave. & Fenton St

6/10/2008




















Movement	SBR2	NER
Lane Configurations		
Ideal Flow (vphpl)	1900	1900
Total Lost time (s)		2.0
Lane Util. Factor		1.00
Frbp, ped/bikes		1.00
Flpb, ped/bikes		1.00
Frt		0.86
Flt Protected		1.00
Satd. Flow (prot)		1536
Flt Permitted		1.00
Satd. Flow (perm)		1536
Volume (vph)	100	10
Peak-hour factor, PHF	0.92	1.00
Adj. Flow (vph)	109	10
RTOR Reduction (vph)	0	0
Lane Group Flow (vph)	0	10
Confl. Peds. (#/hr)		
Turn Type		Over
Protected Phases		9
Permitted Phases		
Actuated Green, G (s)		5.0
Effective Green, g (s)		13.0
Actuated g/C Ratio		0.14
Clearance Time (s)		10.0
Vehicle Extension (s)		3.0
Lane Grp Cap (vph)		222
v/s Ratio Prot		0.01
v/s Ratio Perm		
v/c Ratio		0.05
Uniform Delay, d1		33.2
Progression Factor		1.00
Incremental Delay, d2		0.1
Delay (s)		33.2
Level of Service		C
Approach Delay (s)		
Approach LOS		
Intersection Summary		

# HCM Signalized Intersection Capacity Analysis

## 5: Cedar Ave & Wayne Ave.

6/10/2008

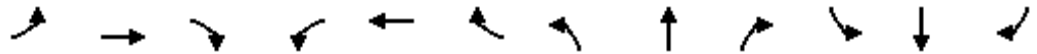
												
Movement	NBL	NBT	NBR	SBL	SBT	SBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		2.0		2.0		2.0	2.0	2.0			2.0	
Lane Util. Factor		1.00		1.00		1.00	1.00	0.95			0.95	
Frbp, ped/bikes		1.00		1.00		0.93	1.00	1.00			0.99	
Flpb, ped/bikes		0.99		1.00		1.00	1.00	1.00			1.00	
Frt		0.97		1.00		0.85	1.00	1.00			0.97	
Flt Protected		0.99		0.95		1.00	0.95	1.00			1.00	
Satd. Flow (prot)		1685		1680		1407	1683	3374			3224	
Flt Permitted		0.99		0.39		1.00	0.14	1.00			1.00	
Satd. Flow (perm)		1685		691		1407	241	3374			3224	
Volume (vph)	25	125	50	125	0	100	75	425	0	0	1050	300
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	27	136	54	136	0	109	82	462	0	0	1141	326
RTOR Reduction (vph)	0	14	0	0	0	85	0	0	0	0	0	0
Lane Group Flow (vph)	0	203	0	136	0	24	82	462	0	0	1467	0
Conf. Peds. (#/hr)	36		5	5		36	12		6	6		12
Turn Type	Perm		custom		custom		Perm					
Protected Phases		8						2			6	
Permitted Phases	8		4		4		2					
Actuated Green, G (s)		16.9		16.9		16.9	63.1	63.1			63.1	
Effective Green, g (s)		19.9		19.9		19.9	66.1	66.1			66.1	
Actuated g/C Ratio		0.22		0.22		0.22	0.73	0.73			0.73	
Clearance Time (s)		5.0		5.0		5.0	5.0	5.0			5.0	
Vehicle Extension (s)		0.2		0.2		0.2	3.0	3.0			3.0	
Lane Grp Cap (vph)		373		153		311	177	2478			2368	
v/s Ratio Prot								0.14			c0.45	
v/s Ratio Perm		0.12		c0.20		0.02	0.34					
v/c Ratio		0.54		0.89		0.08	0.46	0.19			0.62	
Uniform Delay, d1		31.0		34.0		27.8	4.8	3.7			5.8	
Progression Factor		1.00		1.00		1.00	0.79	0.03			0.22	
Incremental Delay, d2		0.9		40.7		0.0	6.9	0.1			0.8	
Delay (s)		31.9		74.7		27.8	10.7	0.2			2.1	
Level of Service		C		E		C	B	A			A	
Approach Delay (s)		31.9				53.8		1.8			2.1	
Approach LOS		C				D		A			A	
<b>Intersection Summary</b>												
HCM Average Control Delay			9.8				HCM Level of Service				A	
HCM Volume to Capacity ratio			0.67									
Actuated Cycle Length (s)			90.0				Sum of lost time (s)				4.0	
Intersection Capacity Utilization			83.6%				ICU Level of Service				E	
Analysis Period (min)			15									
c Critical Lane Group												



# HCM Signalized Intersection Capacity Analysis

## 6: Wayne Ave. & Dale Dr

6/10/2008



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↗	↕		↖	↕		↗	↖		↗	↖	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00		1.00	1.00	
Frbp, ped/bikes	1.00	0.98		1.00	0.99		1.00	0.99		1.00	0.97	
Flpb, ped/bikes	1.00	1.00		0.96	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.97		1.00	0.99		1.00	0.98		1.00	0.94	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1687	3227		1626	3288		1687	1732		1684	1627	
Flt Permitted	0.10	1.00		0.44	1.00		0.17	1.00		0.21	1.00	
Satd. Flow (perm)	181	3227		750	3288		302	1732		375	1627	
Volume (vph)	25	350	75	100	1100	100	50	350	50	100	275	175
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	27	380	82	109	1196	109	54	380	54	109	299	190
RTOR Reduction (vph)	0	19	0	0	0	0	0	6	0	0	27	0
Lane Group Flow (vph)	27	443	0	109	1305	0	54	428	0	109	462	0
Conf. Peds. (#/hr)	52		30	30		52	41		25	25		41
Turn Type	Perm		Perm		pm+pt		pm+pt					
Protected Phases	6		2		3		8		7		4	
Permitted Phases	6		2		8		4					
Actuated Green, G (s)	44.2	44.2		44.2	44.2		30.0	26.8		31.6	27.6	
Effective Green, g (s)	47.2	47.2		47.2	47.2		36.0	29.8		37.6	30.6	
Actuated g/C Ratio	0.52	0.52		0.52	0.52		0.40	0.33		0.42	0.34	
Clearance Time (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	95	1692		393	1724		216	573		258	553	
v/s Ratio Prot		0.14			c0.40		0.02	0.25		c0.03	c0.28	
v/s Ratio Perm	0.15			0.15			0.08			0.14		
v/c Ratio	0.28	0.26		0.28	0.76		0.25	0.75		0.42	0.84	
Uniform Delay, d1	12.0	11.8		11.9	16.9		19.0	26.7		18.3	27.4	
Progression Factor	0.77	0.73		0.29	0.33		1.00	1.00		1.00	1.00	
Incremental Delay, d2	7.1	0.4		1.2	2.2		0.6	5.3		1.1	10.5	
Delay (s)	16.4	8.9		4.7	7.8		19.6	32.0		19.5	37.9	
Level of Service	B		A		A		B		C		D	
Approach Delay (s)		9.3			7.6			30.7			34.5	
Approach LOS		A			A			C			C	

### Intersection Summary

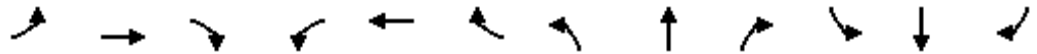
HCM Average Control Delay	17.0	HCM Level of Service	B
HCM Volume to Capacity ratio	0.75		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	6.0
Intersection Capacity Utilization	89.6%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

# HCM Signalized Intersection Capacity Analysis

## 7: Wayne Ave. & Mansfield

6/10/2008



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑			↑↑			↑↓				
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		2.0			2.0			2.0				
Lane Util. Factor		0.95			0.95			1.00				
Frbp, ped/bikes		1.00			1.00			1.00				
Flpb, ped/bikes		1.00			1.00			1.00				
Frt		1.00			1.00			0.93				
Flt Protected		1.00			1.00			0.98				
Satd. Flow (prot)		3367			3372			1615				
Flt Permitted		1.00			0.95			0.98				
Satd. Flow (perm)		3367			3209			1615				
Volume (vph)	0	425	5	10	1350	0	5	0	5	0	0	0
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	462	5	11	1467	0	5	0	5	0	0	0
RTOR Reduction (vph)	0	1	0	0	0	0	0	4	0	0	0	0
Lane Group Flow (vph)	0	466	0	0	1478	0	0	7	0	0	0	0
Conf. Peds. (#/hr)	1		22	22			11			5		
Turn Type					Perm			Split				
Protected Phases		2				6		4	4			
Permitted Phases					6							
Actuated Green, G (s)		55.0			55.0			24.0				
Effective Green, g (s)		59.0			59.0			27.0				
Actuated g/C Ratio		0.66			0.66			0.30				
Clearance Time (s)		6.0			6.0			5.0				
Vehicle Extension (s)		0.2			3.0			0.2				
Lane Grp Cap (vph)		2207			2104			485				
v/s Ratio Prot		0.14						c0.00				
v/s Ratio Perm					c0.46							
v/c Ratio		0.21			0.70			0.01				
Uniform Delay, d1		6.2			9.9			22.1				
Progression Factor		0.79			0.61			1.00				
Incremental Delay, d2		0.2			1.5			0.0				
Delay (s)		5.1			7.5			22.1				
Level of Service		A			A			C				
Approach Delay (s)		5.1			7.5			22.1			0.0	
Approach LOS		A			A			C			A	

### Intersection Summary

HCM Average Control Delay	7.0	HCM Level of Service	A
HCM Volume to Capacity ratio	0.48		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	4.0
Intersection Capacity Utilization	54.3%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

# HCM Signalized Intersection Capacity Analysis

## 8: Wayne Ave. & Sligo Creek Pkwy

6/10/2008



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗			↖		↖	↗			↗	↖
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	2.0	2.0			2.0		2.0	2.0			2.0	2.0
Lane Util. Factor	1.00	0.95			0.95		1.00	1.00			1.00	1.00
Frbp, ped/bikes	1.00	0.99			1.00		1.00	1.00			1.00	1.00
Flpb, ped/bikes	1.00	1.00			1.00		1.00	1.00			1.00	1.00
Frt	1.00	0.98			0.99		1.00	0.99			1.00	0.85
Flt Protected	0.95	1.00			1.00		0.95	1.00			0.99	1.00
Satd. Flow (prot)	1687	3283			3338		1687	1759			1763	1509
Flt Permitted	0.14	1.00			0.94		0.17	1.00			0.91	1.00
Satd. Flow (perm)	240	3283			3153		305	1759			1614	1509
Volume (vph)	50	300	50	20	1000	50	175	350	20	50	350	175
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	54	326	54	22	1087	54	190	380	22	54	380	190
RTOR Reduction (vph)	0	14	0	0	3	0	0	3	0	0	0	0
Lane Group Flow (vph)	54	366	0	0	1160	0	190	399	0	0	434	190
Confl. Peds. (#/hr)	14		8	8		14	2		11	11		2
Turn Type	Perm			Perm			pm+pt			Perm		Prot
Protected Phases		2			6		7	4			8	8
Permitted Phases	2			6			4			8		
Actuated Green, G (s)	43.2	43.2			43.2		36.8	36.8			24.8	24.8
Effective Green, g (s)	46.2	46.2			46.2		39.8	39.8			27.8	27.8
Actuated g/C Ratio	0.51	0.51			0.51		0.44	0.44			0.31	0.31
Clearance Time (s)	5.0	5.0			5.0		5.0	5.0			5.0	5.0
Vehicle Extension (s)	0.2	0.2			0.2		3.0	3.0			0.2	0.2
Lane Grp Cap (vph)	123	1685			1619		288	778			499	466
v/s Ratio Prot		0.11					c0.07	0.23				0.13
v/s Ratio Perm	0.23				c0.37		0.22				c0.27	
v/c Ratio	0.44	0.22			0.72		0.66	0.51			0.87	0.41
Uniform Delay, d1	13.8	12.0			16.9		18.5	18.1			29.4	24.6
Progression Factor	1.02	0.75			0.82		1.00	1.00			1.00	1.00
Incremental Delay, d2	10.9	0.3			2.3		5.4	0.6			14.5	0.2
Delay (s)	24.9	9.3			16.2		23.9	18.7			43.8	24.8
Level of Service	C	A			B		C	B			D	C
Approach Delay (s)		11.3			16.2			20.4			38.0	
Approach LOS		B			B			C			D	

### Intersection Summary

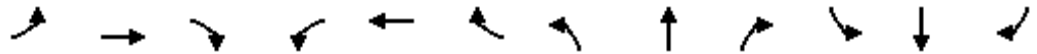
HCM Average Control Delay	21.1	HCM Level of Service	C
HCM Volume to Capacity ratio	0.75		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	6.0
Intersection Capacity Utilization	94.5%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

# HCM Signalized Intersection Capacity Analysis

## 9: Wayne Ave. & Flower Ave

6/10/2008



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕	↗		↕		↖	↖			↕	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		2.0	2.0		2.0		2.0	2.0			2.0	
Lane Util. Factor		1.00	1.00		1.00		1.00	1.00			1.00	
Frbp, ped/bikes		1.00	1.00		0.99		1.00	1.00			0.99	
Flpb, ped/bikes		0.98	1.00		1.00		1.00	1.00			1.00	
Frt		1.00	0.85		0.97		1.00	1.00			0.95	
Flt Protected		0.96	1.00		0.99		0.95	1.00			1.00	
Satd. Flow (prot)		1672	1509		1685		1687	1772			1679	
Flt Permitted		0.80	1.00		0.97		0.33	1.00			0.99	
Satd. Flow (perm)		1397	1509		1646		588	1772			1662	
Volume (vph)	75	10	200	5	25	10	600	450	5	10	300	175
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	82	11	217	5	27	11	652	489	5	11	326	190
RTOR Reduction (vph)	0	0	0	0	9	0	0	0	0	0	19	0
Lane Group Flow (vph)	0	93	217	0	34	0	652	494	0	0	508	0
Conf. Peds. (#/hr)	6		2	2		6	1		4	4		1
Turn Type	Perm		pt+ov	Perm			pm+pt				Perm	
Protected Phases		4	4 5		8		5	2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)		11.5	41.2		11.5		68.5	68.5			39.8	
Effective Green, g (s)		14.5	43.2		14.5		71.5	71.5			42.8	
Actuated g/C Ratio		0.16	0.48		0.16		0.79	0.79			0.48	
Clearance Time (s)		5.0			5.0		4.0	5.0			5.0	
Vehicle Extension (s)		3.0			3.0		3.0	3.0			3.0	
Lane Grp Cap (vph)		225	724		265		793	1408			790	
v/s Ratio Prot			0.14				c0.24	0.28				
v/s Ratio Perm		c0.07			0.02		0.41				c0.31	
v/c Ratio		0.41	0.30		0.13		0.82	0.35			0.64	
Uniform Delay, d1		33.9	14.2		32.3		9.7	2.6			17.8	
Progression Factor		0.70	0.81		1.00		1.00	1.00			1.00	
Incremental Delay, d2		1.2	0.2		0.2		6.9	0.7			4.0	
Delay (s)		24.8	11.7		32.6		16.6	3.3			21.8	
Level of Service		C	B		C		B	A			C	
Approach Delay (s)		15.6			32.6			10.9			21.8	
Approach LOS		B			C			B			C	

### Intersection Summary

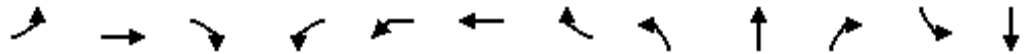
HCM Average Control Delay	14.9	HCM Level of Service	B
HCM Volume to Capacity ratio	0.65		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	6.0
Intersection Capacity Utilization	81.6%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

# HCM Signalized Intersection Capacity Analysis

## 4: Wayne Ave. & Fenton St

6/10/2008



Movement	EBL	EBT	EBR	WBL2	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations	↗	↑↑		↗	↗	↑↑		↗	↑	↗	↗	↑
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	2.0	2.0		2.0	2.0	2.0		2.0	2.0	2.0	2.0	2.0
Lane Util. Factor	1.00	0.95		1.00	1.00	0.95		1.00	1.00	1.00	1.00	1.00
Frbp, ped/bikes	1.00	0.96		1.00	1.00	0.98		1.00	1.00	1.00	1.00	0.98
Flpb, ped/bikes	0.92	1.00		1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.97		1.00	1.00	0.99		1.00	1.00	0.85	1.00	0.98
Flt Protected	0.95	1.00		0.95	0.95	1.00		0.95	1.00	1.00	0.95	1.00
Satd. Flow (prot)	1576	3200		1719	1719	3316		1719	1810	1538	1719	1732
Flt Permitted	0.35	1.00		0.13	0.95	1.00		0.17	1.00	1.00	0.11	1.00
Satd. Flow (perm)	581	3200		244	1719	3316		315	1810	1538	196	1732
Volume (vph)	50	700	175	300	10	525	50	75	525	300	75	350
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	1.00	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	54	761	190	326	10	571	54	82	571	326	82	380
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	54	951	0	326	10	625	0	82	571	326	82	434
Conf. Peds. (#/hr)	71		53	53			71	90		112	112	
Turn Type	Perm		custom	Prot			Perm		Prot	Perm		
Protected Phases		4		3	9	8 9			2	2		6
Permitted Phases	4			8			2					6
Actuated Green, G (s)	43.0	43.0		62.0	5.0	71.0		34.0	34.0	34.0	34.0	34.0
Effective Green, g (s)	46.0	46.0		64.0	13.0	79.0		37.0	37.0	37.0	37.0	37.0
Actuated g/C Ratio	0.38	0.38		0.53	0.11	0.66		0.31	0.31	0.31	0.31	0.31
Clearance Time (s)	5.0	5.0		4.0	10.0			5.0	5.0	5.0	5.0	5.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	223	1227		327	186	2183		97	558	474	60	534
v/s Ratio Prot		0.30		c0.13	0.01	c0.19			0.32	0.21		0.25
v/s Ratio Perm	0.09			c0.40			0.26				c0.42	
v/c Ratio	0.24	0.78		1.00	0.05	0.29		0.85	1.02	0.69	1.37	0.81
Uniform Delay, d1	25.2	32.5		40.4	48.0	8.6		38.8	41.5	36.4	41.5	38.3
Progression Factor	1.00	1.00		0.79	0.77	0.48		1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	2.6	4.8		46.0	0.1	0.1		56.1	44.1	7.9	241.4	12.7
Delay (s)	27.7	37.3		77.8	37.2	4.2		95.0	85.6	44.3	282.9	51.0
Level of Service	C	D		E	D	A		F	F	D	F	D
Approach Delay (s)		36.8				29.5			72.7			87.9
Approach LOS		D				C			E			F

### Intersection Summary

HCM Average Control Delay	52.5	HCM Level of Service	D
HCM Volume to Capacity ratio	0.99		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	4.0
Intersection Capacity Utilization	96.7%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis  
 4: Wayne Ave. & Fenton St

6/10/2008





















Movement	SBR2	NER
Lane Configurations		
Ideal Flow (vphpl)	1900	1900
Total Lost time (s)		2.0
Lane Util. Factor		1.00
Frbp, ped/bikes		1.00
Flpb, ped/bikes		1.00
Frt		0.86
Flt Protected		1.00
Satd. Flow (prot)		1565
Flt Permitted		1.00
Satd. Flow (perm)		1565
Volume (vph)	50	10
Peak-hour factor, PHF	0.92	1.00
Adj. Flow (vph)	54	10
RTOR Reduction (vph)	0	0
Lane Group Flow (vph)	0	10
Confl. Peds. (#/hr)	90	
Turn Type		Over
Protected Phases		9
Permitted Phases		
Actuated Green, G (s)		5.0
Effective Green, g (s)		13.0
Actuated g/C Ratio		0.11
Clearance Time (s)		10.0
Vehicle Extension (s)		3.0
Lane Grp Cap (vph)		170
v/s Ratio Prot		0.01
v/s Ratio Perm		
v/c Ratio		0.06
Uniform Delay, d1		48.0
Progression Factor		1.00
Incremental Delay, d2		0.1
Delay (s)		48.2
Level of Service		D
Approach Delay (s)		
Approach LOS		
Intersection Summary		

# HCM Signalized Intersection Capacity Analysis

## 5: Cedar Ave & Wayne Ave.

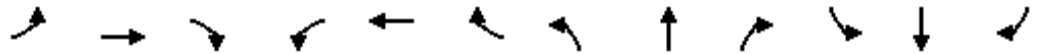
6/10/2008

												
Movement	NBL	NBT	NBR	SBL	SBT	SBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		2.0		2.0		2.0	2.0	2.0			2.0	
Lane Util. Factor		1.00		1.00		1.00	1.00	0.95			0.95	
Frbp, ped/bikes		0.99		1.00		1.00	1.00	1.00			1.00	
Flpb, ped/bikes		1.00		1.00		1.00	1.00	1.00			1.00	
Frt		0.96		1.00		0.85	1.00	1.00			0.97	
Flt Protected		0.99		0.95		1.00	0.95	1.00			1.00	
Satd. Flow (prot)		1711		1719		1538	1719	3438			3319	
Flt Permitted		0.99		0.36		1.00	0.22	1.00			1.00	
Satd. Flow (perm)		1711		655		1538	405	3438			3319	
Volume (vph)	75	225	125	250	0	200	250	775	0	0	700	175
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	82	245	136	272	0	217	272	842	0	0	761	190
RTOR Reduction (vph)	0	13	0	0	0	117	0	0	0	0	0	0
Lane Group Flow (vph)	0	450	0	272	0	100	272	842	0	0	951	0
Conf. Peds. (#/hr)			5	5			1					1
Turn Type	Perm		custom		custom		Perm					
Protected Phases		8						2			6	
Permitted Phases	8		4		4		2					
Actuated Green, G (s)		44.0		44.0		44.0	66.0	66.0			66.0	
Effective Green, g (s)		47.0		47.0		47.0	69.0	69.0			69.0	
Actuated g/C Ratio		0.39		0.39		0.39	0.58	0.58			0.58	
Clearance Time (s)		5.0		5.0		5.0	5.0	5.0			5.0	
Vehicle Extension (s)		3.0		3.0		3.0	0.2	0.2			0.2	
Lane Grp Cap (vph)		670		257		602	233	1977			1908	
v/s Ratio Prot								0.24			0.29	
v/s Ratio Perm		0.26		c0.42		0.07	c0.67					
v/c Ratio		0.67		1.06		0.17	1.17	0.43			0.50	
Uniform Delay, d1		30.1		36.5		23.8	25.5	14.4			15.2	
Progression Factor		1.00		1.00		1.00	0.30	0.21			0.78	
Incremental Delay, d2		2.7		72.4		0.1	99.5	0.4			0.8	
Delay (s)		32.8		108.9		23.9	107.2	3.4			12.7	
Level of Service		C		F		C	F	A			B	
Approach Delay (s)		32.8			71.2			28.7			12.7	
Approach LOS		C			E			C			B	
<b>Intersection Summary</b>												
HCM Average Control Delay			31.2				HCM Level of Service				C	
HCM Volume to Capacity ratio			1.11									
Actuated Cycle Length (s)			120.0				Sum of lost time (s)			4.0		
Intersection Capacity Utilization			89.8%				ICU Level of Service			E		
Analysis Period (min)			15									
c Critical Lane Group												

# HCM Signalized Intersection Capacity Analysis

## 6: Wayne Ave. & Dale Dr

6/10/2008



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗		↖	↗		↖	↗		↖	↗	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00		1.00	1.00	
Frbp, ped/bikes	1.00	1.00		1.00	1.00		1.00	0.99		1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.98		1.00	0.97		1.00	0.95		1.00	0.98	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1719	3361		1719	3332		1719	1716		1719	1764	
Flt Permitted	0.23	1.00		0.17	1.00		0.12	1.00		0.11	1.00	
Satd. Flow (perm)	413	3361		316	3332		225	1716		191	1764	
Volume (vph)	200	850	150	125	675	175	75	350	150	200	425	75
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	217	924	163	136	734	190	82	380	163	217	462	82
RTOR Reduction (vph)	0	12	0	0	0	0	0	13	0	0	5	0
Lane Group Flow (vph)	217	1075	0	136	924	0	82	530	0	217	539	0
Conf. Peds. (#/hr)							2		6	6		2
Turn Type	Perm		Perm		pm+pt		pm+pt					
Protected Phases		2			2		3	8		7	4	
Permitted Phases	2			2			8			4		
Actuated Green, G (s)	64.2	64.2		64.2	64.2		36.0	32.8		45.8	38.6	
Effective Green, g (s)	67.2	67.2		67.2	67.2		41.0	35.8		48.8	41.6	
Actuated g/C Ratio	0.56	0.56		0.56	0.56		0.34	0.30		0.41	0.35	
Clearance Time (s)	5.0	5.0		5.0	5.0		4.0	5.0		5.0	5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	231	1882		177	1866		142	512		218	612	
v/s Ratio Prot		0.32			0.28		0.03	c0.31		c0.09	0.31	
v/s Ratio Perm	c0.53			0.43			0.17			0.31		
v/c Ratio	0.94	0.57		0.77	0.50		0.58	1.04		1.00	0.88	
Uniform Delay, d1	24.5	17.1		20.4	16.1		30.5	42.1		33.0	36.9	
Progression Factor	0.88	0.88		1.13	1.07		1.00	1.00		1.00	1.00	
Incremental Delay, d2	40.4	1.1		25.6	0.9		5.6	49.4		59.3	13.9	
Delay (s)	62.1	16.0		48.7	18.0		36.1	91.5		92.3	50.8	
Level of Service	E	B		D	B		D	F		F	D	
Approach Delay (s)		23.7			22.0			84.2			62.6	
Approach LOS		C			C			F			E	

### Intersection Summary

HCM Average Control Delay	41.2	HCM Level of Service	D
HCM Volume to Capacity ratio	0.96		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	6.0
Intersection Capacity Utilization	92.9%	ICU Level of Service	F
Analysis Period (min)	15		

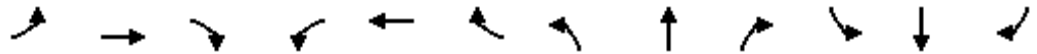
c Critical Lane Group



# HCM Signalized Intersection Capacity Analysis

## 7: Wayne Ave. & Mansfield

6/10/2008



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑			↑↑			↑↓				
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		2.0			2.0			2.0				
Lane Util. Factor		0.95			0.95			1.00				
Frbp, ped/bikes		1.00			1.00			0.99				
Flpb, ped/bikes		1.00			1.00			1.00				
Frt		1.00			1.00			0.93				
Flt Protected		1.00			1.00			0.98				
Satd. Flow (prot)		3427			3435			1630				
Flt Permitted		1.00			0.91			0.98				
Satd. Flow (perm)		3427			3143			1630				
Volume (vph)	0	1275	25	15	875	0	5	0	5	0	0	0
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	1386	27	16	951	0	5	0	5	0	0	0
RTOR Reduction (vph)	0	1	0	0	0	0	0	4	0	0	0	0
Lane Group Flow (vph)	0	1412	0	0	967	0	0	6	0	0	0	0
Conf. Peds. (#/hr)			2	2					5			
Turn Type				Perm			Perm					
Protected Phases		6			2			4				
Permitted Phases				2			4					
Actuated Green, G (s)		85.0			85.0			24.0				
Effective Green, g (s)		89.0			89.0			27.0				
Actuated g/C Ratio		0.74			0.74			0.22				
Clearance Time (s)		6.0			6.0			5.0				
Vehicle Extension (s)		0.2			0.2			3.0				
Lane Grp Cap (vph)		2542			2331			367				
v/s Ratio Prot		c0.41										
v/s Ratio Perm					0.31			0.00				
v/c Ratio		0.56			0.41			0.02				
Uniform Delay, d1		6.8			5.8			36.2				
Progression Factor		0.69			0.50			1.00				
Incremental Delay, d2		0.7			0.4			0.0				
Delay (s)		5.3			3.2			36.2				
Level of Service		A			A			D				
Approach Delay (s)		5.3			3.2			36.2			0.0	
Approach LOS		A			A			D			A	

### Intersection Summary

HCM Average Control Delay	4.6	HCM Level of Service	A
HCM Volume to Capacity ratio	0.43		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	4.0
Intersection Capacity Utilization	62.7%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

# HCM Signalized Intersection Capacity Analysis

## 8: Wayne Ave. & Sligo Creek Pkwy

6/10/2008



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗			↖		↖	↗			↗	↖
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	2.0	2.0			2.0		2.0	2.0			2.0	2.0
Lane Util. Factor	1.00	0.95			0.95		1.00	1.00			1.00	1.00
Frbp, ped/bikes	1.00	1.00			1.00		1.00	1.00			1.00	1.00
Flpb, ped/bikes	1.00	1.00			1.00		1.00	1.00			1.00	1.00
Frt	1.00	0.98			0.99		1.00	0.99			1.00	0.85
Flt Protected	0.95	1.00			1.00		0.95	1.00			0.99	1.00
Satd. Flow (prot)	1719	3363			3412		1719	1790			1788	1538
Flt Permitted	0.20	1.00			0.73		0.26	1.00			0.68	1.00
Satd. Flow (perm)	368	3363			2492		469	1790			1220	1538
Volume (vph)	300	875	150	25	600	25	100	325	25	100	350	175
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	326	951	163	27	652	27	109	353	27	109	380	190
RTOR Reduction (vph)	0	11	0	0	2	0	0	3	0	0	0	0
Lane Group Flow (vph)	326	1103	0	0	704	0	109	377	0	0	489	190
Conf. Peds. (#/hr)	11			10			10			7		
Turn Type	pm+pt			Perm			pm+pt			Perm		Prot
Protected Phases	5	2			6		7	4			8	8
Permitted Phases	2			6			4			8		
Actuated Green, G (s)	53.8	53.8			35.8		56.2	56.2			46.9	46.9
Effective Green, g (s)	56.8	56.8			38.8		59.2	59.2			49.9	49.9
Actuated g/C Ratio	0.47	0.47			0.32		0.49	0.49			0.42	0.42
Clearance Time (s)	5.0	5.0			5.0		5.0	5.0			5.0	5.0
Vehicle Extension (s)	3.0	0.2			0.2		3.0	3.0			3.0	3.0
Lane Grp Cap (vph)	354	1592			806		307	883			507	640
v/s Ratio Prot	c0.12	0.33					0.02	c0.21				0.12
v/s Ratio Perm	c0.31				0.28		0.15				c0.40	
v/c Ratio	0.92	0.69			0.87		0.36	0.43			0.96	0.30
Uniform Delay, d1	39.0	24.8			38.3		34.3	19.5			34.2	23.4
Progression Factor	0.72	0.64			0.94		1.00	1.00			1.00	1.00
Incremental Delay, d2	25.6	2.1			9.4		0.7	0.3			30.8	0.3
Delay (s)	53.7	17.9			45.6		35.0	19.9			65.0	23.6
Level of Service	D	B			D		D	B			E	C
Approach Delay (s)		26.0			45.6			23.2			53.4	
Approach LOS		C			D			C			D	

### Intersection Summary

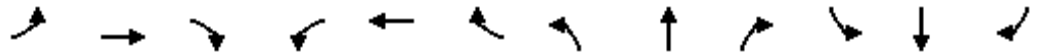
HCM Average Control Delay	35.4	HCM Level of Service	D
HCM Volume to Capacity ratio	0.88		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	4.0
Intersection Capacity Utilization	103.0%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group

# HCM Signalized Intersection Capacity Analysis

## 9: Wayne Ave. & Flower Ave

6/10/2008



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕	↗		↕		↖	↖			↕	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		2.0	2.0		2.0		2.0	2.0			2.0	
Lane Util. Factor		1.00	1.00		1.00		1.00	1.00			1.00	
Frbp, ped/bikes		1.00	0.99		0.99		1.00	1.00			0.99	
Flpb, ped/bikes		0.99	1.00		1.00		1.00	1.00			1.00	
Frt		1.00	0.85		0.94		1.00	1.00			0.96	
Flt Protected		0.96	1.00		0.99		0.95	1.00			1.00	
Satd. Flow (prot)		1729	1516		1662		1719	1804			1715	
Flt Permitted		0.71	1.00		0.93		0.27	1.00			1.00	
Satd. Flow (perm)		1270	1516		1566		483	1804			1710	
Volume (vph)	200	50	475	10	20	25	375	575	10	5	475	225
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	217	54	516	11	22	27	408	625	11	5	516	245
RTOR Reduction (vph)	0	0	0	0	20	0	0	1	0	0	13	0
Lane Group Flow (vph)	0	271	516	0	40	0	408	635	0	0	753	0
Conf. Peds. (#/hr)	2		4	4		2	6		4	4		6
Turn Type	Perm		pm+ov	Perm		pm+pt				Perm		
Protected Phases		4	5		8		5	2			6	
Permitted Phases	4		4	8		2				6		
Actuated Green, G (s)		25.9	43.2		25.9		84.1	84.1			62.8	
Effective Green, g (s)		28.9	48.2		28.9		87.1	87.1			65.8	
Actuated g/C Ratio		0.24	0.40		0.24		0.73	0.73			0.55	
Clearance Time (s)		5.0	4.0		5.0		4.0	5.0			5.0	
Vehicle Extension (s)		3.0	3.0		3.0		3.0	3.0			3.0	
Lane Grp Cap (vph)		306	634		377		549	1309			938	
v/s Ratio Prot			c0.13				0.12	0.35				
v/s Ratio Perm		c0.21	0.21		0.03		0.42				c0.44	
v/c Ratio		0.89	0.81		0.10		0.74	0.49			0.80	
Uniform Delay, d1		44.0	31.9		35.5		11.5	7.0			21.9	
Progression Factor		0.69	0.58		1.00		1.00	1.00			1.00	
Incremental Delay, d2		18.8	5.6		0.1		5.4	1.3			7.2	
Delay (s)		49.1	24.0		35.6		16.9	8.3			29.1	
Level of Service		D	C		D		B	A			C	
Approach Delay (s)		32.7			35.6			11.6			29.1	
Approach LOS		C			D			B			C	















### Intersection Summary

HCM Average Control Delay	23.5	HCM Level of Service	C
HCM Volume to Capacity ratio	0.82		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	4.0
Intersection Capacity Utilization	100.4%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis  
 132: Thayer Ave. & Georgia Ave

7/28/2008

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations			  			  
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0		4.0		4.0	4.0
Lane Util. Factor	1.00		0.91		1.00	0.91
Frt	0.90		1.00		1.00	1.00
Flt Protected	0.99		1.00		0.95	1.00
Satd. Flow (prot)	1655		5078		1770	5085
Flt Permitted	0.99		1.00		0.09	1.00
Satd. Flow (perm)	1655		5078		164	5085
Volume (vph)	80	225	1540	15	55	2255
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	84	237	1621	16	58	2374
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	321	0	1637	0	58	2374
Turn Type					pm+pt	
Protected Phases	4		5		6	2
Permitted Phases					2	
Actuated Green, G (s)	26.8		61.4		83.2	83.2
Effective Green, g (s)	27.8		62.4		84.2	84.2
Actuated g/C Ratio	0.23		0.52		0.70	0.70
Clearance Time (s)	5.0		5.0		5.0	5.0
Vehicle Extension (s)	3.0		3.0		3.0	3.0
Lane Grp Cap (vph)	383		2641		353	3568
v/s Ratio Prot	c0.19		0.32		0.02	c0.47
v/s Ratio Perm					0.09	
v/c Ratio	0.84		0.62		0.16	0.67
Uniform Delay, d1	44.0		20.4		19.7	10.0
Progression Factor	1.00		1.00		0.14	0.01
Incremental Delay, d2	14.7		1.1		0.1	0.5
Delay (s)	58.7		21.5		2.9	0.6
Level of Service	E		C		A	A
Approach Delay (s)	58.7		21.5			0.7
Approach LOS	E		C			A
<b>Intersection Summary</b>						
HCM Average Control Delay			12.7		HCM Level of Service	B
HCM Volume to Capacity ratio			0.71			
Actuated Cycle Length (s)			120.0		Sum of lost time (s)	8.0
Intersection Capacity Utilization			68.5%		ICU Level of Service	C
Analysis Period (min)			15			
c Critical Lane Group						

# HCM Signalized Intersection Capacity Analysis

## 3: Wayne Ave. #1 & Georgia Ave

7/28/2008



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↕	↗	↖	↕	↗	↖	↕	↗	↖	↕	↗
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	0.91		1.00	0.91	
Frbp, ped/bikes	1.00	0.97		1.00	0.99		1.00	0.99		1.00	0.99	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.96		1.00	0.98		1.00	0.99		1.00	0.98	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1687	3148		1687	3269		1687	4789		1687	4720	
Flt Permitted	0.15	1.00		0.30	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	263	3148		525	3269		1687	4789		1687	4720	
Volume (vph)	120	325	115	95	690	85	110	1385	65	85	2290	285
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	126	342	121	100	726	89	116	1458	68	89	2411	300
RTOR Reduction (vph)	0	29	0	0	8	0	0	4	0	0	13	0
Lane Group Flow (vph)	126	434	0	100	807	0	116	1522	0	89	2698	0
Confl. Peds. (#/hr)			67			84			66			46
Heavy Vehicles (%)	7%	7%	7%	7%	7%	7%	7%	7%	7%	7%	7%	7%
Turn Type	pm+pt			pm+pt			Prot			Prot		
Protected Phases	7	4		3	8		1	5		6	2	
Permitted Phases	4			8								
Actuated Green, G (s)	29.0	25.0		29.0	25.0		8.0	49.8		19.2	63.0	
Effective Green, g (s)	31.0	27.0		31.0	27.0		8.0	51.8		21.2	65.0	
Actuated g/C Ratio	0.26	0.22		0.26	0.22		0.07	0.43		0.18	0.54	
Clearance Time (s)	4.0	6.0		4.0	6.0		4.0	6.0		6.0	6.0	
Vehicle Extension (s)	3.0	4.0		3.0	4.0		3.0	0.2		3.0	0.2	
Lane Grp Cap (vph)	115	708		174	736		112	2067		298	2557	
v/s Ratio Prot	c0.04	0.14		0.02	c0.25		c0.07	0.32		0.05	c0.57	
v/s Ratio Perm	0.25			0.13								
v/c Ratio	1.10	0.61		0.57	1.10		1.04	0.74		0.30	1.06	
Uniform Delay, d1	45.3	41.8		38.3	46.5		56.0	28.4		42.9	27.5	
Progression Factor	1.00	1.00		1.00	1.00		1.34	0.58		0.68	0.43	
Incremental Delay, d2	112.0	3.9		4.5	62.8		93.4	2.3		0.4	32.3	
Delay (s)	157.3	45.7		42.9	109.3		168.6	18.9		29.5	44.1	
Level of Service	F	D		D	F		F	B		C	D	
Approach Delay (s)		69.6			102.0			29.5			43.6	
Approach LOS		E			F			C			D	

### Intersection Summary

HCM Average Control Delay	51.3	HCM Level of Service	D
HCM Volume to Capacity ratio	1.07		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	99.5%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

# HCM Signalized Intersection Capacity Analysis

65: Wayne Ave. #1 & Dixon Rd

7/28/2008



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑↑			↑↑↑			↑	↑		↑	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		2.0			2.0			2.0	2.0		2.0	
Lane Util. Factor		0.91			0.91			0.95	0.95		1.00	
Frt		0.97			1.00			0.89	0.85		0.92	
Flt Protected		1.00			0.99			0.99	1.00		0.99	
Satd. Flow (prot)		4692			4773			1572	1519		1708	
Flt Permitted		0.91			0.71			0.93	1.00		0.96	
Satd. Flow (perm)		4264			3451			1484	1519		1661	
Volume (vph)	10	355	95	305	765	10	25	0	165	5	5	15
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	11	374	100	321	805	11	26	0	174	5	5	16
RTOR Reduction (vph)	0	18	0	0	1	0	0	50	79	0	12	0
Lane Group Flow (vph)	0	467	0	0	1136	0	0	43	28	0	14	0
Heavy Vehicles (%)	7%	7%	7%	7%	7%	7%	1%	1%	1%	1%	1%	1%
Turn Type	Perm			pm+pt			Perm		Perm	Perm		
Protected Phases		6		5	2			4				8
Permitted Phases	6			2			4		4	8		
Actuated Green, G (s)		81.0			81.0			27.0	27.0		27.0	
Effective Green, g (s)		85.0			85.0			31.0	31.0		31.0	
Actuated g/C Ratio		0.71			0.71			0.26	0.26		0.26	
Clearance Time (s)		6.0			6.0			6.0	6.0		6.0	
Vehicle Extension (s)		3.0			3.0			3.0	3.0		3.0	
Lane Grp Cap (vph)		3020			2444			383	392		429	
v/s Ratio Prot												
v/s Ratio Perm		0.11			c0.33			c0.03	0.02		0.01	
v/c Ratio		0.15			0.46			0.11	0.07		0.03	
Uniform Delay, d1		5.7			7.6			34.0	33.6		33.3	
Progression Factor		1.00			1.00			1.07	1.13		1.00	
Incremental Delay, d2		0.1			0.1			0.1	0.1		0.0	
Delay (s)		5.8			7.8			36.5	38.0		33.3	
Level of Service		A			A			D	D		C	
Approach Delay (s)		5.8			7.8			37.3			33.3	
Approach LOS		A			A			D			C	
<b>Intersection Summary</b>												
HCM Average Control Delay			10.8			HCM Level of Service			B			
HCM Volume to Capacity ratio			0.37									
Actuated Cycle Length (s)			120.0			Sum of lost time (s)			4.0			
Intersection Capacity Utilization			48.7%			ICU Level of Service			A			
Analysis Period (min)			15									

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis  
 131: Bonifant Street & Georgia Ave

7/28/2008

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑			↑		↖	↑↑↑		↖	↑↑↑	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		2.0			2.0		2.0	2.0		2.0	2.0	
Lane Util. Factor		1.00			1.00		1.00	0.91		1.00	0.91	
Frt		1.00			1.00		1.00	1.00		1.00	0.99	
Flt Protected		1.00			1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1863			1863		1770	5075		1770	5022	
Flt Permitted		1.00			1.00		0.06	1.00		0.11	1.00	
Satd. Flow (perm)		1863			1863		105	5075		212	5022	
Volume (vph)	0	10	0	0	10	0	185	1475	20	35	2265	205
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	11	0	0	11	0	195	1553	21	37	2384	216
RTOR Reduction (vph)	0	0	0	0	0	0	0	1	0	0	9	0
Lane Group Flow (vph)	0	11	0	0	11	0	195	1573	0	37	2591	0
Turn Type							pm+pt			pm+pt		
Protected Phases		4			8		5	2		1	6	
Permitted Phases							2			6		
Actuated Green, G (s)		25.0			25.0		85.0	77.6		68.7	66.3	
Effective Green, g (s)		28.0			28.0		88.0	80.6		74.7	69.3	
Actuated g/C Ratio		0.23			0.23		0.73	0.67		0.62	0.58	
Clearance Time (s)		5.0			5.0		5.0	5.0		5.0	5.0	
Vehicle Extension (s)		3.0			3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		435			435		309	3409		202	2900	
v/s Ratio Prot		c0.01			0.01		c0.09	0.31		0.01	c0.52	
v/s Ratio Perm							0.38			0.11		
v/c Ratio		0.03			0.03		0.63	0.46		0.18	0.89	
Uniform Delay, d1		35.5			35.5		39.7	9.4		18.4	22.1	
Progression Factor		1.00			0.77		1.29	0.81		0.34	0.33	
Incremental Delay, d2		0.0			0.0		3.3	0.4		0.0	0.5	
Delay (s)		35.5			27.4		54.5	7.9		6.2	7.8	
Level of Service		D			C		D	A		A	A	
Approach Delay (s)		35.5			27.4			13.1			7.7	
Approach LOS		D			C			B			A	
<b>Intersection Summary</b>												
HCM Average Control Delay			10.0				HCM Level of Service			A		
HCM Volume to Capacity ratio			0.62									
Actuated Cycle Length (s)			120.0				Sum of lost time (s)			4.0		
Intersection Capacity Utilization			71.9%				ICU Level of Service			C		
Analysis Period (min)			15									
c Critical Lane Group												

# HCM Signalized Intersection Capacity Analysis

## 3: Wayne Ave. #1 & Georgia Ave

7/28/2008



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↖↗		↖	↖↗		↖	↖↗↘		↖	↖↗↘	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	0.91		1.00	0.91	
Frbp, ped/bikes	1.00	0.94		1.00	0.93		1.00	0.98		1.00	0.98	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.95		1.00	0.94		1.00	0.99		1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1719	3083		1719	3004		1719	4796		1719	4798	
Flt Permitted	0.14	1.00		0.16	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	245	3083		283	3004		1719	4796		1719	4798	
Volume (vph)	370	570	265	135	380	245	180	1730	120	105	1530	150
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	389	600	279	142	400	258	189	1821	126	111	1611	158
RTOR Reduction (vph)	0	45	0	0	88	0	0	6	0	0	10	0
Lane Group Flow (vph)	389	834	0	142	570	0	189	1941	0	111	1759	0
Confl. Peds. (#/hr)			117			116			173			97
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%
Turn Type	pm+pt			pm+pt			Prot			Prot		
Protected Phases	7	4		3	8		1	5		6	2	
Permitted Phases	4			8								
Actuated Green, G (s)	44.6	30.3		33.9	23.6		14.2	50.4		7.0	45.2	
Effective Green, g (s)	46.6	32.3		35.9	25.6		14.2	52.4		9.0	47.2	
Actuated g/C Ratio	0.39	0.27		0.30	0.21		0.12	0.44		0.08	0.39	
Clearance Time (s)	4.0	6.0		4.0	6.0		4.0	6.0		6.0	6.0	
Vehicle Extension (s)	3.0	4.0		3.0	4.0		3.0	0.2		3.0	0.2	
Lane Grp Cap (vph)	304	830		208	641		203	2094		129	1887	
v/s Ratio Prot	c0.18	0.27		0.06	0.19		0.11	c0.40		0.06	c0.37	
v/s Ratio Perm	c0.32			0.15								
v/c Ratio	1.28	1.00		0.68	0.89		0.93	0.93		0.86	0.93	
Uniform Delay, d1	34.5	43.8		33.9	45.8		52.4	32.0		54.9	34.9	
Progression Factor	1.00	1.00		1.00	1.00		1.24	0.45		0.69	0.52	
Incremental Delay, d2	148.7	32.3		8.9	14.5		34.5	6.3		45.2	9.1	
Delay (s)	183.3	76.2		42.8	60.3		99.5	20.5		83.1	27.1	
Level of Service	F	E		D	E		F	C		F	C	
Approach Delay (s)		109.0			57.2			27.5			30.4	
Approach LOS		F			E			C			C	

### Intersection Summary

HCM Average Control Delay	49.3	HCM Level of Service	D
HCM Volume to Capacity ratio	1.05		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	98.1%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			



# HCM Signalized Intersection Capacity Analysis

65: Wayne Ave. #1 & Dixon Rd

7/28/2008



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑↑			↑↑↑			↑	↑		↑	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		2.0			2.0			2.0	2.0		2.0	
Lane Util. Factor		0.91			0.91			0.95	0.95		1.00	
Frt		0.99			1.00			0.91	0.85		0.93	
Flt Protected		1.00			0.99			0.98	1.00		0.98	
Satd. Flow (prot)		4877			4897			1600	1519		1725	
Flt Permitted		0.92			0.79			0.87	1.00		0.89	
Satd. Flow (perm)		4515			3877			1411	1519		1555	
Volume (vph)	10	575	50	80	615	15	100	5	515	10	5	15
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	11	605	53	84	647	16	105	5	542	11	5	16
RTOR Reduction (vph)	0	4	0	0	1	0	0	50	287	0	12	0
Lane Group Flow (vph)	0	665	0	0	746	0	0	212	103	0	20	0
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%	1%	1%	1%	1%	1%	1%
Turn Type	Perm			pm+pt			Perm		Perm	Perm		
Protected Phases		6		5	2			4				8
Permitted Phases	6			2			4		4	8		
Actuated Green, G (s)		80.2			80.2			27.8	27.8			27.8
Effective Green, g (s)		84.2			84.2			31.8	31.8			31.8
Actuated g/C Ratio		0.70			0.70			0.26	0.26			0.26
Clearance Time (s)		6.0			6.0			6.0	6.0			6.0
Vehicle Extension (s)		3.0			3.0			3.0	3.0			3.0
Lane Grp Cap (vph)		3168			2720			374	403			412
v/s Ratio Prot												
v/s Ratio Perm		0.15			c0.19			c0.15	0.07			0.01
v/c Ratio		0.21			0.27			0.57	0.26			0.05
Uniform Delay, d1		6.3			6.6			38.1	34.8			32.8
Progression Factor		1.00			1.00			0.98	0.95			1.00
Incremental Delay, d2		0.2			0.1			2.0	0.3			0.0
Delay (s)		6.4			6.7			39.2	33.2			32.9
Level of Service		A			A			D	C			C
Approach Delay (s)		6.4			6.7			35.6				32.9
Approach LOS		A			A			D				C
<b>Intersection Summary</b>												
HCM Average Control Delay			16.0				HCM Level of Service			B		
HCM Volume to Capacity ratio			0.35									
Actuated Cycle Length (s)			120.0				Sum of lost time (s)			4.0		
Intersection Capacity Utilization			58.4%				ICU Level of Service			B		
Analysis Period (min)			15									

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis  
 131: Bonifant Street & Georgia Ave

7/28/2008



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑			↑		↘	↑↑↑		↘	↑↑↑	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		2.0			2.0		2.0	2.0		2.0	2.0	
Lane Util. Factor		1.00			1.00		1.00	0.91		1.00	0.91	
Frt		1.00			1.00		1.00	0.99		1.00	1.00	
Flt Protected		1.00			1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1863			1863		1770	5040		1770	5067	
Flt Permitted		1.00			1.00		0.07	1.00		0.07	1.00	
Satd. Flow (perm)		1863			1863		132	5040		123	5067	
Volume (vph)	0	10	0	0	10	0	85	1965	125	90	1660	40
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	11	0	0	11	0	89	2068	132	95	1747	42
RTOR Reduction (vph)	0	0	0	0	0	0	0	5	0	0	2	0
Lane Group Flow (vph)	0	11	0	0	11	0	89	2195	0	95	1787	0
Turn Type							pm+pt			pm+pt		
Protected Phases		4			4		5	2		1	6	
Permitted Phases							2			6		
Actuated Green, G (s)		25.0			25.0		67.0	67.0		73.8	73.8	
Effective Green, g (s)		28.0			28.0		70.0	70.0		76.8	76.8	
Actuated g/C Ratio		0.23			0.23		0.58	0.58		0.64	0.64	
Clearance Time (s)		5.0			5.0		5.0	5.0		5.0	5.0	
Vehicle Extension (s)		3.0			3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		435			435		203	2940		298	3243	
v/s Ratio Prot		c0.01			0.01		0.03	c0.44		0.04	c0.35	
v/s Ratio Perm							0.22			0.16		
v/c Ratio		0.03			0.03		0.44	0.75		0.32	0.55	
Uniform Delay, d1		35.5			35.5		15.2	18.5		30.9	12.0	
Progression Factor		1.00			0.96		1.65	0.14		0.38	0.35	
Incremental Delay, d2		0.0			0.0		0.9	1.1		0.2	0.3	
Delay (s)		35.5			34.0		26.0	3.7		12.0	4.5	
Level of Service		D			C		C	A		B	A	
Approach Delay (s)		35.5			34.0			4.6			4.9	
Approach LOS		D			C			A			A	

Intersection Summary

HCM Average Control Delay	4.9	HCM Level of Service	A
HCM Volume to Capacity ratio	0.54		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	4.0
Intersection Capacity Utilization	59.1%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis  
 132: Thayer Ave. & Georgia Ave

7/28/2008



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↔		↑↑↑		↔	↑↑↑
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0		4.0		4.0	4.0
Lane Util. Factor	1.00		0.91		1.00	0.91
Frt	0.90		0.99		1.00	1.00
Flt Protected	0.99		1.00		0.95	1.00
Satd. Flow (prot)	1655		5048		1770	5085
Flt Permitted	0.99		1.00		0.06	1.00
Satd. Flow (perm)	1655		5048		103	5085
Volume (vph)	65	185	2050	105	140	1660
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	68	195	2158	111	147	1747
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	263	0	2269	0	147	1747
Turn Type					pm+pt	
Protected Phases	4		5		6	2
Permitted Phases					2	
Actuated Green, G (s)	22.6		67.4		87.4	87.4
Effective Green, g (s)	23.6		68.4		88.4	88.4
Actuated g/C Ratio	0.20		0.57		0.74	0.74
Clearance Time (s)	5.0		5.0		5.0	5.0
Vehicle Extension (s)	3.0		3.0		3.0	3.0
Lane Grp Cap (vph)	325		2877		298	3746
v/s Ratio Prot	c0.16		c0.45		0.07	c0.34
v/s Ratio Perm					0.30	
v/c Ratio	0.81		0.79		0.49	0.47
Uniform Delay, d1	46.0		20.2		32.3	6.3
Progression Factor	1.00		1.00		0.36	0.13
Incremental Delay, d2	13.8		2.3		1.1	0.4
Delay (s)	59.8		22.4		12.8	1.2
Level of Service	E		C		B	A
Approach Delay (s)	59.8		22.4			2.1
Approach LOS	E		C			A

Intersection Summary

HCM Average Control Delay	15.9	HCM Level of Service	B
HCM Volume to Capacity ratio	0.73		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	74.7%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			













HCM Signalized Intersection Capacity Analysis  
801: Campus Drive & Adelphi Rd.

Purple Line (UMD)  
7/30/2008

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations		↑↑	↑	↑	↑	↑	↑	↑↑↑	↑	↑↑	↑↑		
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		
Lane Util. Factor		0.95	1.00	1.00	1.00	1.00	1.00	0.91	1.00	0.97	0.95		
Frbp, ped/bikes		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		
Flpb, ped/bikes		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		
Frt		1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00		
Flt Protected		1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		
Satd. Flow (prot)		3539	1583	1770	1863	1583	1770	5085	1583	3433	3539		
Flt Permitted		1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		
Satd. Flow (perm)		3539	1583	1770	1863	1583	1770	5085	1583	3433	3539		
Volume (vph)	0	192	207	95	233	65	208	888	331	357	1225	0	
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	
Adj. Flow (vph)	0	213	230	106	259	72	231	987	368	397	1361	0	
RTOR Reduction (vph)	0	0	169	0	0	44	0	0	275	0	0	0	
Lane Group Flow (vph)	0	213	61	106	259	28	231	987	93	397	1361	0	
Confl. Peds. (#/hr)	49			3			2						
Turn Type			Perm	Split		Perm	Prot		Perm	Prot			
Protected Phases		2		6	6		3	8		17	14		
Permitted Phases			2			6			8				
Actuated Green, G (s)		62.6	62.6	30.0	30.0	30.0	30.0	60.0	60.0	72.4	103.4		
Effective Green, g (s)		65.6	65.6	33.0	33.0	33.0	32.0	63.0	63.0	74.4	105.4		
Actuated g/C Ratio		0.26	0.26	0.13	0.13	0.13	0.13	0.25	0.25	0.30	0.43		
Clearance Time (s)		6.0	6.0	6.0	6.0	6.0	5.0	6.0	6.0				
Vehicle Extension (s)		4.0	4.0	3.0	3.0	3.0	3.0	3.5	3.5				
Lane Grp Cap (vph)		936	419	236	248	211	228	1292	402	1030	1504		
v/s Ratio Prot		c0.06		0.06	c0.14		c0.13	0.19		0.12	c0.38		
v/s Ratio Perm			0.04			0.02			0.06				
v/c Ratio		0.23	0.15	0.45	1.04	0.13	1.01	0.76	0.23	0.39	0.90		
Uniform Delay, d1		71.4	69.8	99.1	107.5	94.9	108.0	85.6	73.3	68.7	66.6		
Progression Factor		0.56	0.66	1.00	1.00	1.00	1.00	1.00	1.00	0.40	0.36		
Incremental Delay, d2		0.1	0.1	1.4	69.2	0.3	63.0	2.8	0.4	0.2	6.3		
Delay (s)		40.3	46.2	100.5	176.7	95.1	171.0	88.4	73.7	27.7	30.0		
Level of Service		D	D	F	F	F	F	F	E	C	C		
Approach Delay (s)		43.3			144.8			97.0			29.5		
Approach LOS		D			F			F			C		
Intersection Summary													
HCM Average Control Delay			68.2		HCM Level of Service					E			
HCM Volume to Capacity ratio			0.75										
Actuated Cycle Length (s)			248.0		Sum of lost time (s)					12.0			
Intersection Capacity Utilization			84.8%		ICU Level of Service					E			
Analysis Period (min)			15										
c Critical Lane Group													

HCM Unsignalized Intersection Capacity Analysis  
 810: Campus Drive & Regents Drive

Purple Line (UMD)  
 7/30/2008

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Right Turn Channelized			Yes			Yes			Yes			Yes
Volume (veh/h)	9	54	19	52	86	277	4	77	39	93	76	11
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	10	59	21	57	93	301	4	84	42	101	83	12
Approach Volume (veh/h)		68			150			88			184	
Crossing Volume (veh/h)		240			98			170			154	
High Capacity (veh/h)		1147			1283			1213			1227	
High v/c (veh/h)		0.06			0.12			0.07			0.15	
Low Capacity (veh/h)		946			1069			1005			1018	
Low v/c (veh/h)		0.07			0.14			0.09			0.18	
Intersection Summary												
Maximum v/c High			0.15									
Maximum v/c Low			0.18									
Intersection Capacity Utilization			67.2%			ICU Level of Service						C












HCM Signalized Intersection Capacity Analysis  
812: Campus Drive & US 1

Purple Line (UMD)  
11/5/2007

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Util. Factor	0.95	0.95	1.00	0.91	0.91	0.88	0.97	0.95	1.00	0.97	0.95	1.00
Frnt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	1.00
Flt Protected	0.95	1.00	1.00	0.95	0.98	1.00	0.95	1.00	1.00	0.95	1.00	0.85
Satd. Flow (prot)	1681	1770	1583	1610	3327	2787	3433	3539	1583	3433	3539	1583
Flt Permitted	0.95	1.00	1.00	0.95	0.98	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1681	1770	1583	1610	3327	2787	3433	3539	1583	3433	3539	1583
Volume (vph)	58	142	72	677	492	490	169	779	148	507	1718	496
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	64	158	80	752	547	544	188	866	164	563	1909	551
RTOR Reduction (vph)	0	0	71	0	0	174	0	0	94	0	0	134
Lane Group Flow (vph)	64	158	9	418	881	370	188	866	70	563	1909	417
Turn Type	Split		Perm	Split		pt+ov	Prot		Perm	Prot		Perm
Protected Phases	4	4		3	3	3.5	1	6		5	2	
Permitted Phases			4						6			2
Actuated Green, G (s)	14.9	14.9	14.9	30.5	30.5	55.6	13.6	57.5	57.5	25.1	69.0	69.0
Effective Green, g (s)	17.4	17.4	17.4	33.0	33.0	60.1	15.6	60.5	60.5	27.1	72.0	72.0
Actuated g/C Ratio	0.12	0.12	0.12	0.22	0.22	0.40	0.10	0.40	0.40	0.18	0.48	0.48
Clearance Time (s)	5.5	5.5	5.5	5.5	5.5		5.0	6.0	6.0	5.0	6.0	6.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	5.0	5.0	3.0	5.0	5.0
Lane Grp Cap (vph)	195	205	184	354	732	1117	357	1427	638	620	1699	760
v/s Ratio Prot	0.04	c0.09		0.26	c0.26	0.13	0.05	0.24		c0.16	c0.54	
v/s Ratio Perm			0.01						0.04			0.26
v/c Ratio	0.33	0.77	0.05	1.18	1.20	0.33	0.53	0.61	0.11	0.91	1.12	0.55
Uniform Delay, d1	60.9	64.4	59.0	58.5	58.5	31.1	63.7	35.4	27.9	60.2	39.0	27.5
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.13	0.94	1.56	1.16	0.77	0.50
Incremental Delay, d2	1.0	16.3	0.1	106.7	104.4	0.2	1.3	1.7	0.3	2.1	56.5	0.3
Delay (s)	61.9	80.6	59.1	165.2	162.9	31.2	73.3	35.1	43.9	71.7	86.4	14.0
Level of Service	E	F	E	F	F	C	E	D	D	E	F	B
Approach Delay (s)		71.0			124.5			42.1			70.5	
Approach LOS		E			F			D			E	
Intersection Summary												
HCM Average Control Delay	80.7			HCM Level of Service						F		
HCM Volume to Capacity ratio	1.08											
Actuated Cycle Length (s)	150.0			Sum of lost time (s)						12.0		
Intersection Capacity Utilization	95.3%			ICU Level of Service						F		
Analysis Period (min)	15											
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis  
 200: E. Campus Main Ent & US 1

Purple Line (UMD)  
 11/5/2007

Movement						
	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0		4.0	4.0
Lane Util. Factor	1.00	1.00	0.95		1.00	0.95
Frt	1.00	0.85	0.99		1.00	1.00
Flt Protected	0.95	1.00	1.00		0.95	1.00
Satd. Flow (prot)	1770	1583	3513		1770	3539
Flt Permitted	0.95	1.00	1.00		0.95	1.00
Satd. Flow (perm)	1770	1583	3513		1770	3539
Volume (vph)	76	72	1307	68	116	2480
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	83	78	1421	74	126	2696
RTOR Reduction (vph)	0	71	2	0	0	0
Lane Group Flow (vph)	83	7	1493	0	126	2696
Turn Type		Perm			Prot	
Protected Phases	8		2		1	6
Permitted Phases		8				
Actuated Green, G (s)	12.0	12.0	106.5		15.0	126.5
Effective Green, g (s)	13.5	13.5	108.5		16.0	128.5
Actuated g/C Ratio	0.09	0.09	0.72		0.11	0.86
Clearance Time (s)	5.5	5.5	6.0		5.0	6.0
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	159	142	2541		189	3032
v/s Ratio Prot	c0.05		0.42		0.07	c0.76
v/s Ratio Perm		0.00				
v/c Ratio	0.52	0.05	0.59		0.67	0.89
Uniform Delay, d1	65.2	62.4	10.0		64.4	6.5
Progression Factor	1.00	1.00	1.46		0.83	2.45
Incremental Delay, d2	3.1	0.1	0.9		0.8	0.4
Delay (s)	68.2	62.5	15.5		54.3	16.3
Level of Service	E	E	B		D	B
Approach Delay (s)	65.5		15.5			18.0
Approach LOS	E		B			B
<b>Intersection Summary</b>						
HCM Average Control Delay			18.8		HCM Level of Service	B
HCM Volume to Capacity ratio			0.85			
Actuated Cycle Length (s)			150.0		Sum of lost time (s)	8.0
Intersection Capacity Utilization			79.4%		ICU Level of Service	D
Analysis Period (min)			15			
c Critical Lane Group						

HCM Signalized Intersection Capacity Analysis  
 212: Rossborough Rd. & US 1

Purple Line (UMD)  
 7/30/2008

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0			3.0	3.0	3.0	3.0		3.0	3.0	
Lane Util. Factor	1.00	1.00			1.00	1.00	1.00	0.95		1.00	0.95	
Frt	1.00	0.93			1.00	0.85	1.00	1.00		1.00	0.98	
Flt Protected	0.95	1.00			0.96	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1723			1783	1583	1770	3531		1770	3474	
Flt Permitted	0.73	1.00			0.76	1.00	0.06	1.00		0.22	1.00	
Satd. Flow (perm)	1352	1723			1410	1583	120	3531		412	3474	
Volume (vph)	16	2	2	32	4	293	8	990	16	157	1680	236
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	18	2	2	36	4	326	9	1100	18	174	1867	262
RTOR Reduction (vph)	0	2	0	0	0	292	0	0	0	0	3	0
Lane Group Flow (vph)	18	2	0	0	40	34	9	1118	0	174	2126	0
Turn Type	Perm			Perm		Perm	pm+pt			pm+pt		
Protected Phases		4			8		1	6		5	2	
Permitted Phases	4			8		8	6			2		
Actuated Green, G (s)	11.1	11.1			11.1	11.1	116.8	114.5		127.4	120.6	
Effective Green, g (s)	13.6	13.6			13.6	13.6	121.3	117.5		130.4	123.6	
Actuated g/C Ratio	0.09	0.09			0.09	0.09	0.81	0.78		0.87	0.82	
Clearance Time (s)	5.5	5.5			5.5	5.5	4.5	6.0		4.5	6.0	
Vehicle Extension (s)	3.0	3.0			3.0	3.0	3.0	5.0		3.0	5.0	
Lane Grp Cap (vph)	123	156			128	144	139	2766		448	2863	
v/s Ratio Prot		0.00					0.00	0.32		c0.03	c0.61	
v/s Ratio Perm	0.01				c0.03	0.02	0.05			0.31		
v/c Ratio	0.15	0.01			0.31	0.24	0.06	0.40		0.39	0.74	
Uniform Delay, d1	62.9	62.1			63.8	63.4	6.9	5.2		2.7	6.0	
Progression Factor	1.00	1.00			1.00	1.00	0.95	0.52		1.26	1.73	
Incremental Delay, d2	0.6	0.0			1.4	0.9	0.2	0.4		0.3	0.8	
Delay (s)	63.4	62.1			65.2	64.2	6.8	3.1		3.7	11.2	
Level of Service	E	E			E	E	A	A		A	B	
Approach Delay (s)		63.2			64.3			3.1			10.6	
Approach LOS		E			E			A			B	
Intersection Summary												
HCM Average Control Delay			13.9				HCM Level of Service			B		
HCM Volume to Capacity ratio			0.69									
Actuated Cycle Length (s)			150.0				Sum of lost time (s)			9.0		
Intersection Capacity Utilization			76.8%				ICU Level of Service			D		
Analysis Period (min)			15									
c Critical Lane Group												



HCM Signalized Intersection Capacity Analysis  
 813: Paint Branch Pkwy & Fire Academy

Purple Line (UMD)  
 11/5/2007

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	2.0	2.0		2.0	2.0			2.0			2.0	
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00			1.00	
Flt Protected	0.95	1.00		0.95	1.00			0.98			0.92	
Satd. Flow (prot)	1770	3442		1770	3504			1762			1695	
Flt Permitted	0.13	1.00		0.43	1.00			0.87			0.95	
Satd. Flow (perm)	236	3442		794	3504			1580			1629	
Volume (vph)	220	421	94	50	1245	88	25	6	6	13	6	25
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	220	421	94	50	1245	88	25	6	6	13	6	25
RTOR Reduction (vph)	0	24	0	0	6	0	0	4	0	0	16	0
Lane Group Flow (vph)	220	491	0	50	1327	0	0	33	0	0	28	0
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	45.0	45.0		45.0	45.0			25.0			25.0	
Effective Green, g (s)	48.0	48.0		48.0	48.0			28.0			28.0	
Actuated g/C Ratio	0.60	0.60		0.60	0.60			0.35			0.35	
Clearance Time (s)	5.0	5.0		5.0	5.0			5.0			5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0			3.0	
Lane Grp Cap (vph)	142	2065		476	2102			553			570	
v/s Ratio Prot		0.14			0.38							
v/s Ratio Perm	c0.93			0.06				c0.02			0.02	
v/c Ratio	1.55	0.24		0.11	0.63			0.06			0.05	
Uniform Delay, d1	16.0	7.5		6.8	10.3			17.3			17.2	
Progression Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Incremental Delay, d2	278.9	0.1		0.1	0.6			0.2			0.2	
Delay (s)	294.9	7.5		6.9	10.9			17.5			17.4	
Level of Service	F	A		A	B			B			B	
Approach Delay (s)		93.5			10.8			17.5			17.4	
Approach LOS		F			B			B			B	
Intersection Summary												
HCM Average Control Delay			38.7			HCM Level of Service				D		
HCM Volume to Capacity ratio			0.99									
Actuated Cycle Length (s)			80.0			Sum of lost time (s)				4.0		
Intersection Capacity Utilization		63.7%				ICU Level of Service				B		
Analysis Period (min)			15									
c Critical Lane Group												







HCM Signalized Intersection Capacity Analysis  
 814: Paint Branch Pkwy & Metro Parking Garage

Purple Line (UMD)  
 7/30/2008

	→	↘	↙	←	↖	↗
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑	↗	↘	↑↑	↘	↗
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0			4.0		
Lane Util. Factor	0.95			0.95		
Frt	1.00			1.00		
Flt Protected	1.00			1.00		
Satd. Flow (prot)	3539			3539		
Flt Permitted	1.00			1.00		
Satd. Flow (perm)	3539			3539		
Volume (vph)	440	0	0	1383	0	0
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	478	0	0	1503	0	0
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	478	0	0	1503	0	0
Turn Type		Perm	pm+pt			pm+ov
Protected Phases	2		1	6	8	1
Permitted Phases		2	6			8
Actuated Green, G (s)	40.9			40.9		
Effective Green, g (s)	40.9			40.9		
Actuated g/C Ratio	0.52			0.52		
Clearance Time (s)	4.0			4.0		
Vehicle Extension (s)	3.0			3.0		
Lane Grp Cap (vph)	1828			1828		
v/s Ratio Prot	0.14			c0.42		
v/s Ratio Perm						
v/c Ratio	0.26			0.82		
Uniform Delay, d1	10.7			16.1		
Progression Factor	1.00			1.00		
Incremental Delay, d2	0.3			3.1		
Delay (s)	11.1			19.2		
Level of Service	B			B		
Approach Delay (s)	11.1			19.2	0.0	
Approach LOS	B			B	A	
<b>Intersection Summary</b>						
HCM Average Control Delay		17.2		HCM Level of Service		B
HCM Volume to Capacity ratio		0.82				
Actuated Cycle Length (s)		79.2		Sum of lost time (s)		38.3
Intersection Capacity Utilization		41.6%		ICU Level of Service		A
Analysis Period (min)		15				
c Critical Lane Group						













HCM Signalized Intersection Capacity Analysis  
 815: Paint Branch Pkwy & River Road

Purple Line (UMD)  
 11/5/2007

						
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑	↑	↑↑	↑↑	↑↑	↑
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	2.0	2.0	2.0	2.0	2.0	2.0
Lane Util. Factor	0.95	1.00	0.97	0.95	0.97	1.00
Frbp, ped/bikes	1.00	0.97	1.00	1.00	1.00	0.98
Flpb, ped/bikes	1.00	1.00	0.99	1.00	1.00	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (prot)	3539	1532	3398	3539	3419	1552
Flt Permitted	1.00	1.00	0.49	1.00	0.95	1.00
Satd. Flow (perm)	3539	1532	1755	3539	3419	1552
Volume (vph)	261	215	199	1242	87	269
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	261	215	199	1242	87	269
RTOR Reduction (vph)	0	148	0	0	0	146
Lane Group Flow (vph)	261	67	199	1242	87	123
Confl. Peds. (#/hr)		25	25		5	10
Turn Type		Perm	pm+pt			custom
Protected Phases	4		3	8		
Permitted Phases		4	8		2	2
Actuated Green, G (s)	18.9	18.9	32.1	32.1	30.3	30.3
Effective Green, g (s)	22.9	22.9	36.1	36.1	33.8	33.8
Actuated g/C Ratio	0.31	0.31	0.49	0.49	0.46	0.46
Clearance Time (s)	6.0	6.0	5.5	6.0	5.5	5.5
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	1097	475	1106	1729	1564	710
v/s Ratio Prot	0.07		0.03	c0.35		
v/s Ratio Perm		0.04	0.06		0.03	c0.08
v/c Ratio	0.24	0.14	0.18	0.72	0.06	0.17
Uniform Delay, d1	19.0	18.4	10.4	14.9	11.2	11.8
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.1	0.1	0.1	1.5	0.1	0.5
Delay (s)	19.1	18.5	10.5	16.3	11.2	12.3
Level of Service	B	B	B	B	B	B
Approach Delay (s)	18.9			15.5	12.1	
Approach LOS	B			B	B	
<b>Intersection Summary</b>						
HCM Average Control Delay		15.7			HCM Level of Service	B
HCM Volume to Capacity ratio		0.45				
Actuated Cycle Length (s)		73.9			Sum of lost time (s)	4.0
Intersection Capacity Utilization		63.5%			ICU Level of Service	B
Analysis Period (min)		15				
c Critical Lane Group						













HCM Signalized Intersection Capacity Analysis  
801: Campus Drive & Adelphi Rd.

Purple Line (UMD)  
7/30/2008

													
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations		↑↑	↑	↘	↑	↗	↘	↑↑↑	↗	↘↘	↑↑		
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		
Lane Util. Factor		0.95	1.00	1.00	1.00	1.00	1.00	0.91	1.00	0.97	0.95		
Frbp, ped/bikes		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		
Flpb, ped/bikes		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		
Frt		1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00		
Flt Protected		1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		
Satd. Flow (prot)		3539	1583	1770	1863	1583	1770	5085	1583	3433	3539		
Flt Permitted		1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		
Satd. Flow (perm)		3539	1583	1770	1863	1583	1770	5085	1583	3433	3539		
Volume (vph)	0	185	210	185	214	393	222	1304	180	228	917	0	
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	
Adj. Flow (vph)	0	206	233	206	238	437	247	1449	200	253	1019	0	
RTOR Reduction (vph)	0	0	173	0	0	293	0	0	115	0	0	0	
Lane Group Flow (vph)	0	206	60	206	238	144	247	1449	85	253	1019	0	
Confl. Peds. (#/hr)	17			20			9			3			
Turn Type			Perm	Split		Perm	Prot		Perm	Prot			
Protected Phases		2		6	6		3	8		17	14		
Permitted Phases			2			6			8				
Actuated Green, G (s)		60.0	60.0	30.0	30.0	30.0	25.0	60.0	60.0	73.7	109.7		
Effective Green, g (s)		63.0	63.0	33.0	33.0	33.0	27.0	63.0	63.0	75.7	111.7		
Actuated g/C Ratio		0.26	0.26	0.13	0.13	0.13	0.11	0.26	0.26	0.31	0.45		
Clearance Time (s)		6.0	6.0	6.0	6.0	6.0	5.0	6.0	6.0				
Vehicle Extension (s)		4.0	4.0	3.0	3.0	3.0	3.0	3.5	3.5				
Lane Grp Cap (vph)		904	404	237	249	212	194	1299	404	1053	1602		
v/s Ratio Prot		c0.06		0.12	c0.13		c0.14	c0.28		0.07	c0.29		
v/s Ratio Perm			0.04			0.09			0.05				
v/c Ratio		0.23	0.15	0.87	0.96	0.68	1.27	1.12	0.21	0.24	0.64		
Uniform Delay, d1		72.6	71.1	104.7	106.1	101.8	109.8	91.8	72.3	64.0	51.9		
Progression Factor		0.81	1.19	1.00	1.00	1.00	1.00	1.00	1.00	0.53	0.42		
Incremental Delay, d2		0.0	0.0	26.9	44.5	8.7	156.8	63.0	0.3	0.1	0.7		
Delay (s)		58.9	84.8	131.6	150.6	110.5	266.7	154.9	72.6	34.2	22.5		
Level of Service		E	F	F	F	F	F	F	E	C	C		
Approach Delay (s)		72.6			126.3			160.7			24.8		
Approach LOS		E			F			F			C		
Intersection Summary													
HCM Average Control Delay			106.8		HCM Level of Service					F			
HCM Volume to Capacity ratio			0.71										
Actuated Cycle Length (s)			246.7		Sum of lost time (s)					9.0			
Intersection Capacity Utilization			81.3%		ICU Level of Service					D			
Analysis Period (min)			15										
c Critical Lane Group													

HCM Unsignalized Intersection Capacity Analysis  
 810: Campus Drive & Regents Drive

Purple Line (UMD)  
 7/30/2008

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Right Turn Channelized			Yes			Yes			Yes			Yes
Volume (veh/h)	3	44	3	135	40	203	12	178	52	394	25	10
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	3	48	3	147	43	221	13	193	57	428	27	11
Approach Volume (veh/h)		51			190			207			455	
Crossing Volume (veh/h)		602			210			479			203	
High Capacity (veh/h)		860			1175			949			1181	
High v/c (veh/h)		0.06			0.16			0.22			0.39	
Low Capacity (veh/h)		689			971			768			976	
Low v/c (veh/h)		0.07			0.20			0.27			0.47	
Intersection Summary												
Maximum v/c High			0.39									
Maximum v/c Low			0.47									
Intersection Capacity Utilization			82.3%			ICU Level of Service					E	

# HCM Signalized Intersection Capacity Analysis

## 812: Campus Drive & US 1












Purple Line (UMD)  
11/5/2007

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Util. Factor	0.95	0.95	1.00	0.91	0.91	0.88	0.97	0.95	1.00	0.97	0.95	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	0.98	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1681	1770	1583	1610	3325	2787	3433	3539	1583	3433	3539	1583
Flt Permitted	0.95	1.00	1.00	0.95	0.98	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1681	1770	1583	1610	3325	2787	3433	3539	1583	3433	3539	1583
Volume (vph)	254	312	142	334	232	851	162	1466	507	470	1280	287
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	282	347	158	371	258	946	180	1629	563	522	1422	319
RTOR Reduction (vph)	0	0	121	0	0	133	0	0	174	0	0	94
Lane Group Flow (vph)	282	347	37	203	426	813	180	1629	389	522	1422	225
Turn Type	Split		Perm	Split		pt+ov	Prot		Perm	Prot		Perm
Protected Phases	4	4		3	3	3 5	1	6		5	2	
Permitted Phases			4						6			2
Actuated Green, G (s)	32.3	32.3	32.3	13.5	13.5	36.7	12.8	59.0	59.0	23.2	69.4	69.4
Effective Green, g (s)	34.8	34.8	34.8	16.0	16.0	41.2	14.8	62.0	62.0	25.2	72.4	72.4
Actuated g/C Ratio	0.23	0.23	0.23	0.11	0.11	0.27	0.10	0.41	0.41	0.17	0.48	0.48
Clearance Time (s)	5.5	5.5	5.5	5.5	5.5		5.0	6.0	6.0	5.0	6.0	6.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	5.0	5.0	3.0	5.0	5.0
Lane Grp Cap (vph)	390	411	367	172	355	765	339	1463	654	577	1708	764
v/s Ratio Prot	0.17	c0.20		0.13	c0.13	c0.29	0.05	c0.46		0.15	0.40	
v/s Ratio Perm			0.02						0.25			0.14
v/c Ratio	0.72	0.84	0.10	1.18	1.20	1.06	0.53	1.11	0.60	0.90	0.83	0.29
Uniform Delay, d1	53.2	55.0	45.3	67.0	67.0	54.4	64.3	44.0	34.2	61.2	33.6	23.4
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.93	1.02	1.23	1.35	0.82	0.95
Incremental Delay, d2	6.5	14.6	0.1	125.4	114.0	50.3	0.1	52.1	0.4	2.1	0.5	0.1
Delay (s)	59.7	69.6	45.4	192.4	181.0	104.7	59.8	96.9	42.4	84.6	28.1	22.4
Level of Service	E	E	D	F	F	F	E	F	D	F	C	C
Approach Delay (s)		61.2			136.7			81.1			40.3	
Approach LOS		E			F			F			D	
Intersection Summary												
HCM Average Control Delay	78.2			HCM Level of Service						E		
HCM Volume to Capacity ratio	1.05											
Actuated Cycle Length (s)	150.0			Sum of lost time (s)						12.0		
Intersection Capacity Utilization	96.7%			ICU Level of Service						F		
Analysis Period (min)	15											
c Critical Lane Group												

# HCM Signalized Intersection Capacity Analysis

## 200: E. Campus Main Ent & US 1

Purple Line (UMD)  
11/5/2007

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0		4.0	4.0
Lane Util. Factor	1.00	1.00	0.95		1.00	0.95
Fr <sub>t</sub>	1.00	0.85	0.99		1.00	1.00
Flt Protected	0.95	1.00	1.00		0.95	1.00
Satd. Flow (prot)	1770	1583	3511		1770	3539
Flt Permitted	0.95	1.00	1.00		0.95	1.00
Satd. Flow (perm)	1770	1583	3511		1770	3539
Volume (vph)	117	133	2552	141	113	1769
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	127	145	2774	153	123	1923
RTOR Reduction (vph)	0	72	3	0	0	0
Lane Group Flow (vph)	127	73	2924	0	123	1923
Turn Type		Perm			Prot	
Protected Phases	8		2		1	6
Permitted Phases		8				
Actuated Green, G (s)	14.3	14.3	109.5		9.7	124.7
Effective Green, g (s)	15.8	15.8	111.5		10.7	126.2
Actuated g/C Ratio	0.11	0.11	0.74		0.07	0.84
Clearance Time (s)	5.5	5.5	6.0		5.0	5.5
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	186	167	2610		126	2977
v/s Ratio Prot	c0.07		c0.83		c0.07	0.54
v/s Ratio Perm		0.05				
v/c Ratio	0.68	0.44	1.12		0.98	0.65
Uniform Delay, d <sub>1</sub>	64.7	62.9	19.3		69.5	4.1
Progression Factor	1.00	1.00	1.63		0.86	2.94
Incremental Delay, d <sub>2</sub>	9.9	1.8	54.8		52.2	0.6
Delay (s)	74.6	64.8	86.2		112.3	12.8
Level of Service	E	E	F		F	B
Approach Delay (s)	69.4		86.2			18.8
Approach LOS	E		F			B
<b>Intersection Summary</b>						
HCM Average Control Delay		59.0			HCM Level of Service	E
HCM Volume to Capacity ratio		1.06			Sum of lost time (s)	12.0
Actuated Cycle Length (s)		150.0			ICU Level of Service	F
Intersection Capacity Utilization		97.8%				
Analysis Period (min)		15				
c Critical Lane Group						

HCM Signalized Intersection Capacity Analysis  
 212: Rossborough Rd. & US 1

Purple Line (UMD)  
 7/30/2008



















Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0			3.0	3.0	3.0	3.0		3.0	3.0	
Lane Util. Factor	1.00	1.00			1.00	1.00	1.00	0.95		1.00	0.95	
Frt	1.00	0.88			1.00	0.85	1.00	0.99		1.00	1.00	
Flt Protected	0.95	1.00			0.96	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1641			1792	1583	1770	3520		1770	3534	
Flt Permitted	0.52	1.00			0.75	1.00	0.09	1.00		0.04	1.00	
Satd. Flow (perm)	960	1641			1398	1583	169	3520		83	3534	
Volume (vph)	67	5	21	118	31	669	45	1800	68	131	1424	14
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	74	6	23	131	34	743	50	2000	76	146	1582	16
RTOR Reduction (vph)	0	17	0	0	0	213	0	2	0	0	0	0
Lane Group Flow (vph)	74	12	0	0	165	530	50	2074	0	146	1598	0
Turn Type	Perm			Perm		Perm	pm+pt			pm+pt		
Protected Phases		4			8		1	6		5	2	
Permitted Phases	4			8		8	6			2		
Actuated Green, G (s)	36.5	36.5			36.5	36.5	89.2	83.9		102.0	92.2	
Effective Green, g (s)	39.0	39.0			39.0	39.0	93.7	86.9		105.0	95.2	
Actuated g/C Ratio	0.26	0.26			0.26	0.26	0.62	0.58		0.70	0.63	
Clearance Time (s)	5.5	5.5			5.5	5.5	4.5	6.0		4.5	6.0	
Vehicle Extension (s)	3.0	3.0			3.0	3.0	3.0	5.0		3.0	5.0	
Lane Grp Cap (vph)	250	427			363	412	178	2039		228	2243	
v/s Ratio Prot		0.01					0.01	c0.59		c0.06	0.45	
v/s Ratio Perm	0.08				0.12	c0.33	0.16			0.38		
v/c Ratio	0.30	0.03			0.45	1.29	0.28	1.02		0.64	0.71	
Uniform Delay, d1	44.5	41.4			46.6	55.5	16.3	31.5		47.5	18.3	
Progression Factor	1.00	1.00			1.00	1.00	1.56	0.41		1.23	1.11	
Incremental Delay, d2	0.7	0.0			0.9	146.1	0.6	21.0		4.6	1.5	
Delay (s)	45.2	41.4			47.5	201.6	26.0	33.9		63.1	21.7	
Level of Service	D	D			D	F	C	C		E	C	
Approach Delay (s)		44.1			173.6			33.7			25.1	
Approach LOS		D			F			C			C	
Intersection Summary												
HCM Average Control Delay			56.9				HCM Level of Service				E	
HCM Volume to Capacity ratio			1.05									
Actuated Cycle Length (s)			150.0				Sum of lost time (s)				9.0	
Intersection Capacity Utilization			110.0%				ICU Level of Service				H	
Analysis Period (min)			15									
c Critical Lane Group												



# HCM Signalized Intersection Capacity Analysis

## 813: Paint Branch Pkwy & Fire Academy

Purple Line (UMD)  
11/5/2007

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	2.0	2.0		2.0	2.0			2.0			2.0	
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00			1.00	
Fr't	1.00	1.00		1.00	1.00			0.96			0.96	
Flt Protected	0.95	1.00		0.95	1.00			0.98			0.98	
Satd. Flow (prot)	1770	3537		1770	3531			1750			1750	
Flt Permitted	0.24	1.00		0.12	1.00			0.96			0.96	
Satd. Flow (perm)	443	3537		230	3531			1706			1706	
Volume (vph)	13	1270	6	6	851	13	6	6	6	6	6	6
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	13	1270	6	6	851	13	6	6	6	6	6	6
RTOR Reduction (vph)	0	0	0	0	1	0	0	3	0	0	3	0
Lane Group Flow (vph)	13	1276	0	6	863	0	0	15	0	0	15	0
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2				6	
Actuated Green, G (s)	29.4	29.4		29.4	29.4			25.3			25.3	
Effective Green, g (s)	32.4	32.4		32.4	32.4			28.3			28.3	
Actuated g/C Ratio	0.50	0.50		0.50	0.50			0.44			0.44	
Clearance Time (s)	5.0	5.0		5.0	5.0			5.0			5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0			3.0	
Lane Grp Cap (vph)	222	1771		115	1768			746			746	
v/s Ratio Prot		c0.36			0.24							
v/s Ratio Perm	0.03			0.03				c0.01			0.01	
v/c Ratio	0.06	0.72		0.05	0.49			0.02			0.02	
Uniform Delay, d1	8.3	12.6		8.3	10.7			10.3			10.3	
Progression Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Incremental Delay, d2	0.1	1.5		0.2	0.2			0.0			0.0	
Delay (s)	8.4	14.1		8.5	10.9			10.4			10.4	
Level of Service	A	B		A	B			B			B	
Approach Delay (s)		14.0			10.9			10.4			10.4	
Approach LOS		B			B			B			B	
Intersection Summary												
HCM Average Control Delay			12.7			HCM Level of Service			B			
HCM Volume to Capacity ratio			0.39			Sum of lost time (s)			4.0			
Actuated Cycle Length (s)			64.7			ICU Level of Service			A			
Intersection Capacity Utilization			46.1%									
Analysis Period (min)			15									
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis  
 814: Paint Branch Pkwy & Metro Parking Garage

Purple Line (UMD)  
 7/30/2008

	→	↘	↙	←	↖	↗
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑	↑	↘	↑↑	↘	↑
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0			4.0		
Lane Util. Factor	0.95			0.95		
Frt	1.00			1.00		
Flt Protected	1.00			1.00		
Satd. Flow (prot)	3539			3539		
Flt Permitted	1.00			1.00		
Satd. Flow (perm)	3539			3539		
Volume (vph)	1282	0	0	849	0	0
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	1393	0	0	923	0	0
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	1393	0	0	923	0	0
Turn Type		Perm	pm+pt			pm+ov
Protected Phases	2		1	6	8	1
Permitted Phases		2	6			8
Actuated Green, G (s)	120.0			120.0		
Effective Green, g (s)	120.0			120.0		
Actuated g/C Ratio	1.00			1.00		
Clearance Time (s)	4.0			4.0		
Vehicle Extension (s)	3.0			3.0		
Lane Grp Cap (vph)	3539			3539		
v/s Ratio Prot	c0.39			0.26		
v/s Ratio Perm						
v/c Ratio	0.39			0.26		
Uniform Delay, d1	0.0			0.0		
Progression Factor	1.00			1.00		
Incremental Delay, d2	0.3			0.2		
Delay (s)	0.3			0.2		
Level of Service	A			A		
Approach Delay (s)	0.3			0.2	0.0	
Approach LOS	A			A	A	

Intersection Summary

HCM Average Control Delay	0.3	HCM Level of Service	A
HCM Volume to Capacity ratio	0.39		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	0.0
Intersection Capacity Utilization	38.8%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

# HCM Signalized Intersection Capacity Analysis

## 815: Paint Branch Pkwy & River Road

Purple Line (UMD)  
11/5/2007

	→	↘	↙	←	↖	↗
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑	↑	↑↑	↑↑	↑↑	↑
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	2.0	2.0	2.0	2.0	2.0	2.0
Lane Util. Factor	0.95	1.00	0.97	0.95	0.97	1.00
Frbp, ped/bikes	1.00	0.98	1.00	1.00	1.00	0.98
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (prot)	3539	1548	3432	3539	3430	1548
Flt Permitted	1.00	1.00	0.13	1.00	0.95	1.00
Satd. Flow (perm)	3539	1548	458	3539	3430	1548
Volume (vph)	989	304	50	568	186	277
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	989	304	50	568	186	277
RTOR Reduction (vph)	0	181	0	0	0	157
Lane Group Flow (vph)	989	123	50	568	186	120
Confl. Peds. (#/hr)		12	12		1	12
Turn Type		Perm	pm+pt		custom	
Protected Phases	4		3	8		
Permitted Phases		4	8		2	2
Actuated Green, G (s)	28.3	28.3	37.1	37.1	31.1	31.1
Effective Green, g (s)	32.3	32.3	41.1	41.1	34.6	34.6
Actuated g/C Ratio	0.41	0.41	0.52	0.52	0.43	0.43
Clearance Time (s)	6.0	6.0	5.5	6.0	5.5	5.5
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	1434	627	490	1825	1489	672
v/s Ratio Prot	c0.28		0.01	c0.16		
v/s Ratio Perm		0.08	0.04		0.05	c0.08
v/c Ratio	0.69	0.20	0.10	0.31	0.12	0.18
Uniform Delay, d1	19.6	15.3	11.9	11.1	13.5	13.8
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	1.4	0.2	0.1	0.1	0.2	0.6
Delay (s)	21.0	15.5	12.0	11.2	13.7	14.4
Level of Service	C	B	B	B	B	B
Approach Delay (s)	19.7			11.3	14.1	
Approach LOS	B			B	B	
<b>Intersection Summary</b>						
HCM Average Control Delay		16.4		HCM Level of Service		B
HCM Volume to Capacity ratio		0.41		Sum of lost time (s)		6.0
Actuated Cycle Length (s)		79.7		ICU Level of Service		B
Intersection Capacity Utilization		56.5%				
Analysis Period (min)		15				
c Critical Lane Group						

2030 High BRT  
HCS Results

# HCM Signalized Intersection Capacity Analysis

9: Ellin Rd. & MD 410

6/11/2008



Movement	WBL	WBR	NBT	NBR	SBL2	SBL	SBT	NWL	NWR
Lane Configurations	↖↗	↖	↕↕	↖	↖	↖	↕↕↕		↖
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0
Lane Util. Factor	0.97	1.00	0.95	1.00	1.00	1.00	0.91		1.00
Frt	1.00	0.85	1.00	0.85	1.00	1.00	1.00		0.86
Flt Protected	0.95	1.00	1.00	1.00	0.95	0.95	1.00		1.00
Satd. Flow (prot)	3303	1524	3406	1524	1703	1703	4893		1550
Flt Permitted	0.95	1.00	1.00	1.00	0.95	0.95	1.00		1.00
Satd. Flow (perm)	3303	1524	3406	1524	1703	1703	4893		1550
Volume (vph)	400	125	2150	740	200	10	1470	0	10
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Growth Factor (vph)	100%	100%	100%	100%	100%	100%	100%	100%	100%
Adj. Flow (vph)	421	132	2263	779	211	11	1547	0	11
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	421	132	2263	779	211	11	1547	0	11
Heavy Vehicles (%)	6%	6%	6%	6%	6%	6%	6%	6%	6%
Turn Type		Free		custom	Prot	Prot			Over
Protected Phases	4		2	1 4 6!	1!	3	6		3
Permitted Phases		Free							
Actuated Green, G (s)	11.0	110.0	62.0	93.0	10.0	2.0	77.0		2.0
Effective Green, g (s)	12.0	110.0	63.0	94.0	11.0	8.0	78.0		8.0
Actuated g/C Ratio	0.11	1.00	0.57	0.85	0.10	0.07	0.71		0.07
Clearance Time (s)	5.0		5.0		5.0	10.0	5.0		10.0
Vehicle Extension (s)	3.0		6.0		3.0	3.0	6.0		3.0
Lane Grp Cap (vph)	360	1524	1951	1302	170	124	3470		113
v/s Ratio Prot	c0.13		c0.66	0.51	c0.12	0.01	0.32		0.01
v/s Ratio Perm		c0.09							
v/c Ratio	1.17	0.09	1.16	0.60	1.24	0.09	0.45		0.10
Uniform Delay, d1	49.0	0.0	23.5	2.4	49.5	47.6	6.8		47.6
Progression Factor	1.00	1.00	0.69	0.63	1.00	1.00	1.00		1.00
Incremental Delay, d2	102.0	0.1	74.9	0.3	148.4	0.3	0.4		0.4
Delay (s)	151.0	0.1	91.1	1.9	197.9	47.9	7.2		48.0
Level of Service	F	A	F	A	F	D	A		D
Approach Delay (s)	115.0		68.2				30.2	48.0	
Approach LOS	F		E				C	D	

## Intersection Summary

HCM Average Control Delay	60.5	HCM Level of Service	E
HCM Volume to Capacity ratio	1.04		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	91.9%	ICU Level of Service	F
Analysis Period (min)	15		

! Phase conflict between lane groups.

c Critical Lane Group

# HCM Signalized Intersection Capacity Analysis

## 9: Ellin Rd. & MD 410

6/11/2008



Movement	WBL	WBR	NBT	NBR	SBL2	SBL	SBT	NWL	NWR
Lane Configurations	↖↗	↖	↕↕	↖	↖	↖	↕↕↕		↖
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0
Lane Util. Factor	0.97	1.00	0.95	1.00	1.00	1.00	0.91		1.00
Frt	1.00	0.85	1.00	0.85	1.00	1.00	1.00		0.86
Flt Protected	0.95	1.00	1.00	1.00	0.95	0.95	1.00		1.00
Satd. Flow (prot)	3400	1568	3505	1568	1752	902	5036		822
Flt Permitted	0.95	1.00	1.00	1.00	0.95	0.95	1.00		1.00
Satd. Flow (perm)	3400	1568	3505	1568	1752	902	5036		822
Volume (vph)	745	80	1515	295	105	10	1865	0	10
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Growth Factor (vph)	100%	100%	100%	100%	100%	100%	100%	100%	100%
Adj. Flow (vph)	784	84	1595	311	111	11	1963	0	11
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	784	84	1595	311	111	11	1963	0	11
Heavy Vehicles (%)	3%	3%	3%	3%	3%	100%	3%	3%	100%
Turn Type		Free		custom		Prot	Prot		Over
Protected Phases	4			2 1 2 4 6!		1!	9	6	9
Permitted Phases		Free							
Actuated Green, G (s)	26.0	120.0	60.0	106.0	10.0	4.0	75.0		4.0
Effective Green, g (s)	27.0	120.0	61.0	107.0	11.0	5.0	76.0		5.0
Actuated g/C Ratio	0.22	1.00	0.51	0.89	0.09	0.04	0.63		0.04
Clearance Time (s)	5.0		5.0		5.0	5.0	5.0		5.0
Vehicle Extension (s)	3.0		6.0		3.0	3.0	6.0		3.0
Lane Grp Cap (vph)	765	1568	1782	1398	161	38	3189		34
v/s Ratio Prot	c0.23		c0.46	0.20	0.06	0.01	c0.39		c0.01
v/s Ratio Perm		0.05							
v/c Ratio	1.02	0.05	0.90	0.22	0.69	0.29	0.62		0.32
Uniform Delay, d1	46.5	0.0	26.6	0.9	52.8	55.8	13.2		55.9
Progression Factor	1.00	1.00	0.54	0.49	1.00	1.00	1.00		1.00
Incremental Delay, d2	39.0	0.1	7.1	0.1	11.6	4.2	0.9		5.5
Delay (s)	85.5	0.1	21.5	0.5	64.5	60.0	14.1		61.3
Level of Service	F	A	C	A	E	E	B		E
Approach Delay (s)	77.2		18.0				17.0	61.3	
Approach LOS	E		B				B	E	

### Intersection Summary

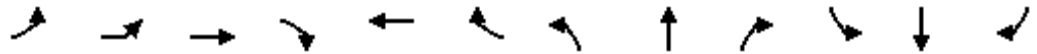
HCM Average Control Delay	28.3	HCM Level of Service	C
HCM Volume to Capacity ratio	0.85		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	81.5%	ICU Level of Service	D
Analysis Period (min)	15		

! Phase conflict between lane groups.

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis  
 2: MD 193 & Carroll Ave

6/10/2008



Movement	EBL2	EBL	EBT	EBR	WBT	WBR	NBL	NBT	NBR2	SBL	SBT	SBR
Lane Configurations	↖	↖	↗↗↗		↗↗↗		↖	↗		↖	↗	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	2.0	2.0	2.0		2.0		2.0	2.0		2.0	2.0	
Lane Util. Factor	1.00	1.00	0.91		0.91		1.00	1.00		1.00	1.00	
Frt	1.00	1.00	0.98		1.00		1.00	0.98		1.00	0.98	
Flt Protected	0.95	0.95	1.00		1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1703	902	4809		4869		1703	1760		1703	1748	
Flt Permitted	0.95	0.95	1.00		1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1703	902	4809		4869		1703	1760		1703	1748	
Volume (vph)	25	10	1650	215	1890	65	185	145	20	100	540	105
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	26	11	1737	226	1989	68	195	153	21	105	568	111
RTOR Reduction (vph)	0	0	14	0	0	0	0	4	0	0	6	0
Lane Group Flow (vph)	26	11	1949	0	2057	0	195	170	0	105	673	0
Heavy Vehicles (%)	6%	100%	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%
Turn Type	Prot	Split					Split			Split		
Protected Phases	1	6!	6		2!		3	3		4	4	
Permitted Phases												
Actuated Green, G (s)	3.0	48.0	48.0		40.0		23.0	23.0		31.0	31.0	
Effective Green, g (s)	6.0	52.0	52.0		44.0		27.0	27.0		35.0	35.0	
Actuated g/C Ratio	0.05	0.43	0.43		0.37		0.22	0.22		0.29	0.29	
Clearance Time (s)	5.0	6.0	6.0		6.0		6.0	6.0		6.0	6.0	
Vehicle Extension (s)	3.0	3.0	3.0		3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	85	391	2084		1785		383	396		497	510	
v/s Ratio Prot	0.02	0.01	c0.41		c0.42		c0.11	0.10		0.06	c0.39	
v/s Ratio Perm												
v/c Ratio	0.31	0.03	0.94		1.15		0.51	0.43		0.21	1.32	
Uniform Delay, d1	55.0	19.5	32.4		38.0		40.7	39.9		32.1	42.5	
Progression Factor	1.21	0.18	0.37		1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.7	0.0	3.6		75.5		1.1	0.8		0.2	157.4	
Delay (s)	67.4	3.6	15.6		113.5		41.8	40.6		32.3	199.9	
Level of Service	E	A	B		F		D	D		C	F	
Approach Delay (s)			16.2		113.5			41.2			177.5	
Approach LOS			B		F			D			F	

Intersection Summary

HCM Average Control Delay	80.5	HCM Level of Service	F
HCM Volume to Capacity ratio	1.02		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	121.9%	ICU Level of Service	H
Analysis Period (min)	15		

! Phase conflict between lane groups.

c Critical Lane Group



Movement	SWR
Lane Configurations	↗
Ideal Flow (vphpl)	1900
Total Lost time (s)	2.0
Lane Util. Factor	1.00
Frt	0.86
Flt Protected	1.00
Satd. Flow (prot)	822
Flt Permitted	1.00
Satd. Flow (perm)	822
Volume (vph)	10
Peak-hour factor, PHF	0.95
Adj. Flow (vph)	11
RTOR Reduction (vph)	0
Lane Group Flow (vph)	11
Heavy Vehicles (%)	100%
Turn Type	custom
Protected Phases	2!
Permitted Phases	
Actuated Green, G (s)	40.0
Effective Green, g (s)	44.0
Actuated g/C Ratio	0.37
Clearance Time (s)	6.0
Vehicle Extension (s)	3.0
Lane Grp Cap (vph)	301
v/s Ratio Prot	0.01
v/s Ratio Perm	
v/c Ratio	0.04
Uniform Delay, d1	24.4
Progression Factor	1.00
Incremental Delay, d2	0.2
Delay (s)	24.6
Level of Service	C
Approach Delay (s)	
Approach LOS	
Intersection Summary	



# HCM Signalized Intersection Capacity Analysis

5: MD 193 & MD 320

6/10/2008



Movement	EBL2	EBT	EBR	WBL2	WBT	WBR	NBL	NBT	NBR2	SBL	SBT	SBR2
Lane Configurations	↘	↑↑↑		↘	↑↑↑		↘	↑↑		↘	↑↑	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lane Util. Factor	1.00	0.91		1.00	0.91		1.00	0.95		1.00	0.95	
Frt	1.00	0.99		1.00	1.00		1.00	0.94		1.00	0.95	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1703	4833		1703	4886		1703	3212		1703	3219	
Flt Permitted	0.95	1.00		0.95	1.00		0.09	1.00		0.40	1.00	
Satd. Flow (perm)	1703	4833		1703	4886		168	3212		722	3219	
Volume (vph)	245	1615	145	235	1925	20	213	360	220	30	950	545
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	258	1700	153	247	2026	21	224	379	232	32	1000	574
RTOR Reduction (vph)	0	0	0	0	0	0	0	74	0	0	66	0
Lane Group Flow (vph)	258	1853	0	247	2047	0	224	537	0	32	1508	0
Heavy Vehicles (%)	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%
Turn Type	Prot			Prot			pm+pt			pm+pt		
Protected Phases	5	2		1!	6!		3	8		7	4	
Permitted Phases							8			4		
Actuated Green, G (s)	12.0	38.4		13.0	39.4		48.8	48.8		44.6	43.6	
Effective Green, g (s)	14.0	41.4		15.0	42.4		51.8	51.8		46.6	46.6	
Actuated g/C Ratio	0.12	0.34		0.12	0.35		0.43	0.43		0.39	0.39	
Clearance Time (s)	4.0	5.0		4.0	5.0		4.0	5.0		4.0	5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	199	1667		213	1726		188	1387		311	1250	
v/s Ratio Prot	0.15	c0.38		0.15	c0.42		c0.09	0.17		0.00	c0.47	
v/s Ratio Perm							0.43			0.04		
v/c Ratio	1.30	1.11		1.16	1.19		1.19	0.39		0.10	1.21	
Uniform Delay, d1	53.0	39.3		52.5	38.8		57.7	23.3		24.6	36.7	
Progression Factor	1.00	1.00		0.70	0.56		1.00	1.00		1.00	1.00	
Incremental Delay, d2	165.3	59.3		77.0	84.3		126.7	0.8		0.1	100.6	
Delay (s)	218.3	98.6		113.5	105.9		184.4	24.1		24.8	137.3	
Level of Service	F	F		F	F		F	C		C	F	
Approach Delay (s)		113.2			106.7			67.1			135.1	
Approach LOS		F			F			E			F	

## Intersection Summary

HCM Average Control Delay	110.3	HCM Level of Service	F
HCM Volume to Capacity ratio	1.17		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	6.0
Intersection Capacity Utilization	134.6%	ICU Level of Service	H
Analysis Period (min)	15		

! Phase conflict between lane groups.

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis  
 5: MD 193 & MD 320

6/10/2008

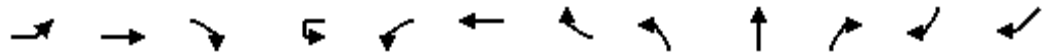


Movement	NER	SWL
Lane Configurations		
Ideal Flow (vphpl)	1900	1900
Total Lost time (s)	2.0	2.0
Lane Util. Factor	1.00	1.00
Frt	0.86	1.00
Flt Protected	1.00	0.95
Satd. Flow (prot)	822	902
Flt Permitted	1.00	0.95
Satd. Flow (perm)	822	902
Volume (vph)	10	10
Peak-hour factor, PHF	0.95	0.95
Adj. Flow (vph)	11	11
RTOR Reduction (vph)	0	0
Lane Group Flow (vph)	11	11
Heavy Vehicles (%)	100%	100%
Turn Type	custom	Prot
Protected Phases	1!	1!
Permitted Phases		
Actuated Green, G (s)	13.0	13.0
Effective Green, g (s)	15.0	15.0
Actuated g/C Ratio	0.12	0.12
Clearance Time (s)	4.0	4.0
Vehicle Extension (s)	3.0	3.0
Lane Grp Cap (vph)	103	113
v/s Ratio Prot	0.01	0.01
v/s Ratio Perm		
v/c Ratio	0.11	0.10
Uniform Delay, d1	46.6	46.5
Progression Factor	1.00	1.00
Incremental Delay, d2	0.5	0.4
Delay (s)	47.0	46.9
Level of Service	D	D
Approach Delay (s)		
Approach LOS		
Intersection Summary		

# HCM Signalized Intersection Capacity Analysis

105: MD 193 & 23rd Ave

6/10/2008



Movement	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR2	SBR	SWR
Lane Configurations	↖	↑↑↑			↘	↑↑↑			↑	↗	↖	↗
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	2.0	3.0			3.0	3.0			3.0	3.0	3.0	2.0
Lane Util. Factor	1.00	0.91			1.00	0.91			1.00	1.00	1.00	1.00
Frt	1.00	0.98			1.00	1.00			1.00	0.85	0.86	0.86
Flt Protected	0.95	1.00			0.95	1.00			0.95	1.00	1.00	1.00
Satd. Flow (prot)	902	4817			1703	4878			1796	1599	1627	822
Flt Permitted	0.95	1.00			0.30	1.00			0.95	1.00	1.00	1.00
Satd. Flow (perm)	902	4817			535	4878			1796	1599	1627	822
Volume (vph)	10	1200	140	30	105	1925	40	200	10	115	5	10
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	11	1263	147	32	111	2026	42	211	11	121	5	11
RTOR Reduction (vph)	0	24	0	0	0	0	0	0	0	92	3	0
Lane Group Flow (vph)	11	1386	0	0	143	2068	0	0	222	29	2	11
Heavy Vehicles (%)	100%	6%	6%	6%	6%	6%	6%	1%	1%	1%	1%	100%
Turn Type	Split			custom	Prot			Perm			Perm	custom
Protected Phases	6!	6			5	2!			4			2!
Permitted Phases		6		5				4		4	6	
Actuated Green, G (s)	20.0	20.0			11.4	36.4			11.6	11.6	20.0	36.4
Effective Green, g (s)	24.0	23.0			13.4	39.4			14.6	14.6	23.0	40.4
Actuated g/C Ratio	0.40	0.38			0.22	0.66			0.24	0.24	0.38	0.67
Clearance Time (s)	6.0	6.0			5.0	6.0			6.0	6.0	6.0	6.0
Vehicle Extension (s)	5.0	5.0			3.0	5.0			3.0	3.0	5.0	5.0
Lane Grp Cap (vph)	361	1847			119	3203			437	389	624	553
v/s Ratio Prot	0.01	c0.29				0.42						0.01
v/s Ratio Perm					c0.27				0.12	0.02	0.00	
v/c Ratio	0.03	0.75			1.20	0.65			0.51	0.08	0.00	0.02
Uniform Delay, d1	10.9	16.0			23.3	6.1			19.6	17.5	11.4	3.2
Progression Factor	0.63	0.65			1.35	0.92			1.00	1.00	1.00	1.00
Incremental Delay, d2	0.1	1.8			130.0	0.6			0.9	0.1	0.0	0.1
Delay (s)	7.0	12.2			161.4	6.3			20.5	17.6	11.4	3.3
Level of Service	A	B			F	A			C	B	B	A
Approach Delay (s)		12.2				16.3			19.5			
Approach LOS		B				B			B			

## Intersection Summary

HCM Average Control Delay	15.1	HCM Level of Service	B
HCM Volume to Capacity ratio	0.80		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	96.4%	ICU Level of Service	F
Analysis Period (min)	15		

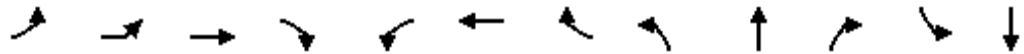
! Phase conflict between lane groups.

c Critical Lane Group

# HCM Signalized Intersection Capacity Analysis

107: MD 193 & W Park Dr

6/10/2008



Movement	EBL2	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR2	SBL	SBT
Lane Configurations	↖	↖	↕	↗	↖	↕	↗	↖	↕		↖	↗
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	2.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0
Lane Util. Factor	1.00	1.00	0.95	1.00	1.00	0.95		1.00	1.00		1.00	1.00
Frt	1.00	1.00	1.00	0.85	1.00	1.00		1.00	0.87		1.00	0.90
Flt Protected	0.95	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00
Satd. Flow (prot)	1703	902	3406	1524	1703	3398		1787	1632		1787	1687
Flt Permitted	0.95	0.95	1.00	1.00	0.95	1.00		0.75	1.00		0.53	1.00
Satd. Flow (perm)	1703	902	3406	1524	1703	3398		1405	1632		1001	1687
Volume (vph)	25	10	1235	25	50	2070	30	20	10	80	30	5
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	26	11	1300	26	53	2179	32	21	11	84	32	5
RTOR Reduction (vph)	0	0	0	7	0	0	0	0	75	0	0	10
Lane Group Flow (vph)	26	11	1300	19	53	2211	0	21	20	0	32	6
Heavy Vehicles (%)	6%	100%	6%	6%	6%	6%	6%	1%	1%	1%	1%	1%
Turn Type	Prot	Split		Perm	Prot			Perm			Perm	
Protected Phases	1	6!	6		5	2!			8			4
Permitted Phases				6				8			4	
Actuated Green, G (s)	4.3	86.2	86.2	86.2	7.1	89.0		9.7	9.7		9.7	9.7
Effective Green, g (s)	6.3	90.2	89.2	89.2	9.1	92.0		12.7	12.7		12.7	12.7
Actuated g/C Ratio	0.05	0.75	0.74	0.74	0.08	0.77		0.11	0.11		0.11	0.11
Clearance Time (s)	5.0	6.0	6.0	6.0	5.0	6.0		6.0	6.0		6.0	6.0
Vehicle Extension (s)	3.0	5.0	5.0	5.0	3.0	5.0		3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	89	678	2532	1133	129	2605		149	173		106	179
v/s Ratio Prot	0.02	0.01	0.38		c0.03	c0.65			0.01			0.00
v/s Ratio Perm				0.01				0.01			c0.03	
v/c Ratio	0.29	0.02	0.51	0.02	0.41	0.85		0.14	0.11		0.30	0.03
Uniform Delay, d1	54.7	3.7	6.4	4.0	52.9	9.4		48.7	48.6		49.6	48.1
Progression Factor	1.10	0.25	0.48	0.00	1.00	1.00		1.00	1.00		1.00	1.00
Incremental Delay, d2	1.4	0.0	0.6	0.0	2.1	3.7		0.4	0.3		1.6	0.1
Delay (s)	61.5	1.0	3.7	0.0	55.0	13.0		49.1	48.9		51.2	48.2
Level of Service	E	A	A	A	E	B		D	D		D	D
Approach Delay (s)			4.7			14.0			48.9			50.2
Approach LOS			A			B			D			D

## Intersection Summary

HCM Average Control Delay	12.2	HCM Level of Service	B
HCM Volume to Capacity ratio	0.76		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	93.2%	ICU Level of Service	F
Analysis Period (min)	15		

! Phase conflict between lane groups.

c Critical Lane Group



Movement	SBR	SWR
Lane Configurations		
Ideal Flow (vphpl)	1900	1900
Total Lost time (s)		2.0
Lane Util. Factor		1.00
Frt		0.86
Flt Protected		1.00
Satd. Flow (prot)		822
Flt Permitted		1.00
Satd. Flow (perm)		822
Volume (vph)	10	10
Peak-hour factor, PHF	0.95	0.95
Adj. Flow (vph)	11	11
RTOR Reduction (vph)	0	0
Lane Group Flow (vph)	0	11
Heavy Vehicles (%)	1%	100%
Turn Type	custom	
Protected Phases	2!	
Permitted Phases		
Actuated Green, G (s)	89.0	
Effective Green, g (s)	93.0	
Actuated g/C Ratio	0.78	
Clearance Time (s)	6.0	
Vehicle Extension (s)	5.0	
Lane Grp Cap (vph)	637	
v/s Ratio Prot	0.01	
v/s Ratio Perm		
v/c Ratio	0.02	
Uniform Delay, d1	3.1	
Progression Factor	1.00	
Incremental Delay, d2	0.0	
Delay (s)	3.1	
Level of Service	A	
Approach Delay (s)		
Approach LOS		
Intersection Summary		

# HCM Signalized Intersection Capacity Analysis

1629: MD 193 & 15th Ave

6/10/2008



Movement	EBL2	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR2	SBL	SBT	SBR
Lane Configurations	↖	↖	↖↖↖	↖	↖↖↖		↖	↑		↖	↗	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	2.0	2.0	2.0	3.0	2.0		2.0	3.0		3.0	3.0	
Lane Util. Factor	1.00	1.00	0.91	1.00	0.91		1.00	1.00		1.00	1.00	
Frt	1.00	1.00	1.00	1.00	0.99		1.00	0.92		1.00	0.85	
Flt Protected	0.95	0.95	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1703	902	4893	1703	4850		1787	1740		1787	1602	
Flt Permitted	0.95	0.95	1.00	0.95	1.00		0.65	1.00		0.76	1.00	
Satd. Flow (perm)	1703	902	4893	1703	4850		1225	1740		1423	1602	
Volume (vph)	60	10	1290	5	1895	120	1	1	1	220	1	85
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	63	11	1358	5	1995	126	1	1	1	232	1	89
RTOR Reduction (vph)	0	0	0	0	0	0	0	1	0	0	69	0
Lane Group Flow (vph)	63	11	1358	5	2121	0	1	1	0	232	21	0
Heavy Vehicles (%)	6%	100%	6%	6%	6%	6%	1%	1%	1%	1%	1%	1%
Turn Type	Prot	Split		Prot		custom	Prot		Perm			
Protected Phases	5	2!	2	1	6!		8				4	
Permitted Phases							8			4		
Actuated Green, G (s)	7.9	77.7	77.7	1.4	72.2		23.9	23.9		23.9	23.9	
Effective Green, g (s)	10.9	81.7	81.7	3.4	75.2		27.9	26.9		26.9	26.9	
Actuated g/C Ratio	0.09	0.68	0.68	0.03	0.63		0.23	0.22		0.22	0.22	
Clearance Time (s)	5.0	6.0	6.0	5.0	5.0		6.0	6.0		6.0	6.0	
Vehicle Extension (s)	3.0	5.0	5.0	3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	155	614	3331	48	3039		285	390		319	359	
v/s Ratio Prot	c0.04	0.01	0.28	0.00	c0.44			0.00			0.01	
v/s Ratio Perm							0.00			c0.16		
v/c Ratio	0.41	0.02	0.41	0.10	0.70		0.00	0.00		0.73	0.06	
Uniform Delay, d1	51.5	6.2	8.5	56.8	14.9		35.4	36.1		43.1	36.6	
Progression Factor	1.00	1.00	1.00	1.05	0.47		1.00	1.00		1.00	1.00	
Incremental Delay, d2	1.7	0.1	0.4	0.6	0.8		0.0	0.0		8.0	0.1	
Delay (s)	53.2	6.2	8.8	60.3	7.8		35.4	36.1		51.2	36.7	
Level of Service	D	A	A	E	A		D	D		D	D	
Approach Delay (s)			10.8		7.9			35.9			47.1	
Approach LOS			B		A			D			D	

## Intersection Summary

HCM Average Control Delay	12.2	HCM Level of Service	B
HCM Volume to Capacity ratio	0.67		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	7.0
Intersection Capacity Utilization	92.3%	ICU Level of Service	F
Analysis Period (min)	15		

! Phase conflict between lane groups.

c Critical Lane Group



Movement	SWR
Lane Configurations	↗
Ideal Flow (vphpl)	1900
Total Lost time (s)	2.0
Lane Util. Factor	1.00
Frt	0.86
Flt Protected	1.00
Satd. Flow (prot)	822
Flt Permitted	1.00
Satd. Flow (perm)	822
Volume (vph)	10
Peak-hour factor, PHF	0.95
Adj. Flow (vph)	11
RTOR Reduction (vph)	0
Lane Group Flow (vph)	11
Heavy Vehicles (%)	100%
Turn Type	custom
Protected Phases	6!
Permitted Phases	
Actuated Green, G (s)	72.2
Effective Green, g (s)	75.2
Actuated g/C Ratio	0.63
Clearance Time (s)	5.0
Vehicle Extension (s)	3.0
Lane Grp Cap (vph)	515
v/s Ratio Prot	0.01
v/s Ratio Perm	
v/c Ratio	0.02
Uniform Delay, d1	8.5
Progression Factor	1.00
Incremental Delay, d2	0.1
Delay (s)	8.6
Level of Service	A
Approach Delay (s)	
Approach LOS	
Intersection Summary	

# HCM Signalized Intersection Capacity Analysis

## 2: MD 193 & Carroll Ave

6/10/2008



Movement	EBL2	EBL	EBT	EBR	WBT	WBR	NBL	NBT	NBR2	SBL	SBT	SBR
Lane Configurations	↖	↖	↕↕↕↕		↕↕↕↕		↖	↕		↖	↕	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	2.0	2.0	2.0		2.0		2.0	2.0		2.0	2.0	
Lane Util. Factor	1.00	1.00	0.91		0.91		1.00	1.00		1.00	1.00	
Frt	1.00	1.00	0.99		0.99		1.00	0.98		1.00	0.98	
Flt Protected	0.95	0.95	1.00		1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1736	902	4920		4941		1736	1789		1736	1794	
Flt Permitted	0.95	0.95	1.00		1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1736	902	4920		4941		1736	1789		1736	1794	
Volume (vph)	40	10	2205	220	2200	145	285	340	55	120	225	30
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	42	11	2321	232	2316	153	300	358	58	126	237	32
RTOR Reduction (vph)	0	0	10	0	0	0	0	5	0	0	4	0
Lane Group Flow (vph)	42	11	2543	0	2469	0	300	411	0	126	265	0
Heavy Vehicles (%)	4%	100%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%
Turn Type	Prot	Split					Split			Split		
Protected Phases	1	6!	6		2!		3	3		4	4	
Permitted Phases												
Actuated Green, G (s)	4.0	66.0	66.0		57.0		23.0	23.0		13.0	13.0	
Effective Green, g (s)	7.0	70.0	70.0		61.0		27.0	27.0		17.0	17.0	
Actuated g/C Ratio	0.06	0.58	0.58		0.51		0.22	0.22		0.14	0.14	
Clearance Time (s)	5.0	6.0	6.0		6.0		6.0	6.0		6.0	6.0	
Vehicle Extension (s)	3.0	3.0	3.0		3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	101	526	2870		2512		391	403		246	254	
v/s Ratio Prot	0.02	0.01	c0.52		c0.50		0.17	c0.23		0.07	c0.15	
v/s Ratio Perm												
v/c Ratio	0.42	0.02	0.89		0.98		0.77	1.02		0.51	1.04	
Uniform Delay, d1	54.5	10.5	21.6		29.0		43.6	46.5		47.7	51.5	
Progression Factor	1.37	0.28	0.41		1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.3	0.0	0.4		14.4		13.4	50.2		1.8	67.9	
Delay (s)	75.1	2.9	9.3		43.3		57.0	96.7		49.5	119.4	
Level of Service	E	A	A		D		E	F		D	F	
Approach Delay (s)			10.3		43.3			80.1			97.1	
Approach LOS			B		D			F			F	

### Intersection Summary

HCM Average Control Delay	37.1	HCM Level of Service	D
HCM Volume to Capacity ratio	0.98		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	110.3%	ICU Level of Service	H
Analysis Period (min)	15		

! Phase conflict between lane groups.

c Critical Lane Group



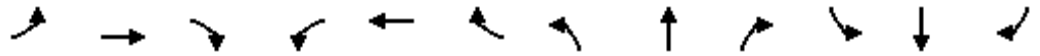


Movement	SWR
Lane Configurations	↗
Ideal Flow (vphpl)	1900
Total Lost time (s)	2.0
Lane Util. Factor	1.00
Frt	0.86
Flt Protected	1.00
Satd. Flow (prot)	822
Flt Permitted	1.00
Satd. Flow (perm)	822
Volume (vph)	10
Peak-hour factor, PHF	0.95
Adj. Flow (vph)	11
RTOR Reduction (vph)	0
Lane Group Flow (vph)	11
Heavy Vehicles (%)	100%
Turn Type	custom
Protected Phases	2!
Permitted Phases	
Actuated Green, G (s)	57.0
Effective Green, g (s)	61.0
Actuated g/C Ratio	0.51
Clearance Time (s)	6.0
Vehicle Extension (s)	3.0
Lane Grp Cap (vph)	418
v/s Ratio Prot	0.01
v/s Ratio Perm	
v/c Ratio	0.03
Uniform Delay, d1	14.7
Progression Factor	1.00
Incremental Delay, d2	0.1
Delay (s)	14.8
Level of Service	B
Approach Delay (s)	
Approach LOS	
Intersection Summary	

# HCM Signalized Intersection Capacity Analysis

5: MD 193 & MD 320

6/10/2008



Movement	EBL2	EBT	EBR	WBL2	WBT	WBR	NBL	NBT	NBR2	SBL	SBT	SBR2
Lane Configurations	↖	↗↖↗		↖	↗↖↗		↖	↗↖↗	↖	↖	↗↖↗	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	2.0	2.0		2.0	2.0		2.0	2.0	2.0	2.0	2.0	
Lane Util. Factor	1.00	0.91		1.00	0.91		1.00	0.95	1.00	1.00	0.95	
Frt	1.00	0.98		1.00	1.00		1.00	1.00	0.85	1.00	0.96	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1736	4910		1736	4967		1736	3471	1553	1736	3337	
Flt Permitted	0.95	1.00		0.95	1.00		0.14	1.00	1.00	0.15	1.00	
Satd. Flow (perm)	1736	4910		1736	4967		254	3471	1553	273	3337	
Volume (vph)	280	2115	245	305	2145	60	350	970	265	75	590	205
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	295	2226	258	321	2258	63	368	1021	279	79	621	216
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	169	0	29	0
Lane Group Flow (vph)	295	2484	0	321	2321	0	368	1021	110	79	808	0
Heavy Vehicles (%)	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%
Turn Type	Prot			Prot			pm+pt		Perm	pm+pt		
Protected Phases	5	2		1!	6!		3!	8!		7	4!	
Permitted Phases							8!		8	4		
Actuated Green, G (s)	17.0	47.2		17.0	47.2		41.8	35.4	35.4	26.2	23.8	
Effective Green, g (s)	19.0	50.2		19.0	50.2		44.8	38.4	38.4	31.2	26.8	
Actuated g/C Ratio	0.16	0.42		0.16	0.42		0.37	0.32	0.32	0.26	0.22	
Clearance Time (s)	4.0	5.0		4.0	5.0		4.0	5.0	5.0	4.0	5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	275	2054		275	2078		292	1111	497	125	745	
v/s Ratio Prot	0.17	c0.51		c0.18	0.47		c0.17	0.29		0.02	c0.24	
v/s Ratio Perm							0.30		0.07	0.14		
v/c Ratio	1.07	1.21		1.17	1.12		1.26	0.92	0.22	0.63	1.08	
Uniform Delay, d1	50.5	34.9		50.5	34.9		34.6	39.3	29.9	36.4	46.6	
Progression Factor	1.00	1.00		0.66	1.47		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	74.9	99.0		88.7	55.3		141.8	13.4	1.0	10.0	58.4	
Delay (s)	125.4	133.9		121.9	106.5		176.4	52.7	30.9	46.4	105.0	
Level of Service	F	F		F	F		F	D	C	D	F	
Approach Delay (s)		133.0			108.4			76.4			100.0	
Approach LOS		F			F			E			F	

## Intersection Summary

HCM Average Control Delay	109.1	HCM Level of Service	F
HCM Volume to Capacity ratio	1.16		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	137.1%	ICU Level of Service	H
Analysis Period (min)	15		

! Phase conflict between lane groups.

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis  
 5: MD 193 & MD 320

6/10/2008



Movement	NER	SWL
Lane Configurations		
Ideal Flow (vphpl)	1900	1900
Total Lost time (s)	2.0	2.0
Lane Util. Factor	1.00	1.00
Frt	0.86	1.00
Flt Protected	1.00	0.95
Satd. Flow (prot)	822	902
Flt Permitted	1.00	0.95
Satd. Flow (perm)	822	902
Volume (vph)	10	10
Peak-hour factor, PHF	0.95	0.95
Adj. Flow (vph)	11	11
RTOR Reduction (vph)	0	0
Lane Group Flow (vph)	11	11
Heavy Vehicles (%)	100%	100%
Turn Type	custom	Prot
Protected Phases	1 8!	1!
Permitted Phases		
Actuated Green, G (s)	57.4	17.0
Effective Green, g (s)	59.4	19.0
Actuated g/C Ratio	0.50	0.16
Clearance Time (s)		4.0
Vehicle Extension (s)		3.0
Lane Grp Cap (vph)	407	143
v/s Ratio Prot	0.01	0.01
v/s Ratio Perm		
v/c Ratio	0.03	0.08
Uniform Delay, d1	15.5	43.0
Progression Factor	1.00	1.00
Incremental Delay, d2	0.0	0.2
Delay (s)	15.5	43.3
Level of Service	B	D
Approach Delay (s)		
Approach LOS		
Intersection Summary		

# HCM Signalized Intersection Capacity Analysis

105: MD 193 & 23rd Ave

6/10/2008



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR2	SBR	SWR
Lane Configurations	↗	↑↑↑		↗	↑↑↑			↑	↗	↗	↗
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	2.0	3.0		3.0	3.0			3.0	3.0	3.0	2.0
Lane Util. Factor	1.00	0.91		1.00	0.91			1.00	1.00	1.00	1.00
Frt	1.00	0.98		1.00	1.00			1.00	0.85	0.86	0.86
Flt Protected	0.95	1.00		0.95	1.00			0.95	1.00	1.00	1.00
Satd. Flow (prot)	902	4894		1736	4976			1793	1599	1627	822
Flt Permitted	0.95	1.00		0.95	1.00			0.95	1.00	1.00	1.00
Satd. Flow (perm)	902	4894		1736	4976			1793	1599	1627	822
Volume (vph)	10	2215	315	185	1970	30	400	5	145	75	10
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	11	2332	332	195	2074	32	421	5	153	79	11
RTOR Reduction (vph)	0	15	0	0	0	0	0	0	115	36	0
Lane Group Flow (vph)	11	2649	0	195	2106	0	0	426	38	43	11
Heavy Vehicles (%)	100%	4%	4%	4%	4%	4%	1%	1%	1%	1%	100%
Turn Type	Split		Prot		Perm		Perm custom custom				
Protected Phases	6!	6		5	2!			4			2!
Permitted Phases		6				4		4	6		
Actuated Green, G (s)	63.0	63.0		13.0	81.0			27.0	27.0	63.0	81.0
Effective Green, g (s)	67.0	66.0		15.0	84.0			30.0	30.0	66.0	85.0
Actuated g/C Ratio	0.56	0.55		0.12	0.70			0.25	0.25	0.55	0.71
Clearance Time (s)	6.0	6.0		5.0	6.0			6.0	6.0	6.0	6.0
Vehicle Extension (s)	5.0	5.0		3.0	5.0			3.0	3.0	5.0	5.0
Lane Grp Cap (vph)	504	2692		217	3483			448	400	895	582
v/s Ratio Prot	0.01	c0.54		c0.11	0.42						0.01
v/s Ratio Perm								0.24	0.02	0.03	
v/c Ratio	0.02	0.98		0.90	0.60			0.95	0.10	0.05	0.02
Uniform Delay, d1	11.8	26.5		51.8	9.4			44.3	34.6	12.5	5.2
Progression Factor	0.57	0.49		0.82	1.44			1.00	1.00	1.00	1.00
Incremental Delay, d2	0.0	2.7		24.9	0.5			30.2	0.1	0.1	0.1
Delay (s)	6.8	15.6		67.5	14.0			74.5	34.7	12.6	5.2
Level of Service	A	B		E	B			E	C	B	A
Approach Delay (s)		15.6			18.6			64.0			
Approach LOS		B			B			E			

## Intersection Summary

HCM Average Control Delay	21.7	HCM Level of Service	C
HCM Volume to Capacity ratio	0.96		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	107.8%	ICU Level of Service	G
Analysis Period (min)	15		

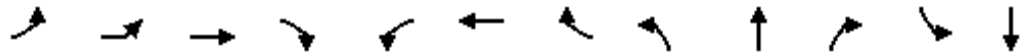
! Phase conflict between lane groups.

c Critical Lane Group

# HCM Signalized Intersection Capacity Analysis

107: MD 193 & W Park Dr

6/10/2008



Movement	EBL2	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR2	SBL	SBT
Lane Configurations	↖	↖	↕	↗	↖	↕	↗	↖	↕		↖	↗
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	2.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0
Lane Util. Factor	1.00	1.00	0.95	1.00	1.00	0.95		1.00	1.00		1.00	1.00
Frt	1.00	1.00	1.00	0.85	1.00	1.00		1.00	0.86		1.00	0.90
Flt Protected	0.95	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00
Satd. Flow (prot)	1736	902	3471	1553	1736	3454		1787	1612		1787	1696
Flt Permitted	0.95	0.95	1.00	1.00	0.95	1.00		0.74	1.00		0.53	1.00
Satd. Flow (perm)	1736	902	3471	1553	1736	3454		1385	1612		1004	1696
Volume (vph)	25	10	2235	40	35	2070	69	25	5	95	80	10
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	26	11	2353	42	37	2179	73	26	5	100	84	11
RTOR Reduction (vph)	0	0	0	10	0	0	0	0	64	0	0	18
Lane Group Flow (vph)	26	11	2353	32	37	2252	0	26	41	0	84	14
Heavy Vehicles (%)	4%	100%	4%	4%	4%	4%	4%	1%	1%	1%	1%	1%
Turn Type	Prot	Split		Perm	Prot			Perm			Perm	
Protected Phases	1	6!	6		5	2!			8			4
Permitted Phases				6				8				4
Actuated Green, G (s)	3.0	87.6	87.6	87.6	3.0	87.6		12.4	12.4		12.4	12.4
Effective Green, g (s)	5.0	91.6	90.6	90.6	5.0	90.6		15.4	15.4		15.4	15.4
Actuated g/C Ratio	0.04	0.76	0.76	0.76	0.04	0.76		0.13	0.13		0.13	0.13
Clearance Time (s)	5.0	6.0	6.0	6.0	5.0	6.0		6.0	6.0		6.0	6.0
Vehicle Extension (s)	3.0	5.0	5.0	5.0	3.0	5.0		3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	72	689	2621	1173	72	2608		178	207		129	218
v/s Ratio Prot	0.01	0.01	c0.68		c0.02	0.65			0.03			0.01
v/s Ratio Perm				0.02				0.02			c0.08	
v/c Ratio	0.36	0.02	0.90	0.03	0.51	0.86		0.15	0.20		0.65	0.06
Uniform Delay, d1	55.9	3.4	11.2	3.7	56.3	10.3		46.5	46.8		49.7	46.0
Progression Factor	1.19	0.12	0.71	0.00	1.00	1.00		1.00	1.00		1.00	1.00
Incremental Delay, d2	1.3	0.0	2.4	0.0	6.1	4.1		0.4	0.5		11.2	0.1
Delay (s)	67.7	0.4	10.4	0.0	62.4	14.4		46.8	47.3		60.9	46.1
Level of Service	E	A	B	A	E	B		D	D		E	D
Approach Delay (s)			10.8			15.2			47.2			56.8
Approach LOS			B			B			D			E

## Intersection Summary

HCM Average Control Delay	14.8	HCM Level of Service	B
HCM Volume to Capacity ratio	0.85		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	99.5%	ICU Level of Service	F
Analysis Period (min)	15		

! Phase conflict between lane groups.

c Critical Lane Group

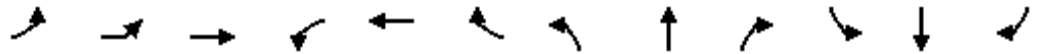


Movement	SBR	SWR
Lane Configurations		
Ideal Flow (vphpl)	1900	1900
Total Lost time (s)		2.0
Lane Util. Factor		1.00
Frt		0.86
Flt Protected		1.00
Satd. Flow (prot)		822
Flt Permitted		1.00
Satd. Flow (perm)		822
Volume (vph)	20	10
Peak-hour factor, PHF	0.95	0.95
Adj. Flow (vph)	21	11
RTOR Reduction (vph)	0	0
Lane Group Flow (vph)	0	11
Heavy Vehicles (%)	1%	100%
Turn Type	custom	
Protected Phases	2!	
Permitted Phases		
Actuated Green, G (s)	87.6	
Effective Green, g (s)	91.6	
Actuated g/C Ratio	0.76	
Clearance Time (s)	6.0	
Vehicle Extension (s)	5.0	
Lane Grp Cap (vph)	627	
v/s Ratio Prot	0.01	
v/s Ratio Perm		
v/c Ratio	0.02	
Uniform Delay, d1	3.4	
Progression Factor	1.00	
Incremental Delay, d2	0.1	
Delay (s)	3.5	
Level of Service	A	
Approach Delay (s)		
Approach LOS		
Intersection Summary		

# HCM Signalized Intersection Capacity Analysis

1629: MD 193 & 15th Ave

6/10/2008



Movement	EBL2	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR2	SBL	SBT	SBR
Lane Configurations	↖	↖	↖↖↖	↖	↖↖↖		↖	↑		↖	↗	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	2.0	2.0	2.0		2.0		2.0	3.0		3.0	3.0	
Lane Util. Factor	1.00	1.00	0.91		0.91		1.00	1.00		1.00	1.00	
Frt	1.00	1.00	1.00		0.98		1.00	0.92		1.00	0.85	
Flt Protected	0.95	0.95	1.00		1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1736	902	4988		4903		1787	1740		1787	1602	
Flt Permitted	0.95	0.95	1.00		1.00		0.65	1.00		0.76	1.00	
Satd. Flow (perm)	1736	902	4988		4903		1218	1740		1423	1602	
Volume (vph)	225	10	2105	0	2195	280	1	1	1	375	1	95
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	237	11	2216	0	2311	295	1	1	1	395	1	100
RTOR Reduction (vph)	0	0	0	0	0	0	0	1	0	0	73	0
Lane Group Flow (vph)	237	11	2216	0	2606	0	1	1	0	395	29	0
Heavy Vehicles (%)	4%	100%	4%	4%	4%	4%	1%	1%	1%	1%	1%	1%
Turn Type	Prot	Split		Prot		custom	Prot		Perm			
Protected Phases	5	2!	2	1	6!		8				4	
Permitted Phases							8			4		
Actuated Green, G (s)	13.0	78.0	78.0		62.0		30.0	30.0		30.0	30.0	
Effective Green, g (s)	16.0	82.0	82.0		64.0		34.0	33.0		33.0	33.0	
Actuated g/C Ratio	0.13	0.68	0.68		0.53		0.28	0.28		0.28	0.28	
Clearance Time (s)	5.0	6.0	6.0		4.0		6.0	6.0		6.0	6.0	
Vehicle Extension (s)	3.0	5.0	5.0		3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	231	616	3408		2615		345	479		391	441	
v/s Ratio Prot	c0.14	0.01	0.44		c0.53			0.00			0.02	
v/s Ratio Perm								0.00		c0.28		
v/c Ratio	1.03	0.02	0.65		1.00		0.00	0.00		1.01	0.06	
Uniform Delay, d1	52.0	6.1	10.8		27.9		30.8	31.6		43.5	32.1	
Progression Factor	1.00	1.00	1.00		0.53		1.00	1.00		1.00	1.00	
Incremental Delay, d2	66.1	0.1	1.0		11.0		0.0	0.0		48.1	0.1	
Delay (s)	118.1	6.1	11.8		25.7		30.8	31.6		91.6	32.2	
Level of Service	F	A	B		C		C	C		F	C	
Approach Delay (s)			22.0		25.7			31.3			79.5	
Approach LOS			C		C			C			E	

## Intersection Summary

HCM Average Control Delay	28.8	HCM Level of Service	C
HCM Volume to Capacity ratio	1.00		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	7.0
Intersection Capacity Utilization	105.2%	ICU Level of Service	G
Analysis Period (min)	15		

! Phase conflict between lane groups.

c Critical Lane Group



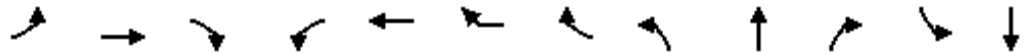
Movement	SWR
Lane Configurations	↗
Ideal Flow (vphpl)	1900
Total Lost time (s)	2.0
Lane Util. Factor	1.00
Frt	0.86
Flt Protected	1.00
Satd. Flow (prot)	1580
Flt Permitted	1.00
Satd. Flow (perm)	1580
Volume (vph)	10
Peak-hour factor, PHF	0.95
Adj. Flow (vph)	11
RTOR Reduction (vph)	0
Lane Group Flow (vph)	11
Heavy Vehicles (%)	4%
Turn Type	custom
Protected Phases	6!
Permitted Phases	
Actuated Green, G (s)	62.0
Effective Green, g (s)	64.0
Actuated g/C Ratio	0.53
Clearance Time (s)	4.0
Vehicle Extension (s)	3.0
Lane Grp Cap (vph)	843
v/s Ratio Prot	0.01
v/s Ratio Perm	
v/c Ratio	0.01
Uniform Delay, d1	13.2
Progression Factor	1.00
Incremental Delay, d2	0.0
Delay (s)	13.2
Level of Service	B
Approach Delay (s)	
Approach LOS	
Intersection Summary	



# HCM Signalized Intersection Capacity Analysis

5: MD 410 & MD 201

6/11/2008



Movement	EBL	EBT	EBR	WBL	WBT	WBR	WBR2	NBL2	NBT	NBR	SBL	SBT
Lane Configurations	↖↗	↑↑	↖	↖	↑↑	↖	↖	↖↗	↑↑	↖	↖	↑↑
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Util. Factor	0.97	0.95	1.00	1.00	0.95	1.00	1.00	0.97	0.95	1.00	1.00	0.95
Frt	1.00	1.00	0.85	1.00	1.00	0.85	0.85	1.00	1.00	0.85	1.00	1.00
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Satd. Flow (prot)	3303	3406	1524	1703	3406	808	1524	3303	3406	1524	1703	3406
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Satd. Flow (perm)	3303	3406	1524	1703	3406	808	1524	3303	3406	1524	1703	3406
Volume (vph)	345	955	365	50	1675	10	550	405	895	40	125	1815
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Growth Factor (vph)	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Adj. Flow (vph)	363	1005	384	53	1763	11	579	426	942	42	132	1911
RTOR Reduction (vph)	0	0	124	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	363	1005	260	53	1763	11	579	426	942	42	132	1911
Heavy Vehicles (%)	6%	6%	6%	6%	6%	100%	6%	6%	6%	6%	6%	6%
Turn Type	Prot		Perm	Prot		Prot	Free	Prot		Free	Prot	
Protected Phases	3!	8!		7	4!	4!		5	2		1	6
Permitted Phases			8				Free			Free		
Actuated Green, G (s)	15.0	58.0	58.0	4.0	48.0	48.0	160.0	13.0	60.3	160.0	15.7	63.0
Effective Green, g (s)	17.0	61.0	61.0	6.0	50.0	50.0	160.0	15.0	63.3	160.0	17.7	66.0
Actuated g/C Ratio	0.11	0.38	0.38	0.04	0.31	0.31	1.00	0.09	0.40	1.00	0.11	0.41
Clearance Time (s)	5.0	6.0	6.0	5.0	5.0	5.0		5.0	6.0		5.0	6.0
Vehicle Extension (s)	3.0	5.0	5.0	3.0	5.0	5.0		3.0	5.0		3.0	5.0
Lane Grp Cap (vph)	351	1299	581	64	1064	253	1524	310	1347	1524	188	1405
v/s Ratio Prot	c0.11	0.30		0.03	c0.52	0.01		c0.13	0.28		0.08	c0.56
v/s Ratio Perm			0.17				c0.38			0.03		
v/c Ratio	1.03	0.77	0.45	0.83	1.66	0.04	0.38	1.37	0.70	0.03	0.70	1.36
Uniform Delay, d1	71.5	43.4	36.9	76.5	55.0	38.3	0.0	72.5	40.4	0.0	68.6	47.0
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.14	0.72	1.00	1.01	0.70
Incremental Delay, d2	57.1	4.5	2.5	56.0	299.8	0.1	0.7	185.9	2.8	0.0	9.2	165.9
Delay (s)	128.6	48.0	39.4	132.5	354.8	38.5	0.7	268.5	31.7	0.0	78.9	198.8
Level of Service	F	D	D	F	F	D	A	F	C	A	E	F
Approach Delay (s)		62.8			263.3				102.3			163.0
Approach LOS		E			F				F			F

## Intersection Summary

HCM Average Control Delay	160.3	HCM Level of Service	F
HCM Volume to Capacity ratio	1.40		
Actuated Cycle Length (s)	160.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	147.0%	ICU Level of Service	H
Analysis Period (min)	15		

! Phase conflict between lane groups.

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis  
 5: MD 410 & MD 201

6/11/2008



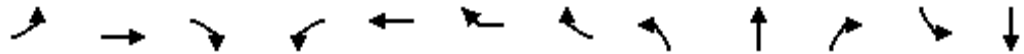
Movement	SBR	SEL
Lane Configurations	↖ ↗	↖ ↗
Ideal Flow (vphpl)	1900	1900
Total Lost time (s)	3.0	3.0
Lane Util. Factor	1.00	1.00
Frt	0.85	1.00
Flt Protected	1.00	0.95
Satd. Flow (prot)	1524	902
Flt Permitted	1.00	0.95
Satd. Flow (perm)	1524	902
Volume (vph)	335	10
Peak-hour factor, PHF	0.95	0.95
Growth Factor (vph)	100%	100%
Adj. Flow (vph)	353	11
RTOR Reduction (vph)	0	0
Lane Group Flow (vph)	353	11
Heavy Vehicles (%)	6%	100%
Turn Type	Free	
Protected Phases		8!
Permitted Phases	Free!	
Actuated Green, G (s)	160.0	58.0
Effective Green, g (s)	160.0	61.0
Actuated g/C Ratio	1.00	0.38
Clearance Time (s)		6.0
Vehicle Extension (s)		5.0
Lane Grp Cap (vph)	1524	344
v/s Ratio Prot		0.01
v/s Ratio Perm	0.23	
v/c Ratio	0.23	0.03
Uniform Delay, d1	0.0	31.0
Progression Factor	1.00	1.00
Incremental Delay, d2	0.3	0.2
Delay (s)	0.3	31.2
Level of Service	A	C
Approach Delay (s)		31.2
Approach LOS		C

Intersection Summary

# HCM Signalized Intersection Capacity Analysis

5: MD 410 & MD 201

6/11/2008



Movement	EBL	EBT	EBR	WBL	WBT	WBR	WBR2	NBL2	NBT	NBR	SBL	SBT
Lane Configurations	↖↗	↕	↖	↖	↕	↖	↖	↖↗	↕	↖	↖	↕
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	11	11	11	11	11	12	11	11	11	11	11	11
Total Lost time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Util. Factor	0.97	0.95	1.00	1.00	0.95	1.00	1.00	0.97	0.95	1.00	1.00	0.95
Fr <sub>t</sub>	1.00	1.00	0.85	1.00	1.00	0.85	0.85	1.00	1.00	0.85	1.00	1.00
Fl <sub>t</sub> Protected	0.95	1.00	1.00	0.95	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Satd. Flow (prot)	3286	3388	1516	1694	3388	808	1516	3286	3388	1516	1694	3388
Fl <sub>t</sub> Permitted	0.95	1.00	1.00	0.95	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Satd. Flow (perm)	3286	3388	1516	1694	3388	808	1516	3286	3388	1516	1694	3388
Volume (vph)	665	1595	495	155	1630	10	300	455	1305	55	415	1430
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Growth Factor (vph)	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Adj. Flow (vph)	700	1679	521	163	1716	11	316	479	1374	58	437	1505
RTOR Reduction (vph)	0	0	145	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	700	1679	376	163	1716	11	316	479	1374	58	437	1505
Heavy Vehicles (%)	3%	3%	3%	3%	3%	100%	3%	3%	3%	3%	3%	3%
Turn Type	Prot		Perm	Prot		Perm	Free	Prot		Free	Prot	
Protected Phases	3!	8!		7	4!			5	2		1	6
Permitted Phases			8			4!	Free			Free		
Actuated Green, G (s)	15.0	39.4	39.4	13.6	38.0	38.0	130.0	10.0	36.0	130.0	19.0	45.0
Effective Green, g (s)	17.0	42.4	42.4	15.6	41.0	41.0	130.0	12.0	39.0	130.0	21.0	48.0
Actuated g/C Ratio	0.13	0.33	0.33	0.12	0.32	0.32	1.00	0.09	0.30	1.00	0.16	0.37
Clearance Time (s)	5.0	6.0	6.0	5.0	6.0	6.0		5.0	6.0		5.0	6.0
Vehicle Extension (s)	3.0	3.5	3.5	3.0	3.5	3.5		3.0	5.0		3.0	5.0
Lane Grp Cap (vph)	430	1105	494	203	1069	255	1516	303	1016	1516	274	1251
v/s Ratio Prot	c0.21	0.50		0.10	c0.51			0.15	c0.41		c0.26	0.44
v/s Ratio Perm			0.25			0.01	c0.21			0.04		
v/c Ratio	1.63	1.52	0.76	0.80	1.61	0.04	0.21	1.58	1.35	0.04	1.59	1.20
Uniform Delay, d <sub>1</sub>	56.5	43.8	39.3	55.7	44.5	30.9	0.0	59.0	45.5	0.0	54.5	41.0
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.45	0.57	1.00	0.94	0.92
Incremental Delay, d <sub>2</sub>	293.0	238.4	7.0	20.0	276.8	0.1	0.3	271.4	162.8	0.0	282.3	98.3
Delay (s)	349.5	282.2	46.3	75.7	321.3	31.0	0.3	357.1	188.8	0.0	333.3	136.0
Level of Service	F	F	D	E	F	C	A	F	F	A	F	F
Approach Delay (s)		256.1			255.7				225.3			163.6
Approach LOS		F			F				F			F

## Intersection Summary

HCM Average Control Delay	227.7	HCM Level of Service	F
HCM Volume to Capacity ratio	1.51		
Actuated Cycle Length (s)	130.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	152.3%	ICU Level of Service	H
Analysis Period (min)	15		

! Phase conflict between lane groups.

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis  
5: MD 410 & MD 201

6/11/2008

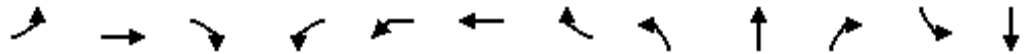


Movement	SBR	SEL
Lane Configurations	↗	↘
Ideal Flow (vphpl)	1900	1900
Lane Width	11	12
Total Lost time (s)	3.0	3.0
Lane Util. Factor	1.00	1.00
Flt	0.85	1.00
Flt Protected	1.00	0.95
Satd. Flow (prot)	1516	902
Flt Permitted	1.00	0.95
Satd. Flow (perm)	1516	902
Volume (vph)	190	10
Peak-hour factor, PHF	0.95	0.95
Growth Factor (vph)	100%	100%
Adj. Flow (vph)	200	11
RTOR Reduction (vph)	0	0
Lane Group Flow (vph)	200	11
Heavy Vehicles (%)	3%	100%
Turn Type	Free	
Protected Phases		8!
Permitted Phases	Free!	
Actuated Green, G (s)	130.0	39.4
Effective Green, g (s)	130.0	42.4
Actuated g/C Ratio	1.00	0.33
Clearance Time (s)		6.0
Vehicle Extension (s)		3.5
Lane Grp Cap (vph)	1516	294
v/s Ratio Prot		0.01
v/s Ratio Perm	0.13	
v/c Ratio	0.13	0.04
Uniform Delay, d1	0.0	29.9
Progression Factor	1.00	1.00
Incremental Delay, d2	0.2	0.1
Delay (s)	0.2	29.9
Level of Service	A	C
Approach Delay (s)		29.9
Approach LOS		C
<b>Intersection Summary</b>		

# HCM Signalized Intersection Capacity Analysis

1601: MD 410 & 62nd Pl.

6/11/2008



Movement	EBL	EBT	EBR	WBL2	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations	↖	↗		↖	↖	↗			↕			↖
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0	4.0			4.0			4.0
Lane Util. Factor	1.00	0.95		1.00	1.00	0.95			1.00			1.00
Frt	1.00	1.00		1.00	1.00	1.00			0.94			0.97
Flt Protected	0.95	1.00		0.95	0.95	1.00			0.97			0.96
Satd. Flow (prot)	1703	3404		1703	902	3399			1726			1757
Flt Permitted	0.95	1.00		0.95	0.95	1.00			0.97			0.96
Satd. Flow (perm)	1703	3404		1703	902	3399			1726			1757
Volume (vph)	30	1375	5	5	10	2210	30	65	0	45	55	0
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	32	1447	5	5	11	2326	32	68	0	47	58	0
RTOR Reduction (vph)	0	0	0	0	0	1	0	0	22	0	0	9
Lane Group Flow (vph)	32	1452	0	5	11	2357	0	0	93	0	0	65
Heavy Vehicles (%)	6%	6%	6%	6%	100%	6%	6%	1%	1%	1%	1%	1%
Turn Type	Prot			Prot	Split			Split			Split	
Protected Phases	1	2!		1	2!	2		3	3		4	4
Permitted Phases												
Actuated Green, G (s)	3.0	73.8		3.0	73.8	73.8			7.5			4.7
Effective Green, g (s)	4.0	75.8		4.0	75.8	75.8			8.5			5.7
Actuated g/C Ratio	0.04	0.69		0.04	0.69	0.69			0.08			0.05
Clearance Time (s)	5.0	6.0		5.0	6.0	6.0			5.0			5.0
Vehicle Extension (s)	3.0	6.0		3.0	6.0	6.0			3.0			3.0
Lane Grp Cap (vph)	62	2346		62	622	2342			133			91
v/s Ratio Prot	c0.02	0.43		0.00	0.01	c0.69			c0.05			c0.04
v/s Ratio Perm												
v/c Ratio	0.52	0.62		0.08	0.02	1.01			0.70			0.71
Uniform Delay, d1	52.0	9.3		51.2	5.4	17.1			49.5			51.3
Progression Factor	1.00	1.00		0.77	0.55	0.37			1.00			1.00
Incremental Delay, d2	7.1	1.2		0.3	0.0	14.3			14.8			22.2
Delay (s)	59.1	10.5		39.8	3.0	20.7			64.3			73.6
Level of Service	E	B		D	A	C			E			E
Approach Delay (s)		11.6				20.7			64.3			73.6
Approach LOS		B				C			E			E

## Intersection Summary

HCM Average Control Delay	19.5	HCM Level of Service	B
HCM Volume to Capacity ratio	0.94		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	83.0%	ICU Level of Service	E
Analysis Period (min)	15		

! Phase conflict between lane groups.

c Critical Lane Group



Movement	SBR2	NER
Lane Configurations		
Ideal Flow (vphpl)	1900	1900
Total Lost time (s)		4.0
Lane Util. Factor		1.00
Frt		0.86
Flt Protected		1.00
Satd. Flow (prot)		822
Flt Permitted		1.00
Satd. Flow (perm)		822
Volume (vph)	15	10
Peak-hour factor, PHF	0.95	0.95
Adj. Flow (vph)	16	11
RTOR Reduction (vph)	0	0
Lane Group Flow (vph)	0	11
Heavy Vehicles (%)	1%	100%
Turn Type		Over
Protected Phases		2!
Permitted Phases		
Actuated Green, G (s)		73.8
Effective Green, g (s)		75.8
Actuated g/C Ratio		0.69
Clearance Time (s)		6.0
Vehicle Extension (s)		6.0
Lane Grp Cap (vph)		566
v/s Ratio Prot		0.01
v/s Ratio Perm		
v/c Ratio		0.02
Uniform Delay, d1		5.4
Progression Factor		1.00
Incremental Delay, d2		0.1
Delay (s)		5.5
Level of Service		A
Approach Delay (s)		
Approach LOS		
Intersection Summary		

# HCM Signalized Intersection Capacity Analysis

1602: MD 410 & 64th Ave.

6/11/2008



Movement	EBL	EBT	EBR	WBL	WBT	WBR	SBL	SBR	SBR2	NEL	NER
Lane Configurations	↖	↑↑		↖	↑↑		↖		↖		↖
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0		4.0		4.0
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00		1.00		1.00
Frt	1.00	1.00		1.00	0.99		1.00		0.85		0.86
Flt Protected	0.95	1.00		0.95	1.00		0.95		1.00		1.00
Satd. Flow (prot)	1703	3406		902	3384		1787		1599		822
Flt Permitted	0.95	1.00		0.95	1.00		0.95		1.00		1.00
Satd. Flow (perm)	1703	3406		902	3384		1787		1599		822
Volume (vph)	30	1445	0	10	2150	95	100	0	95	0	10
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	32	1521	0	11	2263	100	105	0	100	0	11
RTOR Reduction (vph)	0	0	0	0	3	0	0	0	73	0	0
Lane Group Flow (vph)	32	1521	0	11	2360	0	105	0	27	0	11
Heavy Vehicles (%)	6%	6%	6%	100%	6%	6%	1%	1%	1%	1%	100%
Turn Type	Prot		Split			Prot		custom		custom	
Protected Phases	1	6!		2!	2		4				6!
Permitted Phases									4		
Actuated Green, G (s)	3.0	91.3		83.3	83.3		8.7		8.7		91.3
Effective Green, g (s)	4.0	92.3		84.3	84.3		9.7		9.7		92.3
Actuated g/C Ratio	0.04	0.84		0.77	0.77		0.09		0.09		0.84
Clearance Time (s)	5.0	5.0		5.0	5.0		5.0		5.0		5.0
Vehicle Extension (s)	3.0	6.0		6.0	6.0		3.0		3.0		6.0
Lane Grp Cap (vph)	62	2858		691	2593		158		141		690
v/s Ratio Prot	0.02	c0.45		0.01	c0.70		c0.06				0.01
v/s Ratio Perm									0.02		
v/c Ratio	0.52	0.53		0.02	0.91		0.66		0.19		0.02
Uniform Delay, d1	52.0	2.6		3.0	9.9		48.6		46.5		1.4
Progression Factor	0.83	0.45		0.53	0.55		1.00		1.00		1.00
Incremental Delay, d2	5.7	0.6		0.0	3.1		10.1		0.7		0.0
Delay (s)	48.9	1.7		1.6	8.5		58.6		47.2		1.5
Level of Service	D	A		A	A		E		D		A
Approach Delay (s)		2.7			8.5		53.1			1.5	
Approach LOS		A			A		D			A	

## Intersection Summary













HCM Average Control Delay	8.5	HCM Level of Service	A
HCM Volume to Capacity ratio	0.85		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	75.0%	ICU Level of Service	D
Analysis Period (min)	15		

! Phase conflict between lane groups.

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis  
 1603: MD 410 & BW Parkway S/B Ramps

6/11/2008

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑↑	↑	↑	↑↑			↑		↑↑		↑
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0	4.0	4.0			4.0		4.0		4.0
Lane Util. Factor		0.91	1.00	1.00	0.95			1.00		0.97		1.00
Frt		1.00	0.85	1.00	1.00			1.00		1.00		0.85
Flt Protected		1.00	1.00	0.95	1.00			1.00		0.95		1.00
Satd. Flow (prot)		4893	1524	1703	3406			950		3303		1524
Flt Permitted		1.00	1.00	0.95	1.00			1.00		0.95		1.00
Satd. Flow (perm)		4893	1524	1703	3406			950		3303		1524
Volume (vph)	0	1350	195	320	1935	0	0	10	0	105	0	320
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	1421	205	337	2037	0	0	11	0	111	0	337
RTOR Reduction (vph)	0	0	119	0	0	0	0	0	0	0	0	13
Lane Group Flow (vph)	0	1421	86	337	2037	0	0	11	0	111	0	324
Heavy Vehicles (%)	6%	6%	6%	6%	6%	6%	6%	100%	6%	6%	6%	6%
Turn Type			Perm	Prot						Prot		custom
Protected Phases		6!		5	2!			6!		4		
Permitted Phases			6									4
Actuated Green, G (s)		45.1	45.1	24.3	74.4			45.1		25.6		25.6
Effective Green, g (s)		46.1	46.1	25.3	75.4			46.1		26.6		26.6
Actuated g/C Ratio		0.42	0.42	0.23	0.69			0.42		0.24		0.24
Clearance Time (s)		5.0	5.0	5.0	5.0			5.0		5.0		5.0
Vehicle Extension (s)		6.0	6.0	3.0	6.0			6.0		3.0		3.0
Lane Grp Cap (vph)		2051	639	392	2335			398		799		369
v/s Ratio Prot		0.29		0.20	c0.60			0.01		0.03		
v/s Ratio Perm			0.06									c0.21
v/c Ratio		0.69	0.13	0.86	0.87			0.03		0.14		0.88
Uniform Delay, d1		26.2	19.7	40.6	13.5			18.8		32.7		40.1
Progression Factor		0.73	0.39	1.43	1.21			1.00		1.00		1.00
Incremental Delay, d2		1.7	0.4	10.7	3.0			0.1		0.1		20.3
Delay (s)		20.7	8.1	68.7	19.4			18.9		32.8		60.5
Level of Service		C	A	E	B			B		C		E
Approach Delay (s)		19.1			26.4			18.9			53.6	
Approach LOS		B			C			B			D	
<b>Intersection Summary</b>												
HCM Average Control Delay			26.5			HCM Level of Service				C		
HCM Volume to Capacity ratio			0.87									
Actuated Cycle Length (s)			110.0			Sum of lost time (s)				8.0		
Intersection Capacity Utilization			81.0%			ICU Level of Service				D		
Analysis Period (min)			15									
! Phase conflict between lane groups.												
c Critical Lane Group												



HCM Signalized Intersection Capacity Analysis  
 1604: MD 410 & BW Parkway N/B Ramps

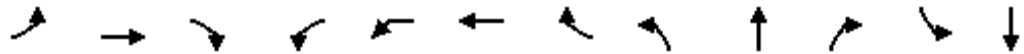
6/11/2008

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0			4.0	4.0	4.0		4.0		4.0	
Lane Util. Factor	1.00	0.95			0.91	1.00	0.97		1.00		1.00	
Frt	1.00	1.00			1.00	0.85	1.00		0.85		1.00	
Flt Protected	0.95	1.00			1.00	1.00	0.95		1.00		1.00	
Satd. Flow (prot)	1703	3406			4893	1524	3303		1524		950	
Flt Permitted	0.95	1.00			1.00	1.00	0.95		1.00		1.00	
Satd. Flow (perm)	1703	3406			4893	1524	3303		1524		950	
Volume (vph)	315	1150	0	0	1875	315	370	0	70	0	10	0
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	332	1211	0	0	1974	332	389	0	74	0	11	0
RTOR Reduction (vph)	0	0	0	0	0	156	0	0	63	0	0	0
Lane Group Flow (vph)	332	1211	0	0	1974	176	389	0	11	0	11	0
Heavy Vehicles (%)	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%	100%	6%
Turn Type	Prot				Perm		Prot	custom				
Protected Phases	1	6!			2!		4				2!	
Permitted Phases						2			4			
Actuated Green, G (s)	25.0	84.5			54.5	54.5	15.5		15.5		54.5	
Effective Green, g (s)	26.0	85.5			55.5	55.5	16.5		16.5		55.5	
Actuated g/C Ratio	0.24	0.78			0.50	0.50	0.15		0.15		0.50	
Clearance Time (s)	5.0	5.0			5.0	5.0	5.0		5.0		5.0	
Vehicle Extension (s)	3.0	6.0			6.0	6.0	3.0		3.0		6.0	
Lane Grp Cap (vph)	403	2647			2469	769	495		229		479	
v/s Ratio Prot	c0.19	0.36			c0.40		c0.12				0.01	
v/s Ratio Perm						0.12			0.01			
v/c Ratio	0.82	0.46			0.80	0.23	0.79		0.05		0.02	
Uniform Delay, d1	39.8	4.2			22.6	15.3	45.0		40.0		13.7	
Progression Factor	1.66	0.67			0.77	0.63	1.00		1.00		1.00	
Incremental Delay, d2	9.5	0.4			1.5	0.4	8.0		0.1		0.1	
Delay (s)	75.5	3.3			18.9	9.9	53.1		40.1		13.7	
Level of Service	E	A			B	A	D		D		B	
Approach Delay (s)		18.8			17.6			51.0			13.7	
Approach LOS		B			B			D			B	
<b>Intersection Summary</b>												
HCM Average Control Delay			21.6	HCM Level of Service				C				
HCM Volume to Capacity ratio			0.80									
Actuated Cycle Length (s)			110.0	Sum of lost time (s)				12.0				
Intersection Capacity Utilization			84.5%	ICU Level of Service				E				
Analysis Period (min)			15									
! Phase conflict between lane groups.												
c Critical Lane Group												

# HCM Signalized Intersection Capacity Analysis

1605: MD 410 & 67th. Ave.

6/11/2008



Movement	EBL	EBT	EBR	WBL2	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations	↖	↗		↖	↖	↗		↖	↗			↖
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0	4.0		4.0	4.0			4.0
Lane Util. Factor	1.00	0.95		1.00	1.00	0.95		1.00	1.00			1.00
Frt	1.00	1.00		1.00	1.00	1.00		1.00	0.86			0.94
Flt Protected	0.95	1.00		0.95	0.95	1.00		0.95	1.00			0.98
Satd. Flow (prot)	1703	3399		1703	902	3404		1787	1618			1734
Flt Permitted	0.95	1.00		0.95	0.95	1.00		0.81	1.00			0.88
Satd. Flow (perm)	1703	3399		1703	902	3404		1515	1618			1561
Volume (vph)	5	1190	15	15	10	2000	5	175	5	65	15	5
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	5	1253	16	16	11	2105	5	184	5	68	16	5
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	57	0	0	13
Lane Group Flow (vph)	5	1269	0	16	11	2110	0	184	16	0	0	24
Heavy Vehicles (%)	6%	6%	6%	6%	100%	6%	6%	1%	1%	1%	1%	1%
Turn Type	Prot		Prot		Split		Perm			Perm		
Protected Phases	1	2!		1	2!	2			8			4
Permitted Phases								8				4
Actuated Green, G (s)	2.0	76.5		2.0	76.5	76.5		16.5	16.5			16.5
Effective Green, g (s)	3.0	77.5		3.0	77.5	77.5		17.5	17.5			17.5
Actuated g/C Ratio	0.03	0.70		0.03	0.70	0.70		0.16	0.16			0.16
Clearance Time (s)	5.0	5.0		5.0	5.0	5.0		5.0	5.0			5.0
Vehicle Extension (s)	3.0	6.0		3.0	6.0	6.0		3.0	3.0			3.0
Lane Grp Cap (vph)	46	2395		46	636	2398		241	257			248
v/s Ratio Prot	0.00	0.37		c0.01	0.01	c0.62			0.01			
v/s Ratio Perm								c0.12				0.02
v/c Ratio	0.11	0.53		0.35	0.02	0.88		0.76	0.06			0.09
Uniform Delay, d1	52.2	7.7		52.5	4.9	12.6		44.3	39.3			39.5
Progression Factor	0.77	0.23		0.90	0.45	0.38		1.00	1.00			1.00
Incremental Delay, d2	1.0	0.8		2.5	0.0	2.9		13.4	0.1			0.2
Delay (s)	40.9	2.5		49.7	2.2	7.7		57.6	39.4			39.7
Level of Service	D	A		D	A	A		E	D			D
Approach Delay (s)		2.6				8.0			52.4			39.7
Approach LOS		A				A			D			D

## Intersection Summary

HCM Average Control Delay	9.6	HCM Level of Service	A
HCM Volume to Capacity ratio	0.84		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	79.7%	ICU Level of Service	D
Analysis Period (min)	15		

! Phase conflict between lane groups.













c Critical Lane Group



Movement	SBR2	NER
Lane Configurations		
Ideal Flow (vphpl)	1900	1900
Total Lost time (s)		4.0
Lane Util. Factor		1.00
Frt		0.86
Flt Protected		1.00
Satd. Flow (prot)		822
Flt Permitted		1.00
Satd. Flow (perm)		822
Volume (vph)	15	10
Peak-hour factor, PHF	0.95	0.95
Adj. Flow (vph)	16	11
RTOR Reduction (vph)	0	0
Lane Group Flow (vph)	0	11
Heavy Vehicles (%)	1%	100%
Turn Type		Over
Protected Phases		2!
Permitted Phases		
Actuated Green, G (s)		76.5
Effective Green, g (s)		77.5
Actuated g/C Ratio		0.70
Clearance Time (s)		5.0
Vehicle Extension (s)		6.0
Lane Grp Cap (vph)		579
v/s Ratio Prot		0.01
v/s Ratio Perm		
v/c Ratio		0.02
Uniform Delay, d1		4.9
Progression Factor		1.00
Incremental Delay, d2		0.1
Delay (s)		4.9
Level of Service		A
Approach Delay (s)		
Approach LOS		
Intersection Summary		

HCM Signalized Intersection Capacity Analysis  
 1606: MD 410 & Veterans Pkwy

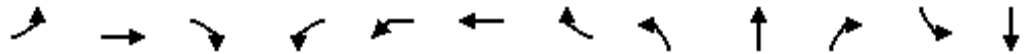
6/11/2008

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑		↔	↑↑		↔	↑	↔		↑	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0		4.0	4.0		4.0	4.0	4.0		4.0	
Lane Util. Factor		0.95		1.00	0.95		0.97	1.00	1.00		1.00	
Frt		0.91		1.00	1.00		1.00	1.00	0.85		1.00	
Flt Protected		1.00		0.95	1.00		0.95	1.00	1.00		1.00	
Satd. Flow (prot)		3113		1703	3406		3303	950	1524		950	
Flt Permitted		1.00		0.08	1.00		0.95	1.00	1.00		1.00	
Satd. Flow (perm)		3113		149	3406		3303	950	1524		950	
Volume (vph)	0	620	830	345	950	0	1115	10	315	0	10	0
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	653	874	363	1000	0	1174	11	332	0	11	0
RTOR Reduction (vph)	0	220	0	0	0	0	0	0	223	0	0	0
Lane Group Flow (vph)	0	1307	0	363	1000	0	1174	11	109	0	11	0
Heavy Vehicles (%)	6%	6%	6%	6%	6%	6%	6%	100%	6%	6%	100%	6%
Turn Type				pm+pt			Split		Perm			
Protected Phases		6		5	2		4!	4			4!	
Permitted Phases				2					4			
Actuated Green, G (s)		43.0		65.0	65.0		35.0	35.0	35.0		35.0	
Effective Green, g (s)		44.0		66.0	66.0		36.0	36.0	36.0		36.0	
Actuated g/C Ratio		0.40		0.60	0.60		0.33	0.33	0.33		0.33	
Clearance Time (s)		5.0		5.0	5.0		5.0	5.0	5.0		5.0	
Vehicle Extension (s)		6.0		3.0	6.0		3.0	3.0	3.0		3.0	
Lane Grp Cap (vph)		1245		344	2044		1081	311	499		311	
v/s Ratio Prot		0.42		c0.17	0.29		c0.36	0.01			0.01	
v/s Ratio Perm				c0.46					0.07			
v/c Ratio		1.05		1.06	0.49		1.09	0.04	0.22		0.04	
Uniform Delay, d1		33.0		42.6	12.5		37.0	25.2	26.8		25.2	
Progression Factor		0.37		1.00	1.00		1.00	1.00	1.00		1.00	
Incremental Delay, d2		38.6		63.8	0.8		53.8	0.0	0.2		0.0	
Delay (s)		50.7		106.4	13.3		90.8	25.2	27.0		25.2	
Level of Service		D		F	B		F	C	C		C	
Approach Delay (s)		50.7			38.1			76.4			25.2	
Approach LOS		D			D			E			C	
<b>Intersection Summary</b>												
HCM Average Control Delay			55.6			HCM Level of Service			E			
HCM Volume to Capacity ratio			1.04									
Actuated Cycle Length (s)			110.0			Sum of lost time (s)			8.0			
Intersection Capacity Utilization			111.4%			ICU Level of Service			H			
Analysis Period (min)			15									
! Phase conflict between lane groups.												
c Critical Lane Group												

# HCM Signalized Intersection Capacity Analysis

1601: MD 410 & 62nd Pl.

6/11/2008



Movement	EBL	EBT	EBR	WBL2	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations	↖	↗		↖	↖	↗			↕			↖
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0	4.0			4.0			4.0
Lane Util. Factor	1.00	0.95		1.00	1.00	0.95			1.00			1.00
Frt	1.00	0.99		1.00	1.00	1.00			0.97			0.96
Flt Protected	0.95	1.00		0.95	0.95	1.00			0.96			0.97
Satd. Flow (prot)	1752	3484		1752	902	3495			1760			1742
Flt Permitted	0.95	1.00		0.95	0.95	1.00			0.96			0.97
Satd. Flow (perm)	1752	3484		1752	902	3495			1760			1742
Volume (vph)	30	2280	95	25	10	2185	40	80	0	20	120	0
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	32	2400	100	26	11	2300	42	84	0	21	126	0
RTOR Reduction (vph)	0	0	0	0	0	1	0	0	9	0	0	15
Lane Group Flow (vph)	32	2500	0	26	11	2341	0	0	96	0	0	169
Heavy Vehicles (%)	3%	3%	3%	3%	100%	3%	3%	1%	1%	1%	1%	1%
Turn Type	Prot			Prot	Split			Split			Split	
Protected Phases	1	2!		1	2!	2		3	3		4	4
Permitted Phases												
Actuated Green, G (s)	4.0	71.0		4.0	71.0	71.0			5.0			9.0
Effective Green, g (s)	5.0	73.0		5.0	73.0	73.0			6.0			10.0
Actuated g/C Ratio	0.05	0.66		0.05	0.66	0.66			0.05			0.09
Clearance Time (s)	5.0	6.0		5.0	6.0	6.0			5.0			5.0
Vehicle Extension (s)	3.0	6.0		3.0	6.0	6.0			3.0			3.0
Lane Grp Cap (vph)	80	2312		80	599	2319			96			158
v/s Ratio Prot	c0.02	c0.72		0.01	0.01	0.67			c0.05			c0.10
v/s Ratio Perm												
v/c Ratio	0.40	1.08		0.33	0.02	1.01			1.01			1.07
Uniform Delay, d1	51.0	18.5		50.9	6.3	18.5			52.0			50.0
Progression Factor	1.00	1.00		1.11	0.79	0.44			1.00			1.00
Incremental Delay, d2	3.3	45.0		0.9	0.0	14.0			93.2			90.5
Delay (s)	54.3	63.5		57.3	5.0	22.2			145.2			140.5
Level of Service	D	E		E	A	C			F			F
Approach Delay (s)		63.4				22.5			145.2			140.5
Approach LOS		E				C			F			F

## Intersection Summary

HCM Average Control Delay	49.0	HCM Level of Service	D
HCM Volume to Capacity ratio	1.04		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	107.3%	ICU Level of Service	G
Analysis Period (min)	15		

! Phase conflict between lane groups.

c Critical Lane Group



Movement	SBR2	NER
Lane Configurations		
Ideal Flow (vphpl)	1900	1900
Total Lost time (s)		4.0
Lane Util. Factor		1.00
Frt		0.86
Flt Protected		1.00
Satd. Flow (prot)		1596
Flt Permitted		1.00
Satd. Flow (perm)		1596
Volume (vph)	55	10
Peak-hour factor, PHF	0.95	0.95
Adj. Flow (vph)	58	11
RTOR Reduction (vph)	0	0
Lane Group Flow (vph)	0	11
Heavy Vehicles (%)	1%	3%
Turn Type		Over
Protected Phases		2!
Permitted Phases		
Actuated Green, G (s)		71.0
Effective Green, g (s)		73.0
Actuated g/C Ratio		0.66
Clearance Time (s)		6.0
Vehicle Extension (s)		6.0
Lane Grp Cap (vph)		1059
v/s Ratio Prot		0.01
v/s Ratio Perm		
v/c Ratio		0.01
Uniform Delay, d1		6.3
Progression Factor		1.00
Incremental Delay, d2		0.0
Delay (s)		6.3
Level of Service		A
Approach Delay (s)		
Approach LOS		
Intersection Summary		

# HCM Signalized Intersection Capacity Analysis

1602: MD 410 & 64th Ave.

6/11/2008



Movement	EBL	EBT	EBR	WBL	WBT	WBR	SBL	SBR	SBR2	NEL	NER
Lane Configurations	↖	↑↑		↖	↑↑		↖		↖		↖
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0		4.0		4.0
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00		1.00		1.00
Frt	1.00	1.00		1.00	0.99		1.00		0.85		0.86
Flt Protected	0.95	1.00		0.95	1.00		0.95		1.00		1.00
Satd. Flow (prot)	1752	3505		902	3478		1787		1599		822
Flt Permitted	0.95	1.00		0.95	1.00		0.95		1.00		1.00
Satd. Flow (perm)	1752	3505		902	3478		1787		1599		822
Volume (vph)	100	2320	0	10	2170	115	80	0	80	0	10
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	105	2442	0	11	2284	121	84	0	84	0	11
RTOR Reduction (vph)	0	0	0	0	3	0	0	0	78	0	0
Lane Group Flow (vph)	105	2442	0	11	2402	0	84	0	6	0	11
Heavy Vehicles (%)	3%	3%	3%	100%	3%	3%	1%	1%	1%	1%	100%
Turn Type	Prot			Split			Prot		custom		custom
Protected Phases	1	6!		2!	2		4				6!
Permitted Phases									4		
Actuated Green, G (s)	8.0	93.0		80.0	80.0		7.0		7.0		93.0
Effective Green, g (s)	9.0	94.0		81.0	81.0		8.0		8.0		94.0
Actuated g/C Ratio	0.08	0.85		0.74	0.74		0.07		0.07		0.85
Clearance Time (s)	5.0	5.0		5.0	5.0		5.0		5.0		5.0
Vehicle Extension (s)	3.0	6.0		6.0	6.0		3.0		3.0		6.0
Lane Grp Cap (vph)	143	2995		664	2561		130		116		702
v/s Ratio Prot	0.06	c0.70		0.01	c0.69		c0.05				0.01
v/s Ratio Perm									0.00		
v/c Ratio	0.73	0.82		0.02	0.94		0.65		0.05		0.02
Uniform Delay, d1	49.3	3.8		3.9	12.4		49.6		47.5		1.2
Progression Factor	0.70	0.66		0.64	0.85		1.00		1.00		1.00
Incremental Delay, d2	1.8	0.2		0.0	4.3		10.5		0.2		0.0
Delay (s)	36.4	2.8		2.5	14.8		60.2		47.7		1.2
Level of Service	D	A		A	B		E		D		A
Approach Delay (s)		4.2			14.7		53.9			1.2	
Approach LOS		A			B		D			A	

## Intersection Summary

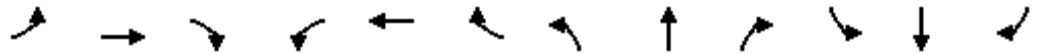
HCM Average Control Delay	10.7	HCM Level of Service	B
HCM Volume to Capacity ratio	0.89		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	94.2%	ICU Level of Service	F
Analysis Period (min)	15		

! Phase conflict between lane groups.

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis  
 1603: MD 410 & BW Parkway S/B Ramps

6/11/2008



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑↑	↑	↑	↑↑			↑		↑↑		↑
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0	4.0	4.0			4.0		4.0		4.0
Lane Util. Factor		0.91	1.00	1.00	0.95			1.00		0.97		1.00
Frt		1.00	0.85	1.00	1.00			1.00		1.00		0.85
Flt Protected		1.00	1.00	0.95	1.00			1.00		0.95		1.00
Satd. Flow (prot)		5036	1568	1752	3505			950		3400		1568
Flt Permitted		1.00	1.00	0.95	1.00			1.00		0.95		1.00
Satd. Flow (perm)		5036	1568	1752	3505			950		3400		1568
Volume (vph)	0	2010	390	345	1895	0	0	10	0	225	0	395
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	2116	411	363	1995	0	0	11	0	237	0	416
RTOR Reduction (vph)	0	0	191	0	0	0	0	0	0	0	0	15
Lane Group Flow (vph)	0	2116	220	363	1995	0	0	11	0	237	0	401
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%	3%	100%	3%	3%	3%	3%
Turn Type			Perm	Prot						Prot		custom
Protected Phases		6!		5	2!			6!		4		
Permitted Phases			6									4
Actuated Green, G (s)		47.0	47.0	22.0	74.0			47.0		26.0		26.0
Effective Green, g (s)		48.0	48.0	23.0	75.0			48.0		27.0		27.0
Actuated g/C Ratio		0.44	0.44	0.21	0.68			0.44		0.25		0.25
Clearance Time (s)		5.0	5.0	5.0	5.0			5.0		5.0		5.0
Vehicle Extension (s)		6.0	6.0	3.0	6.0			6.0		3.0		3.0
Lane Grp Cap (vph)		2198	684	366	2390			415		835		385
v/s Ratio Prot		c0.42		c0.21	0.57			0.01		0.07		
v/s Ratio Perm			0.14									c0.26
v/c Ratio		0.96	0.32	0.99	0.83			0.03		0.28		1.04
Uniform Delay, d1		30.1	20.3	43.4	12.9			17.7		33.7		41.5
Progression Factor		0.97	1.52	1.06	1.64			1.00		1.00		1.00
Incremental Delay, d2		8.1	0.7	36.2	2.6			0.1		0.2		57.0
Delay (s)		37.2	31.6	82.3	23.8			17.8		33.8		98.5
Level of Service		D	C	F	C			B		C		F
Approach Delay (s)		36.3			32.8			17.8			75.0	
Approach LOS		D			C			B			E	

Intersection Summary

HCM Average Control Delay	39.3	HCM Level of Service	D
HCM Volume to Capacity ratio	0.99		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	88.8%	ICU Level of Service	E
Analysis Period (min)	15		
























! Phase conflict between lane groups.

c Critical Lane Group



HCM Signalized Intersection Capacity Analysis  
 1604: MD 410 & BW Parkway N/B Ramps

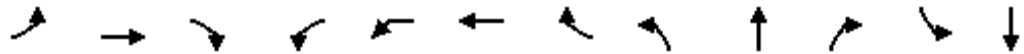
6/11/2008

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		 			  		 					
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0			4.0	4.0	4.0		4.0		4.0	
Lane Util. Factor	1.00	0.95			0.91	1.00	0.97		1.00		1.00	
Frt	1.00	1.00			1.00	0.85	1.00		0.85		1.00	
Flt Protected	0.95	1.00			1.00	1.00	0.95		1.00		1.00	
Satd. Flow (prot)	1752	3505			5036	1568	3400		1568		950	
Flt Permitted	0.95	1.00			1.00	1.00	0.95		1.00		1.00	
Satd. Flow (perm)	1752	3505			5036	1568	3400		1568		950	
Volume (vph)	200	2045	0	0	1850	170	380	0	275	0	10	0
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	211	2153	0	0	1947	179	400	0	289	0	11	0
RTOR Reduction (vph)	0	0	0	0	0	85	0	0	12	0	0	0
Lane Group Flow (vph)	211	2153	0	0	1947	94	400	0	277	0	11	0
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	100%	3%
Turn Type	Prot				Perm		Prot	custom				
Protected Phases	1	6!			2!		4				2!	
Permitted Phases						2			4			
Actuated Green, G (s)	15.9	77.6			56.7	56.7	22.4		22.4		56.7	
Effective Green, g (s)	16.9	78.6			57.7	57.7	23.4		23.4		57.7	
Actuated g/C Ratio	0.15	0.71			0.52	0.52	0.21		0.21		0.52	
Clearance Time (s)	5.0	5.0			5.0	5.0	5.0		5.0		5.0	
Vehicle Extension (s)	3.0	6.0			6.0	6.0	3.0		3.0		6.0	
Lane Grp Cap (vph)	269	2504			2642	822	723		334		498	
v/s Ratio Prot	0.12	c0.61			0.39		0.12				0.01	
v/s Ratio Perm						0.06			c0.18			
v/c Ratio	0.78	0.86			0.74	0.11	0.55		0.83		0.02	
Uniform Delay, d1	44.8	11.6			20.3	13.2	38.6		41.4		12.6	
Progression Factor	1.51	0.70			0.59	0.59	1.00		1.00		1.00	
Incremental Delay, d2	5.0	1.9			1.1	0.2	0.9		15.6		0.1	
Delay (s)	72.5	10.1			13.1	7.9	39.6		57.0		12.7	
Level of Service	E	B			B	A	D		E		B	
Approach Delay (s)		15.7			12.6			46.9			12.7	
Approach LOS		B			B			D			B	
<b>Intersection Summary</b>												
HCM Average Control Delay			18.6		HCM Level of Service					B		
HCM Volume to Capacity ratio			0.85									
Actuated Cycle Length (s)			110.0		Sum of lost time (s)					8.0		
Intersection Capacity Utilization			84.0%		ICU Level of Service					E		
Analysis Period (min)			15									
! Phase conflict between lane groups.												
c Critical Lane Group												

# HCM Signalized Intersection Capacity Analysis

1605: MD 410 & 67th. Ave.

6/11/2008



Movement	EBL	EBT	EBR	WBL2	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations	↖	↗		↖	↖	↗		↖	↗			↖
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0	4.0		4.0	4.0			4.0
Lane Util. Factor	1.00	0.95		1.00	1.00	0.95		1.00	1.00			1.00
Frt	1.00	1.00		1.00	1.00	1.00		1.00	0.86			0.95
Flt Protected	0.95	1.00		0.95	0.95	1.00		0.95	1.00			0.98
Satd. Flow (prot)	1752	3499		1752	902	3498		1787	1609			1767
Flt Permitted	0.95	1.00		0.95	0.95	1.00		0.75	1.00			0.92
Satd. Flow (perm)	1752	3499		1752	902	3498		1407	1609			1646
Volume (vph)	5	2280	25	25	10	1840	25	175	5	125	5	5
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	5	2400	26	26	11	1937	26	184	5	132	5	5
RTOR Reduction (vph)	0	0	0	0	0	1	0	0	64	0	0	4
Lane Group Flow (vph)	5	2426	0	26	11	1962	0	184	73	0	0	11
Heavy Vehicles (%)	3%	3%	3%	3%	100%	3%	3%	1%	1%	1%	1%	1%
Turn Type	Prot		Prot		Split		Perm			Perm		
Protected Phases	1	2!		1	2!	2			8			4
Permitted Phases								8				4
Actuated Green, G (s)	3.0	75.8		3.0	75.8	75.8		16.2	16.2			16.2
Effective Green, g (s)	4.0	76.8		4.0	76.8	76.8		17.2	17.2			17.2
Actuated g/C Ratio	0.04	0.70		0.04	0.70	0.70		0.16	0.16			0.16
Clearance Time (s)	5.0	5.0		5.0	5.0	5.0		5.0	5.0			5.0
Vehicle Extension (s)	3.0	6.0		3.0	6.0	6.0		3.0	3.0			3.0
Lane Grp Cap (vph)	64	2443		64	630	2442		220	252			257
v/s Ratio Prot	0.00	c0.69		c0.01	0.01	0.56			0.05			
v/s Ratio Perm								c0.13				0.01
v/c Ratio	0.08	0.99		0.41	0.02	0.80		0.84	0.29			0.04
Uniform Delay, d1	51.2	16.3		51.8	5.1	11.4		45.0	41.0			39.4
Progression Factor	0.81	0.67		0.89	0.55	0.50		1.00	1.00			1.00
Incremental Delay, d2	0.3	11.4		2.9	0.0	2.0		23.2	0.6			0.1
Delay (s)	42.0	22.3		49.0	2.8	7.7		68.2	41.6			39.5
Level of Service	D	C		D	A	A		E	D			D
Approach Delay (s)		22.4				8.2			56.9			39.5
Approach LOS		C				A			E			D

## Intersection Summary

HCM Average Control Delay	18.8	HCM Level of Service	B
HCM Volume to Capacity ratio	0.94		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	102.7%	ICU Level of Service	G
Analysis Period (min)	15		

! Phase conflict between lane groups.

c Critical Lane Group



Movement	SBR2	NER
Lane Configurations		
Ideal Flow (vphpl)	1900	1900
Total Lost time (s)		4.0
Lane Util. Factor		1.00
Frt		0.86
Flt Protected		1.00
Satd. Flow (prot)		822
Flt Permitted		1.00
Satd. Flow (perm)		822
Volume (vph)	5	10
Peak-hour factor, PHF	0.95	0.95
Adj. Flow (vph)	5	11
RTOR Reduction (vph)	0	0
Lane Group Flow (vph)	0	11
Heavy Vehicles (%)	1%	100%
Turn Type		Over
Protected Phases		2!
Permitted Phases		
Actuated Green, G (s)		75.8
Effective Green, g (s)		76.8
Actuated g/C Ratio		0.70
Clearance Time (s)		5.0
Vehicle Extension (s)		6.0
Lane Grp Cap (vph)		574
v/s Ratio Prot		0.01
v/s Ratio Perm		
v/c Ratio		0.02
Uniform Delay, d1		5.1
Progression Factor		1.00
Incremental Delay, d2		0.1
Delay (s)		5.1
Level of Service		A
Approach Delay (s)		
Approach LOS		
Intersection Summary		

HCM Signalized Intersection Capacity Analysis  
 1606: MD 410 & Veterans Pkwy

6/11/2008

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑		↖	↑↑		↖↖	↑	↖		↑	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0		4.0	4.0		4.0	4.0	4.0		4.0	
Lane Util. Factor		0.95		1.00	0.95		0.97	1.00	1.00		1.00	
Frt		0.92		1.00	1.00		1.00	1.00	0.85		1.00	
Flt Protected		1.00		0.95	1.00		0.95	1.00	1.00		1.00	
Satd. Flow (prot)		3231		1752	3505		3400	950	1568		950	
Flt Permitted		1.00		0.06	1.00		0.95	1.00	1.00		1.00	
Satd. Flow (perm)		3231		112	3505		3400	950	1568		950	
Volume (vph)	0	1105	1200	295	895	0	845	10	290	0	10	0
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	1163	1263	311	942	0	889	11	305	0	11	0
RTOR Reduction (vph)	0	178	0	0	0	0	0	0	177	0	0	0
Lane Group Flow (vph)	0	2248	0	311	942	0	889	11	128	0	11	0
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%	3%	100%	3%	3%	100%	3%
Turn Type				pm+pt			Split		Perm			
Protected Phases		6		5	2		4!	4			4!	
Permitted Phases				2					4			
Actuated Green, G (s)		61.0		77.0	77.0		23.0	23.0	23.0		23.0	
Effective Green, g (s)		62.0		78.0	78.0		24.0	24.0	24.0		24.0	
Actuated g/C Ratio		0.56		0.71	0.71		0.22	0.22	0.22		0.22	
Clearance Time (s)		5.0		5.0	5.0		5.0	5.0	5.0		5.0	
Vehicle Extension (s)		6.0		3.0	6.0		3.0	3.0	3.0		3.0	
Lane Grp Cap (vph)		1821		258	2485		742	207	342		207	
v/s Ratio Prot		c0.70		c0.13	0.27		c0.26	0.01			0.01	
v/s Ratio Perm				0.72					0.08			
v/c Ratio		1.23		1.21	0.38		1.20	0.05	0.38		0.05	
Uniform Delay, d1		24.0		45.7	6.4		43.0	34.0	36.6		34.0	
Progression Factor		0.96		1.00	1.00		1.00	1.00	1.00		1.00	
Incremental Delay, d2		107.3		123.2	0.4		102.0	0.1	0.7		0.1	
Delay (s)		130.4		168.8	6.8		145.0	34.1	37.3		34.1	
Level of Service		F		F	A		F	C	D		C	
Approach Delay (s)		130.4			47.0			116.7			34.1	
Approach LOS		F			D			F			C	
<b>Intersection Summary</b>												
HCM Average Control Delay			105.5			HCM Level of Service			F			
HCM Volume to Capacity ratio			1.18									
Actuated Cycle Length (s)			110.0			Sum of lost time (s)			8.0			
Intersection Capacity Utilization			126.2%			ICU Level of Service			H			
Analysis Period (min)			15									
! Phase conflict between lane groups.												
c Critical Lane Group												

# HCM Signalized Intersection Capacity Analysis

## 12: Piney Branch Rd. & Arliss

6/10/2008



Movement	EBL	EBT	EBR2	WBL	WBT	WBR	NBL	NBT	NBR	SBL2	SBL	SBT
Lane Configurations	↘	↑↑		↘	↑↑			↕		↘	↘	↘
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	2.0	2.0		2.0	2.0			2.0		2.0	2.0	2.0
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00		1.00	1.00	1.00
Frbp, ped/bikes	1.00	1.00		1.00	1.00			1.00		1.00	1.00	1.00
Flpb, ped/bikes	1.00	1.00		0.99	1.00			1.00		1.00	1.00	1.00
Frt	1.00	1.00		1.00	0.96			0.93		1.00	1.00	0.87
Flt Protected	0.95	1.00		0.95	1.00			0.99		0.95	0.95	1.00
Satd. Flow (prot)	1687	3370		1675	3230			1728		1687	902	1551
Flt Permitted	0.08	1.00		0.40	1.00			0.99		0.95	1.00	1.00
Satd. Flow (perm)	138	3370		705	3230			1728		1687	950	1551
Volume (vph)	15	550	5	10	1200	475	5	5	10	175	10	5
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	16	598	5	11	1304	516	5	5	11	190	11	5
RTOR Reduction (vph)	0	0	0	0	19	0	0	0	0	0	0	23
Lane Group Flow (vph)	16	603	0	11	1801	0	0	21	0	190	11	9
Confl. Peds. (#/hr)	4			5			17			10		
Heavy Vehicles (%)	7%	7%	7%	7%	7%	7%	1%	1%	1%	7%	100%	7%
Turn Type	Perm			Perm			Split			Split		Perm
Protected Phases	6			2			3		3	4!		4
Permitted Phases	6			2								4
Actuated Green, G (s)	108.1	108.1		108.1	108.1		5.0			21.9	21.9	21.9
Effective Green, g (s)	111.1	111.1		111.1	111.1		8.0			24.9	24.9	24.9
Actuated g/C Ratio	0.74	0.74		0.74	0.74		0.05			0.17	0.17	0.17
Clearance Time (s)	5.0	5.0		5.0	5.0		5.0			5.0	5.0	5.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0			3.0	3.0	3.0
Lane Grp Cap (vph)	102	2496		522	2392		92			280	158	257
v/s Ratio Prot		0.18			c0.56		c0.01			c0.11		0.01
v/s Ratio Perm	0.12			0.02								0.01
v/c Ratio	0.16	0.24		0.02	0.75		0.23			0.68	0.07	0.04
Uniform Delay, d1	5.7	6.1		5.1	11.4		68.0			58.8	52.8	52.5
Progression Factor	0.82	0.78		0.98	0.66		1.00			1.00	1.00	1.00
Incremental Delay, d2	3.2	0.2		0.1	1.6		1.3			6.4	0.2	0.1
Delay (s)	7.9	5.0		5.1	9.1		69.3			65.2	53.0	52.5
Level of Service	A	A		A	A		E			E	D	D
Approach Delay (s)		5.1			9.0		69.3					62.9
Approach LOS		A			A		E					E

### Intersection Summary

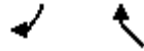
HCM Average Control Delay	13.4	HCM Level of Service	B
HCM Volume to Capacity ratio	0.70		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	6.0
Intersection Capacity Utilization	78.1%	ICU Level of Service	D
Analysis Period (min)	15		

! Phase conflict between lane groups.

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis  
 12: Piney Branch Rd. & Arliss

6/10/2008



Movement	SBR	NWR
Lane Configurations		
Ideal Flow (vphpl)	1900	1900
Total Lost time (s)		2.0
Lane Util. Factor		1.00
Frbp, ped/bikes		1.00
Flpb, ped/bikes		1.00
Frt		0.86
Flt Protected		1.00
Satd. Flow (prot)		822
Flt Permitted		1.00
Satd. Flow (perm)		822
Volume (vph)	25	10
Peak-hour factor, PHF	0.92	0.92
Adj. Flow (vph)	27	11
RTOR Reduction (vph)	0	0
Lane Group Flow (vph)	0	11
Confl. Peds. (#/hr)		
Heavy Vehicles (%)	7%	100%
Turn Type	custom	
Protected Phases	4!	
Permitted Phases		
Actuated Green, G (s)	21.9	
Effective Green, g (s)	24.9	
Actuated g/C Ratio	0.17	
Clearance Time (s)	5.0	
Vehicle Extension (s)	3.0	
Lane Grp Cap (vph)	136	
v/s Ratio Prot	0.01	
v/s Ratio Perm		
v/c Ratio	0.08	
Uniform Delay, d1	52.9	
Progression Factor	1.00	
Incremental Delay, d2	0.3	
Delay (s)	53.1	
Level of Service	D	
Approach Delay (s)		
Approach LOS		
<b>Intersection Summary</b>		

# HCM Signalized Intersection Capacity Analysis

## 13: Piney Branch Rd. & Barron St

6/10/2008



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR2	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	2.0	2.0			2.0			2.0	2.0		2.0	
Lane Util. Factor	1.00	0.95			0.95			1.00	1.00		1.00	
Frt	1.00	0.98			1.00			1.00	0.85		0.97	
Flt Protected	0.95	1.00			1.00			0.95	1.00		0.96	
Satd. Flow (prot)	902	3323			3365			1795	1599		1754	
Flt Permitted	0.95	1.00			0.88			0.74	1.00		0.72	
Satd. Flow (perm)	902	3323			2958			1391	1599		1309	
Volume (vph)	10	675	75	50	1450	10	225	10	75	15	0	5
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	11	734	82	54	1576	11	245	11	82	16	0	5
RTOR Reduction (vph)	0	4	0	0	0	0	0	0	63	0	4	0
Lane Group Flow (vph)	11	812	0	0	1641	0	0	256	19	0	17	0
Heavy Vehicles (%)	100%	7%	7%	7%	7%	7%	1%	1%	1%	1%	1%	1%
Turn Type	Prot			Perm			Perm		Perm	Perm		
Protected Phases	6!	2			6!			8				4
Permitted Phases				6			8		8		4	
Actuated Green, G (s)	107.8	107.8			107.8			31.2	31.2		31.2	
Effective Green, g (s)	111.8	111.8			111.8			34.2	34.2		34.2	
Actuated g/C Ratio	0.75	0.75			0.75			0.23	0.23		0.23	
Clearance Time (s)	6.0	6.0			6.0			5.0	5.0		5.0	
Vehicle Extension (s)	3.0	3.0			3.0			3.0	3.0		3.0	
Lane Grp Cap (vph)	672	2477			2205			317	365		298	
v/s Ratio Prot	0.01	0.24										
v/s Ratio Perm					c0.55			c0.18	0.01		0.01	
v/c Ratio	0.02	0.33			0.74			0.81	0.05		0.06	
Uniform Delay, d1	4.9	6.4			10.9			54.8	45.2		45.3	
Progression Factor	0.60	0.78			1.00			1.00	1.00		1.00	
Incremental Delay, d2	0.0	0.3			2.3			14.0	0.1		0.1	
Delay (s)	3.0	5.3			13.3			68.7	45.3		45.4	
Level of Service	A	A			B			E	D		D	
Approach Delay (s)		5.3			13.3			63.1			45.4	
Approach LOS		A			B			E			D	

### Intersection Summary

HCM Average Control Delay	17.1	HCM Level of Service	B
HCM Volume to Capacity ratio	0.75		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	4.0
Intersection Capacity Utilization	92.5%	ICU Level of Service	F
Analysis Period (min)	15		

! Phase conflict between lane groups.

c Critical Lane Group



Movement	SWR
Lane Configurations	↗
Ideal Flow (vphpl)	1900
Total Lost time (s)	2.0
Lane Util. Factor	1.00
Frt	0.86
Flt Protected	1.00
Satd. Flow (prot)	822
Flt Permitted	1.00
Satd. Flow (perm)	822
Volume (vph)	10
Peak-hour factor, PHF	0.92
Adj. Flow (vph)	11
RTOR Reduction (vph)	0
Lane Group Flow (vph)	11
Heavy Vehicles (%)	100%
Turn Type	Over
Protected Phases	6!
Permitted Phases	
Actuated Green, G (s)	107.8
Effective Green, g (s)	111.8
Actuated g/C Ratio	0.75
Clearance Time (s)	6.0
Vehicle Extension (s)	3.0
Lane Grp Cap (vph)	613
v/s Ratio Prot	0.01
v/s Ratio Perm	
v/c Ratio	0.02
Uniform Delay, d1	4.9
Progression Factor	1.00
Incremental Delay, d2	0.1
Delay (s)	5.0
Level of Service	A
Approach Delay (s)	
Approach LOS	
Intersection Summary	



# HCM Signalized Intersection Capacity Analysis

## 12: Piney Branch Rd. & Arliss

6/10/2008



Movement	EBL	EBT	EBR2	WBL	WBT	WBR	NBL	NBT	NBR	SBL2	SBL	SBT
Lane Configurations	↶	↷		↶	↷			↕		↶	↷	↷
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	2.0	2.0		2.0	2.0			2.0		2.0	2.0	2.0
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00		1.00	1.00	1.00
Frbp, ped/bikes	1.00	1.00		1.00	1.00			1.00		1.00	1.00	1.00
Flpb, ped/bikes	1.00	1.00		1.00	1.00			1.00		1.00	1.00	1.00
Frt	1.00	1.00		1.00	0.97			0.90		1.00	1.00	0.90
Flt Protected	0.95	1.00		0.95	1.00			0.99		0.95	0.95	1.00
Satd. Flow (prot)	1715	3432		1719	3330			1684		1719	902	1629
Flt Permitted	0.16	1.00		0.12	1.00			0.99		0.95	0.95	1.00
Satd. Flow (perm)	285	3432		214	3330			1684		1719	902	1629
Volume (vph)	50	1200	15	25	850	225	5	5	25	425	10	25
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor (vph)	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Adj. Flow (vph)	54	1304	16	27	924	245	5	5	27	462	11	27
RTOR Reduction (vph)	0	1	0	0	21	0	0	0	0	0	0	39
Lane Group Flow (vph)	54	1319	0	27	1148	0	0	37	0	462	11	42
Confl. Peds. (#/hr)	10			12			24			40		
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%	1%	1%	1%	5%	100%	5%
Turn Type	Perm			Perm			Split			Split	Split	
Protected Phases		6			2		3	3		4!	4	4
Permitted Phases	6			2								
Actuated Green, G (s)	42.6	42.6		42.6	42.6			3.4		19.0	19.0	19.0
Effective Green, g (s)	45.6	45.6		45.6	45.6			6.4		22.0	22.0	22.0
Actuated g/C Ratio	0.57	0.57		0.57	0.57			0.08		0.28	0.28	0.28
Clearance Time (s)	5.0	5.0		5.0	5.0			5.0		5.0	5.0	5.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	162	1956		122	1898			135		473	248	448
v/s Ratio Prot		c0.38			0.34			c0.02		c0.27	0.01	0.03
v/s Ratio Perm	0.19			0.13								
v/c Ratio	0.33	0.67		0.22	0.61			0.27		0.98	0.04	0.09
Uniform Delay, d1	9.1	12.0		8.5	11.3			34.6		28.7	21.3	21.6
Progression Factor	0.63	0.58		1.00	1.00			1.00		1.00	1.00	1.00
Incremental Delay, d2	4.6	1.6		4.1	1.4			1.1		35.0	0.1	0.1
Delay (s)	10.3	8.5		12.6	12.7			35.7		63.8	21.4	21.7
Level of Service	B	A		B	B			D		E	C	C
Approach Delay (s)		8.6			12.7			35.7				56.8
Approach LOS		A			B			D				E

### Intersection Summary

HCM Average Control Delay	18.9	HCM Level of Service	B
HCM Volume to Capacity ratio	0.72		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	6.0
Intersection Capacity Utilization	85.1%	ICU Level of Service	E
Analysis Period (min)	15		

! Phase conflict between lane groups.

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis  
 12: Piney Branch Rd. & Arliss

6/10/2008



Movement	SBR	NWR
<b>Lane Configurations</b>		
Ideal Flow (vphpl)	1900	1900
Total Lost time (s)		2.0
Lane Util. Factor		1.00
Frbp, ped/bikes		1.00
Flpb, ped/bikes		1.00
Frt		0.86
Flt Protected		1.00
Satd. Flow (prot)		822
Flt Permitted		1.00
Satd. Flow (perm)		822
Volume (vph)	50	10
Peak-hour factor, PHF	0.92	0.92
Growth Factor (vph)	100%	100%
Adj. Flow (vph)	54	11
RTOR Reduction (vph)	0	0
Lane Group Flow (vph)	0	11
Confl. Peds. (#/hr)		
Heavy Vehicles (%)	5%	100%
Turn Type		Over
Protected Phases		4!
Permitted Phases		
Actuated Green, G (s)		19.0
Effective Green, g (s)		22.0
Actuated g/C Ratio		0.28
Clearance Time (s)		5.0
Vehicle Extension (s)		3.0
Lane Grp Cap (vph)		226
v/s Ratio Prot		0.01
v/s Ratio Perm		
v/c Ratio		0.05
Uniform Delay, d1		21.3
Progression Factor		1.00
Incremental Delay, d2		0.1
Delay (s)		21.4
Level of Service		C
Approach Delay (s)		
Approach LOS		
<b>Intersection Summary</b>		

# HCM Signalized Intersection Capacity Analysis

## 13: Piney Branch Rd. & Barron St

6/10/2008



Movement	EBL	EBT	EBR	WBT	WBR	NBL	NBT	NBR2	SBL	SBT	SBR	SWR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	2.0	2.0		2.0			2.0	2.0		2.0		2.0
Lane Util. Factor	1.00	0.95		0.95			1.00	1.00		1.00		1.00
Frt	1.00	0.98		1.00			1.00	0.85		0.98		0.86
Flt Protected	0.95	1.00		1.00			0.95	1.00		0.96		1.00
Satd. Flow (prot)	902	3378		3426			1794	1599		1782		822
Flt Permitted	0.95	1.00		1.00			0.74	1.00		0.78		1.00
Satd. Flow (perm)	902	3378		3426			1388	1599		1436		822
Volume (vph)	10	1500	200	1075	25	175	5	100	25	5	5	10
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor (vph)	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Adj. Flow (vph)	11	1630	217	1168	27	190	5	109	27	5	5	11
RTOR Reduction (vph)	0	9	0	0	0	0	0	28	0	4	0	0
Lane Group Flow (vph)	11	1838	0	1195	0	0	195	81	0	33	0	11
Heavy Vehicles (%)	100%	5%	5%	5%	5%	1%	1%	1%	1%	1%	1%	100%
Turn Type	Prot			Perm			Perm		Perm		Over	
Protected Phases	6!	2		6!			8	8		4		6!
Permitted Phases						8		8	4			
Actuated Green, G (s)	61.8	61.8		61.8			17.2	17.2		17.2		61.8
Effective Green, g (s)	65.8	65.8		65.8			20.2	20.2		20.2		65.8
Actuated g/C Ratio	0.73	0.73		0.73			0.22	0.22		0.22		0.73
Clearance Time (s)	6.0	6.0		6.0			5.0	5.0		5.0		6.0
Vehicle Extension (s)	3.0	3.0		3.0			3.0	3.0		3.0		3.0
Lane Grp Cap (vph)	659	2470		2505			312	359		322		601
v/s Ratio Prot	0.01	c0.54		0.35								0.01
v/s Ratio Perm							c0.14	0.05		0.02		
v/c Ratio	0.02	0.74		0.48			0.62	0.23		0.10		0.02
Uniform Delay, d1	3.3	7.1		5.0			31.5	28.5		27.7		3.3
Progression Factor	1.00	1.00		1.00			1.00	1.00		1.00		1.00
Incremental Delay, d2	0.0	2.1		0.7			3.9	0.3		0.1		0.1
Delay (s)	3.3	9.2		5.6			35.4	28.8		27.8		3.4
Level of Service	A	A		A			D	C		C		A
Approach Delay (s)		9.2		5.6			33.0			27.8		
Approach LOS		A		A			C			C		

### Intersection Summary

HCM Average Control Delay	10.3	HCM Level of Service	B
HCM Volume to Capacity ratio	0.71		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	4.0
Intersection Capacity Utilization	78.1%	ICU Level of Service	D
Analysis Period (min)	15		



















! Phase conflict between lane groups.

c Critical Lane Group

# HCM Signalized Intersection Capacity Analysis

## 5: Cedar Ave & Wayne Ave.

6/10/2008

												
Movement	NBL	NBT	NBR	SBL	SBT	SBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		2.0		2.0		2.0	2.0	2.0			2.0	
Lane Util. Factor		1.00		1.00		1.00	1.00	1.00			0.95	
Frbp, ped/bikes		0.99		1.00		0.91	1.00	1.00			0.99	
Flpb, ped/bikes		0.99		0.99		1.00	1.00	1.00			1.00	
Frt		0.97		1.00		0.85	1.00	1.00			0.97	
Flt Protected		0.99		0.95		1.00	0.95	1.00			1.00	
Satd. Flow (prot)		1674		1675		1378	1687	1776			3214	
Flt Permitted		0.99		0.35		1.00	0.12	1.00			1.00	
Satd. Flow (perm)		1674		618		1378	209	1776			3214	
Volume (vph)	25	125	50	125	0	100	75	400	0	0	1025	300
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	27	136	54	136	0	109	82	435	0	0	1114	326
RTOR Reduction (vph)	0	11	0	0	0	87	0	0	0	0	0	0
Lane Group Flow (vph)	0	206	0	136	0	22	82	435	0	0	1440	0
Confl. Peds. (#/hr)	36		5	5		36	12		6	6		12
Turn Type	Perm		custom		custom	pm+pt						
Protected Phases		8				5	2				6	
Permitted Phases	8		4		4	2						
Actuated Green, G (s)		21.5		21.5		21.5	88.5	88.5			76.4	
Effective Green, g (s)		24.5		24.5		24.5	91.5	91.5			79.4	
Actuated g/C Ratio		0.20		0.20		0.20	0.76	0.76			0.66	
Clearance Time (s)		5.0		5.0		5.0	5.0	5.0			5.0	
Vehicle Extension (s)		0.2		0.2		0.2	3.0	0.2			3.0	
Lane Grp Cap (vph)		342		126		281	284	1354			2127	
v/s Ratio Prot							0.02	c0.24			c0.45	
v/s Ratio Perm		0.12		c0.22		0.02	0.20					
v/c Ratio		0.60		1.08		0.08	0.29	0.32			0.68	
Uniform Delay, d1		43.3		47.8		38.6	8.4	4.5			12.4	
Progression Factor		1.00		1.00		1.00	2.79	2.86			0.96	
Incremental Delay, d2		2.0		103.0		0.0	0.5	0.6			0.2	
Delay (s)		45.4		150.8		38.7	23.9	13.4			12.1	
Level of Service		D		F		D	C	B			B	
Approach Delay (s)		45.4			100.9			15.0			12.1	
Approach LOS		D			F			B			B	
<b>Intersection Summary</b>												
HCM Average Control Delay			24.7				HCM Level of Service				C	
HCM Volume to Capacity ratio			0.72									
Actuated Cycle Length (s)			120.0				Sum of lost time (s)				6.0	
Intersection Capacity Utilization			78.7%				ICU Level of Service				D	
Analysis Period (min)			15									
c Critical Lane Group												

# HCM Signalized Intersection Capacity Analysis

## 6: Wayne Ave. & Dale Dr

6/10/2008



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frbp, ped/bikes	1.00	0.99		1.00	0.98		1.00	0.99		1.00	0.97	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.99		1.00	0.99		1.00	0.98		1.00	0.94	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1687	1741		1687	1723		1687	1721		1687	1615	
Flt Permitted	0.95	1.00		0.95	1.00		0.16	1.00		0.16	1.00	
Satd. Flow (perm)	1687	1741		1687	1723		284	1721		277	1615	
Volume (vph)	75	325	25	100	1075	100	50	350	50	100	275	175
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	82	353	27	109	1168	109	54	380	54	109	299	190
RTOR Reduction (vph)	0	2	0	0	0	0	0	4	0	0	19	0
Lane Group Flow (vph)	82	378	0	109	1277	0	54	430	0	109	470	0
Confl. Peds. (#/hr)	52		30	30		52	41		25	25		41
Turn Type	Prot			Prot			pm+pt			pm+pt		
Protected Phases	1	6		5	2		3	8		7	4	
Permitted Phases							8			4		
Actuated Green, G (s)	3.0	64.0		11.0	72.0		24.4	22.0		25.6	22.6	
Effective Green, g (s)	6.0	67.0		14.0	75.0		30.4	25.0		31.6	25.6	
Actuated g/C Ratio	0.05	0.56		0.12	0.62		0.25	0.21		0.26	0.21	
Clearance Time (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	84	972		197	1077		135	359		143	345	
v/s Ratio Prot	c0.05	0.22		0.06	c0.74		0.02	0.25		c0.04	c0.29	
v/s Ratio Perm							0.08			0.16		
v/c Ratio	0.98	0.39		0.55	1.19		0.40	1.20		0.76	1.36	
Uniform Delay, d1	56.9	14.9		50.0	22.5		37.2	47.5		57.9	47.2	
Progression Factor	1.20	0.42		0.80	0.54		1.00	1.00		1.00	1.00	
Incremental Delay, d2	86.7	1.1		0.3	84.5		1.9	113.0		21.0	180.9	
Delay (s)	155.2	7.5		40.1	96.6		39.1	160.5		78.9	228.1	
Level of Service	F	A		D	F		D	F		E	F	
Approach Delay (s)		33.7			92.2			147.0			200.9	
Approach LOS		C			F			F			F	

### Intersection Summary

HCM Average Control Delay	114.2	HCM Level of Service	F
HCM Volume to Capacity ratio	1.18		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	110.3%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

# HCM Signalized Intersection Capacity Analysis

## 7: Wayne Ave. & Mansfield

6/10/2008



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↻		↻	↻			↻				
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		2.0		2.0	2.0			2.0				
Lane Util. Factor		1.00		1.00	1.00			1.00				
Frbp, ped/bikes		1.00		1.00	1.00			1.00				
Flpb, ped/bikes		1.00		0.99	1.00			1.00				
Frt		1.00		1.00	1.00			0.93				
Flt Protected		1.00		0.95	1.00			0.98				
Satd. Flow (prot)		1772		1674	1776			1615				
Flt Permitted		1.00		0.46	1.00			0.98				
Satd. Flow (perm)		1772		814	1776			1615				
Volume (vph)	0	400	5	10	1325	0	5	0	5	0	0	0
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	435	5	11	1440	0	5	0	5	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	4	0	0	0	0
Lane Group Flow (vph)	0	440	0	11	1440	0	0	6	0	0	0	0
Conf. Peds. (#/hr)	1		22	22			11			5		
Turn Type				Perm			Split					
Protected Phases		2			6		4	4				
Permitted Phases				6								
Actuated Green, G (s)		85.0		85.0	85.0			24.0				
Effective Green, g (s)		89.0		89.0	89.0			27.0				
Actuated g/C Ratio		0.74		0.74	0.74			0.22				
Clearance Time (s)		6.0		6.0	6.0			5.0				
Vehicle Extension (s)		0.2		3.0	3.0			0.2				
Lane Grp Cap (vph)		1314		604	1317			363				
v/s Ratio Prot		0.25			c0.81			c0.00				
v/s Ratio Perm				0.01								
v/c Ratio		0.33		0.02	1.09			0.02				
Uniform Delay, d1		5.3		4.1	15.5			36.2				
Progression Factor		0.94		0.47	0.31			1.00				
Incremental Delay, d2		0.6		0.0	43.4			0.0				
Delay (s)		5.6		1.9	48.2			36.2				
Level of Service		A		A	D			D				
Approach Delay (s)		5.6			47.9			36.2			0.0	
Approach LOS		A			D			D			A	
<b>Intersection Summary</b>												
HCM Average Control Delay			38.0			HCM Level of Service					D	
HCM Volume to Capacity ratio			0.84									
Actuated Cycle Length (s)			120.0			Sum of lost time (s)				4.0		
Intersection Capacity Utilization			79.7%			ICU Level of Service					D	
Analysis Period (min)			15									

c Critical Lane Group

# HCM Signalized Intersection Capacity Analysis

## 8: Wayne Ave. & Sligo Creek Pkwy

6/10/2008



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	2.0	2.0		2.0	2.0		2.0	2.0			2.0	2.0
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00			1.00	1.00
Frbp, ped/bikes	1.00	0.99		1.00	1.00		1.00	1.00			1.00	1.00
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00			1.00	1.00
Frt	1.00	0.98		1.00	0.99		1.00	0.99			1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00			0.99	1.00
Satd. Flow (prot)	1687	1722		1687	1757		1687	1758			1763	1509
Flt Permitted	0.95	1.00		0.95	1.00		0.17	1.00			0.59	1.00
Satd. Flow (perm)	1687	1722		1687	1757		308	1758			1055	1509
Volume (vph)	50	275	50	20	975	50	175	350	20	50	350	175
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	54	299	54	22	1060	54	190	380	22	54	380	190
RTOR Reduction (vph)	0	6	0	0	1	0	0	2	0	0	0	0
Lane Group Flow (vph)	54	348	0	22	1113	0	190	400	0	0	434	190
Conf. Peds. (#/hr)	14		8	8		14	2		11	11		2
Turn Type	Prot		Prot		pm+pt		Perm		Prot			
Protected Phases	5	2	1	6	7	4	8	8				
Permitted Phases					4		8					
Actuated Green, G (s)	2.4	62.0	2.4	62.0	40.6	40.6	32.6	32.6				
Effective Green, g (s)	5.4	65.0	5.4	65.0	43.6	43.6	35.6	35.6				
Actuated g/C Ratio	0.05	0.54	0.05	0.54	0.36	0.36	0.30	0.30				
Clearance Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0				
Vehicle Extension (s)	3.0	0.2	3.0	0.2	3.0	3.0	0.2	0.2				
Lane Grp Cap (vph)	76	933	76	952	181	639	313	448				
v/s Ratio Prot	c0.03	0.20	0.01	c0.63	c0.05	0.23		0.13				
v/s Ratio Perm					0.33		c0.41					
v/c Ratio	0.71	0.37	0.29	1.17	1.05	0.63	1.39	0.42				
Uniform Delay, d1	56.5	15.8	55.4	27.5	49.4	31.5	42.2	34.0				
Progression Factor	0.86	1.26	0.97	0.92	1.00	1.00	1.00	1.00				
Incremental Delay, d2	25.8	1.1	1.9	86.2	80.6	1.9	192.6	0.2				
Delay (s)	74.3	21.0	55.5	111.4	130.0	33.4	234.8	34.2				
Level of Service	E	C	E	F	F	C	F	C				
Approach Delay (s)		28.1		110.3		64.4		173.7				
Approach LOS		C		F		E		F				

### Intersection Summary



















HCM Average Control Delay	102.7	HCM Level of Service	F
HCM Volume to Capacity ratio	1.17		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	6.0
Intersection Capacity Utilization	105.3%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group

# HCM Signalized Intersection Capacity Analysis

## 5: Cedar Ave & Wayne Ave.

6/10/2008

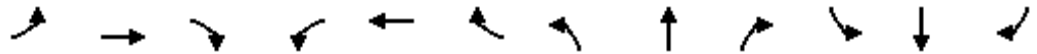
												
Movement	NBL	NBT	NBR	SBL	SBT	SBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		2.0		2.0		2.0	2.0	2.0			2.0	
Lane Util. Factor		1.00		1.00		1.00	1.00	1.00			0.95	
Frbp, ped/bikes		0.99		1.00		1.00	1.00	1.00			1.00	
Flpb, ped/bikes		1.00		1.00		1.00	1.00	1.00			1.00	
Frt		0.96		1.00		0.85	1.00	1.00			0.97	
Flt Protected		0.99		0.95		1.00	0.95	1.00			1.00	
Satd. Flow (prot)		1711		1719		1538	1719	1810			3316	
Flt Permitted		0.99		0.37		1.00	0.14	1.00			1.00	
Satd. Flow (perm)		1711		676		1538	256	1810			3316	
Volume (vph)	75	225	125	250	0	200	250	750	0	0	675	175
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	82	245	136	272	0	217	272	815	0	0	734	190
RTOR Reduction (vph)	0	14	0	0	0	128	0	0	0	0	0	0
Lane Group Flow (vph)	0	449	0	272	0	89	272	815	0	0	924	0
Confl. Peds. (#/hr)			5	5			1					1
Turn Type	Perm		custom		custom	pm+pt						
Protected Phases		8				5	2				6	
Permitted Phases	8		4		4	2						
Actuated Green, G (s)		46.2		46.2		46.2	63.8	63.8			44.5	
Effective Green, g (s)		49.2		49.2		49.2	66.8	66.8			47.5	
Actuated g/C Ratio		0.41		0.41		0.41	0.56	0.56			0.40	
Clearance Time (s)		5.0		5.0		5.0	5.0	5.0			5.0	
Vehicle Extension (s)		3.0		3.0		3.0	3.0	0.2			0.2	
Lane Grp Cap (vph)		702		277		631	353	1008			1313	
v/s Ratio Prot							0.11	c0.45			0.28	
v/s Ratio Perm		0.26		c0.40		0.06	0.32					
v/c Ratio		0.64		0.98		0.14	0.77	0.81			0.70	
Uniform Delay, d1		28.3		35.0		22.2	21.4	21.4			30.4	
Progression Factor		1.00		1.00		1.00	0.67	0.65			0.63	
Incremental Delay, d2		2.0		48.8		0.1	6.3	4.4			1.3	
Delay (s)		30.3		83.8		22.3	20.5	18.4			20.3	
Level of Service		C		F		C	C	B			C	
Approach Delay (s)		30.3			56.5			18.9			20.3	
Approach LOS		C			E			B			C	
<b>Intersection Summary</b>												
HCM Average Control Delay			27.3		HCM Level of Service						C	
HCM Volume to Capacity ratio			0.87									
Actuated Cycle Length (s)			120.0		Sum of lost time (s)					4.0		
Intersection Capacity Utilization			89.1%		ICU Level of Service					E		
Analysis Period (min)			15									
c Critical Lane Group												



# HCM Signalized Intersection Capacity Analysis

## 6: Wayne Ave. & Dale Dr

6/10/2008



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗		↖	↗		↖	↗		↖	↗	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frbp, ped/bikes	1.00	1.00		1.00	1.00		1.00	0.99		1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.98		1.00	0.97		1.00	0.95		1.00	0.98	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1719	1768		1719	1752		1719	1708		1719	1764	
Flt Permitted	0.95	1.00		0.95	1.00		0.18	1.00		0.18	1.00	
Satd. Flow (perm)	1719	1768		1719	1752		332	1708		332	1764	
Volume (vph)	200	825	150	125	650	175	75	350	150	200	425	75
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	217	897	163	136	707	190	82	380	163	217	462	82
RTOR Reduction (vph)	0	6	0	0	0	0	0	13	0	0	5	0
Lane Group Flow (vph)	217	1054	0	136	897	0	82	530	0	217	539	0
Conf. Peds. (#/hr)							2		6	6		2
Turn Type	Prot		Prot		pm+pt			pm+pt				
Protected Phases	1	6	5	2	3	8	7	4				
Permitted Phases	8						4					
Actuated Green, G (s)	11.0	64.2	5.0	58.2	24.0	24.0	28.6	28.6				
Effective Green, g (s)	14.0	67.2	8.0	61.2	27.0	27.0	31.6	31.6				
Actuated g/C Ratio	0.12	0.56	0.07	0.51	0.22	0.22	0.26	0.26				
Clearance Time (s)	5.0	5.0	5.0	5.0	4.0	5.0	5.0	5.0				
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0				
Lane Grp Cap (vph)	201	990	115	894	135	384	201	465				
v/s Ratio Prot	c0.13	c0.60	0.08	c0.51	0.03	c0.31	0.09	c0.31				
v/s Ratio Perm	0.11						0.20					
v/c Ratio	1.08	1.06	1.18	1.00	0.61	1.38	1.08	1.16				
Uniform Delay, d1	53.0	26.4	56.0	29.4	39.8	46.5	52.7	44.2				
Progression Factor	0.90	1.22	0.72	0.43	1.00	1.00	1.00	1.00				
Incremental Delay, d2	73.5	42.3	131.9	27.5	7.5	186.5	86.3	93.1				
Delay (s)	121.3	74.5	172.2	40.1	47.3	233.0	139.0	137.3				
Level of Service	F	E	F	D	D	F	F	F				
Approach Delay (s)	82.5		57.5			208.6			137.8			
Approach LOS	F		E			F			F			

### Intersection Summary

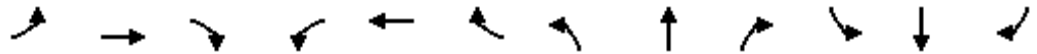
HCM Average Control Delay	108.2	HCM Level of Service	F
HCM Volume to Capacity ratio	1.13		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	4.0
Intersection Capacity Utilization	111.6%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

# HCM Signalized Intersection Capacity Analysis

## 7: Wayne Ave. & Mansfield

6/10/2008



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↻		↻	↻			↻				
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		2.0		2.0	2.0			2.0				
Lane Util. Factor		1.00		1.00	1.00			1.00				
Frbp, ped/bikes		1.00		1.00	1.00			0.99				
Flpb, ped/bikes		1.00		1.00	1.00			1.00				
Frt		1.00		1.00	1.00			0.93				
Flt Protected		1.00		0.95	1.00			0.98				
Satd. Flow (prot)		1804		1719	1810			1630				
Flt Permitted		1.00		0.04	1.00			0.98				
Satd. Flow (perm)		1804		81	1810			1630				
Volume (vph)	0	1250	25	15	850	0	5	0	5	0	0	0
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	1359	27	16	924	0	5	0	5	0	0	0
RTOR Reduction (vph)	0	1	0	0	0	0	0	4	0	0	0	0
Lane Group Flow (vph)	0	1385	0	16	924	0	0	6	0	0	0	0
Conf. Peds. (#/hr)			2	2					5			
Turn Type				Perm				Perm				
Protected Phases		6			2				4			
Permitted Phases				2				4				
Actuated Green, G (s)		85.0		85.0	85.0			24.0				
Effective Green, g (s)		89.0		89.0	89.0			27.0				
Actuated g/C Ratio		0.74		0.74	0.74			0.22				
Clearance Time (s)		6.0		6.0	6.0			5.0				
Vehicle Extension (s)		0.2		0.2	0.2			3.0				
Lane Grp Cap (vph)		1338		60	1342			367				
v/s Ratio Prot		c0.77			0.51							
v/s Ratio Perm				0.20				0.00				
v/c Ratio		1.04		0.27	0.69			0.02				
Uniform Delay, d1		15.5		5.0	8.2			36.2				
Progression Factor		0.81		0.32	0.48			1.00				
Incremental Delay, d2		18.9		6.2	1.7			0.0				
Delay (s)		31.6		7.8	5.6			36.2				
Level of Service		C		A	A			D				
Approach Delay (s)		31.6			5.7			36.2			0.0	
Approach LOS		C			A			D			A	

### Intersection Summary

HCM Average Control Delay	21.2	HCM Level of Service	C
HCM Volume to Capacity ratio	0.79		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	4.0
Intersection Capacity Utilization	94.0%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

# HCM Signalized Intersection Capacity Analysis

## 8: Wayne Ave. & Sligo Creek Pkwy

6/10/2008



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗		↖	↗		↖	↗			↖	↗
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	2.0	2.0		2.0	2.0		2.0	2.0			2.0	2.0
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00			1.00	1.00
Frbp, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00			1.00	1.00
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00			1.00	1.00
Frt	1.00	0.98		1.00	0.99		1.00	0.99			1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00			0.99	1.00
Satd. Flow (prot)	1719	1769		1719	1798		1719	1790			1788	1538
Flt Permitted	0.95	1.00		0.95	1.00		0.20	1.00			0.59	1.00
Satd. Flow (perm)	1719	1769		1719	1798		357	1790			1064	1538
Volume (vph)	300	850	150	25	575	25	100	325	25	100	350	175
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	326	924	163	27	625	27	109	353	27	109	380	190
RTOR Reduction (vph)	0	5	0	0	1	0	0	2	0	0	0	0
Lane Group Flow (vph)	326	1082	0	27	651	0	109	378	0	0	489	190
Confl. Peds. (#/hr)	11			10			10			7		
Turn Type	Prot			Prot			pm+pt			Perm		Prot
Protected Phases	5	2		1	6		7	4			8	8
Permitted Phases							4			8		
Actuated Green, G (s)	18.0	54.6		2.4	39.0		48.0	48.0			40.0	40.0
Effective Green, g (s)	21.0	57.6		5.4	42.0		51.0	51.0			43.0	43.0
Actuated g/C Ratio	0.18	0.48		0.05	0.35		0.42	0.42			0.36	0.36
Clearance Time (s)	5.0	5.0		5.0	5.0		5.0	5.0			5.0	5.0
Vehicle Extension (s)	3.0	0.2		3.0	0.2		3.0	3.0			3.0	3.0
Lane Grp Cap (vph)	301	849		77	629		220	761			381	551
v/s Ratio Prot	0.19	c0.61		0.02	c0.36		0.02	c0.21				0.12
v/s Ratio Perm							0.19				c0.46	
v/c Ratio	1.08	1.27		0.35	1.03		0.50	0.50			1.28	0.34
Uniform Delay, d1	49.5	31.2		55.6	39.0		43.6	25.1			38.5	28.2
Progression Factor	0.84	0.75		1.15	0.89		1.00	1.00			1.00	1.00
Incremental Delay, d2	50.7	125.6		2.0	39.5		1.8	0.5			146.2	0.4
Delay (s)	92.4	149.0		66.1	74.3		45.3	25.7			184.7	28.6
Level of Service	F	F		E	E		D	C			F	C
Approach Delay (s)		136.0			74.0			30.0			141.0	
Approach LOS		F			E			C			F	

### Intersection Summary

HCM Average Control Delay	108.2	HCM Level of Service	F
HCM Volume to Capacity ratio	1.20		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	6.0
Intersection Capacity Utilization	113.1%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group













HCM Signalized Intersection Capacity Analysis  
801: Campus Drive & Adelphi Rd.

Purple Line (UMD)  
7/30/2008

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations		↑↑	↑	↘	↑	↗	↘	↑↑↑	↗	↘↘	↑↑		
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		
Lane Util. Factor		0.95	1.00	1.00	1.00	1.00	1.00	0.91	1.00	0.97	0.95		
Frbp, ped/bikes		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		
Flpb, ped/bikes		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		
Frt		1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00		
Flt Protected		1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		
Satd. Flow (prot)		3539	1583	1770	1863	1583	1770	5085	1583	3433	3539		
Flt Permitted		1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		
Satd. Flow (perm)		3539	1583	1770	1863	1583	1770	5085	1583	3433	3539		
Volume (vph)	0	192	207	95	233	65	208	888	331	357	1225	0	
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	
Adj. Flow (vph)	0	213	230	106	259	72	231	987	368	397	1361	0	
RTOR Reduction (vph)	0	0	169	0	0	44	0	0	275	0	0	0	
Lane Group Flow (vph)	0	213	61	106	259	28	231	987	93	397	1361	0	
Confl. Peds. (#/hr)	49			3			2						
Turn Type			Perm	Split		Perm	Prot		Perm	Prot			
Protected Phases		2		6	6		3	8		1 7	1 4		
Permitted Phases			2			6			8				
Actuated Green, G (s)		62.6	62.6	30.0	30.0	30.0	30.0	60.0	60.0	72.4	103.4		
Effective Green, g (s)		65.6	65.6	33.0	33.0	33.0	32.0	63.0	63.0	74.4	105.4		
Actuated g/C Ratio		0.26	0.26	0.13	0.13	0.13	0.13	0.25	0.25	0.30	0.43		
Clearance Time (s)		6.0	6.0	6.0	6.0	6.0	5.0	6.0	6.0				
Vehicle Extension (s)		4.0	4.0	3.0	3.0	3.0	3.0	3.5	3.5				
Lane Grp Cap (vph)		936	419	236	248	211	228	1292	402	1030	1504		
v/s Ratio Prot		c0.06		0.06	c0.14		c0.13	0.19		0.12	c0.38		
v/s Ratio Perm			0.04			0.02			0.06				
v/c Ratio		0.23	0.15	0.45	1.04	0.13	1.01	0.76	0.23	0.39	0.90		
Uniform Delay, d1		71.4	69.8	99.1	107.5	94.9	108.0	85.6	73.3	68.7	66.6		
Progression Factor		0.56	0.66	1.00	1.00	1.00	1.00	1.00	1.00	0.40	0.36		
Incremental Delay, d2		0.1	0.1	1.4	69.2	0.3	63.0	2.8	0.4	0.2	6.3		
Delay (s)		40.3	46.2	100.5	176.7	95.1	171.0	88.4	73.7	27.7	30.0		
Level of Service		D	D	F	F	F	F	F	E	C	C		
Approach Delay (s)		43.3			144.8			97.0			29.5		
Approach LOS		D			F			F			C		
Intersection Summary													
HCM Average Control Delay			68.2		HCM Level of Service					E			
HCM Volume to Capacity ratio			0.75										
Actuated Cycle Length (s)			248.0		Sum of lost time (s)					12.0			
Intersection Capacity Utilization			84.8%		ICU Level of Service					E			
Analysis Period (min)			15										
c Critical Lane Group													

HCM Unsignalized Intersection Capacity Analysis  
 810: Campus Drive & Regents Drive

Purple Line (UMD)  
 7/30/2008

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Right Turn Channelized			Yes			Yes			Yes			Yes
Volume (veh/h)	9	54	19	52	86	277	4	77	39	93	76	11
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	10	59	21	57	93	301	4	84	42	101	83	12
Approach Volume (veh/h)		68			150			88			184	
Crossing Volume (veh/h)		240			98			170			154	
High Capacity (veh/h)		1147			1283			1213			1227	
High v/c (veh/h)		0.06			0.12			0.07			0.15	
Low Capacity (veh/h)		946			1069			1005			1018	
Low v/c (veh/h)		0.07			0.14			0.09			0.18	
Intersection Summary												
Maximum v/c High			0.15									
Maximum v/c Low			0.18									
Intersection Capacity Utilization			67.2%			ICU Level of Service						C

HCM Signalized Intersection Capacity Analysis  
812: Campus Drive & US 1

Purple Line (UMD)  
11/5/2007

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Util. Factor	0.95	0.95	1.00	0.91	0.91	0.88	0.97	0.95	1.00	0.97	0.95	1.00
Flt Protected	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	1.00
Satd. Flow (prot)	0.95	1.00	1.00	0.95	0.98	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Flt Permitted	1681	1770	1583	1610	3327	2787	3433	3539	1583	3433	3539	1583
Satd. Flow (perm)	0.95	1.00	1.00	0.95	0.98	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Volume (vph)	1681	1770	1583	1610	3327	2787	3433	3539	1583	3433	3539	1583
Peak-hour factor, PHF	58	142	72	677	492	490	169	779	148	507	1718	496
Adj. Flow (vph)	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
RTOR Reduction (vph)	64	158	80	752	547	544	188	866	164	563	1909	551
Lane Group Flow (vph)	0	0	71	0	0	174	0	0	94	0	0	134
Turn Type	64	158	9	418	881	370	188	866	70	563	1909	417
Protected Phases	Split		Perm	Split		pt+ov	Prot		Perm	Prot		Perm
Permitted Phases	4	4		3	3	3.5	1	6		5	2	
Actuated Green, G (s)			4					6			2	
Effective Green, g (s)	14.9	14.9	14.9	30.5	30.5	55.6	13.6	57.5	57.5	25.1	69.0	69.0
Actuated g/C Ratio	17.4	17.4	17.4	33.0	33.0	60.1	15.6	60.5	60.5	27.1	72.0	72.0
Clearance Time (s)	0.12	0.12	0.12	0.22	0.22	0.40	0.10	0.40	0.40	0.18	0.48	0.48
Vehicle Extension (s)	5.5	5.5	5.5	5.5	5.5		5.0	6.0	6.0	5.0	6.0	6.0
Lane Grp Cap (vph)	3.0	3.0	3.0	3.0	3.0		3.0	5.0	5.0	3.0	5.0	5.0
v/s Ratio Prot	195	205	184	354	732	1117	357	1427	638	620	1699	760
v/s Ratio Perm	0.04	c0.09		0.26	c0.26	0.13	0.05	0.24		c0.16	c0.54	
v/c Ratio			0.01						0.04			0.26
Uniform Delay, d1	0.33	0.77	0.05	1.18	1.20	0.33	0.53	0.61	0.11	0.91	1.12	0.55
Progression Factor	60.9	64.4	59.0	58.5	58.5	31.1	63.7	35.4	27.9	60.2	39.0	27.5
Incremental Delay, d2	1.00	1.00	1.00	1.00	1.00	1.00	1.13	0.94	1.56	1.16	0.77	0.50
Delay (s)	1.0	16.3	0.1	106.7	104.4	0.2	1.3	1.7	0.3	2.1	56.5	0.3
Level of Service	61.9	80.6	59.1	165.2	162.9	31.2	73.3	35.1	43.9	71.7	86.4	14.0
Approach Delay (s)	E	F	E	F	F	C	E	D	D	E	F	B
Approach LOS		71.0			124.5			42.1			70.5	
		E			F			D			E	
Intersection Summary												
HCM Average Control Delay			80.7									
HCM Volume to Capacity ratio			1.08									
Actuated Cycle Length (s)			150.0									
Intersection Capacity Utilization			95.3%									
Analysis Period (min)			15									
c Critical Lane Group												
HCM Level of Service									F			
Sum of lost time (s)									12.0			
ICU Level of Service									F			





















HCM Signalized Intersection Capacity Analysis  
 200: E. Campus Main Ent & US 1

Purple Line (UMD)  
 11/5/2007

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0		4.0	4.0
Lane Util. Factor	1.00	1.00	0.95		1.00	0.95
Frt	1.00	0.85	0.99		1.00	1.00
Flt Protected	0.95	1.00	1.00		0.95	1.00
Satd. Flow (prot)	1770	1583	3513		1770	3539
Flt Permitted	0.95	1.00	1.00		0.95	1.00
Satd. Flow (perm)	1770	1583	3513		1770	3539
Volume (vph)	76	72	1307	68	116	2480
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	83	78	1421	74	126	2696
RTOR Reduction (vph)	0	71	2	0	0	0
Lane Group Flow (vph)	83	7	1493	0	126	2696
Turn Type		Perm			Prot	
Protected Phases	8		2		1	6
Permitted Phases		8				
Actuated Green, G (s)	12.0	12.0	106.5		15.0	126.5
Effective Green, g (s)	13.5	13.5	108.5		16.0	128.5
Actuated g/C Ratio	0.09	0.09	0.72		0.11	0.86
Clearance Time (s)	5.5	5.5	6.0		5.0	6.0
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	159	142	2541		189	3032
v/s Ratio Prot	c0.05		0.42		0.07	c0.76
v/s Ratio Perm		0.00				
v/c Ratio	0.52	0.05	0.59		0.67	0.89
Uniform Delay, d1	65.2	62.4	10.0		64.4	6.5
Progression Factor	1.00	1.00	1.46		0.83	2.45
Incremental Delay, d2	3.1	0.1	0.9		0.8	0.4
Delay (s)	68.2	62.5	15.5		54.3	16.3
Level of Service	E	E	B		D	B
Approach Delay (s)	65.5		15.5			18.0
Approach LOS	E		B			B
<b>Intersection Summary</b>						
HCM Average Control Delay			18.8		HCM Level of Service	B
HCM Volume to Capacity ratio			0.85			
Actuated Cycle Length (s)			150.0		Sum of lost time (s)	8.0
Intersection Capacity Utilization			79.4%		ICU Level of Service	D
Analysis Period (min)			15			
c Critical Lane Group						

HCM Signalized Intersection Capacity Analysis  
 212: Rossborough Rd. & US 1

Purple Line (UMD)  
 7/30/2008

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0			3.0	3.0	3.0	3.0		3.0	3.0	
Lane Util. Factor	1.00	1.00			1.00	1.00	1.00	0.95		1.00	0.95	
Frt	1.00	0.93			1.00	0.85	1.00	1.00		1.00	0.98	
Flt Protected	0.95	1.00			0.96	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1723			1783	1583	1770	3531		1770	3474	
Flt Permitted	0.73	1.00			0.76	1.00	0.06	1.00		0.22	1.00	
Satd. Flow (perm)	1352	1723			1410	1583	120	3531		412	3474	
Volume (vph)	16	2	2	32	4	293	8	990	16	157	1680	236
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	18	2	2	36	4	326	9	1100	18	174	1867	262
RTOR Reduction (vph)	0	2	0	0	0	292	0	0	0	0	3	0
Lane Group Flow (vph)	18	2	0	0	40	34	9	1118	0	174	2126	0
Turn Type	Perm			Perm			Perm pm+pt			pm+pt		
Protected Phases		4			8		1	6		5	2	
Permitted Phases	4			8		8	6			2		
Actuated Green, G (s)	11.1	11.1			11.1	11.1	116.8	114.5		127.4	120.6	
Effective Green, g (s)	13.6	13.6			13.6	13.6	121.3	117.5		130.4	123.6	
Actuated g/C Ratio	0.09	0.09			0.09	0.09	0.81	0.78		0.87	0.82	
Clearance Time (s)	5.5	5.5			5.5	5.5	4.5	6.0		4.5	6.0	
Vehicle Extension (s)	3.0	3.0			3.0	3.0	3.0	5.0		3.0	5.0	
Lane Grp Cap (vph)	123	156			128	144	139	2766		448	2863	
v/s Ratio Prot		0.00					0.00	0.32		c0.03	c0.61	
v/s Ratio Perm	0.01				c0.03	0.02	0.05			0.31		
v/c Ratio	0.15	0.01			0.31	0.24	0.06	0.40		0.39	0.74	
Uniform Delay, d1	62.9	62.1			63.8	63.4	6.9	5.2		2.7	6.0	
Progression Factor	1.00	1.00			1.00	1.00	0.95	0.52		1.26	1.73	
Incremental Delay, d2	0.6	0.0			1.4	0.9	0.2	0.4		0.3	0.8	
Delay (s)	63.4	62.1			65.2	64.2	6.8	3.1		3.7	11.2	
Level of Service	E	E			E	E	A	A		A	B	
Approach Delay (s)		63.2			64.3			3.1			10.6	
Approach LOS		E			E			A			B	
Intersection Summary												
HCM Average Control Delay			13.9				HCM Level of Service			B		
HCM Volume to Capacity ratio			0.69									
Actuated Cycle Length (s)			150.0				Sum of lost time (s)			9.0		
Intersection Capacity Utilization			76.8%				ICU Level of Service			D		
Analysis Period (min)			15									
c Critical Lane Group												



# HCM Signalized Intersection Capacity Analysis

## 813: Paint Branch Pkwy & Fire Academy

Purple Line (UMD)  
11/5/2007

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	2.0	2.0		2.0	2.0			2.0			2.0	
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00			1.00	
Flt Protected	1.00	0.97		1.00	0.99			0.98			0.92	
Satd. Flow (prot)	1770	3442		1770	3504			1762			1695	
Flt Permitted	0.13	1.00		0.43	1.00			0.87			0.95	
Satd. Flow (perm)	236	3442		794	3504			1580			1629	
Volume (vph)	220	421	94	50	1245	88	25	6	6	13	6	25
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	220	421	94	50	1245	88	25	6	6	13	6	25
RTOR Reduction (vph)	0	24	0	0	6	0	0	4	0	0	16	0
Lane Group Flow (vph)	220	491	0	50	1327	0	0	33	0	0	28	0
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	45.0	45.0		45.0	45.0			25.0			25.0	
Effective Green, g (s)	48.0	48.0		48.0	48.0			28.0			28.0	
Actuated g/C Ratio	0.60	0.60		0.60	0.60			0.35			0.35	
Clearance Time (s)	5.0	5.0		5.0	5.0			5.0			5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0			3.0	
Lane Grp Cap (vph)	142	2065		476	2102			553			570	
v/s Ratio Prot		0.14			0.38							
v/s Ratio Perm	c0.93			0.06				c0.02			0.02	
v/c Ratio	1.55	0.24		0.11	0.63			0.06			0.05	
Uniform Delay, d1	16.0	7.5		6.8	10.3			17.3			17.2	
Progression Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Incremental Delay, d2	278.9	0.1		0.1	0.6			0.2			0.2	
Delay (s)	294.9	7.5		6.9	10.9			17.5			17.4	
Level of Service	F	A		A	B			B			B	
Approach Delay (s)		93.5			10.8			17.5			17.4	
Approach LOS		F			B			B			B	
Intersection Summary												
HCM Average Control Delay			38.7			HCM Level of Service				D		
HCM Volume to Capacity ratio			0.99									
Actuated Cycle Length (s)			80.0			Sum of lost time (s)				4.0		
Intersection Capacity Utilization		63.7%				ICU Level of Service				B		
Analysis Period (min)			15									
c Critical Lane Group												







HCM Signalized Intersection Capacity Analysis  
 814: Paint Branch Pkwy & Metro Parking Garage

Purple Line (UMD)  
 7/30/2008

	→	↘	↙	←	↖	↗
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑	↑	↓	↑↑	↓	↑
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0			4.0		
Lane Util. Factor	0.95			0.95		
Frt	1.00			1.00		
Flt Protected	1.00			1.00		
Satd. Flow (prot)	3539			3539		
Flt Permitted	1.00			1.00		
Satd. Flow (perm)	3539			3539		
Volume (vph)	440	0	0	1383	0	0
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	478	0	0	1503	0	0
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	478	0	0	1503	0	0
Turn Type		Perm	pm+pt			pm+ov
Protected Phases	2		1	6	8	1
Permitted Phases		2	6			8
Actuated Green, G (s)	40.9			40.9		
Effective Green, g (s)	40.9			40.9		
Actuated g/C Ratio	0.52			0.52		
Clearance Time (s)	4.0			4.0		
Vehicle Extension (s)	3.0			3.0		
Lane Grp Cap (vph)	1828			1828		
v/s Ratio Prot	0.14			c0.42		
v/s Ratio Perm						
v/c Ratio	0.26			0.82		
Uniform Delay, d1	10.7			16.1		
Progression Factor	1.00			1.00		
Incremental Delay, d2	0.3			3.1		
Delay (s)	11.1			19.2		
Level of Service	B			B		
Approach Delay (s)	11.1			19.2	0.0	
Approach LOS	B			B	A	
<b>Intersection Summary</b>						
HCM Average Control Delay		17.2		HCM Level of Service		B
HCM Volume to Capacity ratio		0.82				
Actuated Cycle Length (s)		79.2		Sum of lost time (s)		38.3
Intersection Capacity Utilization		41.6%		ICU Level of Service		A
Analysis Period (min)		15				
c Critical Lane Group						













HCM Signalized Intersection Capacity Analysis  
 815: Paint Branch Pkwy & River Road

Purple Line (UMD)  
 11/5/2007

						
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑	↑	↑↑	↑↑	↑↑	↑
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	2.0	2.0	2.0	2.0	2.0	2.0
Lane Util. Factor	0.95	1.00	0.97	0.95	0.97	1.00
Frbp, ped/bikes	1.00	0.97	1.00	1.00	1.00	0.98
Flpb, ped/bikes	1.00	1.00	0.99	1.00	1.00	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (prot)	3539	1532	3398	3539	3419	1552
Flt Permitted	1.00	1.00	0.49	1.00	0.95	1.00
Satd. Flow (perm)	3539	1532	1755	3539	3419	1552
Volume (vph)	261	215	199	1242	87	269
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	261	215	199	1242	87	269
RTOR Reduction (vph)	0	148	0	0	0	146
Lane Group Flow (vph)	261	67	199	1242	87	123
Confl. Peds. (#/hr)		25	25		5	10
Turn Type		Perm	pm+pt			custom
Protected Phases	4		3	8		
Permitted Phases		4	8		2	2
Actuated Green, G (s)	18.9	18.9	32.1	32.1	30.3	30.3
Effective Green, g (s)	22.9	22.9	36.1	36.1	33.8	33.8
Actuated g/C Ratio	0.31	0.31	0.49	0.49	0.46	0.46
Clearance Time (s)	6.0	6.0	5.5	6.0	5.5	5.5
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	1097	475	1106	1729	1564	710
v/s Ratio Prot	0.07		0.03	c0.35		
v/s Ratio Perm		0.04	0.06		0.03	c0.08
v/c Ratio	0.24	0.14	0.18	0.72	0.06	0.17
Uniform Delay, d1	19.0	18.4	10.4	14.9	11.2	11.8
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.1	0.1	0.1	1.5	0.1	0.5
Delay (s)	19.1	18.5	10.5	16.3	11.2	12.3
Level of Service	B	B	B	B	B	B
Approach Delay (s)	18.9			15.5	12.1	
Approach LOS	B			B	B	
<b>Intersection Summary</b>						
HCM Average Control Delay		15.7			HCM Level of Service	B
HCM Volume to Capacity ratio		0.45				
Actuated Cycle Length (s)		73.9			Sum of lost time (s)	4.0
Intersection Capacity Utilization		63.5%			ICU Level of Service	B
Analysis Period (min)		15				
c Critical Lane Group						













HCM Signalized Intersection Capacity Analysis  
801: Campus Drive & Adelphi Rd.

Purple Line (UMD)  
7/30/2008

													
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations		↑↑	↑	↘	↑	↗	↘	↑↑↑	↗	↘↘	↑↑		
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		
Lane Util. Factor		0.95	1.00	1.00	1.00	1.00	1.00	0.91	1.00	0.97	0.95		
Frbp, ped/bikes		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		
Flpb, ped/bikes		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		
Frt		1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00		
Flt Protected		1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		
Satd. Flow (prot)		3539	1583	1770	1863	1583	1770	5085	1583	3433	3539		
Flt Permitted		1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		
Satd. Flow (perm)		3539	1583	1770	1863	1583	1770	5085	1583	3433	3539		
Volume (vph)	0	185	210	185	214	393	222	1304	180	228	917	0	
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	
Adj. Flow (vph)	0	206	233	206	238	437	247	1449	200	253	1019	0	
RTOR Reduction (vph)	0	0	173	0	0	293	0	0	115	0	0	0	
Lane Group Flow (vph)	0	206	60	206	238	144	247	1449	85	253	1019	0	
Confl. Peds. (#/hr)	17			20			9			3			
Turn Type			Perm	Split		Perm	Prot		Perm	Prot			
Protected Phases		2		6	6		3	8		17	14		
Permitted Phases			2			6			8				
Actuated Green, G (s)		60.0	60.0	30.0	30.0	30.0	25.0	60.0	60.0	73.7	109.7		
Effective Green, g (s)		63.0	63.0	33.0	33.0	33.0	27.0	63.0	63.0	75.7	111.7		
Actuated g/C Ratio		0.26	0.26	0.13	0.13	0.13	0.11	0.26	0.26	0.31	0.45		
Clearance Time (s)		6.0	6.0	6.0	6.0	6.0	5.0	6.0	6.0				
Vehicle Extension (s)		4.0	4.0	3.0	3.0	3.0	3.0	3.5	3.5				
Lane Grp Cap (vph)		904	404	237	249	212	194	1299	404	1053	1602		
v/s Ratio Prot		c0.06		0.12	c0.13		c0.14	c0.28		0.07	c0.29		
v/s Ratio Perm			0.04			0.09			0.05				
v/c Ratio		0.23	0.15	0.87	0.96	0.68	1.27	1.12	0.21	0.24	0.64		
Uniform Delay, d1		72.6	71.1	104.7	106.1	101.8	109.8	91.8	72.3	64.0	51.9		
Progression Factor		0.81	1.19	1.00	1.00	1.00	1.00	1.00	1.00	0.53	0.42		
Incremental Delay, d2		0.0	0.0	26.9	44.5	8.7	156.8	63.0	0.3	0.1	0.7		
Delay (s)		58.9	84.8	131.6	150.6	110.5	266.7	154.9	72.6	34.2	22.5		
Level of Service		E	F	F	F	F	F	F	E	C	C		
Approach Delay (s)		72.6			126.3			160.7			24.8		
Approach LOS		E			F			F			C		
Intersection Summary													
HCM Average Control Delay			106.8		HCM Level of Service					F			
HCM Volume to Capacity ratio			0.71										
Actuated Cycle Length (s)			246.7		Sum of lost time (s)					9.0			
Intersection Capacity Utilization			81.3%		ICU Level of Service					D			
Analysis Period (min)			15										
c Critical Lane Group													

HCM Unsignalized Intersection Capacity Analysis  
 810: Campus Drive & Regents Drive

Purple Line (UMD)  
 7/30/2008

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Right Turn Channelized			Yes			Yes			Yes			Yes
Volume (veh/h)	3	44	3	135	40	203	12	178	52	394	25	10
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	3	48	3	147	43	221	13	193	57	428	27	11
Approach Volume (veh/h)		51			190			207			455	
Crossing Volume (veh/h)		602			210			479			203	
High Capacity (veh/h)		860			1175			949			1181	
High v/c (veh/h)		0.06			0.16			0.22			0.39	
Low Capacity (veh/h)		689			971			768			976	
Low v/c (veh/h)		0.07			0.20			0.27			0.47	
Intersection Summary												
Maximum v/c High			0.39									
Maximum v/c Low			0.47									
Intersection Capacity Utilization			82.3%			ICU Level of Service					E	

HCM Signalized Intersection Capacity Analysis  
812: Campus Drive & US 1












Purple Line (UMD)  
11/5/2007

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Util. Factor	0.95	0.95	1.00	0.91	0.91	0.88	0.97	0.95	1.00	0.97	0.95	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	0.98	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1681	1770	1583	1610	3325	2787	3433	3539	1583	3433	3539	1583
Flt Permitted	0.95	1.00	1.00	0.95	0.98	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1681	1770	1583	1610	3325	2787	3433	3539	1583	3433	3539	1583
Volume (vph)	254	312	142	334	232	851	162	1466	507	470	1280	287
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	282	347	158	371	258	946	180	1629	563	522	1422	319
RTOR Reduction (vph)	0	0	121	0	0	133	0	0	174	0	0	94
Lane Group Flow (vph)	282	347	37	203	426	813	180	1629	389	522	1422	225
Turn Type	Split		Perm	Split		pt+ov	Prot		Perm	Prot		Perm
Protected Phases	4	4		3	3	3 5	1	6		5	2	
Permitted Phases			4						6			2
Actuated Green, G (s)	32.3	32.3	32.3	13.5	13.5	36.7	12.8	59.0	59.0	23.2	69.4	69.4
Effective Green, g (s)	34.8	34.8	34.8	16.0	16.0	41.2	14.8	62.0	62.0	25.2	72.4	72.4
Actuated g/C Ratio	0.23	0.23	0.23	0.11	0.11	0.27	0.10	0.41	0.41	0.17	0.48	0.48
Clearance Time (s)	5.5	5.5	5.5	5.5	5.5		5.0	6.0	6.0	5.0	6.0	6.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	5.0	5.0	3.0	5.0	5.0
Lane Grp Cap (vph)	390	411	367	172	355	765	339	1463	654	577	1708	764
v/s Ratio Prot	0.17	c0.20		0.13	c0.13	c0.29	0.05	c0.46		0.15	0.40	
v/s Ratio Perm			0.02						0.25			0.14
v/c Ratio	0.72	0.84	0.10	1.18	1.20	1.06	0.53	1.11	0.60	0.90	0.83	0.29
Uniform Delay, d1	53.2	55.0	45.3	67.0	67.0	54.4	64.3	44.0	34.2	61.2	33.6	23.4
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.93	1.02	1.23	1.35	0.82	0.95
Incremental Delay, d2	6.5	14.6	0.1	125.4	114.0	50.3	0.1	52.1	0.4	2.1	0.5	0.1
Delay (s)	59.7	69.6	45.4	192.4	181.0	104.7	59.8	96.9	42.4	84.6	28.1	22.4
Level of Service	E	E	D	F	F	F	E	F	D	F	C	C
Approach Delay (s)		61.2			136.7			81.1			40.3	
Approach LOS		E			F			F			D	
Intersection Summary												
HCM Average Control Delay	78.2			HCM Level of Service						E		
HCM Volume to Capacity ratio	1.05											
Actuated Cycle Length (s)	150.0			Sum of lost time (s)						12.0		
Intersection Capacity Utilization	96.7%			ICU Level of Service						F		
Analysis Period (min)	15											
c Critical Lane Group												

# HCM Signalized Intersection Capacity Analysis





















## 200: E. Campus Main Ent & US 1

Purple Line (UMD)  
11/5/2007

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0		4.0	4.0
Lane Util. Factor	1.00	1.00	0.95		1.00	0.95
Fr <sub>t</sub>	1.00	0.85	0.99		1.00	1.00
Flt Protected	0.95	1.00	1.00		0.95	1.00
Satd. Flow (prot)	1770	1583	3511		1770	3539
Flt Permitted	0.95	1.00	1.00		0.95	1.00
Satd. Flow (perm)	1770	1583	3511		1770	3539
Volume (vph)	117	133	2552	141	113	1769
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	127	145	2774	153	123	1923
RTOR Reduction (vph)	0	72	3	0	0	0
Lane Group Flow (vph)	127	73	2924	0	123	1923
Turn Type		Perm			Prot	
Protected Phases	8		2		1	6
Permitted Phases		8				
Actuated Green, G (s)	14.3	14.3	109.5		9.7	124.7
Effective Green, g (s)	15.8	15.8	111.5		10.7	126.2
Actuated g/C Ratio	0.11	0.11	0.74		0.07	0.84
Clearance Time (s)	5.5	5.5	6.0		5.0	5.5
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	186	167	2610		126	2977
v/s Ratio Prot	c0.07		c0.83		c0.07	0.54
v/s Ratio Perm		0.05				
v/c Ratio	0.68	0.44	1.12		0.98	0.65
Uniform Delay, d <sub>1</sub>	64.7	62.9	19.3		69.5	4.1
Progression Factor	1.00	1.00	1.63		0.86	2.94
Incremental Delay, d <sub>2</sub>	9.9	1.8	54.8		52.2	0.6
Delay (s)	74.6	64.8	86.2		112.3	12.8
Level of Service	E	E	F		F	B
Approach Delay (s)	69.4		86.2			18.8
Approach LOS	E		F			B
<b>Intersection Summary</b>						
HCM Average Control Delay		59.0			HCM Level of Service	E
HCM Volume to Capacity ratio		1.06			Sum of lost time (s)	12.0
Actuated Cycle Length (s)		150.0			ICU Level of Service	F
Intersection Capacity Utilization		97.8%				
Analysis Period (min)		15				
c Critical Lane Group						

HCM Signalized Intersection Capacity Analysis  
 212: Rossborough Rd. & US 1

Purple Line (UMD)  
 7/30/2008

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0			3.0	3.0	3.0	3.0		3.0	3.0	
Lane Util. Factor	1.00	1.00			1.00	1.00	1.00	0.95		1.00	0.95	
Frt	1.00	0.88			1.00	0.85	1.00	0.99		1.00	1.00	
Flt Protected	0.95	1.00			0.96	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1641			1792	1583	1770	3520		1770	3534	
Flt Permitted	0.52	1.00			0.75	1.00	0.09	1.00		0.04	1.00	
Satd. Flow (perm)	960	1641			1398	1583	169	3520		83	3534	
Volume (vph)	67	5	21	118	31	669	45	1800	68	131	1424	14
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	74	6	23	131	34	743	50	2000	76	146	1582	16
RTOR Reduction (vph)	0	17	0	0	0	213	0	2	0	0	0	0
Lane Group Flow (vph)	74	12	0	0	165	530	50	2074	0	146	1598	0
Turn Type	Perm			Perm		Perm	pm+pt			pm+pt		
Protected Phases		4			8		1	6		5	2	
Permitted Phases	4			8		8	6			2		
Actuated Green, G (s)	36.5	36.5			36.5	36.5	89.2	83.9		102.0	92.2	
Effective Green, g (s)	39.0	39.0			39.0	39.0	93.7	86.9		105.0	95.2	
Actuated g/C Ratio	0.26	0.26			0.26	0.26	0.62	0.58		0.70	0.63	
Clearance Time (s)	5.5	5.5			5.5	5.5	4.5	6.0		4.5	6.0	
Vehicle Extension (s)	3.0	3.0			3.0	3.0	3.0	5.0		3.0	5.0	
Lane Grp Cap (vph)	250	427			363	412	178	2039		228	2243	
v/s Ratio Prot		0.01					0.01	c0.59		c0.06	0.45	
v/s Ratio Perm	0.08				0.12	c0.33	0.16			0.38		
v/c Ratio	0.30	0.03			0.45	1.29	0.28	1.02		0.64	0.71	
Uniform Delay, d1	44.5	41.4			46.6	55.5	16.3	31.5		47.5	18.3	
Progression Factor	1.00	1.00			1.00	1.00	1.56	0.41		1.23	1.11	
Incremental Delay, d2	0.7	0.0			0.9	146.1	0.6	21.0		4.6	1.5	
Delay (s)	45.2	41.4			47.5	201.6	26.0	33.9		63.1	21.7	
Level of Service	D	D			D	F	C	C		E	C	
Approach Delay (s)		44.1			173.6			33.7			25.1	
Approach LOS		D			F			C			C	
<b>Intersection Summary</b>												
HCM Average Control Delay			56.9				HCM Level of Service				E	
HCM Volume to Capacity ratio			1.05									
Actuated Cycle Length (s)			150.0				Sum of lost time (s)				9.0	
Intersection Capacity Utilization			110.0%				ICU Level of Service				H	
Analysis Period (min)			15									
c Critical Lane Group												





HCM Signalized Intersection Capacity Analysis  
 814: Paint Branch Pkwy & Metro Parking Garage

Purple Line (UMD)  
 7/30/2008

	→	↘	↙	←	↖	↗
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑	↑	↘	↑↑	↘	↑
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0			4.0		
Lane Util. Factor	0.95			0.95		
Frt	1.00			1.00		
Flt Protected	1.00			1.00		
Satd. Flow (prot)	3539			3539		
Flt Permitted	1.00			1.00		
Satd. Flow (perm)	3539			3539		
Volume (vph)	1282	0	0	849	0	0
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	1393	0	0	923	0	0
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	1393	0	0	923	0	0
Turn Type		Perm	pm+pt			pm+ov
Protected Phases	2		1	6	8	1
Permitted Phases		2	6			8
Actuated Green, G (s)	120.0			120.0		
Effective Green, g (s)	120.0			120.0		
Actuated g/C Ratio	1.00			1.00		
Clearance Time (s)	4.0			4.0		
Vehicle Extension (s)	3.0			3.0		
Lane Grp Cap (vph)	3539			3539		
v/s Ratio Prot	c0.39			0.26		
v/s Ratio Perm						
v/c Ratio	0.39			0.26		
Uniform Delay, d1	0.0			0.0		
Progression Factor	1.00			1.00		
Incremental Delay, d2	0.3			0.2		
Delay (s)	0.3			0.2		
Level of Service	A			A		
Approach Delay (s)	0.3			0.2	0.0	
Approach LOS	A			A	A	

Intersection Summary

HCM Average Control Delay	0.3	HCM Level of Service	A
HCM Volume to Capacity ratio	0.39		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	0.0
Intersection Capacity Utilization	38.8%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

# HCM Signalized Intersection Capacity Analysis

## 815: Paint Branch Pkwy & River Road

Purple Line (UMD)  
11/5/2007

	→	↘	↙	←	↖	↗
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑	↑	↑↑	↑↑	↑↑	↑
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	2.0	2.0	2.0	2.0	2.0	2.0
Lane Util. Factor	0.95	1.00	0.97	0.95	0.97	1.00
Frbp, ped/bikes	1.00	0.98	1.00	1.00	1.00	0.98
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (prot)	3539	1548	3432	3539	3430	1548
Flt Permitted	1.00	1.00	0.13	1.00	0.95	1.00
Satd. Flow (perm)	3539	1548	458	3539	3430	1548
Volume (vph)	989	304	50	568	186	277
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	989	304	50	568	186	277
RTOR Reduction (vph)	0	181	0	0	0	157
Lane Group Flow (vph)	989	123	50	568	186	120
Confl. Peds. (#/hr)		12	12		1	12
Turn Type		Perm	pm+pt		custom	
Protected Phases	4		3	8		
Permitted Phases		4	8		2	2
Actuated Green, G (s)	28.3	28.3	37.1	37.1	31.1	31.1
Effective Green, g (s)	32.3	32.3	41.1	41.1	34.6	34.6
Actuated g/C Ratio	0.41	0.41	0.52	0.52	0.43	0.43
Clearance Time (s)	6.0	6.0	5.5	6.0	5.5	5.5
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	1434	627	490	1825	1489	672
v/s Ratio Prot	c0.28		0.01	c0.16		
v/s Ratio Perm		0.08	0.04		0.05	c0.08
v/c Ratio	0.69	0.20	0.10	0.31	0.12	0.18
Uniform Delay, d1	19.6	15.3	11.9	11.1	13.5	13.8
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	1.4	0.2	0.1	0.1	0.2	0.6
Delay (s)	21.0	15.5	12.0	11.2	13.7	14.4
Level of Service	C	B	B	B	B	B
Approach Delay (s)	19.7			11.3	14.1	
Approach LOS	B			B	B	
<b>Intersection Summary</b>						
HCM Average Control Delay		16.4			HCM Level of Service	B
HCM Volume to Capacity ratio		0.41				
Actuated Cycle Length (s)		79.7			Sum of lost time (s)	6.0
Intersection Capacity Utilization		56.5%			ICU Level of Service	B
Analysis Period (min)		15				
c Critical Lane Group						

203 Low LRT  
HCS Results

# HCM Signalized Intersection Capacity Analysis

## 3: Purple Line & 16th Street

6/10/2008



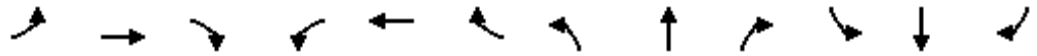
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑			↑			↑↑↑			↑↑↑	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0			4.0			4.0	
Lane Util. Factor		1.00			1.00			0.91			0.91	
Frt		1.00			1.00			1.00			1.00	
Flt Protected		1.00			1.00			1.00			1.00	
Satd. Flow (prot)		950			950			4848			4848	
Flt Permitted		1.00			1.00			1.00			1.00	
Satd. Flow (perm)		950			950			4848			4848	
Volume (vph)	0	10	0	0	10	0	0	1015	0	0	2290	0
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	11	0	0	11	0	0	1068	0	0	2411	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	11	0	0	11	0	0	1068	0	0	2411	0
Heavy Vehicles (%)	2%	100%	2%	2%	100%	2%	7%	7%	7%	7%	7%	7%
<b>Turn Type</b>												
Protected Phases		4			8			2			6	
Permitted Phases												
Actuated Green, G (s)		3.0			3.0			101.0			101.0	
Effective Green, g (s)		9.0			9.0			103.0			103.0	
Actuated g/C Ratio		0.08			0.08			0.86			0.86	
Clearance Time (s)		10.0			10.0			6.0			6.0	
Vehicle Extension (s)		3.0			3.0			3.0			3.0	
Lane Grp Cap (vph)		71			71			4161			4161	
v/s Ratio Prot		c0.01			0.01			0.22			c0.50	
v/s Ratio Perm												
v/c Ratio		0.15			0.15			0.26			0.58	
Uniform Delay, d1		51.9			51.9			1.5			2.4	
Progression Factor		1.00			1.00			1.00			1.00	
Incremental Delay, d2		1.0			1.0			0.1			0.6	
Delay (s)		53.0			53.0			1.7			3.0	
Level of Service		D			D			A			A	
Approach Delay (s)		53.0			53.0			1.7			3.0	
Approach LOS		D			D			A			A	
<b>Intersection Summary</b>												
HCM Average Control Delay			2.9				HCM Level of Service				A	
HCM Volume to Capacity ratio			0.55									
Actuated Cycle Length (s)			120.0				Sum of lost time (s)			8.0		
Intersection Capacity Utilization			63.4%				ICU Level of Service				B	
Analysis Period (min)			15									

c Critical Lane Group

# HCM Signalized Intersection Capacity Analysis

## 3: Purple Line & 16th Street

6/10/2008



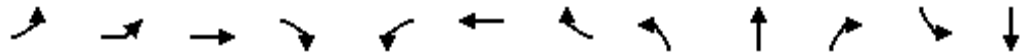
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑			↑			↑↑↑			↑↑↑	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0			4.0			4.0	
Lane Util. Factor		1.00			1.00			0.91			0.91	
Frt		1.00			1.00			1.00			1.00	
Flt Protected		1.00			1.00			1.00			1.00	
Satd. Flow (prot)		950			950			4940			4940	
Flt Permitted		1.00			1.00			1.00			1.00	
Satd. Flow (perm)		950			950			4940			4940	
Volume (vph)	0	10	0	0	10	0	0	2280	0	0	1110	0
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	11	0	0	11	0	0	2400	0	0	1168	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	11	0	0	11	0	0	2400	0	0	1168	0
Heavy Vehicles (%)	2%	100%	2%	2%	100%	2%	5%	5%	5%	5%	5%	5%
<b>Turn Type</b>												
Protected Phases		4			8			2			6	
Permitted Phases												
Actuated Green, G (s)		3.0			3.0			101.0			101.0	
Effective Green, g (s)		9.0			9.0			103.0			103.0	
Actuated g/C Ratio		0.08			0.08			0.86			0.86	
Clearance Time (s)		10.0			10.0			6.0			6.0	
Vehicle Extension (s)		3.0			3.0			3.0			3.0	
Lane Grp Cap (vph)		71			71			4240			4240	
v/s Ratio Prot		c0.01			0.01			c0.49			0.24	
v/s Ratio Perm												
v/c Ratio		0.15			0.15			0.57			0.28	
Uniform Delay, d1		51.9			51.9			2.3			1.6	
Progression Factor		1.00			1.00			1.00			1.00	
Incremental Delay, d2		1.0			1.0			0.6			0.2	
Delay (s)		53.0			53.0			2.9			1.7	
Level of Service		D			D			A			A	
Approach Delay (s)		53.0			53.0			2.9			1.7	
Approach LOS		D			D			A			A	
<b>Intersection Summary</b>												
HCM Average Control Delay			2.8				HCM Level of Service				A	
HCM Volume to Capacity ratio			0.53									
Actuated Cycle Length (s)			120.0				Sum of lost time (s)			8.0		
Intersection Capacity Utilization			63.2%				ICU Level of Service				B	
Analysis Period (min)			15									

c Critical Lane Group

# HCM Signalized Intersection Capacity Analysis

## 15: Harkins Rd & Lanham

6/11/2008



Movement	EBL2	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR2	SBL	SBT
Lane Configurations	↖	↖	↗		↖	↗			↖		↖	↗
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0		4.0	4.0			4.0		4.0	4.0
Lane Util. Factor	1.00	1.00	1.00		1.00	1.00			1.00		1.00	1.00
Frt	1.00	1.00	0.95		1.00	0.95			0.96		1.00	1.00
Flt Protected	0.95	0.95	1.00		0.95	1.00			0.98		0.95	1.00
Satd. Flow (prot)	1787	902	1783		1787	1785			1767		1787	1881
Flt Permitted	0.95	0.95	1.00		0.95	1.00			0.89		0.75	1.00
Satd. Flow (perm)	1787	902	1783		1787	1785			1600		1407	1881
Volume (vph)	5	10	150	80	75	125	65	5	5	5	200	190
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	5	11	158	84	79	132	68	5	5	5	211	200
RTOR Reduction (vph)	0	0	22	0	0	0	0	0	4	0	0	0
Lane Group Flow (vph)	5	11	220	0	79	200	0	0	11	0	211	200
Heavy Vehicles (%)	1%	100%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%
Turn Type	Prot	Split			Prot			Perm			Perm	
Protected Phases	7	4!	4		3	8!			2			6
Permitted Phases								2			6	
Actuated Green, G (s)	0.8	10.4	10.4		4.2	14.8			9.8		9.8	9.8
Effective Green, g (s)	0.8	11.4	11.4		5.2	15.8			10.8		10.8	10.8
Actuated g/C Ratio	0.02	0.29	0.29		0.13	0.40			0.27		0.27	0.27
Clearance Time (s)	4.0	5.0	5.0		5.0	5.0			5.0		5.0	5.0
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0			3.0		3.0	3.0
Lane Grp Cap (vph)	36	261	516		236	716			439		386	516
v/s Ratio Prot	0.00	0.01	c0.12		c0.04	0.11						0.11
v/s Ratio Perm									0.01		c0.15	
v/c Ratio	0.14	0.04	0.43		0.33	0.28			0.03		0.55	0.39
Uniform Delay, d1	19.0	10.1	11.3		15.5	8.0			10.5		12.2	11.6
Progression Factor	1.00	1.00	1.00		1.00	1.00			1.00		1.00	1.00
Incremental Delay, d2	1.8	0.1	0.6		0.8	0.2			0.0		1.6	0.5
Delay (s)	20.7	10.1	11.9		16.4	8.2			10.5		13.8	12.1
Level of Service	C	B	B		B	A			B		B	B
Approach Delay (s)			12.0			10.5			10.5			12.9
Approach LOS			B			B			B			B

### Intersection Summary

HCM Average Control Delay	11.9	HCM Level of Service	B
HCM Volume to Capacity ratio	0.46		
Actuated Cycle Length (s)	39.4	Sum of lost time (s)	12.0
Intersection Capacity Utilization	53.3%	ICU Level of Service	A
Analysis Period (min)	15		

! Phase conflict between lane groups.

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis  
 15: Harkins Rd & Lanham

6/11/2008



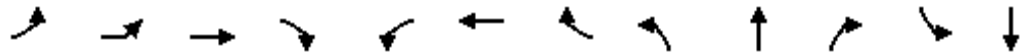
Movement	SBR	SWR
Lane Configurations	↕	↕
Ideal Flow (vphpl)	1900	1900
Total Lost time (s)	4.0	4.0
Lane Util. Factor	1.00	1.00
Frt	0.85	0.86
Flt Protected	1.00	1.00
Satd. Flow (prot)	1599	822
Flt Permitted	1.00	1.00
Satd. Flow (perm)	1599	822
Volume (vph)	5	10
Peak-hour factor, PHF	0.95	0.95
Adj. Flow (vph)	5	11
RTOR Reduction (vph)	4	0
Lane Group Flow (vph)	1	11
Heavy Vehicles (%)	1%	100%
Turn Type	Perm custom	
Protected Phases	8!	
Permitted Phases	6	
Actuated Green, G (s)	9.8	14.8
Effective Green, g (s)	10.8	15.8
Actuated g/C Ratio	0.27	0.40
Clearance Time (s)	5.0	5.0
Vehicle Extension (s)	3.0	3.0
Lane Grp Cap (vph)	438	330
v/s Ratio Prot	0.01	
v/s Ratio Perm	0.00	
v/c Ratio	0.00	0.03
Uniform Delay, d1	10.4	7.2
Progression Factor	1.00	1.00
Incremental Delay, d2	0.0	0.0
Delay (s)	10.4	7.2
Level of Service	B	A
Approach Delay (s)		
Approach LOS		
Intersection Summary		



# HCM Signalized Intersection Capacity Analysis

## 15: Harkins Rd & Lanham Dr

6/11/2008



Movement	EBL2	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR2	SBL	SBT
Lane Configurations	↖	↖	↗		↖	↗			↖		↖	↗
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0		4.0	4.0			4.0		4.0	4.0
Lane Util. Factor	1.00	1.00	1.00		1.00	1.00			1.00		1.00	1.00
Frt	1.00	1.00	1.00		1.00	0.94			0.97		1.00	1.00
Flt Protected	0.95	0.95	1.00		0.95	1.00			0.99		0.95	1.00
Satd. Flow (prot)	1787	902	1876		1787	1777			1805		1787	1881
Flt Permitted	0.95	0.95	1.00		0.95	1.00			0.95		0.49	1.00
Satd. Flow (perm)	1787	902	1876		1787	1777			1735		917	1881
Volume (vph)	5	10	245	5	5	205	120	55	220	90	75	5
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	5	11	258	5	5	216	126	58	232	95	79	5
RTOR Reduction (vph)	0	0	1	0	0	0	0	0	15	0	0	0
Lane Group Flow (vph)	5	11	262	0	5	342	0	0	370	0	79	5
Heavy Vehicles (%)	1%	100%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%
Turn Type	Prot	Split			Prot			Perm			Perm	
Protected Phases	7	4!	4		3	8!			2			6
Permitted Phases								2			6	
Actuated Green, G (s)	0.6	10.3	10.3		0.6	11.3			10.8		10.8	10.8
Effective Green, g (s)	0.6	11.3	11.3		1.6	12.3			11.8		11.8	11.8
Actuated g/C Ratio	0.02	0.31	0.31		0.04	0.34			0.32		0.32	0.32
Clearance Time (s)	4.0	5.0	5.0		5.0	5.0			5.0		5.0	5.0
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0			3.0		3.0	3.0
Lane Grp Cap (vph)	29	278	578		78	596			558		295	605
v/s Ratio Prot	c0.00	0.01	0.14		0.00	c0.19						0.00
v/s Ratio Perm									c0.21		0.09	
v/c Ratio	0.17	0.04	0.45		0.06	0.57			0.66		0.27	0.01
Uniform Delay, d1	17.8	8.9	10.2		16.8	10.0			10.7		9.2	8.5
Progression Factor	1.00	1.00	1.00		1.00	1.00			1.00		1.00	1.00
Incremental Delay, d2	2.8	0.1	0.6		0.3	1.3			3.0		0.5	0.0
Delay (s)	20.6	9.0	10.8		17.2	11.4			13.7		9.7	8.5
Level of Service	C	A	B		B	B			B		A	A
Approach Delay (s)			10.9			11.5			13.7			9.6
Approach LOS			B			B			B			A

### Intersection Summary

HCM Average Control Delay	11.9	HCM Level of Service	B
HCM Volume to Capacity ratio	0.52		
Actuated Cycle Length (s)	36.7	Sum of lost time (s)	8.0
Intersection Capacity Utilization	64.0%	ICU Level of Service	C
Analysis Period (min)	15		

! Phase conflict between lane groups.

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis  
 15: Harkins Rd & Lanham Dr

6/11/2008



Movement	SBR	SWR
Lane Configurations	↗	↗
Ideal Flow (vphpl)	1900	1900
Total Lost time (s)	4.0	4.0
Lane Util. Factor	1.00	1.00
Frt	0.85	0.86
Flt Protected	1.00	1.00
Satd. Flow (prot)	1599	822
Flt Permitted	1.00	1.00
Satd. Flow (perm)	1599	822
Volume (vph)	5	10
Peak-hour factor, PHF	0.95	0.95
Adj. Flow (vph)	5	11
RTOR Reduction (vph)	3	0
Lane Group Flow (vph)	2	11
Heavy Vehicles (%)	1%	100%
Turn Type	Perm custom	
Protected Phases	8!	
Permitted Phases	6	
Actuated Green, G (s)	10.8	11.3
Effective Green, g (s)	11.8	12.3
Actuated g/C Ratio	0.32	0.34
Clearance Time (s)	5.0	5.0
Vehicle Extension (s)	3.0	3.0
Lane Grp Cap (vph)	514	275
v/s Ratio Prot	0.01	
v/s Ratio Perm	0.00	
v/c Ratio	0.00	0.04
Uniform Delay, d1	8.5	8.2
Progression Factor	1.00	1.00
Incremental Delay, d2	0.0	0.1
Delay (s)	8.5	8.3
Level of Service	A	A
Approach Delay (s)		
Approach LOS		
Intersection Summary		

HCM Signalized Intersection Capacity Analysis  
 18: Chevy Chase Lake Dr & MD 185

6/10/2008



Movement	WBL2	WBL	WBR	NBL	NBT	NBR2	SBL	SBT	NET	SWT
Lane Configurations	↘	↘↘		↘	↑↑↑		↘	↑↑↑↔	↑	↑
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0			4.0		4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	1.00			0.91		1.00	0.91	1.00	1.00
Frt	1.00	0.85			1.00		1.00	1.00	1.00	1.00
Flt Protected	0.95	1.00			1.00		0.95	1.00	1.00	1.00
Satd. Flow (prot)	1787	1599			4918		1719	4940	950	950
Flt Permitted	0.95	1.00			1.00		0.07	1.00	1.00	1.00
Satd. Flow (perm)	1787	1599			4918		132	4940	950	950
Volume (vph)	35	0	40	0	1805	55	85	3105	10	10
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	37	0	42	0	1900	58	89	3268	11	11
RTOR Reduction (vph)	0	0	0	0	2	0	0	0	0	0
Lane Group Flow (vph)	37	42	0	0	1956	0	89	3268	11	11
Heavy Vehicles (%)	1%	1%	1%	5%	5%	5%	5%	5%	100%	100%
Turn Type	Split		Perm			pm+pt				
Protected Phases	8	8			6		5	2	7	7
Permitted Phases				6			2			
Actuated Green, G (s)	6.3	6.3			105.1		117.7	117.7	6.0	6.0
Effective Green, g (s)	7.3	7.3			106.1		118.7	118.7	12.0	12.0
Actuated g/C Ratio	0.05	0.05			0.71		0.79	0.79	0.08	0.08
Clearance Time (s)	5.0	5.0			5.0		5.0	5.0	10.0	10.0
Vehicle Extension (s)	3.0	3.0			3.0		3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	87	78			3479		195	3909	76	76
v/s Ratio Prot	0.02	c0.03			0.40		0.03	c0.66	c0.01	0.01
v/s Ratio Perm							0.33			
v/c Ratio	0.43	0.54			0.56		0.46	0.84	0.14	0.14
Uniform Delay, d1	69.3	69.7			10.7		9.0	9.6	64.2	64.2
Progression Factor	1.00	1.00			0.62		1.27	1.66	1.00	1.00
Incremental Delay, d2	3.3	7.0			0.6		1.1	1.4	0.9	0.9
Delay (s)	72.6	76.7			7.2		12.5	17.4	65.1	65.1
Level of Service	E	E			A		B	B	E	E
Approach Delay (s)		74.8			7.2			17.3	65.1	65.1
Approach LOS		E			A			B	E	E

Intersection Summary

HCM Average Control Delay	14.7	HCM Level of Service	B
HCM Volume to Capacity ratio	0.76		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	90.8%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis  
 18: Chevy Chase Lake Dr & MD 185

6/10/2008



Movement	WBL2	WBL	WBR	NBL	NBT	NBR2	SBL	SBT	NET	SWT
Lane Configurations										
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0			4.0		4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	1.00			0.91		1.00	0.91	1.00	1.00
Frt	1.00	0.85			1.00		1.00	1.00	1.00	1.00
Flt Protected	0.95	1.00			1.00		0.95	1.00	1.00	1.00
Satd. Flow (prot)	1787	1599			5027		1752	5036	950	950
Flt Permitted	0.95	1.00			1.00		0.04	1.00	1.00	1.00
Satd. Flow (perm)	1787	1599			5027		66	5036	950	950
Volume (vph)	70	0	75	0	3315	40	55	2125	10	10
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	74	0	79	0	3489	42	58	2237	11	11
RTOR Reduction (vph)	0	0	0	0	1	0	0	0	0	0
Lane Group Flow (vph)	74	79	0	0	3530	0	58	2237	11	11
Heavy Vehicles (%)	1%	1%	1%	3%	3%	3%	3%	3%	100%	100%
Turn Type	Split		Perm			pm+pt				
Protected Phases	8	8			6		5	2	7	7
Permitted Phases				6			2			
Actuated Green, G (s)	9.1	9.1			106.3		114.9	114.9	6.0	6.0
Effective Green, g (s)	10.1	10.1			107.3		115.9	115.9	12.0	12.0
Actuated g/C Ratio	0.07	0.07			0.72		0.77	0.77	0.08	0.08
Clearance Time (s)	5.0	5.0			5.0		5.0	5.0	10.0	10.0
Vehicle Extension (s)	3.0	3.0			3.0		3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	120	108			3596		103	3891	76	76
v/s Ratio Prot	0.04	c0.05			c0.70		0.02	c0.44	c0.01	0.01
v/s Ratio Perm							0.42			
v/c Ratio	0.62	0.73			0.98		0.56	0.57	0.14	0.14
Uniform Delay, d1	68.1	68.6			20.4		44.3	7.0	64.2	64.2
Progression Factor	1.00	1.00			1.21		1.58	1.13	1.00	1.00
Incremental Delay, d2	9.1	22.3			10.6		6.7	0.6	0.9	0.9
Delay (s)	77.1	90.9			35.3		76.6	8.5	65.1	65.1
Level of Service	E	F			D		E	A	E	E
Approach Delay (s)		84.3			35.3			10.2	65.1	65.1
Approach LOS		F			D			B	E	E

Intersection Summary

HCM Average Control Delay	27.1	HCM Level of Service	C
HCM Volume to Capacity ratio	0.88		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	87.9%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

# HCM Signalized Intersection Capacity Analysis

## 2: MD 193 & Carroll Ave

6/10/2008



Movement	EBL2	EBL	EBT	EBR	WBT	WBR	NBL	NBT	NBR2	SBL	SBT	SBR
Lane Configurations	↖	↖	↕↕↕↕		↕↕↕↕		↖	↕		↖	↕	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	2.0	2.0	2.0		2.0		2.0	2.0		2.0	2.0	
Lane Util. Factor	1.00	1.00	0.91		0.91		1.00	1.00		1.00	1.00	
Frt	1.00	1.00	0.98		1.00		1.00	0.98		1.00	0.98	
Flt Protected	0.95	0.95	1.00		1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1703	902	4809		4869		1703	1760		1703	1748	
Flt Permitted	0.95	0.95	1.00		1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1703	902	4809		4869		1703	1760		1703	1748	
Volume (vph)	25	10	1650	215	1890	65	185	145	20	100	540	105
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	26	11	1737	226	1989	68	195	153	21	105	568	111
RTOR Reduction (vph)	0	0	14	0	0	0	0	4	0	0	6	0
Lane Group Flow (vph)	26	11	1949	0	2057	0	195	170	0	105	673	0
Heavy Vehicles (%)	6%	100%	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%
Turn Type	Prot	Split					Split			Split		
Protected Phases	1	6!	6		2!		3	3		4	4	
Permitted Phases												
Actuated Green, G (s)	3.0	48.0	48.0		40.0		23.0	23.0		31.0	31.0	
Effective Green, g (s)	6.0	52.0	52.0		44.0		27.0	27.0		35.0	35.0	
Actuated g/C Ratio	0.05	0.43	0.43		0.37		0.22	0.22		0.29	0.29	
Clearance Time (s)	5.0	6.0	6.0		6.0		6.0	6.0		6.0	6.0	
Vehicle Extension (s)	3.0	3.0	3.0		3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	85	391	2084		1785		383	396		497	510	
v/s Ratio Prot	0.02	0.01	c0.41		c0.42		c0.11	0.10		0.06	c0.39	
v/s Ratio Perm												
v/c Ratio	0.31	0.03	0.94		1.15		0.51	0.43		0.21	1.32	
Uniform Delay, d1	55.0	19.5	32.4		38.0		40.7	39.9		32.1	42.5	
Progression Factor	1.21	0.18	0.37		1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.7	0.0	3.6		75.5		1.1	0.8		0.2	157.4	
Delay (s)	67.4	3.6	15.6		113.5		41.8	40.6		32.3	199.9	
Level of Service	E	A	B		F		D	D		C	F	
Approach Delay (s)			16.2		113.5			41.2			177.5	
Approach LOS			B		F			D			F	

### Intersection Summary

HCM Average Control Delay	80.5	HCM Level of Service	F
HCM Volume to Capacity ratio	1.02		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	121.9%	ICU Level of Service	H
Analysis Period (min)	15		

! Phase conflict between lane groups.

c Critical Lane Group



Movement	SWR
Lane Configurations	↗
Ideal Flow (vphpl)	1900
Total Lost time (s)	2.0
Lane Util. Factor	1.00
Frt	0.86
Flt Protected	1.00
Satd. Flow (prot)	822
Flt Permitted	1.00
Satd. Flow (perm)	822
Volume (vph)	10
Peak-hour factor, PHF	0.95
Adj. Flow (vph)	11
RTOR Reduction (vph)	0
Lane Group Flow (vph)	11
Heavy Vehicles (%)	100%
Turn Type	custom
Protected Phases	2!
Permitted Phases	
Actuated Green, G (s)	40.0
Effective Green, g (s)	44.0
Actuated g/C Ratio	0.37
Clearance Time (s)	6.0
Vehicle Extension (s)	3.0
Lane Grp Cap (vph)	301
v/s Ratio Prot	0.01
v/s Ratio Perm	
v/c Ratio	0.04
Uniform Delay, d1	24.4
Progression Factor	1.00
Incremental Delay, d2	0.2
Delay (s)	24.6
Level of Service	C
Approach Delay (s)	
Approach LOS	
Intersection Summary	

# HCM Signalized Intersection Capacity Analysis

5: MD 193 & MD 320

6/10/2008



Movement	EBL2	EBT	EBR	WBL2	WBT	WBR	NBL	NBT	NBR2	SBL	SBT	SBR2
Lane Configurations	↖	↕↕↕		↖	↕↕↕		↖	↕↕		↖	↕↕	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lane Util. Factor	1.00	0.91		1.00	0.91		1.00	0.95		1.00	0.95	
Frt	1.00	0.99		1.00	1.00		1.00	0.94		1.00	0.95	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1703	4833		1703	4886		1703	3212		1703	3219	
Flt Permitted	0.95	1.00		0.95	1.00		0.09	1.00		0.40	1.00	
Satd. Flow (perm)	1703	4833		1703	4886		168	3212		722	3219	
Volume (vph)	245	1615	145	235	1925	20	213	360	220	30	950	545
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	258	1700	153	247	2026	21	224	379	232	32	1000	574
RTOR Reduction (vph)	0	0	0	0	0	0	0	74	0	0	66	0
Lane Group Flow (vph)	258	1853	0	247	2047	0	224	537	0	32	1508	0
Heavy Vehicles (%)	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%
Turn Type	Prot			Prot			pm+pt			pm+pt		
Protected Phases	5	2		1!	6!		3	8		7	4	
Permitted Phases							8			4		
Actuated Green, G (s)	12.0	38.4		13.0	39.4		48.8	48.8		44.6	43.6	
Effective Green, g (s)	14.0	41.4		15.0	42.4		51.8	51.8		46.6	46.6	
Actuated g/C Ratio	0.12	0.34		0.12	0.35		0.43	0.43		0.39	0.39	
Clearance Time (s)	4.0	5.0		4.0	5.0		4.0	5.0		4.0	5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	199	1667		213	1726		188	1387		311	1250	
v/s Ratio Prot	0.15	c0.38		0.15	c0.42		c0.09	0.17		0.00	c0.47	
v/s Ratio Perm							0.43			0.04		
v/c Ratio	1.30	1.11		1.16	1.19		1.19	0.39		0.10	1.21	
Uniform Delay, d1	53.0	39.3		52.5	38.8		57.7	23.3		24.6	36.7	
Progression Factor	1.00	1.00		0.70	0.56		1.00	1.00		1.00	1.00	
Incremental Delay, d2	165.3	59.3		77.0	84.3		126.7	0.8		0.1	100.6	
Delay (s)	218.3	98.6		113.5	105.9		184.4	24.1		24.8	137.3	
Level of Service	F	F		F	F		F	C		C	F	
Approach Delay (s)		113.2			106.7			67.1			135.1	
Approach LOS		F			F			E			F	

## Intersection Summary

HCM Average Control Delay	110.3	HCM Level of Service	F
HCM Volume to Capacity ratio	1.17		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	6.0
Intersection Capacity Utilization	134.6%	ICU Level of Service	H
Analysis Period (min)	15		

! Phase conflict between lane groups.

c Critical Lane Group



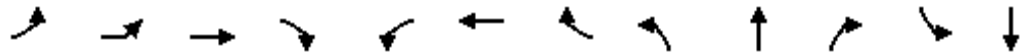
Movement	NER	SWL
Lane Configurations		
Ideal Flow (vphpl)	1900	1900
Total Lost time (s)	2.0	2.0
Lane Util. Factor	1.00	1.00
Frt	0.86	1.00
Flt Protected	1.00	0.95
Satd. Flow (prot)	822	902
Flt Permitted	1.00	0.95
Satd. Flow (perm)	822	902
Volume (vph)	10	10
Peak-hour factor, PHF	0.95	0.95
Adj. Flow (vph)	11	11
RTOR Reduction (vph)	0	0
Lane Group Flow (vph)	11	11
Heavy Vehicles (%)	100%	100%
Turn Type	custom	Prot
Protected Phases	1!	1!
Permitted Phases		
Actuated Green, G (s)	13.0	13.0
Effective Green, g (s)	15.0	15.0
Actuated g/C Ratio	0.12	0.12
Clearance Time (s)	4.0	4.0
Vehicle Extension (s)	3.0	3.0
Lane Grp Cap (vph)	103	113
v/s Ratio Prot	0.01	0.01
v/s Ratio Perm		
v/c Ratio	0.11	0.10
Uniform Delay, d1	46.6	46.5
Progression Factor	1.00	1.00
Incremental Delay, d2	0.5	0.4
Delay (s)	47.0	46.9
Level of Service	D	D
Approach Delay (s)		
Approach LOS		
Intersection Summary		



# HCM Signalized Intersection Capacity Analysis

## 14: MD 193 & MD 193 West SC

6/10/2008



Movement	EBL2	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR2	SBL	SBT
Lane Configurations	↖	↖	↗↗↗		↖	↗↗↗			↖	↖	↖	↗
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	2.0	2.0	2.0		2.0	2.0			2.0	2.0	2.0	2.0
Lane Util. Factor	1.00	1.00	0.91		1.00	0.91			1.00	1.00	1.00	1.00
Frt	1.00	1.00	1.00		1.00	1.00			1.00	0.85	1.00	0.89
Flt Protected	0.95	0.95	1.00		0.95	1.00			0.96	1.00	0.95	1.00
Satd. Flow (prot)	1703	902	4887		1703	4880			1814	1599	1787	1666
Flt Permitted	0.95	0.95	1.00		0.95	1.00			0.81	1.00	0.67	1.00
Satd. Flow (perm)	1703	902	4887		1703	4880			1526	1599	1263	1666
Volume (vph)	65	10	1690	15	25	1885	35	45	15	20	15	5
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	68	11	1779	16	26	1984	37	47	16	21	16	5
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	16	0	12
Lane Group Flow (vph)	68	11	1795	0	26	2021	0	0	63	5	16	9
Heavy Vehicles (%)	6%	100%	6%	6%	6%	6%	6%	1%	1%	1%	1%	1%
Turn Type	Prot	Split			Prot			Perm		Perm	Perm	
Protected Phases	5	2!	2		1	6!			3			3
Permitted Phases								3	3	3	3	
Actuated Green, G (s)	9.8	97.6	97.6		5.4	93.2			32.0	32.0	32.0	32.0
Effective Green, g (s)	12.8	100.6	100.6		8.4	96.2			35.0	35.0	35.0	35.0
Actuated g/C Ratio	0.09	0.67	0.67		0.06	0.64			0.23	0.23	0.23	0.23
Clearance Time (s)	5.0	5.0	5.0		5.0	5.0			5.0	5.0	5.0	5.0
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0			3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	145	605	3278		95	3130			356	373	295	389
v/s Ratio Prot	c0.04	0.01	0.37		0.02	c0.41						0.01
v/s Ratio Perm								c0.04	0.00	0.01		
v/c Ratio	0.47	0.02	0.55		0.27	0.65			0.18	0.01	0.05	0.02
Uniform Delay, d1	65.4	8.2	12.9		67.9	16.5			46.0	44.2	44.6	44.3
Progression Factor	1.00	1.00	1.00		1.42	0.29			1.00	1.00	1.00	1.00
Incremental Delay, d2	2.4	0.1	0.7		0.1	0.1			0.2	0.0	0.1	0.0
Delay (s)	67.7	8.3	13.5		96.2	4.9			46.2	44.2	44.7	44.3
Level of Service	E	A	B		F	A			D	D	D	D
Approach Delay (s)			15.5			6.1			45.7			44.5
Approach LOS			B			A			D			D

### Intersection Summary

HCM Average Control Delay	11.6	HCM Level of Service	B
HCM Volume to Capacity ratio	0.51		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	6.0
Intersection Capacity Utilization	79.7%	ICU Level of Service	D
Analysis Period (min)	15		

! Phase conflict between lane groups.

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis  
 14: MD 193 & MD 193 West SC

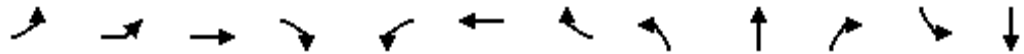
6/10/2008



Movement	SBR	SWR
Lane Configurations		
Ideal Flow (vphpl)	1900	1900
Total Lost time (s)		2.0
Lane Util. Factor		1.00
Frt		0.86
Flt Protected		1.00
Satd. Flow (prot)		822
Flt Permitted		1.00
Satd. Flow (perm)		822
Volume (vph)	15	10
Peak-hour factor, PHF	0.95	0.95
Adj. Flow (vph)	16	11
RTOR Reduction (vph)	0	0
Lane Group Flow (vph)	0	11
Heavy Vehicles (%)	1%	100%
Turn Type	custom	
Protected Phases	6!	
Permitted Phases		
Actuated Green, G (s)	93.2	
Effective Green, g (s)	96.2	
Actuated g/C Ratio	0.64	
Clearance Time (s)	5.0	
Vehicle Extension (s)	3.0	
Lane Grp Cap (vph)	527	
v/s Ratio Prot	0.01	
v/s Ratio Perm		
v/c Ratio	0.02	
Uniform Delay, d1	9.8	
Progression Factor	1.00	
Incremental Delay, d2	0.1	
Delay (s)	9.9	
Level of Service	A	
Approach Delay (s)		
Approach LOS		
Intersection Summary		

HCM Signalized Intersection Capacity Analysis  
 15: MD 193 & MD 193 East SC

6/10/2008



Movement	EBL2	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR2	SBL	SBT
Lane Configurations	↖	↖	↑↑↑		↖	↑↑↑		↖	↑		↖	↖
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	2.0	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0
Lane Util. Factor	1.00	1.00	0.91		1.00	0.91		1.00	1.00		0.95	0.95
Frt	1.00	1.00	1.00		1.00	1.00		1.00	0.92		1.00	1.00
Flt Protected	0.95	0.95	1.00		0.95	1.00		0.95	1.00		0.95	0.96
Satd. Flow (prot)	1703	902	4874		1703	4878		1787	1740		1698	1712
Flt Permitted	0.95	0.95	1.00		0.95	1.00		0.72	1.00		0.75	0.81
Satd. Flow (perm)	1703	902	4874		1703	4878		1347	1740		1342	1450
Volume (vph)	30	10	1315	35	20	1905	40	5	5	5	65	5
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	32	11	1384	37	21	2005	42	5	5	5	68	5
RTOR Reduction (vph)	0	0	1	0	0	0	0	0	4	0	0	0
Lane Group Flow (vph)	32	11	1420	0	21	2047	0	5	6	0	34	39
Heavy Vehicles (%)	6%	100%	6%	6%	6%	6%	6%	1%	1%	1%	1%	1%
Turn Type	Prot	Split			Prot			Perm			Perm	
Protected Phases	1	6!	6		5	2!			3			3
Permitted Phases			6			2!		3	3		3	
Actuated Green, G (s)	5.8	97.2	97.2		5.8	97.2		32.0	32.0		32.0	32.0
Effective Green, g (s)	8.8	100.2	100.2		8.8	100.2		35.0	35.0		35.0	35.0
Actuated g/C Ratio	0.06	0.67	0.67		0.06	0.67		0.23	0.23		0.23	0.23
Clearance Time (s)	5.0	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	100	603	3256		100	3259		314	406		313	338
v/s Ratio Prot	c0.02	0.01	0.29		0.01	c0.42			0.00			
v/s Ratio Perm								0.00			0.03	c0.03
v/c Ratio	0.32	0.02	0.44		0.21	0.63		0.02	0.02		0.11	0.12
Uniform Delay, d1	67.7	8.4	11.7		67.3	14.2		44.2	44.2		45.2	45.3
Progression Factor	0.88	0.42	0.28		1.00	1.00		1.00	1.00		1.00	1.00
Incremental Delay, d2	0.2	0.0	0.0		1.0	0.9		0.0	0.0		0.2	0.2
Delay (s)	59.8	3.5	3.3		68.3	15.2		44.3	44.3		45.4	45.5
Level of Service	E	A	A		E	B		D	D		D	D
Approach Delay (s)			4.5			15.7			44.3			45.2
Approach LOS			A			B			D			D

Intersection Summary

HCM Average Control Delay	12.0	HCM Level of Service	B
HCM Volume to Capacity ratio	0.48		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	6.0
Intersection Capacity Utilization	92.7%	ICU Level of Service	F
Analysis Period (min)	15		

! Phase conflict between lane groups.

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis  
 15: MD 193 & MD 193 East SC

6/10/2008

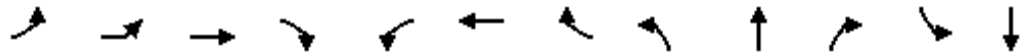


Movement	SBR	SWR
Lane Configurations	↗	↗
Ideal Flow (vphpl)	1900	1900
Total Lost time (s)	2.0	2.0
Lane Util. Factor	1.00	1.00
Frt	0.85	0.86
Flt Protected	1.00	1.00
Satd. Flow (prot)	1599	822
Flt Permitted	1.00	1.00
Satd. Flow (perm)	1599	822
Volume (vph)	15	10
Peak-hour factor, PHF	0.95	0.95
Adj. Flow (vph)	16	11
RTOR Reduction (vph)	12	0
Lane Group Flow (vph)	4	11
Heavy Vehicles (%)	1%	100%
Turn Type	Perm custom	
Protected Phases	2!	
Permitted Phases	3	
Actuated Green, G (s)	32.0	97.2
Effective Green, g (s)	35.0	100.2
Actuated g/C Ratio	0.23	0.67
Clearance Time (s)	5.0	5.0
Vehicle Extension (s)	3.0	3.0
Lane Grp Cap (vph)	373	549
v/s Ratio Prot	0.01	
v/s Ratio Perm	0.00	
v/c Ratio	0.01	0.02
Uniform Delay, d1	44.2	8.4
Progression Factor	1.00	1.00
Incremental Delay, d2	0.0	0.1
Delay (s)	44.2	8.4
Level of Service	D	A
Approach Delay (s)		
Approach LOS		
Intersection Summary		

# HCM Signalized Intersection Capacity Analysis

91: MD 193 & MD 212

6/10/2008



Movement	EBL2	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR2	SBL	SBT
Lane Configurations	↘	↘	↗↗↗	↗	↘↘	↗↗↗		↘↘	↗	↘	↘	↗↗
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	2.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0
Lane Util. Factor	1.00	1.00	0.91	1.00	0.97	0.91		0.97	1.00	1.00	1.00	0.95
Frt	1.00	1.00	1.00	0.85	1.00	0.99		1.00	1.00	0.85	1.00	0.98
Flt Protected	0.95	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00
Satd. Flow (prot)	1703	902	4893	1524	3303	4825		3303	1792	1524	1703	3322
Flt Permitted	0.95	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00
Satd. Flow (perm)	1703	902	4893	1524	3303	4825		3303	1792	1524	1703	3322
Volume (vph)	80	10	875	555	720	1220	125	780	520	395	155	485
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	84	11	921	584	758	1284	132	821	547	416	163	511
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	251	0	13
Lane Group Flow (vph)	84	11	921	584	758	1416	0	821	547	165	163	598
Heavy Vehicles (%)	6%	100%	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%
Turn Type	Prot	Split		Free	Prot			Split		Perm	Split	
Protected Phases	1	6!	6		5	2!		4	4		3	3
Permitted Phases				Free						4		
Actuated Green, G (s)	6.0	20.0	20.0	120.0	25.0	39.0		34.0	34.0	34.0	19.0	19.0
Effective Green, g (s)	8.0	25.0	24.0	120.0	27.0	43.0		36.0	36.0	36.0	21.0	21.0
Actuated g/C Ratio	0.07	0.21	0.20	1.00	0.22	0.36		0.30	0.30	0.30	0.18	0.18
Clearance Time (s)	5.0	7.0	7.0		5.0	7.0		5.0	5.0	5.0	5.0	5.0
Vehicle Extension (s)	2.5	5.0	5.0		2.5	5.0		2.5	2.5	2.5	2.5	2.5
Lane Grp Cap (vph)	114	188	979	1524	743	1729		991	538	457	298	581
v/s Ratio Prot	0.05	0.01	c0.19		c0.23	0.29		0.25	c0.31		0.10	c0.18
v/s Ratio Perm				0.38						0.11		
v/c Ratio	0.74	0.06	0.94	0.38	1.02	0.82		0.83	1.02	0.36	0.55	1.03
Uniform Delay, d1	55.0	38.1	47.3	0.0	46.5	35.0		39.1	42.0	33.0	45.2	49.5
Progression Factor	1.05	0.79	0.91	1.00	1.20	0.82		1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	19.5	0.6	16.8	0.7	34.5	3.6		5.7	43.1	0.4	1.6	44.9
Delay (s)	77.1	30.6	59.9	0.7	90.3	32.1		44.8	85.1	33.3	46.8	94.4
Level of Service	E	C	E	A	F	C		D	F	C	D	F
Approach Delay (s)			39.0			52.4			54.5			84.4
Approach LOS			D			D			D			F

## Intersection Summary

HCM Average Control Delay	53.5	HCM Level of Service	D
HCM Volume to Capacity ratio	1.00		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	102.8%	ICU Level of Service	G
Analysis Period (min)	15		

! Phase conflict between lane groups.

c Critical Lane Group

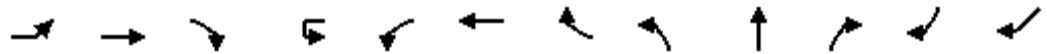


Movement	SBR	SWR
<b>Lane Configurations</b>		
Ideal Flow (vphpl)	1900	1900
Total Lost time (s)		2.0
Lane Util. Factor		1.00
Frt		0.86
Flt Protected		1.00
Satd. Flow (prot)		822
Flt Permitted		1.00
Satd. Flow (perm)		822
Volume (vph)	95	10
Peak-hour factor, PHF	0.95	0.95
Adj. Flow (vph)	100	11
RTOR Reduction (vph)	0	0
Lane Group Flow (vph)	0	11
Heavy Vehicles (%)	6%	100%
Turn Type	custom	
Protected Phases	2!	
Permitted Phases		
Actuated Green, G (s)	39.0	
Effective Green, g (s)	44.0	
Actuated g/C Ratio	0.37	
Clearance Time (s)	7.0	
Vehicle Extension (s)	5.0	
Lane Grp Cap (vph)	301	
v/s Ratio Prot	0.01	
v/s Ratio Perm		
v/c Ratio	0.04	
Uniform Delay, d1	24.4	
Progression Factor	1.00	
Incremental Delay, d2	0.2	
Delay (s)	24.6	
Level of Service	C	
Approach Delay (s)		
Approach LOS		
<b>Intersection Summary</b>		

# HCM Signalized Intersection Capacity Analysis

105: MD 193 & 23rd Ave

6/10/2008



Movement	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR2	SBR	SWR
Lane Configurations	↖	↑↑↑			↘	↑↑↑			↑	↗	↖	↗
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	2.0	3.0			3.0	3.0			3.0	3.0	3.0	2.0
Lane Util. Factor	1.00	0.91			1.00	0.91			1.00	1.00	1.00	1.00
Frt	1.00	0.98			1.00	1.00			1.00	0.85	0.86	0.86
Flt Protected	0.95	1.00			0.95	1.00			0.95	1.00	1.00	1.00
Satd. Flow (prot)	902	4817			1703	4878			1796	1599	1627	822
Flt Permitted	0.95	1.00			0.30	1.00			0.95	1.00	1.00	1.00
Satd. Flow (perm)	902	4817			535	4878			1796	1599	1627	822
Volume (vph)	10	1200	140	30	105	1925	40	200	10	115	5	10
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	11	1263	147	32	111	2026	42	211	11	121	5	11
RTOR Reduction (vph)	0	24	0	0	0	0	0	0	0	92	3	0
Lane Group Flow (vph)	11	1386	0	0	143	2068	0	0	222	29	2	11
Heavy Vehicles (%)	100%	6%	6%	6%	6%	6%	6%	1%	1%	1%	1%	100%
Turn Type	Split			custom	Prot			Perm			Perm	custom
Protected Phases	6!	6			5	2!			4			2!
Permitted Phases		6		5				4		4	6	
Actuated Green, G (s)	20.0	20.0			11.4	36.4			11.6	11.6	20.0	36.4
Effective Green, g (s)	24.0	23.0			13.4	39.4			14.6	14.6	23.0	40.4
Actuated g/C Ratio	0.40	0.38			0.22	0.66			0.24	0.24	0.38	0.67
Clearance Time (s)	6.0	6.0			5.0	6.0			6.0	6.0	6.0	6.0
Vehicle Extension (s)	5.0	5.0			3.0	5.0			3.0	3.0	5.0	5.0
Lane Grp Cap (vph)	361	1847			119	3203			437	389	624	553
v/s Ratio Prot	0.01	c0.29				0.42						0.01
v/s Ratio Perm					c0.27				0.12	0.02	0.00	
v/c Ratio	0.03	0.75			1.20	0.65			0.51	0.08	0.00	0.02
Uniform Delay, d1	10.9	16.0			23.3	6.1			19.6	17.5	11.4	3.2
Progression Factor	0.63	0.65			1.35	0.92			1.00	1.00	1.00	1.00
Incremental Delay, d2	0.1	1.8			130.0	0.6			0.9	0.1	0.0	0.1
Delay (s)	7.0	12.2			161.4	6.3			20.5	17.6	11.4	3.3
Level of Service	A	B			F	A			C	B	B	A
Approach Delay (s)		12.2				16.3			19.5			
Approach LOS		B				B			B			

## Intersection Summary

HCM Average Control Delay	15.1	HCM Level of Service	B
HCM Volume to Capacity ratio	0.80		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	96.4%	ICU Level of Service	F
Analysis Period (min)	15		

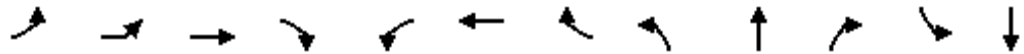
! Phase conflict between lane groups.

c Critical Lane Group

# HCM Signalized Intersection Capacity Analysis

107: MD 193 & W Park Dr

6/10/2008



Movement	EBL2	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR2	SBL	SBT
Lane Configurations	↖	↖	↕	↗	↖	↕	↗	↖	↕		↖	↗
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	2.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0
Lane Util. Factor	1.00	1.00	0.95	1.00	1.00	0.95		1.00	1.00		1.00	1.00
Frt	1.00	1.00	1.00	0.85	1.00	1.00		1.00	0.87		1.00	0.90
Flt Protected	0.95	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00
Satd. Flow (prot)	1703	902	3406	1524	1703	3398		1787	1632		1787	1687
Flt Permitted	0.95	0.95	1.00	1.00	0.95	1.00		0.75	1.00		0.53	1.00
Satd. Flow (perm)	1703	902	3406	1524	1703	3398		1405	1632		1001	1687
Volume (vph)	25	10	1235	25	50	2070	30	20	10	80	30	5
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	26	11	1300	26	53	2179	32	21	11	84	32	5
RTOR Reduction (vph)	0	0	0	7	0	0	0	0	75	0	0	10
Lane Group Flow (vph)	26	11	1300	19	53	2211	0	21	20	0	32	6
Heavy Vehicles (%)	6%	100%	6%	6%	6%	6%	6%	1%	1%	1%	1%	1%
Turn Type	Prot	Split		Perm	Prot			Perm			Perm	
Protected Phases	1	6!	6		5	2!			8			4
Permitted Phases				6				8			4	
Actuated Green, G (s)	4.3	86.2	86.2	86.2	7.1	89.0		9.7	9.7		9.7	9.7
Effective Green, g (s)	6.3	90.2	89.2	89.2	9.1	92.0		12.7	12.7		12.7	12.7
Actuated g/C Ratio	0.05	0.75	0.74	0.74	0.08	0.77		0.11	0.11		0.11	0.11
Clearance Time (s)	5.0	6.0	6.0	6.0	5.0	6.0		6.0	6.0		6.0	6.0
Vehicle Extension (s)	3.0	5.0	5.0	5.0	3.0	5.0		3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	89	678	2532	1133	129	2605		149	173		106	179
v/s Ratio Prot	0.02	0.01	0.38		c0.03	c0.65			0.01			0.00
v/s Ratio Perm				0.01				0.01			c0.03	
v/c Ratio	0.29	0.02	0.51	0.02	0.41	0.85		0.14	0.11		0.30	0.03
Uniform Delay, d1	54.7	3.7	6.4	4.0	52.9	9.4		48.7	48.6		49.6	48.1
Progression Factor	1.10	0.25	0.48	0.00	1.00	1.00		1.00	1.00		1.00	1.00
Incremental Delay, d2	1.4	0.0	0.6	0.0	2.1	3.7		0.4	0.3		1.6	0.1
Delay (s)	61.5	1.0	3.7	0.0	55.0	13.0		49.1	48.9		51.2	48.2
Level of Service	E	A	A	A	E	B		D	D		D	D
Approach Delay (s)			4.7			14.0			48.9			50.2
Approach LOS			A			B			D			D

## Intersection Summary

HCM Average Control Delay	12.2	HCM Level of Service	B
HCM Volume to Capacity ratio	0.76		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	93.2%	ICU Level of Service	F
Analysis Period (min)	15		

! Phase conflict between lane groups.

c Critical Lane Group



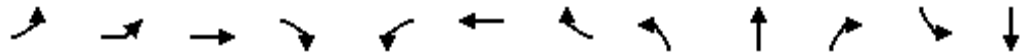


Movement	SBR	SWR
Lane Configurations		
Ideal Flow (vphpl)	1900	1900
Total Lost time (s)		2.0
Lane Util. Factor		1.00
Frt		0.86
Flt Protected		1.00
Satd. Flow (prot)		822
Flt Permitted		1.00
Satd. Flow (perm)		822
Volume (vph)	10	10
Peak-hour factor, PHF	0.95	0.95
Adj. Flow (vph)	11	11
RTOR Reduction (vph)	0	0
Lane Group Flow (vph)	0	11
Heavy Vehicles (%)	1%	100%
Turn Type	custom	
Protected Phases	2!	
Permitted Phases		
Actuated Green, G (s)	89.0	
Effective Green, g (s)	93.0	
Actuated g/C Ratio	0.78	
Clearance Time (s)	6.0	
Vehicle Extension (s)	5.0	
Lane Grp Cap (vph)	637	
v/s Ratio Prot	0.01	
v/s Ratio Perm		
v/c Ratio	0.02	
Uniform Delay, d1	3.1	
Progression Factor	1.00	
Incremental Delay, d2	0.0	
Delay (s)	3.1	
Level of Service	A	
Approach Delay (s)		
Approach LOS		
Intersection Summary		

# HCM Signalized Intersection Capacity Analysis

1621: MD 193 & MD 650

6/10/2008



Movement	EBL2	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR2	SBL	SBT
Lane Configurations	↖	↖	↕↕↕		↖	↕↕↕		↖↖	↕↕↕		↖	↕↕↕
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	2.0	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0
Lane Util. Factor	1.00	1.00	0.91		1.00	0.91		0.97	0.91		1.00	0.91
Frt	1.00	1.00	0.95		1.00	0.98		1.00	0.99		1.00	0.99
Flt Protected	0.95	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00
Satd. Flow (prot)	1703	902	4652		1703	4777		3303	4837		1703	4831
Flt Permitted	0.95	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00
Satd. Flow (perm)	1703	902	4652		1703	4777		3303	4837		1703	4831
Volume (vph)	100	10	1090	535	210	1430	270	300	950	80	210	2250
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	105	11	1147	563	221	1505	284	316	1000	84	221	2368
RTOR Reduction (vph)	0	0	59	0	0	0	0	0	6	0	0	7
Lane Group Flow (vph)	105	11	1651	0	221	1789	0	316	1078	0	221	2582
Heavy Vehicles (%)	6%	100%	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%
Turn Type	Prot	Split			Prot			Prot			Prot	
Protected Phases	7	4!	4		3	8!		1	6		5	2
Permitted Phases												
Actuated Green, G (s)	6.0	39.0	39.0		12.0	45.0		15.8	54.1		22.4	60.7
Effective Green, g (s)	9.0	43.0	43.0		15.0	49.0		18.8	58.6		25.4	65.2
Actuated g/C Ratio	0.06	0.29	0.29		0.10	0.33		0.13	0.39		0.17	0.43
Clearance Time (s)	5.0	6.0	6.0		5.0	6.0		5.0	6.5		5.0	6.5
Vehicle Extension (s)	3.0	5.0	5.0		3.0	5.0		3.0	5.0		3.0	5.0
Lane Grp Cap (vph)	102	259	1334		170	1560		414	1890		288	2100
v/s Ratio Prot	0.06	0.01	c0.35		c0.13	c0.37		0.10	0.22		c0.13	c0.53
v/s Ratio Perm												
v/c Ratio	1.03	0.04	1.24		1.30	1.15		0.76	0.57		0.77	1.23
Uniform Delay, d1	70.5	38.6	53.5		67.5	50.5		63.4	35.8		59.5	42.4
Progression Factor	0.82	0.94	0.81		0.80	0.75		1.10	0.72		1.14	0.82
Incremental Delay, d2	90.9	0.1	112.6		165.1	72.6		7.8	1.2		1.1	103.6
Delay (s)	148.5	36.3	155.8		219.1	110.6		77.6	27.0		68.8	138.5
Level of Service	F	D	F		F	F		E	C		E	F
Approach Delay (s)			154.7			122.5			38.4			133.0
Approach LOS			F			F			D			F

## Intersection Summary

HCM Average Control Delay	118.7	HCM Level of Service	F
HCM Volume to Capacity ratio	1.15		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	4.0
Intersection Capacity Utilization	129.2%	ICU Level of Service	H
Analysis Period (min)	15		

! Phase conflict between lane groups.

c Critical Lane Group



Movement	SBR	SWR
<b>Intersection Summary</b>		
Line Configurations		
Ideal Flow (vphpl)	1900	1900
Total Lost time (s)		2.0
Lane Util. Factor		1.00
Frt		0.86
Flt Protected		1.00
Satd. Flow (prot)		822
Flt Permitted		1.00
Satd. Flow (perm)		822
Volume (vph)	210	10
Peak-hour factor, PHF	0.95	0.95
Adj. Flow (vph)	221	11
RTOR Reduction (vph)	0	0
Lane Group Flow (vph)	0	11
Heavy Vehicles (%)	6%	100%
Turn Type	custom	
Protected Phases	8!	
Permitted Phases		
Actuated Green, G (s)	45.0	
Effective Green, g (s)	49.0	
Actuated g/C Ratio	0.33	
Clearance Time (s)	6.0	
Vehicle Extension (s)	5.0	
Lane Grp Cap (vph)	269	
v/s Ratio Prot	0.01	
v/s Ratio Perm		
v/c Ratio	0.04	
Uniform Delay, d1	34.5	
Progression Factor	1.00	
Incremental Delay, d2	0.1	
Delay (s)	34.6	
Level of Service	C	
Approach Delay (s)		
Approach LOS		
<b>Intersection Summary</b>		

# HCM Signalized Intersection Capacity Analysis

1629: MD 193 & 15th Ave

6/10/2008



Movement	EBL2	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR2	SBL	SBT	SBR
Lane Configurations	↖	↖	↖↖↖	↖	↖↖↖		↖	↑		↖	↗	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	2.0	2.0	2.0	3.0	2.0		2.0	3.0		3.0	3.0	
Lane Util. Factor	1.00	1.00	0.91	1.00	0.91		1.00	1.00		1.00	1.00	
Frt	1.00	1.00	1.00	1.00	0.99		1.00	0.92		1.00	0.85	
Flt Protected	0.95	0.95	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1703	902	4893	1703	4850		1787	1740		1787	1602	
Flt Permitted	0.95	0.95	1.00	0.95	1.00		0.65	1.00		0.76	1.00	
Satd. Flow (perm)	1703	902	4893	1703	4850		1225	1740		1423	1602	
Volume (vph)	60	10	1290	5	1895	120	1	1	1	220	1	85
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	63	11	1358	5	1995	126	1	1	1	232	1	89
RTOR Reduction (vph)	0	0	0	0	0	0	0	1	0	0	69	0
Lane Group Flow (vph)	63	11	1358	5	2121	0	1	1	0	232	21	0
Heavy Vehicles (%)	6%	100%	6%	6%	6%	6%	1%	1%	1%	1%	1%	1%
Turn Type	Prot	Split		Prot		custom	Prot		Perm			
Protected Phases	5	2!	2	1	6!		8				4	
Permitted Phases							8			4		
Actuated Green, G (s)	7.9	77.7	77.7	1.4	72.2		23.9	23.9		23.9	23.9	
Effective Green, g (s)	10.9	81.7	81.7	3.4	75.2		27.9	26.9		26.9	26.9	
Actuated g/C Ratio	0.09	0.68	0.68	0.03	0.63		0.23	0.22		0.22	0.22	
Clearance Time (s)	5.0	6.0	6.0	5.0	5.0		6.0	6.0		6.0	6.0	
Vehicle Extension (s)	3.0	5.0	5.0	3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	155	614	3331	48	3039		285	390		319	359	
v/s Ratio Prot	c0.04	0.01	0.28	0.00	c0.44			0.00			0.01	
v/s Ratio Perm							0.00			c0.16		
v/c Ratio	0.41	0.02	0.41	0.10	0.70		0.00	0.00		0.73	0.06	
Uniform Delay, d1	51.5	6.2	8.5	56.8	14.9		35.4	36.1		43.1	36.6	
Progression Factor	1.00	1.00	1.00	1.05	0.47		1.00	1.00		1.00	1.00	
Incremental Delay, d2	1.7	0.1	0.4	0.6	0.8		0.0	0.0		8.0	0.1	
Delay (s)	53.2	6.2	8.8	60.3	7.8		35.4	36.1		51.2	36.7	
Level of Service	D	A	A	E	A		D	D		D	D	
Approach Delay (s)			10.8		7.9			35.9			47.1	
Approach LOS			B		A			D			D	

## Intersection Summary

HCM Average Control Delay	12.2	HCM Level of Service	B
HCM Volume to Capacity ratio	0.67		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	7.0
Intersection Capacity Utilization	92.3%	ICU Level of Service	F
Analysis Period (min)	15		

! Phase conflict between lane groups.

c Critical Lane Group



Movement	SWR
Lane Configurations	↗
Ideal Flow (vphpl)	1900
Total Lost time (s)	2.0
Lane Util. Factor	1.00
Frt	0.86
Flt Protected	1.00
Satd. Flow (prot)	822
Flt Permitted	1.00
Satd. Flow (perm)	822
Volume (vph)	10
Peak-hour factor, PHF	0.95
Adj. Flow (vph)	11
RTOR Reduction (vph)	0
Lane Group Flow (vph)	11
Heavy Vehicles (%)	100%
Turn Type	custom
Protected Phases	6!
Permitted Phases	
Actuated Green, G (s)	72.2
Effective Green, g (s)	75.2
Actuated g/C Ratio	0.63
Clearance Time (s)	5.0
Vehicle Extension (s)	3.0
Lane Grp Cap (vph)	515
v/s Ratio Prot	0.01
v/s Ratio Perm	
v/c Ratio	0.02
Uniform Delay, d1	8.5
Progression Factor	1.00
Incremental Delay, d2	0.1
Delay (s)	8.6
Level of Service	A
Approach Delay (s)	
Approach LOS	
Intersection Summary	

# HCM Signalized Intersection Capacity Analysis

## 2: MD 193 & Carroll Ave

6/10/2008



Movement	EBL2	EBL	EBT	EBR	WBT	WBR	NBL	NBT	NBR2	SBL	SBT	SBR
Lane Configurations	↖	↖	↖↖↖		↖↖↖		↖	↖		↖	↖	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	2.0	2.0	2.0		2.0		2.0	2.0		2.0	2.0	
Lane Util. Factor	1.00	1.00	0.91		0.91		1.00	1.00		1.00	1.00	
Frt	1.00	1.00	0.99		0.99		1.00	0.98		1.00	0.98	
Flt Protected	0.95	0.95	1.00		1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1736	902	4920		4941		1736	1789		1736	1794	
Flt Permitted	0.95	0.95	1.00		1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1736	902	4920		4941		1736	1789		1736	1794	
Volume (vph)	40	10	2205	220	2200	145	285	340	55	120	225	30
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	42	11	2321	232	2316	153	300	358	58	126	237	32
RTOR Reduction (vph)	0	0	10	0	0	0	0	5	0	0	4	0
Lane Group Flow (vph)	42	11	2543	0	2469	0	300	411	0	126	265	0
Heavy Vehicles (%)	4%	100%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%
Turn Type	Prot	Split					Split			Split		
Protected Phases	1	6!	6		2!		3	3		4	4	
Permitted Phases												
Actuated Green, G (s)	4.0	66.0	66.0		57.0		23.0	23.0		13.0	13.0	
Effective Green, g (s)	7.0	70.0	70.0		61.0		27.0	27.0		17.0	17.0	
Actuated g/C Ratio	0.06	0.58	0.58		0.51		0.22	0.22		0.14	0.14	
Clearance Time (s)	5.0	6.0	6.0		6.0		6.0	6.0		6.0	6.0	
Vehicle Extension (s)	3.0	3.0	3.0		3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	101	526	2870		2512		391	403		246	254	
v/s Ratio Prot	0.02	0.01	c0.52		c0.50		0.17	c0.23		0.07	c0.15	
v/s Ratio Perm												
v/c Ratio	0.42	0.02	0.89		0.98		0.77	1.02		0.51	1.04	
Uniform Delay, d1	54.5	10.5	21.6		29.0		43.6	46.5		47.7	51.5	
Progression Factor	1.37	0.28	0.41		1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.3	0.0	0.4		14.4		13.4	50.2		1.8	67.9	
Delay (s)	75.1	2.9	9.3		43.3		57.0	96.7		49.5	119.4	
Level of Service	E	A	A		D		E	F		D	F	
Approach Delay (s)			10.3		43.3			80.1			97.1	
Approach LOS			B		D			F			F	

### Intersection Summary

HCM Average Control Delay	37.1	HCM Level of Service	D
HCM Volume to Capacity ratio	0.98		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	110.3%	ICU Level of Service	H
Analysis Period (min)	15		

! Phase conflict between lane groups.

c Critical Lane Group



Movement	SWR
Lane Configurations	↗
Ideal Flow (vphpl)	1900
Total Lost time (s)	2.0
Lane Util. Factor	1.00
Frt	0.86
Flt Protected	1.00
Satd. Flow (prot)	822
Flt Permitted	1.00
Satd. Flow (perm)	822
Volume (vph)	10
Peak-hour factor, PHF	0.95
Adj. Flow (vph)	11
RTOR Reduction (vph)	0
Lane Group Flow (vph)	11
Heavy Vehicles (%)	100%
Turn Type	custom
Protected Phases	2!
Permitted Phases	
Actuated Green, G (s)	57.0
Effective Green, g (s)	61.0
Actuated g/C Ratio	0.51
Clearance Time (s)	6.0
Vehicle Extension (s)	3.0
Lane Grp Cap (vph)	418
v/s Ratio Prot	0.01
v/s Ratio Perm	
v/c Ratio	0.03
Uniform Delay, d1	14.7
Progression Factor	1.00
Incremental Delay, d2	0.1
Delay (s)	14.8
Level of Service	B
Approach Delay (s)	
Approach LOS	
Intersection Summary	

# HCM Signalized Intersection Capacity Analysis

5: MD 193 & MD 320

6/10/2008



Movement	EBL2	EBT	EBR	WBL2	WBT	WBR	NBL	NBT	NBR2	SBL	SBT	SBR2
Lane Configurations	↘	↑↑↑		↘	↑↑↑		↘	↑↑	↘	↘	↑↑	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	2.0	2.0		2.0	2.0		2.0	2.0	2.0	2.0	2.0	
Lane Util. Factor	1.00	0.91		1.00	0.91		1.00	0.95	1.00	1.00	0.95	
Frt	1.00	0.98		1.00	1.00		1.00	1.00	0.85	1.00	0.96	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1736	4910		1736	4967		1736	3471	1553	1736	3337	
Flt Permitted	0.95	1.00		0.95	1.00		0.14	1.00	1.00	0.15	1.00	
Satd. Flow (perm)	1736	4910		1736	4967		254	3471	1553	273	3337	
Volume (vph)	280	2115	245	305	2145	60	350	970	265	75	590	205
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	295	2226	258	321	2258	63	368	1021	279	79	621	216
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	169	0	29	0
Lane Group Flow (vph)	295	2484	0	321	2321	0	368	1021	110	79	808	0
Heavy Vehicles (%)	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%
Turn Type	Prot		Prot		pm+pt			Perm		pm+pt		
Protected Phases	5	2		1!	6!		3!	8!		7	4!	
Permitted Phases							8!		8		4	
Actuated Green, G (s)	17.0	47.2		17.0	47.2		41.8	35.4	35.4	26.2	23.8	
Effective Green, g (s)	19.0	50.2		19.0	50.2		44.8	38.4	38.4	31.2	26.8	
Actuated g/C Ratio	0.16	0.42		0.16	0.42		0.37	0.32	0.32	0.26	0.22	
Clearance Time (s)	4.0	5.0		4.0	5.0		4.0	5.0	5.0	4.0	5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	275	2054		275	2078		292	1111	497	125	745	
v/s Ratio Prot	0.17	c0.51		c0.18	0.47		c0.17	0.29		0.02	c0.24	
v/s Ratio Perm							0.30		0.07	0.14		
v/c Ratio	1.07	1.21		1.17	1.12		1.26	0.92	0.22	0.63	1.08	
Uniform Delay, d1	50.5	34.9		50.5	34.9		34.6	39.3	29.9	36.4	46.6	
Progression Factor	1.00	1.00		0.66	1.47		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	74.9	99.0		88.7	55.3		141.8	13.4	1.0	10.0	58.4	
Delay (s)	125.4	133.9		121.9	106.5		176.4	52.7	30.9	46.4	105.0	
Level of Service	F	F		F	F		F	D	C	D	F	
Approach Delay (s)		133.0			108.4			76.4			100.0	
Approach LOS		F			F			E			F	

## Intersection Summary

HCM Average Control Delay	109.1	HCM Level of Service	F
HCM Volume to Capacity ratio	1.16		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	137.1%	ICU Level of Service	H
Analysis Period (min)	15		

! Phase conflict between lane groups.

c Critical Lane Group



HCM Signalized Intersection Capacity Analysis  
 5: MD 193 & MD 320

6/10/2008

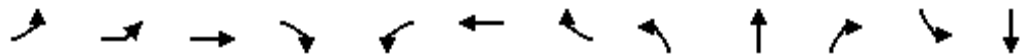


Movement	NER	SWL
Lane Configurations		
Ideal Flow (vphpl)	1900	1900
Total Lost time (s)	2.0	2.0
Lane Util. Factor	1.00	1.00
Frt	0.86	1.00
Flt Protected	1.00	0.95
Satd. Flow (prot)	822	902
Flt Permitted	1.00	0.95
Satd. Flow (perm)	822	902
Volume (vph)	10	10
Peak-hour factor, PHF	0.95	0.95
Adj. Flow (vph)	11	11
RTOR Reduction (vph)	0	0
Lane Group Flow (vph)	11	11
Heavy Vehicles (%)	100%	100%
Turn Type	custom	Prot
Protected Phases	1 8!	1!
Permitted Phases		
Actuated Green, G (s)	57.4	17.0
Effective Green, g (s)	59.4	19.0
Actuated g/C Ratio	0.50	0.16
Clearance Time (s)		4.0
Vehicle Extension (s)		3.0
Lane Grp Cap (vph)	407	143
v/s Ratio Prot	0.01	0.01
v/s Ratio Perm		
v/c Ratio	0.03	0.08
Uniform Delay, d1	15.5	43.0
Progression Factor	1.00	1.00
Incremental Delay, d2	0.0	0.2
Delay (s)	15.5	43.3
Level of Service	B	D
Approach Delay (s)		
Approach LOS		
Intersection Summary		

# HCM Signalized Intersection Capacity Analysis

## 14: MD 193 & MD 193 West SC

6/10/2008



Movement	EBL2	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR2	SBL	SBT
Lane Configurations			  			  						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	2.0	2.0	2.0		2.0	2.0			2.0	2.0	2.0	2.0
Lane Util. Factor	1.00	1.00	0.91		1.00	0.91			1.00	1.00	1.00	1.00
Frt	1.00	1.00	1.00		1.00	1.00			1.00	0.85	1.00	0.92
Flt Protected	0.95	0.95	1.00		0.95	1.00			0.98	1.00	0.95	1.00
Satd. Flow (prot)	1736	902	4977		1736	4978			1835	1599	1787	1740
Flt Permitted	0.95	0.95	1.00		0.95	1.00			0.86	1.00	0.66	1.00
Satd. Flow (perm)	1736	902	4977		1736	4978			1615	1599	1247	1740
Volume (vph)	30	10	2210	30	30	2325	30	30	30	30	30	30
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	32	11	2326	32	32	2447	32	32	32	32	32	32
RTOR Reduction (vph)	0	0	1	0	0	0	0	0	0	25	0	24
Lane Group Flow (vph)	32	11	2357	0	32	2479	0	0	64	7	32	40
Heavy Vehicles (%)	4%	100%	4%	4%	4%	4%	4%	1%	1%	1%	1%	1%
Turn Type	Prot	Split			Prot			Perm		Perm	Perm	
Protected Phases	5	2!	2		1	6!			3			3
Permitted Phases								3	3	3	3	
Actuated Green, G (s)	14.0	87.0	87.0		19.0	92.0			29.0	29.0	29.0	29.0
Effective Green, g (s)	17.0	90.0	90.0		22.0	95.0			32.0	32.0	32.0	32.0
Actuated g/C Ratio	0.11	0.60	0.60		0.15	0.63			0.21	0.21	0.21	0.21
Clearance Time (s)	5.0	5.0	5.0		5.0	5.0			5.0	5.0	5.0	5.0
Lane Grp Cap (vph)	197	541	2986		255	3153			345	341	266	371
v/s Ratio Prot	c0.02	0.01	0.47		0.02	c0.50						0.02
v/s Ratio Perm								c0.04	0.00	0.03		
v/c Ratio	0.16	0.02	0.79		0.13	0.79			0.19	0.02	0.12	0.11
Uniform Delay, d1	60.1	12.1	22.8		55.6	20.1			48.3	46.6	47.6	47.5
Progression Factor	1.00	1.00	1.00		1.41	0.15			1.00	1.00	1.00	1.00
Incremental Delay, d2	1.8	0.1	2.2		0.1	0.2			1.2	0.1	0.9	0.6
Delay (s)	61.8	12.2	25.0		78.6	3.3			49.5	46.7	48.6	48.1
Level of Service	E	B	C		E	A			D	D	D	D
Approach Delay (s)			25.4			4.2			48.6			48.2
Approach LOS			C			A			D			D

### Intersection Summary

HCM Average Control Delay	15.9	HCM Level of Service	B
HCM Volume to Capacity ratio	0.58		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	6.0
Intersection Capacity Utilization	86.7%	ICU Level of Service	E
Analysis Period (min)	15		

! Phase conflict between lane groups.

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis  
 14: MD 193 & MD 193 West SC

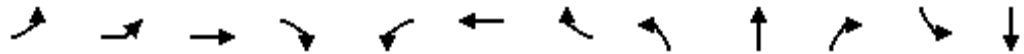
6/10/2008



Movement	SBR	SWR
Lane Configurations		
Ideal Flow (vphpl)	1900	1900
Total Lost time (s)		2.0
Lane Util. Factor		1.00
Frt		0.86
Flt Protected		1.00
Satd. Flow (prot)		822
Flt Permitted		1.00
Satd. Flow (perm)		822
Volume (vph)	30	10
Peak-hour factor, PHF	0.95	0.95
Adj. Flow (vph)	32	11
RTOR Reduction (vph)	0	0
Lane Group Flow (vph)	0	11
Heavy Vehicles (%)	1%	100%
Turn Type	custom	
Protected Phases	6!	
Permitted Phases		
Actuated Green, G (s)	92.0	
Effective Green, g (s)	95.0	
Actuated g/C Ratio	0.63	
Clearance Time (s)	5.0	
Lane Grp Cap (vph)	521	
v/s Ratio Prot	0.01	
v/s Ratio Perm		
v/c Ratio	0.02	
Uniform Delay, d1	10.2	
Progression Factor	1.00	
Incremental Delay, d2	0.1	
Delay (s)	10.3	
Level of Service	B	
Approach Delay (s)		
Approach LOS		
<b>Intersection Summary</b>		

HCM Signalized Intersection Capacity Analysis  
 15: MD 193 & MD 193 East SC

6/10/2008



Movement	EBL2	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR2	SBL	SBT
Lane Configurations	↖	↖	↕↕↕		↖	↕↕↕		↖	↕		↖	↖
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	2.0	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0
Lane Util. Factor	1.00	1.00	0.91		1.00	0.91		1.00	1.00		0.95	0.95
Frt	1.00	1.00	1.00		1.00	0.99		1.00	0.87		1.00	1.00
Flt Protected	0.95	0.95	1.00		0.95	1.00		0.95	1.00		0.95	0.97
Satd. Flow (prot)	1736	902	4977		1736	4949		1787	1638		1698	1731
Flt Permitted	0.95	0.95	1.00		0.95	1.00		0.70	1.00		0.55	0.81
Satd. Flow (perm)	1736	902	4977		1736	4949		1315	1638		986	1448
Volume (vph)	45	10	2195	30	70	2120	115	95	15	95	55	15
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	47	11	2311	32	74	2232	121	100	16	100	58	16
RTOR Reduction (vph)	0	0	1	0	0	0	0	0	79	0	0	0
Lane Group Flow (vph)	47	11	2342	0	74	2353	0	100	37	0	29	45
Heavy Vehicles (%)	4%	100%	4%	4%	4%	4%	4%	1%	1%	1%	1%	1%
Turn Type	Prot	Split			Prot			Perm			Perm	
Protected Phases	1	6!	6		5	2!		3			3	3
Permitted Phases			6			2!		3	3		3	
Actuated Green, G (s)	19.0	88.0	88.0		18.0	87.0		29.0	29.0		29.0	29.0
Effective Green, g (s)	22.0	91.0	91.0		21.0	90.0		32.0	32.0		32.0	32.0
Actuated g/C Ratio	0.15	0.61	0.61		0.14	0.60		0.21	0.21		0.21	0.21
Clearance Time (s)	5.0	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0
Lane Grp Cap (vph)	255	547	3019		243	2969		281	349		210	309
v/s Ratio Prot	0.03	0.01	0.47		c0.04	c0.48			0.02			
v/s Ratio Perm								c0.08			0.03	0.03
v/c Ratio	0.18	0.02	0.78		0.30	0.79		0.36	0.11		0.14	0.15
Uniform Delay, d1	56.1	11.7	21.9		57.9	22.9		50.2	47.5		47.8	47.9
Progression Factor	1.43	0.27	0.25		1.00	1.00		1.00	1.00		1.00	1.00
Incremental Delay, d2	0.1	0.0	0.2		3.2	2.3		3.5	0.6		1.4	1.0
Delay (s)	80.6	3.2	5.7		61.2	25.1		53.7	48.1		49.2	48.9
Level of Service	F	A	A		E	C		D	D		D	D
Approach Delay (s)			7.2			26.2			50.7			48.2
Approach LOS			A			C			D			D

Intersection Summary

HCM Average Control Delay	18.9	HCM Level of Service	B
HCM Volume to Capacity ratio	0.61		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	6.0
Intersection Capacity Utilization	98.5%	ICU Level of Service	F
Analysis Period (min)	15		

! Phase conflict between lane groups.

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis  
 15: MD 193 & MD 193 East SC

6/10/2008

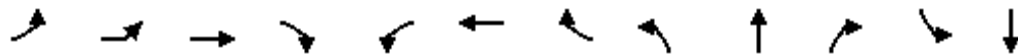


Movement	SBR	SWR
Lane Configurations	↗	↗
Ideal Flow (vphpl)	1900	1900
Total Lost time (s)	2.0	2.0
Lane Util. Factor	1.00	1.00
Frt	0.85	0.86
Flt Protected	1.00	1.00
Satd. Flow (prot)	1599	822
Flt Permitted	1.00	1.00
Satd. Flow (perm)	1599	822
Volume (vph)	40	10
Peak-hour factor, PHF	0.95	0.95
Adj. Flow (vph)	42	11
RTOR Reduction (vph)	33	0
Lane Group Flow (vph)	9	11
Heavy Vehicles (%)	1%	100%
Turn Type	Perm custom	
Protected Phases	2!	
Permitted Phases	3	
Actuated Green, G (s)	29.0	87.0
Effective Green, g (s)	32.0	90.0
Actuated g/C Ratio	0.21	0.60
Clearance Time (s)	5.0	5.0
Lane Grp Cap (vph)	341	493
v/s Ratio Prot	0.01	
v/s Ratio Perm	0.01	
v/c Ratio	0.03	0.02
Uniform Delay, d1	46.7	12.2
Progression Factor	1.00	1.00
Incremental Delay, d2	0.1	0.1
Delay (s)	46.8	12.2
Level of Service	D	B
Approach Delay (s)		
Approach LOS		
<b>Intersection Summary</b>		

# HCM Signalized Intersection Capacity Analysis

91: MD 193 & Riggs Rd

6/10/2008



Movement	EBL2	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR2	SBL	SBT
Lane Configurations	↘	↘	↗↗↗	↗	↘↘	↗↗↗		↘↘	↗	↘	↘	↗↗
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	2.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0
Lane Util. Factor	1.00	1.00	0.91	1.00	0.97	0.91		0.97	1.00	1.00	1.00	0.95
Frt	1.00	1.00	1.00	0.85	1.00	0.98		1.00	1.00	0.85	1.00	0.98
Flt Protected	0.95	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00
Satd. Flow (prot)	1736	902	4988	1553	3367	4912		3367	1827	1553	1736	3397
Flt Permitted	0.95	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00
Satd. Flow (perm)	1736	902	4988	1553	3367	4912		3367	1827	1553	1736	3397
Volume (vph)	140	10	1625	665	670	1550	175	800	635	670	270	479
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	147	11	1711	700	705	1632	184	842	668	705	284	504
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	178	0	11
Lane Group Flow (vph)	147	11	1711	700	705	1816	0	842	668	527	284	577
Heavy Vehicles (%)	4%	100%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%
Turn Type	Prot	Split		Free	Prot			Split		Perm	Split	
Protected Phases	1	6!	6		5	2!		4	4		3	3
Permitted Phases				Free						4		
Actuated Green, G (s)	9.0	33.0	33.0	120.0	18.0	42.0		33.0	33.0	33.0	14.0	14.0
Effective Green, g (s)	11.0	38.0	37.0	120.0	20.0	46.0		35.0	35.0	35.0	16.0	16.0
Actuated g/C Ratio	0.09	0.32	0.31	1.00	0.17	0.38		0.29	0.29	0.29	0.13	0.13
Clearance Time (s)	5.0	7.0	7.0		5.0	7.0		5.0	5.0	5.0	5.0	5.0
Vehicle Extension (s)	2.5	5.0	5.0		2.5	5.0		2.5	2.5	2.5	2.5	2.5
Lane Grp Cap (vph)	159	286	1538	1553	561	1883		982	533	453	231	453
v/s Ratio Prot	0.08	0.01	c0.34		c0.21	0.37		0.25	c0.37		0.16	c0.17
v/s Ratio Perm				0.45						0.34		
v/c Ratio	0.92	0.04	1.11	0.45	1.26	0.96		0.86	1.25	1.16	1.23	1.27
Uniform Delay, d1	54.1	28.4	41.5	0.0	50.0	36.2		40.1	42.5	42.5	52.0	52.0
Progression Factor	1.21	0.75	0.84	1.00	0.99	1.17		1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	39.8	0.2	57.9	0.7	126.5	11.6		7.4	128.8	95.5	135.1	139.3
Delay (s)	105.4	21.4	92.6	0.7	175.9	54.0		47.6	171.3	138.0	187.1	191.3
Level of Service	F	C	F	A	F	D		D	F	F	F	F
Approach Delay (s)			68.0			88.1			113.7			189.9
Approach LOS			E			F			F			F

## Intersection Summary

HCM Average Control Delay	99.5	HCM Level of Service	F
HCM Volume to Capacity ratio	1.21		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	123.3%	ICU Level of Service	H
Analysis Period (min)	15		

! Phase conflict between lane groups.

c Critical Lane Group



Movement	SBR	SWR
Lane Configurations		
Ideal Flow (vphpl)	1900	1900
Total Lost time (s)		2.0
Lane Util. Factor		1.00
Frt		0.86
Flt Protected		1.00
Satd. Flow (prot)		822
Flt Permitted		1.00
Satd. Flow (perm)		822
Volume (vph)	80	10
Peak-hour factor, PHF	0.95	0.95
Adj. Flow (vph)	84	11
RTOR Reduction (vph)	0	0
Lane Group Flow (vph)	0	11
Heavy Vehicles (%)	4%	100%
Turn Type	custom	
Protected Phases	2!	
Permitted Phases		
Actuated Green, G (s)	42.0	
Effective Green, g (s)	47.0	
Actuated g/C Ratio	0.39	
Clearance Time (s)	7.0	
Vehicle Extension (s)	5.0	
Lane Grp Cap (vph)	322	
v/s Ratio Prot	0.01	
v/s Ratio Perm		
v/c Ratio	0.03	
Uniform Delay, d1	22.5	
Progression Factor	1.00	
Incremental Delay, d2	0.2	
Delay (s)	22.7	
Level of Service	C	
Approach Delay (s)		
Approach LOS		
Intersection Summary		

# HCM Signalized Intersection Capacity Analysis

105: MD 193 & 23rd Ave

6/10/2008



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR2	SBR	SWR
Lane Configurations	↖	↑↑↑		↖	↑↑↑			↑	↗	↗	↖
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	2.0	3.0		3.0	3.0			3.0	3.0	3.0	2.0
Lane Util. Factor	1.00	0.91		1.00	0.91			1.00	1.00	1.00	1.00
Frt	1.00	0.98		1.00	1.00			1.00	0.85	0.86	0.86
Flt Protected	0.95	1.00		0.95	1.00			0.95	1.00	1.00	1.00
Satd. Flow (prot)	902	4894		1736	4976			1793	1599	1627	822
Flt Permitted	0.95	1.00		0.95	1.00			0.95	1.00	1.00	1.00
Satd. Flow (perm)	902	4894		1736	4976			1793	1599	1627	822
Volume (vph)	10	2215	315	185	1970	30	400	5	145	75	10
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	11	2332	332	195	2074	32	421	5	153	79	11
RTOR Reduction (vph)	0	15	0	0	0	0	0	0	115	36	0
Lane Group Flow (vph)	11	2649	0	195	2106	0	0	426	38	43	11
Heavy Vehicles (%)	100%	4%	4%	4%	4%	4%	1%	1%	1%	1%	100%
Turn Type	Split		Prot		Perm		Perm custom custom				
Protected Phases	6!	6		5	2!			4			2!
Permitted Phases		6				4		4	6		
Actuated Green, G (s)	63.0	63.0		13.0	81.0			27.0	27.0	63.0	81.0
Effective Green, g (s)	67.0	66.0		15.0	84.0			30.0	30.0	66.0	85.0
Actuated g/C Ratio	0.56	0.55		0.12	0.70			0.25	0.25	0.55	0.71
Clearance Time (s)	6.0	6.0		5.0	6.0			6.0	6.0	6.0	6.0
Vehicle Extension (s)	5.0	5.0		3.0	5.0			3.0	3.0	5.0	5.0
Lane Grp Cap (vph)	504	2692		217	3483			448	400	895	582
v/s Ratio Prot	0.01	c0.54		c0.11	0.42						0.01
v/s Ratio Perm								0.24	0.02	0.03	
v/c Ratio	0.02	0.98		0.90	0.60			0.95	0.10	0.05	0.02
Uniform Delay, d1	11.8	26.5		51.8	9.4			44.3	34.6	12.5	5.2
Progression Factor	0.57	0.49		0.82	1.44			1.00	1.00	1.00	1.00
Incremental Delay, d2	0.0	2.7		24.9	0.5			30.2	0.1	0.1	0.1
Delay (s)	6.8	15.6		67.5	14.0			74.5	34.7	12.6	5.2
Level of Service	A	B		E	B			E	C	B	A
Approach Delay (s)		15.6			18.6			64.0			
Approach LOS		B			B			E			

## Intersection Summary

HCM Average Control Delay	21.7	HCM Level of Service	C
HCM Volume to Capacity ratio	0.96		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	107.8%	ICU Level of Service	G
Analysis Period (min)	15		

! Phase conflict between lane groups.

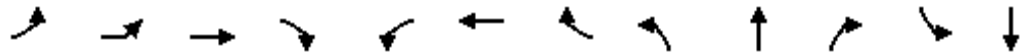
c Critical Lane Group



# HCM Signalized Intersection Capacity Analysis

107: MD 193 & W Park Dr

6/10/2008



Movement	EBL2	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR2	SBL	SBT
Lane Configurations	↖	↖	↗↗	↗	↖	↗↗		↖	↗		↖	↗
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	2.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0
Lane Util. Factor	1.00	1.00	0.95	1.00	1.00	0.95		1.00	1.00		1.00	1.00
Frt	1.00	1.00	1.00	0.85	1.00	1.00		1.00	0.86		1.00	0.90
Flt Protected	0.95	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00
Satd. Flow (prot)	1736	902	3471	1553	1736	3454		1787	1612		1787	1696
Flt Permitted	0.95	0.95	1.00	1.00	0.95	1.00		0.74	1.00		0.53	1.00
Satd. Flow (perm)	1736	902	3471	1553	1736	3454		1385	1612		1004	1696
Volume (vph)	25	10	2235	40	35	2070	69	25	5	95	80	10
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	26	11	2353	42	37	2179	73	26	5	100	84	11
RTOR Reduction (vph)	0	0	0	10	0	0	0	0	64	0	0	18
Lane Group Flow (vph)	26	11	2353	32	37	2252	0	26	41	0	84	14
Heavy Vehicles (%)	4%	100%	4%	4%	4%	4%	4%	1%	1%	1%	1%	1%
Turn Type	Prot	Split		Perm	Prot			Perm			Perm	
Protected Phases	1	6!	6		5	2!			8			4
Permitted Phases				6				8				4
Actuated Green, G (s)	3.0	87.6	87.6	87.6	3.0	87.6		12.4	12.4		12.4	12.4
Effective Green, g (s)	5.0	91.6	90.6	90.6	5.0	90.6		15.4	15.4		15.4	15.4
Actuated g/C Ratio	0.04	0.76	0.76	0.76	0.04	0.76		0.13	0.13		0.13	0.13
Clearance Time (s)	5.0	6.0	6.0	6.0	5.0	6.0		6.0	6.0		6.0	6.0
Vehicle Extension (s)	3.0	5.0	5.0	5.0	3.0	5.0		3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	72	689	2621	1173	72	2608		178	207		129	218
v/s Ratio Prot	0.01	0.01	c0.68		c0.02	0.65			0.03			0.01
v/s Ratio Perm				0.02				0.02			c0.08	
v/c Ratio	0.36	0.02	0.90	0.03	0.51	0.86		0.15	0.20		0.65	0.06
Uniform Delay, d1	55.9	3.4	11.2	3.7	56.3	10.3		46.5	46.8		49.7	46.0
Progression Factor	1.19	0.12	0.71	0.00	1.00	1.00		1.00	1.00		1.00	1.00
Incremental Delay, d2	1.3	0.0	2.4	0.0	6.1	4.1		0.4	0.5		11.2	0.1
Delay (s)	67.7	0.4	10.4	0.0	62.4	14.4		46.8	47.3		60.9	46.1
Level of Service	E	A	B	A	E	B		D	D		E	D
Approach Delay (s)			10.8			15.2			47.2			56.8
Approach LOS			B			B			D			E

## Intersection Summary

HCM Average Control Delay	14.8	HCM Level of Service	B
HCM Volume to Capacity ratio	0.85		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	99.5%	ICU Level of Service	F
Analysis Period (min)	15		

! Phase conflict between lane groups.

c Critical Lane Group

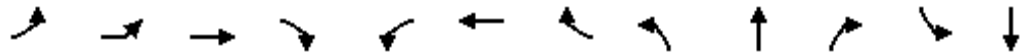


Movement	SBR	SWR
Lane Configurations		
Ideal Flow (vphpl)	1900	1900
Total Lost time (s)		2.0
Lane Util. Factor		1.00
Frt		0.86
Flt Protected		1.00
Satd. Flow (prot)		822
Flt Permitted		1.00
Satd. Flow (perm)		822
Volume (vph)	20	10
Peak-hour factor, PHF	0.95	0.95
Adj. Flow (vph)	21	11
RTOR Reduction (vph)	0	0
Lane Group Flow (vph)	0	11
Heavy Vehicles (%)	1%	100%
Turn Type	custom	
Protected Phases	2!	
Permitted Phases		
Actuated Green, G (s)	87.6	
Effective Green, g (s)	91.6	
Actuated g/C Ratio	0.76	
Clearance Time (s)	6.0	
Vehicle Extension (s)	5.0	
Lane Grp Cap (vph)	627	
v/s Ratio Prot	0.01	
v/s Ratio Perm		
v/c Ratio	0.02	
Uniform Delay, d1	3.4	
Progression Factor	1.00	
Incremental Delay, d2	0.1	
Delay (s)	3.5	
Level of Service	A	
Approach Delay (s)		
Approach LOS		
Intersection Summary		

# HCM Signalized Intersection Capacity Analysis

1621: MD 193 & MD 650

6/10/2008



Movement	EBL2	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR2	SBL	SBT
Lane Configurations	↖	↖	↕↕↕		↖	↕↕↕		↖↖	↕↕↕		↖	↕↕↕
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	2.0	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0
Lane Util. Factor	1.00	1.00	0.91		1.00	0.91		0.97	0.91		1.00	0.91
Frt	1.00	1.00	0.97		1.00	0.98		1.00	0.99		1.00	0.99
Flt Protected	0.95	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00
Satd. Flow (prot)	1736	902	4840		1736	4896		3367	4917		1736	4938
Flt Permitted	0.95	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00
Satd. Flow (perm)	1736	902	4840		1736	4896		3367	4917		1736	4938
Volume (vph)	135	10	1715	420	265	1770	245	535	2120	220	360	1270
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	142	11	1805	442	279	1863	258	563	2232	232	379	1337
RTOR Reduction (vph)	0	0	28	0	0	0	0	0	8	0	0	5
Lane Group Flow (vph)	142	11	2219	0	279	2121	0	563	2456	0	379	1427
Heavy Vehicles (%)	4%	100%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%
Turn Type	Prot	Split			Prot			Prot			Prot	
Protected Phases	7	4!	4		3	8!		1	6		5	2
Permitted Phases												
Actuated Green, G (s)	7.0	45.0	45.0		14.0	52.0		23.0	50.5		18.0	45.5
Effective Green, g (s)	10.0	49.0	49.0		17.0	56.0		26.0	55.0		21.0	50.0
Actuated g/C Ratio	0.07	0.33	0.33		0.11	0.37		0.17	0.37		0.14	0.33
Clearance Time (s)	5.0	6.0	6.0		5.0	6.0		5.0	6.5		5.0	6.5
Vehicle Extension (s)	3.0	5.0	5.0		3.0	5.0		3.0	5.0		3.0	5.0
Lane Grp Cap (vph)	116	295	1581		197	1828		584	1803		243	1646
v/s Ratio Prot	0.08	0.01	c0.46		c0.16	c0.43		0.17	c0.50		c0.22	0.29
v/s Ratio Perm												
v/c Ratio	1.22	0.04	1.40		1.42	1.16		0.96	1.36		1.56	0.87
Uniform Delay, d1	70.0	34.4	50.5		66.5	47.0		61.5	47.5		64.5	46.9
Progression Factor	0.69	0.83	0.67		0.71	0.62		0.71	0.70		0.79	0.68
Incremental Delay, d2	138.9	0.1	184.1		205.6	76.5		20.1	165.1		268.4	5.5
Delay (s)	186.9	28.7	218.2		252.8	105.7		64.0	198.4		319.1	37.6
Level of Service	F	C	F		F	F		E	F		F	D
Approach Delay (s)			215.4			122.8			173.4			96.5
Approach LOS			F			F			F			F

## Intersection Summary

HCM Average Control Delay	156.7	HCM Level of Service	F
HCM Volume to Capacity ratio	1.38		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	6.0
Intersection Capacity Utilization	146.3%	ICU Level of Service	H
Analysis Period (min)	15		

! Phase conflict between lane groups.

c Critical Lane Group



Movement	SBR	SWR
<b>Line Configurations</b>		
Ideal Flow (vphpl)	1900	1900
Total Lost time (s)		2.0
Lane Util. Factor		1.00
Frt		0.86
Flt Protected		1.00
Satd. Flow (prot)		822
Flt Permitted		1.00
Satd. Flow (perm)		822
Volume (vph)	90	10
Peak-hour factor, PHF	0.95	0.95
Adj. Flow (vph)	95	11
RTOR Reduction (vph)	0	0
Lane Group Flow (vph)	0	11
Heavy Vehicles (%)	4%	100%
Turn Type	custom	
Protected Phases	8!	
Permitted Phases		
Actuated Green, G (s)	52.0	
Effective Green, g (s)	56.0	
Actuated g/C Ratio	0.37	
Clearance Time (s)	6.0	
Vehicle Extension (s)	5.0	
Lane Grp Cap (vph)	307	
v/s Ratio Prot	0.01	
v/s Ratio Perm		
v/c Ratio	0.04	
Uniform Delay, d1	29.9	
Progression Factor	1.00	
Incremental Delay, d2	0.1	
Delay (s)	30.0	
Level of Service	C	
Approach Delay (s)		
Approach LOS		
<b>Intersection Summary</b>		

# HCM Signalized Intersection Capacity Analysis

1629: MD 193 & 15th Ave

6/10/2008



Movement	EBL2	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR2	SBL	SBT	SBR
Lane Configurations	↖	↖	↖↖↖	↖	↖↖↖		↖	↑		↖	↗	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	2.0	2.0	2.0		2.0		2.0	3.0		3.0	3.0	
Lane Util. Factor	1.00	1.00	0.91		0.91		1.00	1.00		1.00	1.00	
Frt	1.00	1.00	1.00		0.98		1.00	0.92		1.00	0.85	
Flt Protected	0.95	0.95	1.00		1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1736	902	4988		4903		1787	1740		1787	1602	
Flt Permitted	0.95	0.95	1.00		1.00		0.65	1.00		0.76	1.00	
Satd. Flow (perm)	1736	902	4988		4903		1218	1740		1423	1602	
Volume (vph)	225	10	2105	0	2195	280	1	1	1	375	1	95
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	237	11	2216	0	2311	295	1	1	1	395	1	100
RTOR Reduction (vph)	0	0	0	0	0	0	0	1	0	0	73	0
Lane Group Flow (vph)	237	11	2216	0	2606	0	1	1	0	395	29	0
Heavy Vehicles (%)	4%	100%	4%	4%	4%	4%	1%	1%	1%	1%	1%	1%
Turn Type	Prot	Split		Prot		custom	Prot		Perm			
Protected Phases	5	2!	2	1	6!		8				4	
Permitted Phases							8			4		
Actuated Green, G (s)	13.0	78.0	78.0		62.0		30.0	30.0		30.0	30.0	
Effective Green, g (s)	16.0	82.0	82.0		64.0		34.0	33.0		33.0	33.0	
Actuated g/C Ratio	0.13	0.68	0.68		0.53		0.28	0.28		0.28	0.28	
Clearance Time (s)	5.0	6.0	6.0		4.0		6.0	6.0		6.0	6.0	
Vehicle Extension (s)	3.0	5.0	5.0		3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	231	616	3408		2615		345	479		391	441	
v/s Ratio Prot	c0.14	0.01	0.44		c0.53			0.00			0.02	
v/s Ratio Perm								0.00		c0.28		
v/c Ratio	1.03	0.02	0.65		1.00		0.00	0.00		1.01	0.06	
Uniform Delay, d1	52.0	6.1	10.8		27.9		30.8	31.6		43.5	32.1	
Progression Factor	1.00	1.00	1.00		0.53		1.00	1.00		1.00	1.00	
Incremental Delay, d2	66.1	0.1	1.0		11.0		0.0	0.0		48.1	0.1	
Delay (s)	118.1	6.1	11.8		25.7		30.8	31.6		91.6	32.2	
Level of Service	F	A	B		C		C	C		F	C	
Approach Delay (s)			22.0		25.7			31.3			79.5	
Approach LOS			C		C			C			E	

## Intersection Summary

HCM Average Control Delay	28.8	HCM Level of Service	C
HCM Volume to Capacity ratio	1.00		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	7.0
Intersection Capacity Utilization	105.2%	ICU Level of Service	G
Analysis Period (min)	15		

! Phase conflict between lane groups.

c Critical Lane Group



Movement	SWR
Lane Configurations	↗
Ideal Flow (vphpl)	1900
Total Lost time (s)	2.0
Lane Util. Factor	1.00
Frt	0.86
Flt Protected	1.00
Satd. Flow (prot)	1580
Flt Permitted	1.00
Satd. Flow (perm)	1580
Volume (vph)	10
Peak-hour factor, PHF	0.95
Adj. Flow (vph)	11
RTOR Reduction (vph)	0
Lane Group Flow (vph)	11
Heavy Vehicles (%)	4%
Turn Type	custom
Protected Phases	6!
Permitted Phases	
Actuated Green, G (s)	62.0
Effective Green, g (s)	64.0
Actuated g/C Ratio	0.53
Clearance Time (s)	4.0
Vehicle Extension (s)	3.0
Lane Grp Cap (vph)	843
v/s Ratio Prot	0.01
v/s Ratio Perm	
v/c Ratio	0.01
Uniform Delay, d1	13.2
Progression Factor	1.00
Incremental Delay, d2	0.0
Delay (s)	13.2
Level of Service	B
Approach Delay (s)	
Approach LOS	
Intersection Summary	

HCM Signalized Intersection Capacity Analysis  
4: Shopping Center & MD 201

6/11/2008



Movement	EBL	EBT	EBR	WBL	WBT	WBR2	NBL2	NBL	NBT	NBR	SBL	SBT
Lane Configurations		↕	↗		↕		↗	↗	↕↕	↗	↗	↕↕↕
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		3.0	3.0		3.0		3.0	3.0	3.0	3.0	3.0	3.0
Lane Util. Factor		1.00	1.00		1.00		1.00	1.00	0.95	1.00	1.00	0.91
Frt		1.00	0.85		0.91		1.00	1.00	1.00	0.85	1.00	1.00
Flt Protected		0.96	1.00		0.99		0.95	0.95	1.00	1.00	0.95	1.00
Satd. Flow (prot)		1812	1599		1690		1703	902	3406	1524	1703	4892
Flt Permitted		0.84	1.00		0.92		0.95	0.95	1.00	1.00	0.08	1.00
Satd. Flow (perm)		1582	1599		1570		1703	902	3406	1524	142	4892
Volume (vph)	15	5	15	15	5	40	25	10	1750	15	15	2245
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Growth Factor (vph)	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Adj. Flow (vph)	16	5	16	16	5	42	26	11	1842	16	16	2363
RTOR Reduction (vph)	0	0	14	0	37	0	0	0	0	3	0	0
Lane Group Flow (vph)	0	21	2	0	26	0	26	11	1842	13	16	2368
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	6%	100%	6%	6%	6%	6%
Turn Type	Perm		Perm	Perm			Prot	Split		Perm	pm+pt	
Protected Phases		8			4		5	2!	2		1	6!
Permitted Phases	8		8	4						2		6
Actuated Green, G (s)		6.4	6.4		6.4		3.0	55.1	55.1	55.1	54.1	53.1
Effective Green, g (s)		9.4	9.4		9.4		5.0	58.6	58.6	58.6	59.6	56.6
Actuated g/C Ratio		0.12	0.12		0.12		0.06	0.73	0.73	0.73	0.75	0.71
Clearance Time (s)		6.0	6.0		6.0		5.0	6.5	6.5	6.5	5.0	6.5
Vehicle Extension (s)		3.0	3.0		3.0		3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)		186	188		184		106	661	2495	1116	164	3461
v/s Ratio Prot							c0.02	0.01	c0.54		0.00	0.48
v/s Ratio Perm		0.01	0.00		c0.02					0.01	0.07	
v/c Ratio		0.11	0.01		0.14		0.25	0.02	0.74	0.01	0.10	0.68
Uniform Delay, d1		31.6	31.2		31.7		35.7	2.9	6.2	2.9	5.3	6.6
Progression Factor		1.00	1.00		1.00		1.07	0.75	1.39	0.66	0.96	1.21
Incremental Delay, d2		0.3	0.0		0.4		0.9	0.0	1.5	0.0	0.2	0.6
Delay (s)		31.8	31.2		32.0		39.2	2.2	10.1	1.9	5.3	8.6
Level of Service		C	C		C		D	A	B	A	A	A
Approach Delay (s)		31.6			32.0				10.4			8.6
Approach LOS		C			C				B			A

Intersection Summary

HCM Average Control Delay	9.9	HCM Level of Service	A
HCM Volume to Capacity ratio	0.61		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	6.0
Intersection Capacity Utilization	86.8%	ICU Level of Service	E
Analysis Period (min)	15		

! Phase conflict between lane groups.

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis  
 4: Shopping Center & MD 201

6/11/2008



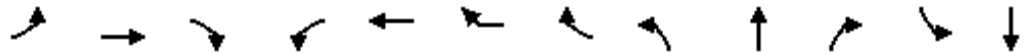
Movement	SBR	SER
<b>Intersection Summary</b>		
Line Configurations		
Ideal Flow (vphpl)	1900	1900
Total Lost time (s)		3.0
Lane Util. Factor		1.00
Frt		0.86
Flt Protected		1.00
Satd. Flow (prot)		822
Flt Permitted		1.00
Satd. Flow (perm)		822
Volume (vph)	5	10
Peak-hour factor, PHF	0.95	0.95
Growth Factor (vph)	100%	100%
Adj. Flow (vph)	5	11
RTOR Reduction (vph)	0	0
Lane Group Flow (vph)	0	11
Heavy Vehicles (%)	6%	100%
Turn Type	custom	
Protected Phases	6!	
Permitted Phases		
Actuated Green, G (s)	53.1	
Effective Green, g (s)	56.6	
Actuated g/C Ratio	0.71	
Clearance Time (s)	6.5	
Vehicle Extension (s)	3.0	
Lane Grp Cap (vph)	582	
v/s Ratio Prot	0.01	
v/s Ratio Perm		
v/c Ratio	0.02	
Uniform Delay, d1	3.5	
Progression Factor	1.00	
Incremental Delay, d2	0.1	
Delay (s)	3.5	
Level of Service	A	
Approach Delay (s)		
Approach LOS		
<b>Intersection Summary</b>		



# HCM Signalized Intersection Capacity Analysis

## 5: MD 410 & MD 201

6/11/2008



Movement	EBL	EBT	EBR	WBL	WBT	WBR	WBR2	NBL2	NBT	NBR	SBL	SBT
Lane Configurations	↖↗	↑↑	↖	↖	↑↑	↖	↖	↖↗	↑↑	↖	↖	↑↑
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Util. Factor	0.97	0.95	1.00	1.00	0.95	1.00	1.00	0.97	0.95	1.00	1.00	0.95
Frt	1.00	1.00	0.85	1.00	1.00	0.85	0.85	1.00	1.00	0.85	1.00	1.00
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Satd. Flow (prot)	3303	3406	1524	1703	3406	808	1524	3303	3406	1524	1703	3406
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Satd. Flow (perm)	3303	3406	1524	1703	3406	808	1524	3303	3406	1524	1703	3406
Volume (vph)	345	955	365	50	1675	10	550	405	895	40	125	1815
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Growth Factor (vph)	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Adj. Flow (vph)	363	1005	384	53	1763	11	579	426	942	42	132	1911
RTOR Reduction (vph)	0	0	201	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	363	1005	183	53	1763	11	579	426	942	42	132	1911
Heavy Vehicles (%)	6%	6%	6%	6%	6%	100%	6%	6%	6%	6%	6%	6%
Turn Type	Prot		Perm	Prot		Over	Free	Prot		Free	Prot	
Protected Phases	3	8		7	4	9		5	2		1	6
Permitted Phases			8				Free			Free		
Actuated Green, G (s)	14.0	51.0	51.0	4.0	42.0	6.0	160.0	18.0	58.2	160.0	13.8	54.0
Effective Green, g (s)	16.0	54.0	54.0	6.0	44.0	8.0	160.0	20.0	61.2	160.0	15.8	57.0
Actuated g/C Ratio	0.10	0.34	0.34	0.04	0.28	0.05	1.00	0.12	0.38	1.00	0.10	0.36
Clearance Time (s)	5.0	6.0	6.0	5.0	5.0	5.0		5.0	6.0		5.0	6.0
Vehicle Extension (s)	3.0	5.0	5.0	3.0	5.0	5.0		3.0	5.0		3.0	5.0
Lane Grp Cap (vph)	330	1150	514	64	937	40	1524	413	1303	1524	168	1213
v/s Ratio Prot	c0.11	0.30		0.03	c0.52	0.01		c0.13	0.28		0.08	c0.56
v/s Ratio Perm			0.12				c0.38			0.03		
v/c Ratio	1.10	0.87	0.36	0.83	1.88	0.28	0.38	1.03	0.72	0.03	0.79	1.58
Uniform Delay, d1	72.0	49.8	39.9	76.5	58.0	73.2	0.0	70.0	42.2	0.0	70.4	51.5
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.21	0.82	1.00	0.89	0.81
Incremental Delay, d2	79.1	9.3	1.9	56.0	400.8	7.7	0.7	50.5	3.2	0.0	16.9	262.0
Delay (s)	151.1	59.1	41.8	132.5	458.8	80.9	0.7	135.4	37.7	0.0	79.8	303.8
Level of Service	F	E	D	F	F	F	A	F	D	A	E	F
Approach Delay (s)		74.4			339.6				66.1			246.9
Approach LOS		E			F				E			F

### Intersection Summary

HCM Average Control Delay	204.8	HCM Level of Service	F
HCM Volume to Capacity ratio	1.45		
Actuated Cycle Length (s)	160.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	142.9%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			



Movement	SBR	SEL
Lane Configurations	↖ ↗	↖ ↗
Ideal Flow (vphpl)	1900	1900
Total Lost time (s)	3.0	3.0
Lane Util. Factor	1.00	1.00
Frt	0.85	1.00
Flt Protected	1.00	0.95
Satd. Flow (prot)	1524	902
Flt Permitted	1.00	0.95
Satd. Flow (perm)	1524	902
Volume (vph)	335	10
Peak-hour factor, PHF	0.95	0.95
Growth Factor (vph)	100%	100%
Adj. Flow (vph)	353	11
RTOR Reduction (vph)	0	0
Lane Group Flow (vph)	353	11
Heavy Vehicles (%)	6%	100%
Turn Type	custom	
Protected Phases		9
Permitted Phases	1 2 3 4	
Actuated Green, G (s)	144.0	6.0
Effective Green, g (s)	146.0	8.0
Actuated g/C Ratio	0.91	0.05
Clearance Time (s)		5.0
Vehicle Extension (s)		5.0
Lane Grp Cap (vph)	1391	45
v/s Ratio Prot		0.01
v/s Ratio Perm	0.23	
v/c Ratio	0.25	0.24
Uniform Delay, d1	0.8	73.1
Progression Factor	2.14	1.00
Incremental Delay, d2	0.1	5.9
Delay (s)	1.8	78.9
Level of Service	A	E
Approach Delay (s)		78.9
Approach LOS		E

Intersection Summary

HCM Signalized Intersection Capacity Analysis  
4: Shopping Center & MD 201

6/11/2008



Movement	EBL	EBT	EBR	WBL	WBT	WBR2	NBL2	NBL	NBT	NBR	SBL	SBT
Lane Configurations		↕	↕		↕		↕	↕	↕↕	↕	↕	↕↕↕
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		3.0	3.0		3.0		3.0	3.0	3.0	3.0	3.0	3.0
Lane Util. Factor		1.00	1.00		1.00		1.00	1.00	0.95	1.00	1.00	0.91
Frt		1.00	0.85		0.91		1.00	1.00	1.00	0.85	1.00	1.00
Flt Protected		0.96	1.00		0.99		0.95	0.95	1.00	1.00	0.95	1.00
Satd. Flow (prot)		1800	1599		1686		1752	902	3505	1568	1752	5034
Flt Permitted		0.53	1.00		0.92		0.95	0.95	1.00	1.00	0.04	1.00
Satd. Flow (perm)		989	1599		1573		1752	902	3505	1568	73	5034
Volume (vph)	45	5	40	15	5	45	80	10	2155	35	100	1980
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Growth Factor (vph)	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Adj. Flow (vph)	47	5	42	16	5	47	84	11	2268	37	105	2084
RTOR Reduction (vph)	0	0	38	0	43	0	0	0	0	3	0	0
Lane Group Flow (vph)	0	52	4	0	25	0	84	11	2268	34	105	2089
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	3%	100%	3%	3%	3%	3%
Turn Type	Perm		Perm	Perm			Prot	Split		Perm	pm+pt	
Protected Phases		8			4		5	2!	2		1	6!
Permitted Phases	8		8	4						2		6
Actuated Green, G (s)		12.9	12.9		12.9		12.9	138.5	138.5	138.5	147.8	136.7
Effective Green, g (s)		15.9	15.9		15.9		14.9	142.0	142.0	142.0	153.3	140.2
Actuated g/C Ratio		0.09	0.09		0.09		0.08	0.79	0.79	0.79	0.85	0.78
Clearance Time (s)		6.0	6.0		6.0		5.0	6.5	6.5	6.5	5.0	6.5
Vehicle Extension (s)		3.0	3.0		3.0		3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)		87	141		139		145	712	2765	1237	184	3921
v/s Ratio Prot							c0.05	0.01	c0.65		0.04	0.41
v/s Ratio Perm		c0.05	0.00		0.02					0.02	0.45	
v/c Ratio		0.60	0.03		0.18		0.58	0.02	0.82	0.03	0.57	0.53
Uniform Delay, d1		79.0	75.0		76.0		79.5	4.1	11.4	4.1	45.0	7.5
Progression Factor		1.00	1.00		1.00		1.17	0.13	1.48	0.00	0.77	0.88
Incremental Delay, d2		10.6	0.1		0.6		0.5	0.0	0.3	0.0	3.3	0.4
Delay (s)		89.5	75.1		76.6		93.6	0.5	17.1	0.0	37.9	7.0
Level of Service		F	E		E		F	A	B	A	D	A
Approach Delay (s)		83.1			76.6				19.4			8.5
Approach LOS		F			E				B			A

Intersection Summary

HCM Average Control Delay	16.4	HCM Level of Service	B
HCM Volume to Capacity ratio	0.77		
Actuated Cycle Length (s)	180.0	Sum of lost time (s)	6.0
Intersection Capacity Utilization	85.6%	ICU Level of Service	E
Analysis Period (min)	15		

! Phase conflict between lane groups.

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis  
 4: Shopping Center & MD 201

6/11/2008

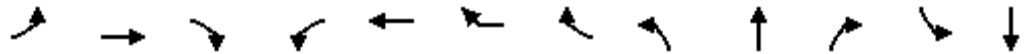


Movement	SBR	SER
<b>Intersection Summary</b>		
Line Configurations		
Ideal Flow (vphpl)	1900	1900
Total Lost time (s)		3.0
Lane Util. Factor		1.00
Frt		0.86
Flt Protected		1.00
Satd. Flow (prot)		822
Flt Permitted		1.00
Satd. Flow (perm)		822
Volume (vph)	5	10
Peak-hour factor, PHF	0.95	0.95
Growth Factor (vph)	100%	100%
Adj. Flow (vph)	5	11
RTOR Reduction (vph)	0	0
Lane Group Flow (vph)	0	11
Heavy Vehicles (%)	3%	100%
Turn Type	custom	
Protected Phases	6!	
Permitted Phases		
Actuated Green, G (s)	136.7	
Effective Green, g (s)	140.2	
Actuated g/C Ratio	0.78	
Clearance Time (s)	6.5	
Vehicle Extension (s)	3.0	
Lane Grp Cap (vph)	640	
v/s Ratio Prot	0.01	
v/s Ratio Perm		
v/c Ratio	0.02	
Uniform Delay, d1	4.5	
Progression Factor	1.00	
Incremental Delay, d2	0.0	
Delay (s)	4.5	
Level of Service	A	
Approach Delay (s)		
Approach LOS		
<b>Intersection Summary</b>		

# HCM Signalized Intersection Capacity Analysis

5: MD 410 & MD 201

6/11/2008



Movement	EBL	EBT	EBR	WBL	WBT	WBR	WBR2	NBL2	NBT	NBR	SBL	SBT
Lane Configurations	↖↗	↑↑	↖	↖	↑↑	↖	↖	↖↗	↑↑	↖	↖	↑↑
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	11	11	11	11	11	12	11	11	11	11	11	11
Total Lost time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Util. Factor	0.97	0.95	1.00	1.00	0.95	1.00	1.00	0.97	0.95	1.00	1.00	0.95
Fr <sub>t</sub>	1.00	1.00	0.85	1.00	1.00	0.85	0.85	1.00	1.00	0.85	1.00	1.00
Fl <sub>t</sub> Protected	0.95	1.00	1.00	0.95	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Satd. Flow (prot)	3286	3388	1516	1694	3388	808	1516	3286	3388	1516	1694	3388
Fl <sub>t</sub> Permitted	0.95	1.00	1.00	0.95	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Satd. Flow (perm)	3286	3388	1516	1694	3388	808	1516	3286	3388	1516	1694	3388
Volume (vph)	665	1595	495	155	1630	10	300	455	1305	55	415	1430
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Growth Factor (vph)	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Adj. Flow (vph)	700	1679	521	163	1716	11	316	479	1374	58	437	1505
RTOR Reduction (vph)	0	0	214	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	700	1679	307	163	1716	11	316	479	1374	58	437	1505
Heavy Vehicles (%)	3%	3%	3%	3%	3%	100%	3%	3%	3%	3%	3%	3%
Turn Type	Prot		Perm	Prot		custom	Free	Prot		Free	Prot	
Protected Phases	3	8		7	4			5	2		1	6
Permitted Phases			8			9	Free			Free		
Actuated Green, G (s)	21.0	53.6	53.6	18.4	51.0	6.0	180.0	20.0	44.0	180.0	31.0	55.0
Effective Green, g (s)	23.0	56.6	56.6	20.4	54.0	8.0	180.0	22.0	47.0	180.0	33.0	58.0
Actuated g/C Ratio	0.13	0.31	0.31	0.11	0.30	0.04	1.00	0.12	0.26	1.00	0.18	0.32
Clearance Time (s)	5.0	6.0	6.0	5.0	6.0	5.0		5.0	6.0		5.0	6.0
Vehicle Extension (s)	3.0	3.5	3.5	3.0	3.5	3.5		3.0	5.0		3.0	5.0
Lane Grp Cap (vph)	420	1065	477	192	1016	36	1516	402	885	1516	311	1092
v/s Ratio Prot	c0.21	0.50		0.10	c0.51			0.15	c0.41		c0.26	0.44
v/s Ratio Perm			0.20			c0.01	c0.21			0.04		
v/c Ratio	1.67	1.58	0.64	0.85	1.69	0.31	0.21	1.19	1.55	0.04	1.41	1.38
Uniform Delay, d <sub>1</sub>	78.5	61.7	53.0	78.3	63.0	83.3	0.0	79.0	66.5	0.0	73.5	61.0
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.39	0.80	1.00	1.15	1.04
Incremental Delay, d <sub>2</sub>	310.4	264.0	3.1	27.8	314.3	5.6	0.3	101.8	252.4	0.0	198.3	175.2
Delay (s)	388.9	325.7	56.1	106.1	377.3	88.9	0.3	211.7	305.5	0.0	282.9	238.8
Level of Service	F	F	E	F	F	F	A	F	F	A	F	F
Approach Delay (s)		292.5			301.8				272.7			225.6
Approach LOS		F			F				F			F

## Intersection Summary

HCM Average Control Delay	274.8	HCM Level of Service	F
HCM Volume to Capacity ratio	1.51		
Actuated Cycle Length (s)	180.0	Sum of lost time (s)	15.0
Intersection Capacity Utilization	148.1%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

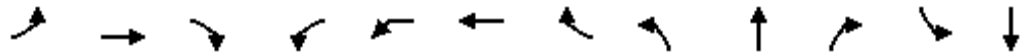


Movement	SBR	SEL
Lane Configurations	↗	↘
Ideal Flow (vphpl)	1900	1900
Lane Width	11	12
Total Lost time (s)	3.0	3.0
Lane Util. Factor	1.00	1.00
Flt	0.85	1.00
Flt Protected	1.00	0.95
Satd. Flow (prot)	1516	902
Flt Permitted	1.00	0.95
Satd. Flow (perm)	1516	902
Volume (vph)	190	10
Peak-hour factor, PHF	0.95	0.95
Growth Factor (vph)	100%	100%
Adj. Flow (vph)	200	11
RTOR Reduction (vph)	0	0
Lane Group Flow (vph)	200	11
Heavy Vehicles (%)	3%	100%
Turn Type	custom	
Protected Phases		9
Permitted Phases	1 2 3 4	
Actuated Green, G (s)	163.0	6.0
Effective Green, g (s)	166.0	8.0
Actuated g/C Ratio	0.92	0.04
Clearance Time (s)		5.0
Vehicle Extension (s)		3.5
Lane Grp Cap (vph)	1398	40
v/s Ratio Prot		0.01
v/s Ratio Perm	0.13	
v/c Ratio	0.14	0.28
Uniform Delay, d1	0.6	83.2
Progression Factor	1.08	1.00
Incremental Delay, d2	0.0	4.4
Delay (s)	0.7	87.6
Level of Service	A	F
Approach Delay (s)		87.6
Approach LOS		F
<b>Intersection Summary</b>		

# HCM Signalized Intersection Capacity Analysis

1601: MD 410 & 62nd Pl.

6/10/2008



Movement	EBL	EBT	EBR	WBL2	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations	↙	↑↑		↙	↙	↑↑			↑			↙
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0	4.0			4.0			4.0
Lane Util. Factor	1.00	0.95		1.00	1.00	0.95			1.00			1.00
Frt	1.00	1.00		1.00	1.00	1.00			0.94			0.97
Flt Protected	0.95	1.00		0.95	0.95	1.00			0.97			0.96
Satd. Flow (prot)	1703	3404		1703	902	3399			1726			1757
Flt Permitted	0.95	1.00		0.95	0.95	1.00			0.97			0.96
Satd. Flow (perm)	1703	3404		1703	902	3399			1726			1757
Volume (vph)	30	1375	5	5	10	2210	30	65	0	45	55	0
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	32	1447	5	5	11	2326	32	68	0	47	58	0
RTOR Reduction (vph)	0	0	0	0	0	1	0	0	22	0	0	9
Lane Group Flow (vph)	32	1452	0	5	11	2357	0	0	93	0	0	65
Heavy Vehicles (%)	6%	6%	6%	6%	100%	6%	6%	1%	1%	1%	1%	1%
Turn Type	Prot			Prot	Split			Split			Split	
Protected Phases	1	2!		1	2!	2		3	3		4	4
Permitted Phases												
Actuated Green, G (s)	3.0	73.8		3.0	73.8	73.8			7.5			4.7
Effective Green, g (s)	4.0	75.8		4.0	75.8	75.8			8.5			5.7
Actuated g/C Ratio	0.04	0.69		0.04	0.69	0.69			0.08			0.05
Clearance Time (s)	5.0	6.0		5.0	6.0	6.0			5.0			5.0
Vehicle Extension (s)	3.0	6.0		3.0	6.0	6.0			3.0			3.0
Lane Grp Cap (vph)	62	2346		62	622	2342			133			91
v/s Ratio Prot	c0.02	0.43		0.00	0.01	c0.69			c0.05			c0.04
v/s Ratio Perm												
v/c Ratio	0.52	0.62		0.08	0.02	1.01			0.70			0.71
Uniform Delay, d1	52.0	9.3		51.2	5.4	17.1			49.5			51.3
Progression Factor	1.00	1.00		0.76	0.59	0.37			1.00			1.00
Incremental Delay, d2	7.1	1.2		0.3	0.0	14.3			14.8			22.2
Delay (s)	59.1	10.5		39.3	3.2	20.7			64.3			73.6
Level of Service	E	B		D	A	C			E			E
Approach Delay (s)		11.6				20.7			64.3			73.6
Approach LOS		B				C			E			E
<b>Intersection Summary</b>												
HCM Average Control Delay			19.5			HCM Level of Service			B			
HCM Volume to Capacity ratio			0.94									
Actuated Cycle Length (s)			110.0			Sum of lost time (s)			16.0			
Intersection Capacity Utilization			83.0%			ICU Level of Service			E			
Analysis Period (min)			15									
! Phase conflict between lane groups.												
c Critical Lane Group												



Movement	SBR2	NER
Lane Configurations		
Ideal Flow (vphpl)	1900	1900
Total Lost time (s)		4.0
Lane Util. Factor		1.00
Frt		0.86
Flt Protected		1.00
Satd. Flow (prot)		822
Flt Permitted		1.00
Satd. Flow (perm)		822
Volume (vph)	15	10
Peak-hour factor, PHF	0.95	0.95
Adj. Flow (vph)	16	11
RTOR Reduction (vph)	0	0
Lane Group Flow (vph)	0	11
Heavy Vehicles (%)	1%	100%
Turn Type		Over
Protected Phases		2!
Permitted Phases		
Actuated Green, G (s)		73.8
Effective Green, g (s)		75.8
Actuated g/C Ratio		0.69
Clearance Time (s)		6.0
Vehicle Extension (s)		6.0
Lane Grp Cap (vph)		566
v/s Ratio Prot		0.01
v/s Ratio Perm		
v/c Ratio		0.02
Uniform Delay, d1		5.4
Progression Factor		1.00
Incremental Delay, d2		0.1
Delay (s)		5.5
Level of Service		A
Approach Delay (s)		
Approach LOS		
Intersection Summary		



# HCM Signalized Intersection Capacity Analysis

1602: MD 410 & 64th Ave.

6/10/2008



Movement	EBL	EBT	EBR	WBL	WBT	WBR	SBL	SBR	SBR2	NEL	NER
Lane Configurations	↖	↗↗		↖	↗↗		↖		↗		↖
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0		4.0		4.0
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00		1.00		1.00
Frt	1.00	1.00		1.00	0.99		1.00		0.85		0.86
Flt Protected	0.95	1.00		0.95	1.00		0.95		1.00		1.00
Satd. Flow (prot)	1703	3406		902	3384		1787		1599		822
Flt Permitted	0.95	1.00		0.95	1.00		0.95		1.00		1.00
Satd. Flow (perm)	1703	3406		902	3384		1787		1599		822
Volume (vph)	30	1445	0	10	2150	95	100	0	95	0	10
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	32	1521	0	11	2263	100	105	0	100	0	11
RTOR Reduction (vph)	0	0	0	0	3	0	0	0	73	0	0
Lane Group Flow (vph)	32	1521	0	11	2360	0	105	0	27	0	11
Heavy Vehicles (%)	6%	6%	6%	100%	6%	6%	1%	1%	1%	1%	100%
Turn Type	Prot			Split			Prot		custom		custom
Protected Phases	1	6!		2!	2		4				6!
Permitted Phases									4		
Actuated Green, G (s)	3.0	91.3		83.3	83.3		8.7		8.7		91.3
Effective Green, g (s)	4.0	92.3		84.3	84.3		9.7		9.7		92.3
Actuated g/C Ratio	0.04	0.84		0.77	0.77		0.09		0.09		0.84
Clearance Time (s)	5.0	5.0		5.0	5.0		5.0		5.0		5.0
Vehicle Extension (s)	3.0	6.0		6.0	6.0		3.0		3.0		6.0
Lane Grp Cap (vph)	62	2858		691	2593		158		141		690
v/s Ratio Prot	0.02	c0.45		0.01	c0.70		c0.06				0.01
v/s Ratio Perm									0.02		
v/c Ratio	0.52	0.53		0.02	0.91		0.66		0.19		0.02
Uniform Delay, d1	52.0	2.6		3.0	9.9		48.6		46.5		1.4
Progression Factor	0.83	0.45		0.47	0.32		1.00		1.00		1.00
Incremental Delay, d2	5.7	0.6		0.0	2.8		10.1		0.7		0.0
Delay (s)	48.9	1.7		1.4	6.0		58.6		47.2		1.5
Level of Service	D	A		A	A		E		D		A
Approach Delay (s)		2.7			6.0		53.1			1.5	
Approach LOS		A			A		D			A	

## Intersection Summary

HCM Average Control Delay	7.1	HCM Level of Service	A
HCM Volume to Capacity ratio	0.85		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	75.0%	ICU Level of Service	D
Analysis Period (min)	15		

! Phase conflict between lane groups.

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis  
 1603: MD 410 & BW Parkway S/B Ramps

6/10/2008



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑↑	↑	↑	↑↑			↑		↑↑		↑
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0	4.0	4.0			4.0		4.0		4.0
Lane Util. Factor		0.91	1.00	1.00	0.95			1.00		0.97		1.00
Frt		1.00	0.85	1.00	1.00			1.00		1.00		0.85
Flt Protected		1.00	1.00	0.95	1.00			1.00		0.95		1.00
Satd. Flow (prot)		4893	1524	1703	3406			950		3303		1524
Flt Permitted		1.00	1.00	0.95	1.00			1.00		0.95		1.00
Satd. Flow (perm)		4893	1524	1703	3406			950		3303		1524
Volume (vph)	0	1350	195	320	2010	0	0	10	0	105	0	320
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	1421	205	337	2116	0	0	11	0	111	0	337
RTOR Reduction (vph)	0	0	140	0	0	0	0	0	0	0	0	14
Lane Group Flow (vph)	0	1421	65	337	2116	0	0	11	0	111	0	323
Heavy Vehicles (%)	6%	6%	6%	6%	6%	6%	6%	100%	6%	6%	6%	6%
Turn Type			Perm	Prot						Prot		custom
Protected Phases		6		5	2 3!			3!		4		
Permitted Phases			6									4
Actuated Green, G (s)		33.7	33.7	22.5	76.2			10.0		23.8		23.8
Effective Green, g (s)		34.7	34.7	23.5	77.2			11.0		24.8		24.8
Actuated g/C Ratio		0.32	0.32	0.21	0.70			0.10		0.23		0.23
Clearance Time (s)		5.0	5.0	5.0				5.0		5.0		5.0
Vehicle Extension (s)		6.0	6.0	3.0				6.0		3.0		3.0
Lane Grp Cap (vph)		1544	481	364	2390			95		745		344
v/s Ratio Prot		0.29		0.20	c0.62			0.01		0.03		
v/s Ratio Perm			0.04									c0.21
v/c Ratio		0.92	0.13	0.93	0.89			0.12		0.15		0.94
Uniform Delay, d1		36.3	26.9	42.4	12.9			45.1		34.1		41.9
Progression Factor		0.83	0.84	1.68	0.68			1.00		1.00		1.00
Incremental Delay, d2		9.2	0.5	16.1	2.4			2.5		0.1		32.7
Delay (s)		39.2	23.1	87.5	11.3			47.5		34.2		74.5
Level of Service		D	C	F	B			D		C		E
Approach Delay (s)		37.2			21.7			47.5			64.6	
Approach LOS		D			C			D			E	

Intersection Summary
























HCM Average Control Delay	31.6	HCM Level of Service	C
HCM Volume to Capacity ratio	0.90		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	82.0%	ICU Level of Service	E
Analysis Period (min)	15		

! Phase conflict between lane groups.

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis  
 1604: MD 410 & BW Parkway N/B Ramps

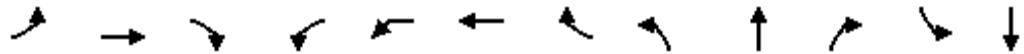
6/10/2008

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		 			  		 					
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0			4.0	4.0	4.0		4.0		4.0	
Lane Util. Factor	1.00	0.95			0.91	1.00	0.97		1.00		1.00	
Frt	1.00	1.00			1.00	0.85	1.00		0.85		1.00	
Flt Protected	0.95	1.00			1.00	1.00	0.95		1.00		1.00	
Satd. Flow (prot)	1703	3406			4893	1524	3303		1524		950	
Flt Permitted	0.95	1.00			1.00	1.00	0.95		1.00		1.00	
Satd. Flow (perm)	1703	3406			4893	1524	3303		1524		950	
Volume (vph)	315	1225	0	0	1875	315	370	0	70	0	10	0
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	332	1289	0	0	1974	332	389	0	74	0	11	0
RTOR Reduction (vph)	0	0	0	0	0	165	0	0	65	0	0	0
Lane Group Flow (vph)	332	1289	0	0	1974	167	389	0	9	0	11	0
Heavy Vehicles (%)	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%	100%	6%
Turn Type	Prot				Perm		Prot	custom				
Protected Phases	1	6 3!			2		4				3!	
Permitted Phases						2			4			
Actuated Green, G (s)	21.9	87.0			45.1	45.1	13.0		13.0		10.0	
Effective Green, g (s)	22.9	88.0			46.1	46.1	14.0		14.0		11.0	
Actuated g/C Ratio	0.21	0.80			0.42	0.42	0.13		0.13		0.10	
Clearance Time (s)	5.0				5.0	5.0	5.0		5.0		5.0	
Vehicle Extension (s)	3.0				6.0	6.0	3.0		3.0		6.0	
Lane Grp Cap (vph)	355	2725			2051	639	420		194		95	
v/s Ratio Prot	c0.19	c0.38			c0.40		c0.12				0.01	
v/s Ratio Perm						0.11			0.01			
v/c Ratio	0.94	0.47			0.96	0.26	0.93		0.05		0.12	
Uniform Delay, d1	42.8	3.5			31.1	20.8	47.5		42.2		45.1	
Progression Factor	1.29	0.74			0.97	1.60	1.00		1.00		1.00	
Incremental Delay, d2	20.7	0.2			8.1	0.5	26.2		0.1		1.5	
Delay (s)	76.0	2.8			38.4	33.8	73.7		42.3		46.6	
Level of Service	E	A			D	C	E		D		D	
Approach Delay (s)		17.8			37.7			68.7			46.6	
Approach LOS		B			D			E			D	
<b>Intersection Summary</b>												
HCM Average Control Delay			33.7		HCM Level of Service				C			
HCM Volume to Capacity ratio			0.87									
Actuated Cycle Length (s)			110.0		Sum of lost time (s)				12.0			
Intersection Capacity Utilization			80.9%		ICU Level of Service				D			
Analysis Period (min)			15									
! Phase conflict between lane groups.												
c Critical Lane Group												

# HCM Signalized Intersection Capacity Analysis

1605: MD 410 & 67th. Ave.

6/10/2008



Movement	EBL	EBT	EBR	WBL2	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations	↖	↗		↖	↖	↗		↖	↗			↖
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0	4.0		4.0	4.0			4.0
Lane Util. Factor	1.00	0.95		1.00	1.00	0.95		1.00	1.00			1.00
Frt	1.00	1.00		1.00	1.00	1.00		1.00	0.86			0.94
Flt Protected	0.95	1.00		0.95	0.95	1.00		0.95	1.00			0.98
Satd. Flow (prot)	1703	3399		1703	902	3404		1787	1618			1734
Flt Permitted	0.95	1.00		0.95	0.95	1.00		0.81	1.00			0.88
Satd. Flow (perm)	1703	3399		1703	902	3404		1515	1618			1561
Volume (vph)	5	1190	15	15	10	2000	5	175	5	65	15	5
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	5	1253	16	16	11	2105	5	184	5	68	16	5
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	57	0	0	13
Lane Group Flow (vph)	5	1269	0	16	11	2110	0	184	16	0	0	24
Heavy Vehicles (%)	6%	6%	6%	6%	100%	6%	6%	1%	1%	1%	1%	1%
Turn Type	Prot		Prot		Split		Perm			Perm		
Protected Phases	1	2!		1	2!	2			8			4
Permitted Phases								8				4
Actuated Green, G (s)	2.0	76.5		2.0	76.5	76.5		16.5	16.5			16.5
Effective Green, g (s)	3.0	77.5		3.0	77.5	77.5		17.5	17.5			17.5
Actuated g/C Ratio	0.03	0.70		0.03	0.70	0.70		0.16	0.16			0.16
Clearance Time (s)	5.0	5.0		5.0	5.0	5.0		5.0	5.0			5.0
Vehicle Extension (s)	3.0	6.0		3.0	6.0	6.0		3.0	3.0			3.0
Lane Grp Cap (vph)	46	2395		46	636	2398		241	257			248
v/s Ratio Prot	0.00	0.37		c0.01	0.01	c0.62			0.01			
v/s Ratio Perm								c0.12				0.02
v/c Ratio	0.11	0.53		0.35	0.02	0.88		0.76	0.06			0.09
Uniform Delay, d1	52.2	7.7		52.5	4.9	12.6		44.3	39.3			39.5
Progression Factor	0.87	0.32		0.90	0.46	0.38		1.00	1.00			1.00
Incremental Delay, d2	0.9	0.8		2.6	0.0	3.0		13.4	0.1			0.2
Delay (s)	46.2	3.2		50.0	2.3	7.9		57.6	39.4			39.7
Level of Service	D	A		D	A	A		E	D			D
Approach Delay (s)		3.4				8.1			52.4			39.7
Approach LOS		A				A			D			D

## Intersection Summary

HCM Average Control Delay	9.9	HCM Level of Service	A
HCM Volume to Capacity ratio	0.84		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	79.7%	ICU Level of Service	D
Analysis Period (min)	15		

! Phase conflict between lane groups.

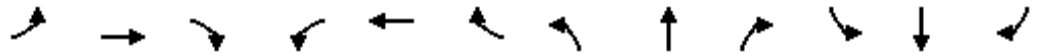
c Critical Lane Group



Movement	SBR2	NER
Lane Configurations		
Ideal Flow (vphpl)	1900	1900
Total Lost time (s)		4.0
Lane Util. Factor		1.00
Frt		0.86
Flt Protected		1.00
Satd. Flow (prot)		822
Flt Permitted		1.00
Satd. Flow (perm)		822
Volume (vph)	15	10
Peak-hour factor, PHF	0.95	0.95
Adj. Flow (vph)	16	11
RTOR Reduction (vph)	0	0
Lane Group Flow (vph)	0	11
Heavy Vehicles (%)	1%	100%
Turn Type		Over
Protected Phases		2!
Permitted Phases		
Actuated Green, G (s)		76.5
Effective Green, g (s)		77.5
Actuated g/C Ratio		0.70
Clearance Time (s)		5.0
Vehicle Extension (s)		6.0
Lane Grp Cap (vph)		579
v/s Ratio Prot		0.01
v/s Ratio Perm		
v/c Ratio		0.02
Uniform Delay, d1		4.9
Progression Factor		1.00
Incremental Delay, d2		0.1
Delay (s)		4.9
Level of Service		A
Approach Delay (s)		
Approach LOS		
Intersection Summary		

HCM Signalized Intersection Capacity Analysis  
 1606: MD 410 & Veterans Pkwy

6/10/2008



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑		↖	↑↑		↖↖	↑	↖		↑	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0		4.0	4.0		4.0	4.0	4.0		4.0	
Lane Util. Factor		0.95		1.00	0.95		0.97	1.00	1.00		1.00	
Frt		0.91		1.00	1.00		1.00	1.00	0.85		1.00	
Flt Protected		1.00		0.95	1.00		0.95	1.00	1.00		1.00	
Satd. Flow (prot)		3113		1703	3406		3303	950	1524		950	
Flt Permitted		1.00		0.08	1.00		0.95	1.00	1.00		1.00	
Satd. Flow (perm)		3113		149	3406		3303	950	1524		950	
Volume (vph)	0	620	830	345	950	0	1115	10	315	0	10	0
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	653	874	363	1000	0	1174	11	332	0	11	0
RTOR Reduction (vph)	0	220	0	0	0	0	0	0	220	0	0	0
Lane Group Flow (vph)	0	1307	0	363	1000	0	1174	11	112	0	11	0
Heavy Vehicles (%)	6%	6%	6%	6%	6%	6%	6%	100%	6%	6%	100%	6%
Turn Type				pm+pt			Split		Perm			
Protected Phases		6		5	2		4!	4			4!	
Permitted Phases				2					4			
Actuated Green, G (s)		43.0		64.0	64.0		36.0	36.0	36.0		36.0	
Effective Green, g (s)		44.0		65.0	65.0		37.0	37.0	37.0		37.0	
Actuated g/C Ratio		0.40		0.59	0.59		0.34	0.34	0.34		0.34	
Clearance Time (s)		5.0		5.0	5.0		5.0	5.0	5.0		5.0	
Vehicle Extension (s)		6.0		3.0	6.0		3.0	3.0	3.0		3.0	
Lane Grp Cap (vph)		1245		328	2013		1111	320	513		320	
v/s Ratio Prot		0.42		c0.17	0.29		c0.36	0.01			0.01	
v/s Ratio Perm				c0.48					0.07			
v/c Ratio		1.05		1.11	0.50		1.06	0.03	0.22		0.03	
Uniform Delay, d1		33.0		43.1	13.0		36.5	24.5	26.1		24.5	
Progression Factor		0.35		1.00	1.00		1.00	1.00	1.00		1.00	
Incremental Delay, d2		38.6		81.5	0.9		43.3	0.0	0.2		0.0	
Delay (s)		50.2		124.7	13.9		79.8	24.6	26.4		24.6	
Level of Service		D		F	B		E	C	C		C	
Approach Delay (s)		50.2			43.4			67.7			24.6	
Approach LOS		D			D			E			C	

Intersection Summary

HCM Average Control Delay	54.1	HCM Level of Service	D
HCM Volume to Capacity ratio	1.06		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	111.4%	ICU Level of Service	H
Analysis Period (min)	15		

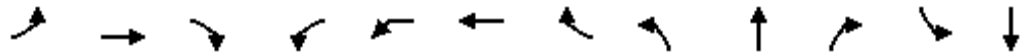
! Phase conflict between lane groups.

c Critical Lane Group

# HCM Signalized Intersection Capacity Analysis

1601: MD 410 & 62nd Pl.

6/10/2008



Movement	EBL	EBT	EBR	WBL2	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations	↖	↗		↖	↖	↗			↕			↖
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0	4.0			4.0			4.0
Lane Util. Factor	1.00	0.95		1.00	1.00	0.95			1.00			1.00
Frt	1.00	0.99		1.00	1.00	1.00			0.97			0.96
Flt Protected	0.95	1.00		0.95	0.95	1.00			0.96			0.97
Satd. Flow (prot)	1752	3484		1752	902	3495			1760			1742
Flt Permitted	0.95	1.00		0.95	0.95	1.00			0.96			0.97
Satd. Flow (perm)	1752	3484		1752	902	3495			1760			1742
Volume (vph)	30	2280	95	25	10	2185	40	80	0	20	120	0
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	32	2400	100	26	11	2300	42	84	0	21	126	0
RTOR Reduction (vph)	0	0	0	0	0	1	0	0	9	0	0	15
Lane Group Flow (vph)	32	2500	0	26	11	2341	0	0	96	0	0	169
Heavy Vehicles (%)	3%	3%	3%	3%	100%	3%	3%	1%	1%	1%	1%	1%
Turn Type	Prot			Prot	Split			Split			Split	
Protected Phases	1	2!		1	2!	2		3	3		4	4
Permitted Phases												
Actuated Green, G (s)	4.0	71.0		4.0	71.0	71.0			5.0			9.0
Effective Green, g (s)	5.0	73.0		5.0	73.0	73.0			6.0			10.0
Actuated g/C Ratio	0.05	0.66		0.05	0.66	0.66			0.05			0.09
Clearance Time (s)	5.0	6.0		5.0	6.0	6.0			5.0			5.0
Vehicle Extension (s)	3.0	6.0		3.0	6.0	6.0			3.0			3.0
Lane Grp Cap (vph)	80	2312		80	599	2319			96			158
v/s Ratio Prot	c0.02	c0.72		0.01	0.01	0.67			c0.05			c0.10
v/s Ratio Perm												
v/c Ratio	0.40	1.08		0.33	0.02	1.01			1.01			1.07
Uniform Delay, d1	51.0	18.5		50.9	6.3	18.5			52.0			50.0
Progression Factor	1.00	1.00		1.11	0.81	0.43			1.00			1.00
Incremental Delay, d2	3.3	45.0		0.9	0.0	14.0			93.2			90.5
Delay (s)	54.3	63.5		57.1	5.1	22.0			145.2			140.5
Level of Service	D	E		E	A	C			F			F
Approach Delay (s)		63.4				22.3			145.2			140.5
Approach LOS		E				C			F			F

## Intersection Summary

HCM Average Control Delay	48.9	HCM Level of Service	D
HCM Volume to Capacity ratio	1.04		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	107.3%	ICU Level of Service	G
Analysis Period (min)	15		

! Phase conflict between lane groups.

c Critical Lane Group



Movement	SBR2	NER
Lane Configurations		
Ideal Flow (vphpl)	1900	1900
Total Lost time (s)		4.0
Lane Util. Factor		1.00
Frt		0.86
Flt Protected		1.00
Satd. Flow (prot)		822
Flt Permitted		1.00
Satd. Flow (perm)		822
Volume (vph)	55	10
Peak-hour factor, PHF	0.95	0.95
Adj. Flow (vph)	58	11
RTOR Reduction (vph)	0	0
Lane Group Flow (vph)	0	11
Heavy Vehicles (%)	1%	100%
Turn Type		Over
Protected Phases		2!
Permitted Phases		
Actuated Green, G (s)		71.0
Effective Green, g (s)		73.0
Actuated g/C Ratio		0.66
Clearance Time (s)		6.0
Vehicle Extension (s)		6.0
Lane Grp Cap (vph)		546
v/s Ratio Prot		0.01
v/s Ratio Perm		
v/c Ratio		0.02
Uniform Delay, d1		6.3
Progression Factor		1.00
Incremental Delay, d2		0.1
Delay (s)		6.4
Level of Service		A
Approach Delay (s)		
Approach LOS		
Intersection Summary		



# HCM Signalized Intersection Capacity Analysis

1602: MD 410 & 64th Ave.

6/10/2008



Movement	EBL	EBT	EBR	WBL	WBT	WBR	SBL	SBR	SBR2	NEL	NER
Lane Configurations											
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0		4.0		4.0
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00		1.00		1.00
Frt	1.00	1.00		1.00	0.99		1.00		0.85		0.86
Flt Protected	0.95	1.00		0.95	1.00		0.95		1.00		1.00
Satd. Flow (prot)	1752	3505		902	3478		1787		1599		822
Flt Permitted	0.95	1.00		0.95	1.00		0.95		1.00		1.00
Satd. Flow (perm)	1752	3505		902	3478		1787		1599		822
Volume (vph)	100	2320	0	10	2170	115	80	0	80	0	10
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	105	2442	0	11	2284	121	84	0	84	0	11
RTOR Reduction (vph)	0	0	0	0	3	0	0	0	78	0	0
Lane Group Flow (vph)	105	2442	0	11	2402	0	84	0	6	0	11
Heavy Vehicles (%)	3%	3%	3%	100%	3%	3%	1%	1%	1%	1%	100%
Turn Type	Prot		Split			Prot		custom		custom	
Protected Phases	1	6!		2!	2		4				6!
Permitted Phases									4		
Actuated Green, G (s)	8.0	93.0		80.0	80.0		7.0		7.0		93.0
Effective Green, g (s)	9.0	94.0		81.0	81.0		8.0		8.0		94.0
Actuated g/C Ratio	0.08	0.85		0.74	0.74		0.07		0.07		0.85
Clearance Time (s)	5.0	5.0		5.0	5.0		5.0		5.0		5.0
Vehicle Extension (s)	3.0	6.0		6.0	6.0		3.0		3.0		6.0
Lane Grp Cap (vph)	143	2995		664	2561		130		116		702
v/s Ratio Prot	0.06	c0.70		0.01	c0.69		c0.05				0.01
v/s Ratio Perm									0.00		
v/c Ratio	0.73	0.82		0.02	0.94		0.65		0.05		0.02
Uniform Delay, d1	49.3	3.8		3.9	12.4		49.6		47.5		1.2
Progression Factor	0.70	0.66		0.60	0.46		1.00		1.00		1.00
Incremental Delay, d2	1.8	0.2		0.0	4.0		10.5		0.2		0.0
Delay (s)	36.4	2.8		2.3	9.7		60.2		47.7		1.2
Level of Service	D	A		A	A		E		D		A
Approach Delay (s)		4.2			9.7		53.9			1.2	
Approach LOS		A			A		D			A	

## Intersection Summary

HCM Average Control Delay	8.4	HCM Level of Service	A
HCM Volume to Capacity ratio	0.89		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	94.2%	ICU Level of Service	F
Analysis Period (min)	15		

! Phase conflict between lane groups.

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis  
 1603: MD 410 & BW Parkway S/B Ramps

6/10/2008



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑↑	↑	↑	↑↑			↑		↑↑		↑
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0	4.0	4.0			4.0		4.0		4.0
Lane Util. Factor		0.91	1.00	1.00	0.95			1.00		0.97		1.00
Frt		1.00	0.85	1.00	1.00			1.00		1.00		0.85
Flt Protected		1.00	1.00	0.95	1.00			1.00		0.95		1.00
Satd. Flow (prot)		5036	1568	1752	3505			950		3400		1568
Flt Permitted		1.00	1.00	0.95	1.00			1.00		0.95		1.00
Satd. Flow (perm)		5036	1568	1752	3505			950		3400		1568
Volume (vph)	0	2010	390	345	1970	0	0	10	0	225	0	395
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	2116	411	363	2074	0	0	11	0	237	0	416
RTOR Reduction (vph)	0	0	191	0	0	0	0	0	0	0	0	19
Lane Group Flow (vph)	0	2116	220	363	2074	0	0	11	0	237	0	397
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%	3%	100%	3%	3%	3%	3%
Turn Type			Perm	Prot						Prot		custom
Protected Phases		6		5	2 3!			3!		4		
Permitted Phases			6									4
Actuated Green, G (s)		41.0	41.0	19.0	80.0			10.0		20.0		20.0
Effective Green, g (s)		42.0	42.0	20.0	81.0			11.0		21.0		21.0
Actuated g/C Ratio		0.38	0.38	0.18	0.74			0.10		0.19		0.19
Clearance Time (s)		5.0	5.0	5.0				5.0		5.0		5.0
Vehicle Extension (s)		6.0	6.0	3.0				6.0		3.0		3.0
Lane Grp Cap (vph)		1923	599	319	2581			95		649		299
v/s Ratio Prot		c0.42		c0.21	c0.59			0.01		0.07		
v/s Ratio Perm			0.14									c0.25
v/c Ratio		1.10	0.37	1.14	0.80			0.12		0.37		1.33
Uniform Delay, d1		34.0	24.4	45.0	9.4			45.1		38.7		44.5
Progression Factor		1.02	1.48	1.61	0.65			1.00		1.00		1.00
Incremental Delay, d2		50.4	1.0	75.9	1.2			2.5		0.4		168.2
Delay (s)		85.2	37.2	148.4	7.3			47.5		39.1		212.7
Level of Service		F	D	F	A			D		D		F
Approach Delay (s)		77.4			28.3			47.5			149.7	
Approach LOS		E			C			D				F

Intersection Summary

HCM Average Control Delay	64.5	HCM Level of Service	E
HCM Volume to Capacity ratio	1.10		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	85.6%	ICU Level of Service	E
Analysis Period (min)	15		

! Phase conflict between lane groups.

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis  
 1604: MD 410 & BW Parkway N/B Ramps

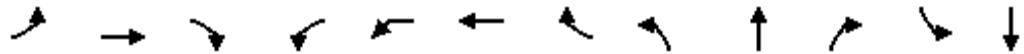
6/10/2008

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0			4.0	4.0	4.0		4.0		4.0	
Lane Util. Factor	1.00	0.95			0.91	1.00	0.97		1.00		1.00	
Frt	1.00	1.00			1.00	0.85	1.00		0.85		1.00	
Flt Protected	0.95	1.00			1.00	1.00	0.95		1.00		1.00	
Satd. Flow (prot)	1752	3505			5036	1568	3400		1568		950	
Flt Permitted	0.95	1.00			1.00	1.00	0.95		1.00		1.00	
Satd. Flow (perm)	1752	3505			5036	1568	3400		1568		950	
Volume (vph)	200	2120	0	0	1850	170	380	0	275	0	10	0
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	211	2232	0	0	1947	179	400	0	289	0	11	0
RTOR Reduction (vph)	0	0	0	0	0	90	0	0	18	0	0	0
Lane Group Flow (vph)	211	2232	0	0	1947	89	400	0	271	0	11	0
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	100%	3%
Turn Type	Prot				Perm		Prot	custom				
Protected Phases	1	3 6!				2	4		3!			
Permitted Phases					2		4					
Actuated Green, G (s)	12.0	84.0				41.0	41.0	16.0	16.0		21.0	
Effective Green, g (s)	13.0	85.0				42.0	42.0	17.0	17.0		22.0	
Actuated g/C Ratio	0.12	0.77				0.38	0.38	0.15	0.15		0.20	
Clearance Time (s)	5.0				5.0		5.0		5.0		5.0	
Vehicle Extension (s)	3.0				6.0		6.0		3.0		6.0	
Lane Grp Cap (vph)	207	2708				1923	599	525	242		190	
v/s Ratio Prot	c0.12	c0.64				c0.39	0.12				0.01	
v/s Ratio Perm					0.06				c0.17			
v/c Ratio	1.02	0.82				1.01	0.15	0.76	1.12		0.06	
Uniform Delay, d1	48.5	7.8				34.0	22.3	44.6	46.5		35.6	
Progression Factor	1.32	1.55				1.01	1.38	1.00	1.00		1.00	
Incremental Delay, d2	34.7	0.9				19.0	0.3	6.5	94.2		0.4	
Delay (s)	98.9	13.0				53.3	31.0	51.0	140.7		36.0	
Level of Service	F	B				D	C	D	F		D	
Approach Delay (s)			20.4				51.4		88.6		36.0	
Approach LOS			C				D		F		D	
<b>Intersection Summary</b>												
HCM Average Control Delay			41.9				HCM Level of Service		D			
HCM Volume to Capacity ratio			0.97									
Actuated Cycle Length (s)			110.0				Sum of lost time (s)		12.0			
Intersection Capacity Utilization			82.8%				ICU Level of Service		E			
Analysis Period (min)			15									
! Phase conflict between lane groups.												
c Critical Lane Group												

# HCM Signalized Intersection Capacity Analysis

1605: MD 410 & 67th. Ave.

6/10/2008



Movement	EBL	EBT	EBR	WBL2	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations	↖	↗		↖	↖	↗		↖	↗			↖
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0	4.0		4.0	4.0			4.0
Lane Util. Factor	1.00	0.95		1.00	1.00	0.95		1.00	1.00			1.00
Frt	1.00	1.00		1.00	1.00	1.00		1.00	0.86			0.95
Flt Protected	0.95	1.00		0.95	0.95	1.00		0.95	1.00			0.98
Satd. Flow (prot)	1752	3499		1752	902	3498		1787	1609			1767
Flt Permitted	0.95	1.00		0.95	0.95	1.00		0.75	1.00			0.92
Satd. Flow (perm)	1752	3499		1752	902	3498		1407	1609			1646
Volume (vph)	5	2280	25	25	10	1840	25	175	5	125	5	5
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	5	2400	26	26	11	1937	26	184	5	132	5	5
RTOR Reduction (vph)	0	0	0	0	0	1	0	0	64	0	0	4
Lane Group Flow (vph)	5	2426	0	26	11	1962	0	184	73	0	0	11
Heavy Vehicles (%)	3%	3%	3%	3%	100%	3%	3%	1%	1%	1%	1%	1%
Turn Type	Prot		Prot		Split		Perm			Perm		
Protected Phases	1	2!		1	2!	2			8			4
Permitted Phases								8				4
Actuated Green, G (s)	3.0	75.8		3.0	75.8	75.8		16.2	16.2			16.2
Effective Green, g (s)	4.0	76.8		4.0	76.8	76.8		17.2	17.2			17.2
Actuated g/C Ratio	0.04	0.70		0.04	0.70	0.70		0.16	0.16			0.16
Clearance Time (s)	5.0	5.0		5.0	5.0	5.0		5.0	5.0			5.0
Vehicle Extension (s)	3.0	6.0		3.0	6.0	6.0		3.0	3.0			3.0
Lane Grp Cap (vph)	64	2443		64	630	2442		220	252			257
v/s Ratio Prot	0.00	c0.69		c0.01	0.01	0.56			0.05			
v/s Ratio Perm								c0.13				0.01
v/c Ratio	0.08	0.99		0.41	0.02	0.80		0.84	0.29			0.04
Uniform Delay, d1	51.2	16.3		51.8	5.1	11.4		45.0	41.0			39.4
Progression Factor	0.88	0.56		0.89	0.55	0.50		1.00	1.00			1.00
Incremental Delay, d2	0.3	11.2		2.9	0.0	2.0		23.2	0.6			0.1
Delay (s)	45.4	20.4		49.0	2.8	7.7		68.2	41.6			39.5
Level of Service	D	C		D	A	A		E	D			D
Approach Delay (s)		20.4				8.2			56.9			39.5
Approach LOS		C				A			E			D

## Intersection Summary

HCM Average Control Delay	17.8	HCM Level of Service	B
HCM Volume to Capacity ratio	0.94		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	102.7%	ICU Level of Service	G
Analysis Period (min)	15		

! Phase conflict between lane groups.

c Critical Lane Group



Movement	SBR2	NER
Lane Configurations		
Ideal Flow (vphpl)	1900	1900
Total Lost time (s)		4.0
Lane Util. Factor		1.00
Frt		0.86
Flt Protected		1.00
Satd. Flow (prot)		822
Flt Permitted		1.00
Satd. Flow (perm)		822
Volume (vph)	5	10
Peak-hour factor, PHF	0.95	0.95
Adj. Flow (vph)	5	11
RTOR Reduction (vph)	0	0
Lane Group Flow (vph)	0	11
Heavy Vehicles (%)	1%	100%
Turn Type		Over
Protected Phases		2!
Permitted Phases		
Actuated Green, G (s)		75.8
Effective Green, g (s)		76.8
Actuated g/C Ratio		0.70
Clearance Time (s)		5.0
Vehicle Extension (s)		6.0
Lane Grp Cap (vph)		574
v/s Ratio Prot		0.01
v/s Ratio Perm		
v/c Ratio		0.02
Uniform Delay, d1		5.1
Progression Factor		1.00
Incremental Delay, d2		0.1
Delay (s)		5.1
Level of Service		A
Approach Delay (s)		
Approach LOS		
Intersection Summary		

HCM Signalized Intersection Capacity Analysis  
 1606: MD 410 & Veterans Pkwy

6/10/2008

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑		↖	↑↑		↖↖	↑	↖		↑	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0		4.0	4.0		4.0	4.0	4.0		4.0	
Lane Util. Factor		0.95		1.00	0.95		0.97	1.00	1.00		1.00	
Frt		0.92		1.00	1.00		1.00	1.00	0.85		1.00	
Flt Protected		1.00		0.95	1.00		0.95	1.00	1.00		1.00	
Satd. Flow (prot)		3231		1752	3505		3400	950	1568		950	
Flt Permitted		1.00		0.06	1.00		0.95	1.00	1.00		1.00	
Satd. Flow (perm)		3231		112	3505		3400	950	1568		950	
Volume (vph)	0	1105	1200	295	895	0	845	10	290	0	10	0
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	1163	1263	311	942	0	889	11	305	0	11	0
RTOR Reduction (vph)	0	178	0	0	0	0	0	0	177	0	0	0
Lane Group Flow (vph)	0	2248	0	311	942	0	889	11	128	0	11	0
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%	3%	100%	3%	3%	100%	3%
Turn Type				pm+pt			Split		Perm			
Protected Phases		6		5	2		4!	4			4!	
Permitted Phases				2					4			
Actuated Green, G (s)		61.0		77.0	77.0		23.0	23.0	23.0		23.0	
Effective Green, g (s)		62.0		78.0	78.0		24.0	24.0	24.0		24.0	
Actuated g/C Ratio		0.56		0.71	0.71		0.22	0.22	0.22		0.22	
Clearance Time (s)		5.0		5.0	5.0		5.0	5.0	5.0		5.0	
Vehicle Extension (s)		6.0		3.0	6.0		3.0	3.0	3.0		3.0	
Lane Grp Cap (vph)		1821		258	2485		742	207	342		207	
v/s Ratio Prot		c0.70		c0.13	0.27		c0.26	0.01			0.01	
v/s Ratio Perm				0.72					0.08			
v/c Ratio		1.23		1.21	0.38		1.20	0.05	0.38		0.05	
Uniform Delay, d1		24.0		45.7	6.4		43.0	34.0	36.6		34.0	
Progression Factor		0.96		1.00	1.00		1.00	1.00	1.00		1.00	
Incremental Delay, d2		107.3		123.2	0.4		102.0	0.1	0.7		0.1	
Delay (s)		130.4		168.8	6.8		145.0	34.1	37.3		34.1	
Level of Service		F		F	A		F	C	D		C	
Approach Delay (s)		130.4			47.0			116.7			34.1	
Approach LOS		F			D			F			C	
<b>Intersection Summary</b>												
HCM Average Control Delay			105.5			HCM Level of Service			F			
HCM Volume to Capacity ratio			1.18									
Actuated Cycle Length (s)			110.0			Sum of lost time (s)			8.0			
Intersection Capacity Utilization			126.2%			ICU Level of Service			H			
Analysis Period (min)			15									
! Phase conflict between lane groups.												
c Critical Lane Group												

# HCM Signalized Intersection Capacity Analysis

9: MD 450 & MD 410

6/11/2008



Movement	EBL	EBT	EBR2	WBL	WBT	WBR	NBL	NBT	NBR	SBL2	SBL	SBT
Lane Configurations	↘	↑↑↑	↗	↘↗	↑↑↑	↗	↘	↑↑	↗	↘↗	↘	↑↑
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	0.91	1.00	0.97	0.91	1.00	1.00	0.95	1.00	0.97	1.00	0.95
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	1.00
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	0.95	1.00
Satd. Flow (prot)	1703	4893	1524	3303	4893	1524	1703	3406	1524	3303	902	3406
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	0.95	1.00
Satd. Flow (perm)	1703	4893	1524	3303	4893	1524	1703	3406	1524	3303	902	3406
Volume (vph)	280	670	455	470	2090	135	770	1065	440	180	10	745
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Growth Factor (vph)	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Adj. Flow (vph)	295	705	479	495	2200	142	811	1121	463	189	11	784
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	295	705	479	495	2200	142	811	1121	463	189	11	784
Heavy Vehicles (%)	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%	100%	6%
Turn Type	Prot		Free	Prot		Free	Prot		Perm	Prot	Prot	
Protected Phases	1	6		5	2		3	8		7	9	4
Permitted Phases			Free			Free			8			
Actuated Green, G (s)	19.0	34.5	140.0	24.5	40.0	140.0	31.0	38.0	38.0	10.0	6.0	17.0
Effective Green, g (s)	20.0	36.5	140.0	25.5	42.0	140.0	32.0	40.0	40.0	11.0	7.0	19.0
Actuated g/C Ratio	0.14	0.26	1.00	0.18	0.30	1.00	0.23	0.29	0.29	0.08	0.05	0.14
Clearance Time (s)	5.0	6.0		5.0	6.0		5.0	6.0	6.0	5.0	5.0	6.0
Vehicle Extension (s)	3.0	6.0		3.0	6.0		3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	243	1276	1524	602	1468	1524	389	973	435	260	45	462
v/s Ratio Prot	c0.17	0.14		0.15	c0.45		c0.48	0.33		0.06	0.01	c0.23
v/s Ratio Perm			c0.31			0.09			0.30			
v/c Ratio	1.21	0.55	0.31	0.82	1.50	0.09	2.08	1.15	1.06	0.73	0.24	1.70
Uniform Delay, d1	60.0	44.7	0.0	55.1	49.0	0.0	54.0	50.0	50.0	63.0	64.0	60.5
Progression Factor	0.81	0.82	1.00	0.92	0.67	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	126.3	1.6	0.5	7.0	227.2	0.1	496.9	80.4	61.3	9.7	2.8	322.9
Delay (s)	174.6	38.2	0.5	57.7	259.9	0.1	550.9	130.4	111.3	72.7	66.8	383.4
Level of Service	F	D	A	E	F	A	F	F	F	E	E	F
Approach Delay (s)		53.2			211.6			269.1				264.0
Approach LOS		D			F			F				F

Intersection Summary			
HCM Average Control Delay	207.5	HCM Level of Service	F
HCM Volume to Capacity ratio	1.53		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	132.5%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis  
 9: MD 450 & MD 410

6/11/2008



Movement	SBR	NWR
Lane Configurations	↗	↖
Ideal Flow (vphpl)	1900	1900
Total Lost time (s)	4.0	4.0
Lane Util. Factor	1.00	1.00
Frt	0.85	0.86
Flt Protected	1.00	1.00
Satd. Flow (prot)	1524	822
Flt Permitted	1.00	1.00
Satd. Flow (perm)	1524	822
Volume (vph)	250	10
Peak-hour factor, PHF	0.95	0.95
Growth Factor (vph)	100%	100%
Adj. Flow (vph)	263	11
RTOR Reduction (vph)	227	0
Lane Group Flow (vph)	36	11
Heavy Vehicles (%)	6%	100%
Turn Type	Perm	Over
Protected Phases		9
Permitted Phases	4	
Actuated Green, G (s)	17.0	6.0
Effective Green, g (s)	19.0	7.0
Actuated g/C Ratio	0.14	0.05
Clearance Time (s)	6.0	5.0
Vehicle Extension (s)	3.0	3.0
Lane Grp Cap (vph)	207	41
v/s Ratio Prot		0.01
v/s Ratio Perm	0.02	
v/c Ratio	0.17	0.27
Uniform Delay, d1	53.5	64.0
Progression Factor	1.00	1.00
Incremental Delay, d2	0.4	3.5
Delay (s)	53.9	67.5
Level of Service	D	E
Approach Delay (s)		
Approach LOS		
<b>Intersection Summary</b>		



# HCM Signalized Intersection Capacity Analysis

9: MD 450 & MD 410

6/11/2008



Movement	EBL	EBT	EBR2	WBL	WBT	WBR	NBL	NBT	NBR	SBL2	SBL	SBT
Lane Configurations	↘	↑↑↑	↗	↘↗	↑↑↑	↗	↘	↑↑	↗	↘↗	↘	↑↑
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	0.91	1.00	0.97	0.91	1.00	1.00	0.95	1.00	0.97	1.00	0.95
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	1.00
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	0.95	1.00
Satd. Flow (prot)	1752	5036	1568	3400	5036	1568	1752	3505	1568	3400	902	3505
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	0.95	1.00
Satd. Flow (perm)	1752	5036	1568	3400	5036	1568	1752	3505	1568	3400	902	3505
Volume (vph)	195	1740	665	280	1355	165	555	775	265	195	10	1025
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Growth Factor (vph)	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Adj. Flow (vph)	205	1832	700	295	1426	174	584	816	279	205	11	1079
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	205	1832	700	295	1426	174	584	816	279	205	11	1079
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	100%	3%
Turn Type	Prot		Free	Prot		Free	Prot		Perm	Prot	Prot	
Protected Phases	1	6		5	2		3	8		7	9	4
Permitted Phases			Free			Free			8			
Actuated Green, G (s)	19.0	28.1	115.0	14.9	24.0	115.0	21.0	31.0	31.0	10.0	4.0	20.0
Effective Green, g (s)	20.0	30.1	115.0	15.9	26.0	115.0	22.0	33.0	33.0	11.0	5.0	22.0
Actuated g/C Ratio	0.17	0.26	1.00	0.14	0.23	1.00	0.19	0.29	0.29	0.10	0.04	0.19
Clearance Time (s)	5.0	6.0		5.0	6.0		5.0	6.0	6.0	5.0	5.0	6.0
Vehicle Extension (s)	3.0	6.0		3.0	6.0		3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	305	1318	1568	470	1139	1568	335	1006	450	325	39	671
v/s Ratio Prot	c0.12	c0.36		0.09	0.28		c0.33	0.23		0.06	0.01	c0.31
v/s Ratio Perm			c0.45			0.11			0.18			
v/c Ratio	0.67	1.39	0.45	0.63	1.25	0.11	1.74	0.81	0.62	0.63	0.28	1.61
Uniform Delay, d1	44.4	42.5	0.0	46.8	44.5	0.0	46.5	38.1	35.6	50.0	53.3	46.5
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	5.7	180.2	0.9	2.6	120.8	0.1	346.6	5.0	2.5	4.0	3.9	280.5
Delay (s)	50.2	222.7	0.9	49.4	165.3	0.1	393.1	43.2	38.1	54.0	57.2	327.0
Level of Service	D	F	A	D	F	A	F	D	D	D	E	F
Approach Delay (s)		153.0			132.1			164.0				237.3
Approach LOS		F			F			F				F

Intersection Summary			
HCM Average Control Delay	167.1	HCM Level of Service	F
HCM Volume to Capacity ratio	1.33		
Actuated Cycle Length (s)	115.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	114.0%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			



Movement	SBR	NWR
Lane Configurations	↗	↖
Ideal Flow (vphpl)	1900	1900
Total Lost time (s)	4.0	4.0
Lane Util. Factor	1.00	1.00
Frt	0.85	0.86
Flt Protected	1.00	1.00
Satd. Flow (prot)	1568	822
Flt Permitted	1.00	1.00
Satd. Flow (perm)	1568	822
Volume (vph)	275	10
Peak-hour factor, PHF	0.95	0.95
Growth Factor (vph)	100%	100%
Adj. Flow (vph)	289	11
RTOR Reduction (vph)	234	0
Lane Group Flow (vph)	55	11
Heavy Vehicles (%)	3%	100%
Turn Type	Perm	Over
Protected Phases		9
Permitted Phases	4	
Actuated Green, G (s)	20.0	4.0
Effective Green, g (s)	22.0	5.0
Actuated g/C Ratio	0.19	0.04
Clearance Time (s)	6.0	5.0
Vehicle Extension (s)	3.0	3.0
Lane Grp Cap (vph)	300	36
v/s Ratio Prot		0.01
v/s Ratio Perm	0.04	
v/c Ratio	0.18	0.31
Uniform Delay, d1	39.0	53.3
Progression Factor	1.00	1.00
Incremental Delay, d2	0.3	4.8
Delay (s)	39.3	58.1
Level of Service	D	E
Approach Delay (s)		
Approach LOS		
<b>Intersection Summary</b>		

# HCM Signalized Intersection Capacity Analysis

## 12: Piney Branch Rd. & Arliss

6/10/2008



Movement	EBL	EBT	EBR2	WBL	WBT	WBR	NBL	NBT	NBR	SBL2	SBL	SBT
Lane Configurations	↖	↑↑		↖	↑↑			↕		↖	↖	↖
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	2.0	2.0		2.0	2.0			2.0		2.0	2.0	2.0
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00		1.00	1.00	1.00
Frbp, ped/bikes	1.00	1.00		1.00	1.00			1.00		1.00	1.00	1.00
Flpb, ped/bikes	1.00	1.00		0.99	1.00			1.00		1.00	1.00	1.00
Frt	1.00	1.00		1.00	0.96			0.93		1.00	1.00	0.87
Flt Protected	0.95	1.00		0.95	1.00			0.99		0.95	0.95	1.00
Satd. Flow (prot)	1687	3370		1675	3230			1728		1687	902	1551
Flt Permitted	0.08	1.00		0.40	1.00			0.99		0.95	1.00	1.00
Satd. Flow (perm)	138	3370		705	3230			1728		1687	950	1551
Volume (vph)	15	550	5	10	1200	475	5	5	10	175	10	5
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	16	598	5	11	1304	516	5	5	11	190	11	5
RTOR Reduction (vph)	0	0	0	0	19	0	0	0	0	0	0	23
Lane Group Flow (vph)	16	603	0	11	1801	0	0	21	0	190	11	9
Confl. Peds. (#/hr)	4			5			17			10		
Heavy Vehicles (%)	7%	7%	7%	7%	7%	7%	1%	1%	1%	7%	100%	7%
Turn Type	Perm			Perm			Split			Split	Perm	
Protected Phases		6			2		3	3		4!		4
Permitted Phases	6			2							4	
Actuated Green, G (s)	108.1	108.1		108.1	108.1			5.0		21.9	21.9	21.9
Effective Green, g (s)	111.1	111.1		111.1	111.1			8.0		24.9	24.9	24.9
Actuated g/C Ratio	0.74	0.74		0.74	0.74			0.05		0.17	0.17	0.17
Clearance Time (s)	5.0	5.0		5.0	5.0			5.0		5.0	5.0	5.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	102	2496		522	2392			92		280	158	257
v/s Ratio Prot		0.18			c0.56			c0.01		c0.11		0.01
v/s Ratio Perm	0.12			0.02							0.01	
v/c Ratio	0.16	0.24		0.02	0.75			0.23		0.68	0.07	0.04
Uniform Delay, d1	5.7	6.1		5.1	11.4			68.0		58.8	52.8	52.5
Progression Factor	0.82	0.78		0.98	0.66			1.00		1.00	1.00	1.00
Incremental Delay, d2	3.2	0.2		0.1	1.6			1.3		6.4	0.2	0.1
Delay (s)	7.9	5.0		5.1	9.1			69.3		65.2	53.0	52.5
Level of Service	A	A		A	A			E		E	D	D
Approach Delay (s)		5.1			9.0			69.3				62.9
Approach LOS		A			A			E				E

### Intersection Summary

HCM Average Control Delay	13.4	HCM Level of Service	B
HCM Volume to Capacity ratio	0.70		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	6.0
Intersection Capacity Utilization	78.1%	ICU Level of Service	D
Analysis Period (min)	15		

! Phase conflict between lane groups.

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis  
 12: Piney Branch Rd. & Arliss

6/10/2008

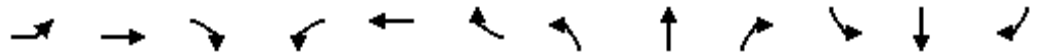


Movement	SBR	NWR
<b>Lane Configurations</b>		
Ideal Flow (vphpl)	1900	1900
Total Lost time (s)		2.0
Lane Util. Factor		1.00
Frbp, ped/bikes		1.00
Flpb, ped/bikes		1.00
Frt		0.86
Flt Protected		1.00
Satd. Flow (prot)		822
Flt Permitted		1.00
Satd. Flow (perm)		822
Volume (vph)	25	10
Peak-hour factor, PHF	0.92	0.92
Adj. Flow (vph)	27	11
RTOR Reduction (vph)	0	0
Lane Group Flow (vph)	0	11
Confl. Peds. (#/hr)		
Heavy Vehicles (%)	7%	100%
Turn Type	custom	
Protected Phases	4!	
Permitted Phases		
Actuated Green, G (s)	21.9	
Effective Green, g (s)	24.9	
Actuated g/C Ratio	0.17	
Clearance Time (s)	5.0	
Vehicle Extension (s)	3.0	
Lane Grp Cap (vph)	136	
v/s Ratio Prot	0.01	
v/s Ratio Perm		
v/c Ratio	0.08	
Uniform Delay, d1	52.9	
Progression Factor	1.00	
Incremental Delay, d2	0.3	
Delay (s)	53.1	
Level of Service	D	
Approach Delay (s)		
Approach LOS		
<b>Intersection Summary</b>		

# HCM Signalized Intersection Capacity Analysis

## 13: Piney Branch Rd. & Barron St

6/10/2008



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR2	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	2.0	2.0			2.0			2.0	2.0		2.0	
Lane Util. Factor	1.00	0.95			0.95			1.00	1.00		1.00	
Frt	1.00	0.98			1.00			1.00	0.85		0.97	
Flt Protected	0.95	1.00			1.00			0.95	1.00		0.96	
Satd. Flow (prot)	902	3323			3365			1795	1599		1754	
Flt Permitted	0.95	1.00			0.88			0.74	1.00		0.72	
Satd. Flow (perm)	902	3323			2958			1391	1599		1309	
Volume (vph)	10	675	75	50	1450	10	225	10	75	15	0	5
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	11	734	82	54	1576	11	245	11	82	16	0	5
RTOR Reduction (vph)	0	4	0	0	0	0	0	0	63	0	4	0
Lane Group Flow (vph)	11	812	0	0	1641	0	0	256	19	0	17	0
Heavy Vehicles (%)	100%	7%	7%	7%	7%	7%	1%	1%	1%	1%	1%	1%
Turn Type	Prot			Perm			Perm		Perm	Perm		
Protected Phases	6!	2			6!			8				4
Permitted Phases				6			8		8		4	
Actuated Green, G (s)	107.8	107.8			107.8			31.2	31.2		31.2	
Effective Green, g (s)	111.8	111.8			111.8			34.2	34.2		34.2	
Actuated g/C Ratio	0.75	0.75			0.75			0.23	0.23		0.23	
Clearance Time (s)	6.0	6.0			6.0			5.0	5.0		5.0	
Vehicle Extension (s)	3.0	3.0			3.0			3.0	3.0		3.0	
Lane Grp Cap (vph)	672	2477			2205			317	365		298	
v/s Ratio Prot	0.01	0.24										
v/s Ratio Perm					c0.55			c0.18	0.01		0.01	
v/c Ratio	0.02	0.33			0.74			0.81	0.05		0.06	
Uniform Delay, d1	4.9	6.4			10.9			54.8	45.2		45.3	
Progression Factor	0.60	0.78			1.00			1.00	1.00		1.00	
Incremental Delay, d2	0.0	0.3			2.3			14.0	0.1		0.1	
Delay (s)	3.0	5.3			13.3			68.7	45.3		45.4	
Level of Service	A	A			B			E	D		D	
Approach Delay (s)		5.3			13.3			63.1			45.4	
Approach LOS		A			B			E			D	

### Intersection Summary

HCM Average Control Delay	17.1	HCM Level of Service	B
HCM Volume to Capacity ratio	0.75		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	4.0
Intersection Capacity Utilization	92.5%	ICU Level of Service	F
Analysis Period (min)	15		

! Phase conflict between lane groups.

c Critical Lane Group



Movement	SWR
Lane Configurations	↗
Ideal Flow (vphpl)	1900
Total Lost time (s)	2.0
Lane Util. Factor	1.00
Frt	0.86
Flt Protected	1.00
Satd. Flow (prot)	822
Flt Permitted	1.00
Satd. Flow (perm)	822
Volume (vph)	10
Peak-hour factor, PHF	0.92
Adj. Flow (vph)	11
RTOR Reduction (vph)	0
Lane Group Flow (vph)	11
Heavy Vehicles (%)	100%
Turn Type	Over
Protected Phases	6!
Permitted Phases	
Actuated Green, G (s)	107.8
Effective Green, g (s)	111.8
Actuated g/C Ratio	0.75
Clearance Time (s)	6.0
Vehicle Extension (s)	3.0
Lane Grp Cap (vph)	613
v/s Ratio Prot	0.01
v/s Ratio Perm	
v/c Ratio	0.02
Uniform Delay, d1	4.9
Progression Factor	1.00
Incremental Delay, d2	0.1
Delay (s)	5.0
Level of Service	A
Approach Delay (s)	
Approach LOS	
Intersection Summary	

# HCM Signalized Intersection Capacity Analysis

## 12: Piney Branch Rd. & Arliss

6/10/2008



Movement	EBL	EBT	EBR2	WBL	WBT	WBR	NBL	NBT	NBR	SBL2	SBL	SBT
Lane Configurations	↶	↷		↶	↷			↕		↶	↷	↷
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	2.0	2.0		2.0	2.0			2.0		2.0	2.0	2.0
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00		1.00	1.00	1.00
Frbp, ped/bikes	1.00	1.00		1.00	1.00			1.00		1.00	1.00	1.00
Flpb, ped/bikes	1.00	1.00		1.00	1.00			1.00		1.00	1.00	1.00
Frt	1.00	1.00		1.00	0.97			0.90		1.00	1.00	0.90
Flt Protected	0.95	1.00		0.95	1.00			0.99		0.95	0.95	1.00
Satd. Flow (prot)	1715	3432		1719	3330			1684		1719	902	1629
Flt Permitted	0.16	1.00		0.12	1.00			0.99		0.95	0.95	1.00
Satd. Flow (perm)	285	3432		214	3330			1684		1719	902	1629
Volume (vph)	50	1200	15	25	850	225	5	5	25	425	10	25
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor (vph)	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Adj. Flow (vph)	54	1304	16	27	924	245	5	5	27	462	11	27
RTOR Reduction (vph)	0	1	0	0	21	0	0	0	0	0	0	39
Lane Group Flow (vph)	54	1319	0	27	1148	0	0	37	0	462	11	42
Confl. Peds. (#/hr)	10			12			24			40		
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%	1%	1%	1%	5%	100%	5%
Turn Type	Perm			Perm			Split			Split		Split
Protected Phases		6			2		3	3		4!	4	4
Permitted Phases	6			2								
Actuated Green, G (s)	42.6	42.6		42.6	42.6			3.4		19.0	19.0	19.0
Effective Green, g (s)	45.6	45.6		45.6	45.6			6.4		22.0	22.0	22.0
Actuated g/C Ratio	0.57	0.57		0.57	0.57			0.08		0.28	0.28	0.28
Clearance Time (s)	5.0	5.0		5.0	5.0			5.0		5.0	5.0	5.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	162	1956		122	1898			135		473	248	448
v/s Ratio Prot		c0.38			0.34			c0.02		c0.27	0.01	0.03
v/s Ratio Perm	0.19			0.13								
v/c Ratio	0.33	0.67		0.22	0.61			0.27		0.98	0.04	0.09
Uniform Delay, d1	9.1	12.0		8.5	11.3			34.6		28.7	21.3	21.6
Progression Factor	0.63	0.58		1.00	1.00			1.00		1.00	1.00	1.00
Incremental Delay, d2	4.6	1.6		4.1	1.4			1.1		35.0	0.1	0.1
Delay (s)	10.3	8.5		12.6	12.7			35.7		63.8	21.4	21.7
Level of Service	B	A		B	B			D		E	C	C
Approach Delay (s)		8.6			12.7			35.7				56.8
Approach LOS		A			B			D				E

### Intersection Summary

HCM Average Control Delay	18.9	HCM Level of Service	B
HCM Volume to Capacity ratio	0.72		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	6.0
Intersection Capacity Utilization	85.1%	ICU Level of Service	E
Analysis Period (min)	15		

! Phase conflict between lane groups.

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis  
 12: Piney Branch Rd. & Arliss

6/10/2008



Movement	SBR	NWR
Lane Configurations		
Ideal Flow (vphpl)	1900	1900
Total Lost time (s)		2.0
Lane Util. Factor		1.00
Frbp, ped/bikes		1.00
Flpb, ped/bikes		1.00
Frt		0.86
Flt Protected		1.00
Satd. Flow (prot)		822
Flt Permitted		1.00
Satd. Flow (perm)		822
Volume (vph)	50	10
Peak-hour factor, PHF	0.92	0.92
Growth Factor (vph)	100%	100%
Adj. Flow (vph)	54	11
RTOR Reduction (vph)	0	0
Lane Group Flow (vph)	0	11
Confl. Peds. (#/hr)		
Heavy Vehicles (%)	5%	100%
Turn Type		Over
Protected Phases		4!
Permitted Phases		
Actuated Green, G (s)		19.0
Effective Green, g (s)		22.0
Actuated g/C Ratio		0.28
Clearance Time (s)		5.0
Vehicle Extension (s)		3.0
Lane Grp Cap (vph)		226
v/s Ratio Prot		0.01
v/s Ratio Perm		
v/c Ratio		0.05
Uniform Delay, d1		21.3
Progression Factor		1.00
Incremental Delay, d2		0.1
Delay (s)		21.4
Level of Service		C
Approach Delay (s)		
Approach LOS		
<b>Intersection Summary</b>		



# HCM Signalized Intersection Capacity Analysis

## 13: Piney Branch Rd. & Barron St

6/10/2008



Movement	EBL	EBT	EBR	WBT	WBR	NBL	NBT	NBR2	SBL	SBT	SBR	SWR
Lane Configurations	↔	↕		↕			↕	↕		↕		↕
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	2.0	2.0		2.0			2.0	2.0		2.0		2.0
Lane Util. Factor	1.00	0.95		0.95			1.00	1.00		1.00		1.00
Frt	1.00	0.98		1.00			1.00	0.85		0.98		0.86
Flt Protected	0.95	1.00		1.00			0.95	1.00		0.96		1.00
Satd. Flow (prot)	902	3378		3426			1794	1599		1782		822
Flt Permitted	0.95	1.00		1.00			0.74	1.00		0.78		1.00
Satd. Flow (perm)	902	3378		3426			1388	1599		1436		822
Volume (vph)	10	1500	200	1075	25	175	5	100	25	5	5	10
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor (vph)	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Adj. Flow (vph)	11	1630	217	1168	27	190	5	109	27	5	5	11
RTOR Reduction (vph)	0	9	0	0	0	0	0	28	0	4	0	0
Lane Group Flow (vph)	11	1838	0	1195	0	0	195	81	0	33	0	11
Heavy Vehicles (%)	100%	5%	5%	5%	5%	1%	1%	1%	1%	1%	1%	100%
Turn Type	Prot			Perm			Perm		Perm		Over	
Protected Phases	6!	2		6!			8	8		4		6!
Permitted Phases						8		8	4			
Actuated Green, G (s)	61.8	61.8		61.8			17.2	17.2		17.2		61.8
Effective Green, g (s)	65.8	65.8		65.8			20.2	20.2		20.2		65.8
Actuated g/C Ratio	0.73	0.73		0.73			0.22	0.22		0.22		0.73
Clearance Time (s)	6.0	6.0		6.0			5.0	5.0		5.0		6.0
Vehicle Extension (s)	3.0	3.0		3.0			3.0	3.0		3.0		3.0
Lane Grp Cap (vph)	659	2470		2505			312	359		322		601
v/s Ratio Prot	0.01	c0.54		0.35								0.01
v/s Ratio Perm							c0.14	0.05		0.02		
v/c Ratio	0.02	0.74		0.48			0.62	0.23		0.10		0.02
Uniform Delay, d1	3.3	7.1		5.0			31.5	28.5		27.7		3.3
Progression Factor	1.00	1.00		1.00			1.00	1.00		1.00		1.00
Incremental Delay, d2	0.0	2.1		0.7			3.9	0.3		0.1		0.1
Delay (s)	3.3	9.2		5.6			35.4	28.8		27.8		3.4
Level of Service	A	A		A			D	C		C		A
Approach Delay (s)		9.2		5.6			33.0			27.8		
Approach LOS		A		A			C			C		

### Intersection Summary

HCM Average Control Delay	10.3	HCM Level of Service	B
HCM Volume to Capacity ratio	0.71		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	4.0
Intersection Capacity Utilization	78.1%	ICU Level of Service	D
Analysis Period (min)	15		

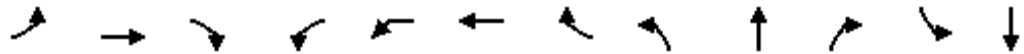
! Phase conflict between lane groups.

c Critical Lane Group

# HCM Signalized Intersection Capacity Analysis

## 4: Wayne Ave. & Fenton St

6/10/2008



Movement	EBL	EBT	EBR	WBL2	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations	↖	↗	↘	↖	↖	↗	↗	↖	↗	↘	↖	↗
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frbp, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	0.99	1.00	1.00	1.00	1.00	1.00	1.00	0.99	1.00
Frt	1.00	1.00	0.85	1.00	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.97
Flt Protected	0.95	1.00	1.00	0.95	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Satd. Flow (prot)	1687	1776	1509	1678	902	1776	1509	1687	1776	1509	1665	1716
Flt Permitted	0.20	1.00	1.00	0.22	0.95	1.00	1.00	0.20	1.00	1.00	0.41	1.00
Satd. Flow (perm)	350	1776	1509	396	902	1776	1509	359	1776	1509	725	1716
Volume (vph)	50	300	100	375	10	750	75	125	275	200	25	350
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	1.00	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	54	326	109	408	10	815	82	136	299	217	27	380
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	54	326	109	408	10	815	82	136	299	217	27	489
Confl. Peds. (#/hr)	19			29				34			17	
Heavy Vehicles (%)	7%	7%	7%	7%	100%	7%	7%	7%	7%	7%	7%	7%
Turn Type	Perm		Permcust		Prot		Perm	Perm		Perm	Perm	
Protected Phases		4		3	9	8 9			2			6
Permitted Phases	4		4	8			8 9	2		2		6
Actuated Green, G (s)	17.3	17.3	17.3	36.0	5.0	45.0	45.0	30.0	30.0	30.0	30.0	30.0
Effective Green, g (s)	20.3	20.3	20.3	38.0	13.0	53.0	53.0	33.0	33.0	33.0	33.0	33.0
Actuated g/C Ratio	0.23	0.23	0.23	0.42	0.14	0.59	0.59	0.37	0.37	0.37	0.37	0.37
Clearance Time (s)	5.0	5.0	5.0	4.0	10.0			5.0	5.0	5.0	5.0	5.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0			3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	79	401	340	391	130	1046	889	132	651	553	266	629
v/s Ratio Prot		0.18		c0.18	0.01	c0.46			0.17			0.28
v/s Ratio Perm	0.15		0.07	c0.26			0.05	c0.38		0.14	0.04	
v/c Ratio	0.68	0.81	0.32	1.04	0.08	0.78	0.09	1.03	0.46	0.39	0.10	0.78
Uniform Delay, d1	31.9	33.0	29.1	31.6	33.3	14.1	8.0	28.5	21.7	21.1	18.7	25.2
Progression Factor	1.00	1.00	1.00	0.80	0.60	0.26	0.31	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	21.7	11.9	0.5	52.4	0.2	3.0	0.0	86.6	2.3	2.1	0.8	9.2
Delay (s)	53.6	44.9	29.6	77.6	20.3	6.7	2.5	115.1	24.0	23.2	19.5	34.4
Level of Service	D	D	C	E	C	A	A	F	C	C	B	C
Approach Delay (s)		42.5				28.5			42.7			33.6
Approach LOS		D				C			D			C

### Intersection Summary

HCM Average Control Delay	34.8	HCM Level of Service	C
HCM Volume to Capacity ratio	0.96		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	4.0
Intersection Capacity Utilization	88.8%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis  
 4: Wayne Ave. & Fenton St

6/10/2008




















Movement	SBR2	NER
Lane Configurations		
Ideal Flow (vphpl)	1900	1900
Total Lost time (s)		2.0
Lane Util. Factor		1.00
Frbp, ped/bikes		1.00
Flpb, ped/bikes		1.00
Frt		0.86
Flt Protected		1.00
Satd. Flow (prot)		822
Flt Permitted		1.00
Satd. Flow (perm)		822
Volume (vph)	100	10
Peak-hour factor, PHF	0.92	1.00
Adj. Flow (vph)	109	10
RTOR Reduction (vph)	0	0
Lane Group Flow (vph)	0	10
Confl. Peds. (#/hr)		
Heavy Vehicles (%)	7%	100%
Turn Type		Over
Protected Phases		9
Permitted Phases		
Actuated Green, G (s)		5.0
Effective Green, g (s)		13.0
Actuated g/C Ratio		0.14
Clearance Time (s)		10.0
Vehicle Extension (s)		3.0
Lane Grp Cap (vph)		119
v/s Ratio Prot		0.01
v/s Ratio Perm		
v/c Ratio		0.08
Uniform Delay, d1		33.3
Progression Factor		1.00
Incremental Delay, d2		0.3
Delay (s)		33.6
Level of Service		C
Approach Delay (s)		
Approach LOS		
<b>Intersection Summary</b>		

# HCM Signalized Intersection Capacity Analysis

## 5: Cedar Ave & Wayne Ave.

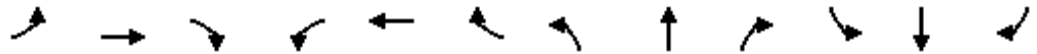
6/10/2008

												
Movement	NBL	NBT	NBR	SBL	SBT	SBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		2.0		2.0		2.0		2.0			2.0	
Lane Util. Factor		1.00		1.00		1.00		0.95			0.95	
Frbp, ped/bikes		1.00		1.00		0.93		1.00			0.99	
Flpb, ped/bikes		0.99		1.00		1.00		1.00			1.00	
Frt		0.97		1.00		0.85		1.00			0.97	
Flt Protected		0.99		0.95		1.00		0.99			1.00	
Satd. Flow (prot)		1685		1680		1407		3351			3231	
Flt Permitted		0.99		0.39		1.00		0.64			1.00	
Satd. Flow (perm)		1685		684		1407		2175			3231	
Volume (vph)	25	125	50	125	0	100	75	485	0	0	1110	300
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	27	136	54	136	0	109	82	527	0	0	1207	326
RTOR Reduction (vph)	0	15	0	0	0	73	0	0	0	0	0	0
Lane Group Flow (vph)	0	202	0	136	0	36	0	609	0	0	1533	0
Confl. Peds. (#/hr)	36		5	5		36	12		6	6		12
Turn Type	Perm		custom		custom		Perm					
Protected Phases		8						2			6	
Permitted Phases	8		4		4		2					
Actuated Green, G (s)		16.7		16.7		16.7		63.3			63.3	
Effective Green, g (s)		19.7		19.7		19.7		66.3			66.3	
Actuated g/C Ratio		0.22		0.22		0.22		0.74			0.74	
Clearance Time (s)		5.0		5.0		5.0		5.0			5.0	
Vehicle Extension (s)		0.2		0.2		0.2		3.0			3.0	
Lane Grp Cap (vph)		369		150		308		1602			2380	
v/s Ratio Prot											c0.47	
v/s Ratio Perm		0.12		c0.20		0.03		0.28				
v/c Ratio		0.55		0.91		0.12		0.38			0.64	
Uniform Delay, d1		31.2		34.3		28.2		4.3			5.9	
Progression Factor		1.00		1.00		1.00		0.06			0.20	
Incremental Delay, d2		0.9		45.8		0.1		0.6			0.4	
Delay (s)		32.1		80.0		28.2		0.8			1.6	
Level of Service		C		F		C		A			A	
Approach Delay (s)		32.1			57.0			0.8			1.6	
Approach LOS		C			E			A			A	
<b>Intersection Summary</b>												
HCM Average Control Delay			9.2				HCM Level of Service				A	
HCM Volume to Capacity ratio			0.70									
Actuated Cycle Length (s)			90.0				Sum of lost time (s)			4.0		
Intersection Capacity Utilization			92.4%				ICU Level of Service			F		
Analysis Period (min)			15									
c	Critical Lane Group											

# HCM Signalized Intersection Capacity Analysis

## 6: Wayne Ave. & Dale Dr

6/10/2008



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕↕			↕↕		↕	↕		↕	↕	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		2.0			2.0		2.0	2.0		2.0	2.0	
Lane Util. Factor		0.95			0.95		1.00	1.00		1.00	1.00	
Frbp, ped/bikes		1.00			0.99		1.00	0.99		1.00	0.97	
Flpb, ped/bikes		1.00			1.00		1.00	1.00		1.00	1.00	
Frt		0.99			0.99		1.00	0.98		1.00	0.94	
Flt Protected		0.99			1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		3309			3278		1687	1732		1684	1627	
Flt Permitted		0.58			0.82		0.17	1.00		0.21	1.00	
Satd. Flow (perm)		1935			2707		302	1732		375	1627	
Volume (vph)	75	410	25	110	1160	100	50	350	50	100	275	175
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	82	446	27	120	1261	109	54	380	54	109	299	190
RTOR Reduction (vph)	0	4	0	0	0	0	0	6	0	0	27	0
Lane Group Flow (vph)	0	551	0	0	1490	0	54	428	0	109	462	0
Confl. Peds. (#/hr)	52		30	30		52	41		25	25		41
Turn Type	Perm			Perm			pm+pt			pm+pt		
Protected Phases		6			2		3	8		7	4	
Permitted Phases	6			2			8			4		
Actuated Green, G (s)		44.2			44.2		30.0	26.8		31.6	27.6	
Effective Green, g (s)		47.2			47.2		36.0	29.8		37.6	30.6	
Actuated g/C Ratio		0.52			0.52		0.40	0.33		0.42	0.34	
Clearance Time (s)		5.0			5.0		5.0	5.0		5.0	5.0	
Vehicle Extension (s)		3.0			3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		1015			1420		216	573		258	553	
v/s Ratio Prot							0.02	0.25		c0.03	c0.28	
v/s Ratio Perm		0.28			c0.55		0.08			0.14		
v/c Ratio		0.89dl			1.05		0.25	0.75		0.42	0.84	
Uniform Delay, d1		14.2			21.4		19.0	26.7		18.3	27.4	
Progression Factor		0.82			0.42		1.00	1.00		1.00	1.00	
Incremental Delay, d2		1.9			34.5		0.6	5.3		1.1	10.5	
Delay (s)		13.7			43.5		19.6	32.0		19.5	37.9	
Level of Service		B			D		B	C		B	D	
Approach Delay (s)		13.7			43.5			30.7			34.5	
Approach LOS		B			D			C			C	

### Intersection Summary

HCM Average Control Delay	34.5	HCM Level of Service	C
HCM Volume to Capacity ratio	0.92		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	6.0
Intersection Capacity Utilization	96.3%	ICU Level of Service	F
Analysis Period (min)	15		

dl Defacto Left Lane. Recode with 1 though lane as a left lane.

c Critical Lane Group

# HCM Signalized Intersection Capacity Analysis

## 7: Wayne Ave. & Mansfield

6/10/2008



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑			↑↑			↑↓				
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		2.0			2.0			2.0				
Lane Util. Factor		0.95			0.95			1.00				
Frbp, ped/bikes		1.00			1.00			1.00				
Flpb, ped/bikes		1.00			1.00			1.00				
Frt		1.00			1.00			0.93				
Flt Protected		1.00			1.00			0.98				
Satd. Flow (prot)		3368			3374			1615				
Flt Permitted		1.00			1.00			0.98				
Satd. Flow (perm)		3368			3374			1615				
Volume (vph)	0	485	5	0	1420	0	5	0	5	0	0	0
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	527	5	0	1543	0	5	0	5	0	0	0
RTOR Reduction (vph)	0	1	0	0	0	0	0	4	0	0	0	0
Lane Group Flow (vph)	0	531	0	0	1543	0	0	7	0	0	0	0
Conf. Peds. (#/hr)	1		22	22			11			5		
Turn Type								Split				
Protected Phases		2			6		4	4				
Permitted Phases												
Actuated Green, G (s)		55.0			55.0			24.0				
Effective Green, g (s)		59.0			59.0			27.0				
Actuated g/C Ratio		0.66			0.66			0.30				
Clearance Time (s)		6.0			6.0			5.0				
Vehicle Extension (s)		0.2			3.0			0.2				
Lane Grp Cap (vph)		2208			2212			485				
v/s Ratio Prot		0.16			0.46			0.00				
v/s Ratio Perm												
v/c Ratio		0.24			0.70			0.01				
Uniform Delay, d1		6.3			9.8			22.1				
Progression Factor		1.46			0.56			1.00				
Incremental Delay, d2		0.2			1.3			0.0				
Delay (s)		9.5			6.8			22.1				
Level of Service		A			A			C				
Approach Delay (s)		9.5			6.8			22.1			0.0	
Approach LOS		A			A			C			A	

### Intersection Summary

HCM Average Control Delay	7.6	HCM Level of Service	A
HCM Volume to Capacity ratio	0.48		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	4.0
Intersection Capacity Utilization	49.3%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

# HCM Signalized Intersection Capacity Analysis

## 8: Wayne Ave. & Sligo Creek Pkwy

6/10/2008



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗			↔		↖	↗			↖	↗
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	2.0	2.0			2.0		2.0	2.0			2.0	2.0
Lane Util. Factor	1.00	1.00			0.95		1.00	1.00			1.00	1.00
Frbp, ped/bikes	1.00	1.00			1.00		1.00	1.00			1.00	1.00
Flpb, ped/bikes	1.00	1.00			1.00		1.00	1.00			1.00	1.00
Frt	1.00	0.98			0.99		1.00	0.99			1.00	0.85
Flt Protected	0.95	1.00			1.00		0.95	1.00			0.99	1.00
Satd. Flow (prot)	1687	1735			3340		1687	1759			1763	1509
Flt Permitted	0.12	1.00			0.94		0.17	1.00			0.91	1.00
Satd. Flow (perm)	208	1735			3154		305	1759			1614	1509
Volume (vph)	50	360	50	20	1060	50	175	350	20	50	350	175
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	54	391	54	22	1152	54	190	380	22	54	380	190
RTOR Reduction (vph)	0	5	0	0	3	0	0	3	0	0	0	0
Lane Group Flow (vph)	54	440	0	0	1225	0	190	399	0	0	434	190
Confl. Peds. (#/hr)	14		8	8		14	2		11	11		2
Turn Type	Perm			Perm			pm+pt			Perm		Prot
Protected Phases		2			6		7	4			8	8
Permitted Phases	2			6			4			8		
Actuated Green, G (s)	43.2	43.2			43.2		36.8	36.8			24.8	24.8
Effective Green, g (s)	46.2	46.2			46.2		39.8	39.8			27.8	27.8
Actuated g/C Ratio	0.51	0.51			0.51		0.44	0.44			0.31	0.31
Clearance Time (s)	5.0	5.0			5.0		5.0	5.0			5.0	5.0
Vehicle Extension (s)	0.2	0.2			0.2		3.0	3.0			0.2	0.2
Lane Grp Cap (vph)	107	891			1619		288	778			499	466
v/s Ratio Prot		0.25					c0.07	0.23				0.13
v/s Ratio Perm	0.26				c0.39		0.22				c0.27	
v/c Ratio	0.50	0.49			0.76		0.66	0.51			0.87	0.41
Uniform Delay, d1	14.4	14.3			17.4		18.5	18.1			29.4	24.6
Progression Factor	1.31	1.00			0.85		1.00	1.00			1.00	1.00
Incremental Delay, d2	15.7	1.9			3.0		5.4	0.6			14.5	0.2
Delay (s)	34.6	16.2			17.8		23.9	18.7			43.8	24.8
Level of Service	C	B			B		C	B			D	C
Approach Delay (s)		18.2			17.8			20.4			38.0	
Approach LOS		B			B			C			D	

### Intersection Summary

HCM Average Control Delay	22.7	HCM Level of Service	C
HCM Volume to Capacity ratio	0.77		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	6.0
Intersection Capacity Utilization	96.1%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis  
 132: Thayer Ave. & Georgia Ave

7/28/2008



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↙		↑↑↑		↘	↑↑↑
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0		4.0		4.0	4.0
Lane Util. Factor	1.00		0.91		1.00	0.91
Frt	0.88		1.00		1.00	1.00
Flt Protected	0.99		1.00		0.95	1.00
Satd. Flow (prot)	1634		5078		1770	5085
Flt Permitted	0.99		1.00		0.09	1.00
Satd. Flow (perm)	1634		5078		171	5085
Volume (vph)	35	225	1540	15	55	2255
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	37	237	1621	16	58	2374
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	274	0	1637	0	58	2374
Turn Type					pm+pt	
Protected Phases	4		5		6	2
Permitted Phases					2	
Actuated Green, G (s)	24.5		63.7		85.5	85.5
Effective Green, g (s)	25.5		64.7		86.5	86.5
Actuated g/C Ratio	0.21		0.54		0.72	0.72
Clearance Time (s)	5.0		5.0		5.0	5.0
Vehicle Extension (s)	3.0		3.0		3.0	3.0
Lane Grp Cap (vph)	347		2738		360	3665
v/s Ratio Prot	c0.17		0.32		0.02	c0.47
v/s Ratio Perm					0.09	
v/c Ratio	0.79		0.60		0.16	0.65
Uniform Delay, d1	44.7		18.8		17.5	8.8
Progression Factor	1.00		1.00		0.15	0.02
Incremental Delay, d2	11.3		1.0		0.1	0.4
Delay (s)	56.0		19.8		2.8	0.7
Level of Service	E		B		A	A
Approach Delay (s)	56.0		19.8			0.7
Approach LOS	E		B			A

Intersection Summary

HCM Average Control Delay	11.4	HCM Level of Service	B
HCM Volume to Capacity ratio	0.68		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	66.1%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			



# HCM Signalized Intersection Capacity Analysis

## 3: Wayne Ave. #1 & Georgia Ave

7/28/2008



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↙	↑↑		↙	↑↑		↙	↑↑↑		↙	↑↑↑	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	0.91		1.00	0.91	
Frbp, ped/bikes	1.00	0.97		1.00	0.99		1.00	0.99		1.00	0.99	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.96		1.00	0.98		1.00	0.99		1.00	0.98	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1687	3148		1687	3269		1687	4789		1687	4720	
Flt Permitted	0.15	1.00		0.30	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	263	3148		525	3269		1687	4789		1687	4720	
Volume (vph)	120	325	115	95	690	85	110	1385	65	85	2290	285
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	126	342	121	100	726	89	116	1458	68	89	2411	300
RTOR Reduction (vph)	0	29	0	0	8	0	0	4	0	0	13	0
Lane Group Flow (vph)	126	434	0	100	807	0	116	1522	0	89	2698	0
Confl. Peds. (#/hr)			67			84			66			46
Heavy Vehicles (%)	7%	7%	7%	7%	7%	7%	7%	7%	7%	7%	7%	7%
Turn Type	pm+pt			pm+pt			Prot			Prot		
Protected Phases	7	4		3	8		1	5		6	2	
Permitted Phases	4			8								
Actuated Green, G (s)	29.0	25.0		29.0	25.0		8.0	49.8		19.2	63.0	
Effective Green, g (s)	31.0	27.0		31.0	27.0		8.0	51.8		21.2	65.0	
Actuated g/C Ratio	0.26	0.22		0.26	0.22		0.07	0.43		0.18	0.54	
Clearance Time (s)	4.0	6.0		4.0	6.0		4.0	6.0		6.0	6.0	
Vehicle Extension (s)	3.0	4.0		3.0	4.0		3.0	0.2		3.0	0.2	
Lane Grp Cap (vph)	115	708		174	736		112	2067		298	2557	
v/s Ratio Prot	c0.04	0.14		0.02	c0.25		c0.07	0.32		0.05	c0.57	
v/s Ratio Perm	0.25			0.13								
v/c Ratio	1.10	0.61		0.57	1.10		1.04	0.74		0.30	1.06	
Uniform Delay, d1	45.3	41.8		38.3	46.5		56.0	28.4		42.9	27.5	
Progression Factor	1.00	1.00		1.00	1.00		1.34	0.58		0.68	0.43	
Incremental Delay, d2	112.0	3.9		4.5	62.8		93.4	2.3		0.4	32.3	
Delay (s)	157.3	45.7		42.9	109.3		168.6	18.9		29.5	44.1	
Level of Service	F	D		D	F		F	B		C	D	
Approach Delay (s)		69.6			102.0			29.5			43.6	
Approach LOS		E			F			C			D	

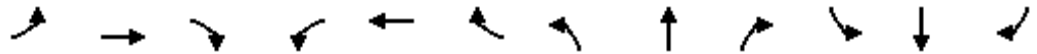
### Intersection Summary

HCM Average Control Delay	51.3	HCM Level of Service	D
HCM Volume to Capacity ratio	1.07		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	99.5%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

# HCM Signalized Intersection Capacity Analysis

65: Wayne Ave. #1 & Dixon Rd

7/28/2008



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑↑			↑↑↑			↑	↑		↑	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		2.0			2.0			2.0	2.0		2.0	
Lane Util. Factor		0.91			0.91			0.95	0.95		1.00	
Frt		0.97			1.00			0.89	0.85		0.92	
Flt Protected		1.00			0.99			0.99	1.00		0.99	
Satd. Flow (prot)		4692			4773			1572	1519		1708	
Flt Permitted		0.91			0.71			0.93	1.00		0.96	
Satd. Flow (perm)		4264			3451			1484	1519		1661	
Volume (vph)	10	355	95	305	765	10	25	0	165	5	5	15
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	11	374	100	321	805	11	26	0	174	5	5	16
RTOR Reduction (vph)	0	18	0	0	1	0	0	50	79	0	12	0
Lane Group Flow (vph)	0	467	0	0	1136	0	0	43	28	0	14	0
Heavy Vehicles (%)	7%	7%	7%	7%	7%	7%	1%	1%	1%	1%	1%	1%
Turn Type	Perm			pm+pt			Perm		Perm	Perm		
Protected Phases		6		5	2			4				8
Permitted Phases	6			2			4		4	8		
Actuated Green, G (s)		81.0			81.0			27.0	27.0		27.0	
Effective Green, g (s)		85.0			85.0			31.0	31.0		31.0	
Actuated g/C Ratio		0.71			0.71			0.26	0.26		0.26	
Clearance Time (s)		6.0			6.0			6.0	6.0		6.0	
Vehicle Extension (s)		3.0			3.0			3.0	3.0		3.0	
Lane Grp Cap (vph)		3020			2444			383	392		429	
v/s Ratio Prot												
v/s Ratio Perm		0.11			0.33			0.03	0.02		0.01	
v/c Ratio		0.15			0.46			0.11	0.07		0.03	
Uniform Delay, d1		5.7			7.6			34.0	33.6		33.3	
Progression Factor		1.00			1.00			1.07	1.13		1.00	
Incremental Delay, d2		0.1			0.1			0.1	0.1		0.0	
Delay (s)		5.8			7.8			36.5	38.0		33.3	
Level of Service		A			A			D	D		C	
Approach Delay (s)		5.8			7.8			37.3			33.3	
Approach LOS		A			A			D			C	













## Intersection Summary

HCM Average Control Delay	10.8	HCM Level of Service	B
HCM Volume to Capacity ratio	0.37		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	4.0
Intersection Capacity Utilization	48.7%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis  
131: Bonifant Street & Georgia Ave

7/28/2008

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑		↔	↑		↔	↑↑↑		↔	↑↑↑	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lane Util. Factor		1.00		1.00	1.00		1.00	0.91		1.00	0.91	
Frt		1.00		1.00	1.00		1.00	1.00		1.00	0.99	
Flt Protected		1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1863		1770	1863		1770	5075		1770	5022	
Flt Permitted		1.00		0.75	1.00		0.06	1.00		0.11	1.00	
Satd. Flow (perm)		1863		1398	1863		105	5075		212	5022	
Volume (vph)	0	10	0	45	10	0	185	1475	20	35	2265	205
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	11	0	47	11	0	195	1553	21	37	2384	216
RTOR Reduction (vph)	0	0	0	0	0	0	0	1	0	0	9	0
Lane Group Flow (vph)	0	11	0	47	11	0	195	1573	0	37	2591	0
Turn Type				Perm			pm+pt			pm+pt		
Protected Phases		4			8		5	2		1	6	
Permitted Phases				8			2			6		
Actuated Green, G (s)		25.0		25.0	25.0		85.0	77.6		68.7	66.3	
Effective Green, g (s)		28.0		28.0	28.0		88.0	80.6		74.7	69.3	
Actuated g/C Ratio		0.23		0.23	0.23		0.73	0.67		0.62	0.58	
Clearance Time (s)		5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Vehicle Extension (s)		3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		435		326	435		309	3409		202	2900	
v/s Ratio Prot		0.01			0.01		c0.09	0.31		0.01	c0.52	
v/s Ratio Perm				c0.03			0.38			0.11		
v/c Ratio		0.03		0.14	0.03		0.63	0.46		0.18	0.89	
Uniform Delay, d1		35.5		36.5	35.5		39.7	9.4		18.4	22.1	
Progression Factor		1.00		0.76	0.77		1.32	0.97		0.34	0.33	
Incremental Delay, d2		0.0		0.2	0.0		3.4	0.4		0.0	0.5	
Delay (s)		35.5		27.9	27.4		55.8	9.5		6.2	7.8	
Level of Service		D		C	C		E	A		A	A	
Approach Delay (s)		35.5			27.8			14.6			7.7	
Approach LOS		D			C			B			A	
<b>Intersection Summary</b>												
HCM Average Control Delay			10.8				HCM Level of Service			B		
HCM Volume to Capacity ratio			0.65									
Actuated Cycle Length (s)			120.0				Sum of lost time (s)			4.0		
Intersection Capacity Utilization			77.7%				ICU Level of Service			D		
Analysis Period (min)			15									
c Critical Lane Group												

# HCM Signalized Intersection Capacity Analysis

## 3: Wayne Ave. #1 & Georgia Ave

7/28/2008



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↗	↗↘		↗	↗↘		↗	↗↘↙		↗	↗↘↙	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	0.91		1.00	0.91	
Frbp, ped/bikes	1.00	0.94		1.00	0.93		1.00	0.98		1.00	0.98	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.95		1.00	0.94		1.00	0.99		1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1719	3083		1719	3004		1719	4796		1719	4798	
Flt Permitted	0.14	1.00		0.16	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	245	3083		283	3004		1719	4796		1719	4798	
Volume (vph)	370	570	265	135	380	245	180	1730	120	105	1530	150
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	389	600	279	142	400	258	189	1821	126	111	1611	158
RTOR Reduction (vph)	0	45	0	0	88	0	0	6	0	0	10	0
Lane Group Flow (vph)	389	834	0	142	570	0	189	1941	0	111	1759	0
Confl. Peds. (#/hr)			117			116			173			97
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%
Turn Type	pm+pt			pm+pt			Prot			Prot		
Protected Phases	7	4		3	8		1	5		6	2	
Permitted Phases	4			8								
Actuated Green, G (s)	44.6	30.3		33.9	23.6		14.2	50.4		7.0	45.2	
Effective Green, g (s)	46.6	32.3		35.9	25.6		14.2	52.4		9.0	47.2	
Actuated g/C Ratio	0.39	0.27		0.30	0.21		0.12	0.44		0.08	0.39	
Clearance Time (s)	4.0	6.0		4.0	6.0		4.0	6.0		6.0	6.0	
Vehicle Extension (s)	3.0	4.0		3.0	4.0		3.0	0.2		3.0	0.2	
Lane Grp Cap (vph)	304	830		208	641		203	2094		129	1887	
v/s Ratio Prot	c0.18	0.27		0.06	0.19		0.11	c0.40		0.06	c0.37	
v/s Ratio Perm	c0.32			0.15								
v/c Ratio	1.28	1.00		0.68	0.89		0.93	0.93		0.86	0.93	
Uniform Delay, d1	34.5	43.8		33.9	45.8		52.4	32.0		54.9	34.9	
Progression Factor	1.00	1.00		1.00	1.00		1.24	0.45		0.69	0.52	
Incremental Delay, d2	148.7	32.3		8.9	14.5		34.5	6.3		45.2	9.1	
Delay (s)	183.3	76.2		42.8	60.3		99.5	20.5		83.1	27.1	
Level of Service	F	E		D	E		F	C		F	C	
Approach Delay (s)		109.0			57.2			27.5			30.4	
Approach LOS		F			E			C			C	

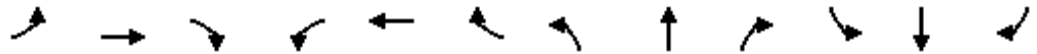
### Intersection Summary

HCM Average Control Delay	49.3	HCM Level of Service	D
HCM Volume to Capacity ratio	1.05		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	98.1%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

# HCM Signalized Intersection Capacity Analysis

65: Wayne Ave. #1 & Dixon Rd

7/28/2008



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑↑			↑↑↑			↑	↑		↑	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		2.0			2.0			2.0	2.0		2.0	
Lane Util. Factor		0.91			0.91			0.95	0.95		1.00	
Frt		0.99			1.00			0.91	0.85		0.93	
Flt Protected		1.00			0.99			0.98	1.00		0.98	
Satd. Flow (prot)		4877			4897			1600	1519		1725	
Flt Permitted		0.92			0.79			0.87	1.00		0.89	
Satd. Flow (perm)		4515			3877			1411	1519		1555	
Volume (vph)	10	575	50	80	615	15	100	5	515	10	5	15
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	11	605	53	84	647	16	105	5	542	11	5	16
RTOR Reduction (vph)	0	4	0	0	1	0	0	50	287	0	12	0
Lane Group Flow (vph)	0	665	0	0	746	0	0	212	103	0	20	0
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%	1%	1%	1%	1%	1%	1%
Turn Type	Perm			pm+pt			Perm		Perm	Perm		
Protected Phases		6		5	2			4				8
Permitted Phases	6			2			4		4	8		
Actuated Green, G (s)		80.2			80.2			27.8	27.8			27.8
Effective Green, g (s)		84.2			84.2			31.8	31.8			31.8
Actuated g/C Ratio		0.70			0.70			0.26	0.26			0.26
Clearance Time (s)		6.0			6.0			6.0	6.0			6.0
Vehicle Extension (s)		3.0			3.0			3.0	3.0			3.0
Lane Grp Cap (vph)		3168			2720			374	403			412
v/s Ratio Prot												
v/s Ratio Perm		0.15			c0.19			c0.15	0.07			0.01
v/c Ratio		0.21			0.27			0.57	0.26			0.05
Uniform Delay, d1		6.3			6.6			38.1	34.8			32.8
Progression Factor		1.00			1.00			0.98	0.95			1.00
Incremental Delay, d2		0.2			0.1			2.0	0.3			0.0
Delay (s)		6.4			6.7			39.2	33.2			32.9
Level of Service		A			A			D	C			C
Approach Delay (s)		6.4			6.7			35.6				32.9
Approach LOS		A			A			D				C
<b>Intersection Summary</b>												
HCM Average Control Delay			16.0				HCM Level of Service			B		
HCM Volume to Capacity ratio			0.35									
Actuated Cycle Length (s)			120.0				Sum of lost time (s)			4.0		
Intersection Capacity Utilization			58.4%				ICU Level of Service			B		
Analysis Period (min)			15									

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis  
 131: Bonifant Street & Georgia Ave

7/28/2008

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑		↔	↑		↔	↑↑↑		↔	↑↑↑	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lane Util. Factor		1.00		1.00	1.00		1.00	0.91		1.00	0.91	
Frt		1.00		1.00	1.00		1.00	0.99		1.00	1.00	
Flt Protected		1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1863		1770	1863		1770	5040		1770	5067	
Flt Permitted		1.00		0.75	1.00		0.07	1.00		0.07	1.00	
Satd. Flow (perm)		1863		1398	1863		132	5040		123	5067	
Volume (vph)	0	10	0	10	10	0	85	1965	125	90	1660	40
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	11	0	11	11	0	89	2068	132	95	1747	42
RTOR Reduction (vph)	0	0	0	0	0	0	0	5	0	0	2	0
Lane Group Flow (vph)	0	11	0	11	11	0	89	2195	0	95	1787	0
Turn Type				Perm			pm+pt			pm+pt		
Protected Phases		4			4		5	2		1	6	
Permitted Phases				4			2			6		
Actuated Green, G (s)		25.0		25.0	25.0		67.0	67.0		73.8	73.8	
Effective Green, g (s)		28.0		28.0	28.0		70.0	70.0		76.8	76.8	
Actuated g/C Ratio		0.23		0.23	0.23		0.58	0.58		0.64	0.64	
Clearance Time (s)		5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Vehicle Extension (s)		3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		435		326	435		203	2940		298	3243	
v/s Ratio Prot		0.01			0.01		0.03	c0.44		0.04	c0.35	
v/s Ratio Perm				c0.01			0.22			0.16		
v/c Ratio		0.03		0.03	0.03		0.44	0.75		0.32	0.55	
Uniform Delay, d1		35.5		35.5	35.5		15.2	18.5		30.9	12.0	
Progression Factor		1.00		0.96	0.96		1.65	0.14		0.38	0.35	
Incremental Delay, d2		0.0		0.0	0.0		0.9	1.1		0.2	0.3	
Delay (s)		35.5		34.0	34.0		26.0	3.7		12.0	4.5	
Level of Service		D		C	C		C	A		B	A	
Approach Delay (s)		35.5			34.0			4.6			4.9	
Approach LOS		D			C			A			A	
<b>Intersection Summary</b>												
HCM Average Control Delay			4.9			HCM Level of Service				A		
HCM Volume to Capacity ratio			0.54									
Actuated Cycle Length (s)			120.0			Sum of lost time (s)			4.0			
Intersection Capacity Utilization			63.0%			ICU Level of Service				B		
Analysis Period (min)			15									
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis  
 132: Thayer Ave. & Georgia Ave

7/28/2008



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↵		↑↑↑		↵	↑↑↑
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0		4.0		4.0	4.0
Lane Util. Factor	1.00		0.91		1.00	0.91
Frt	0.90		0.99		1.00	1.00
Flt Protected	0.99		1.00		0.95	1.00
Satd. Flow (prot)	1655		5048		1770	5085
Flt Permitted	0.99		1.00		0.06	1.00
Satd. Flow (perm)	1655		5048		103	5085
Volume (vph)	65	185	2050	105	140	1660
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	68	195	2158	111	147	1747
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	263	0	2269	0	147	1747
Turn Type					pm+pt	
Protected Phases	4		5		6	2
Permitted Phases					2	
Actuated Green, G (s)	22.6		67.4		87.4	87.4
Effective Green, g (s)	23.6		68.4		88.4	88.4
Actuated g/C Ratio	0.20		0.57		0.74	0.74
Clearance Time (s)	5.0		5.0		5.0	5.0
Vehicle Extension (s)	3.0		3.0		3.0	3.0
Lane Grp Cap (vph)	325		2877		298	3746
v/s Ratio Prot	c0.16		c0.45		0.07	c0.34
v/s Ratio Perm					0.30	
v/c Ratio	0.81		0.79		0.49	0.47
Uniform Delay, d1	46.0		20.2		32.3	6.3
Progression Factor	1.00		1.00		0.36	0.14
Incremental Delay, d2	13.8		2.3		1.1	0.4
Delay (s)	59.8		22.4		12.9	1.2
Level of Service	E		C		B	A
Approach Delay (s)	59.8		22.4			2.1
Approach LOS	E		C			A

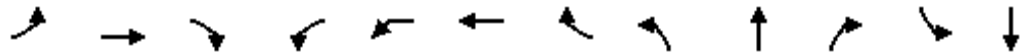
Intersection Summary

HCM Average Control Delay	16.0	HCM Level of Service	B
HCM Volume to Capacity ratio	0.73		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	74.7%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

# HCM Signalized Intersection Capacity Analysis

## 4: Wayne Ave. & Fenton St

6/10/2008



Movement	EBL	EBT	EBR	WBL2	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations	↖	↗		↖	↖	↗		↖	↗	↗	↖	↗
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	2.0	2.0		2.0	2.0	2.0		2.0	2.0	2.0	2.0	2.0
Lane Util. Factor	1.00	0.95		1.00	1.00	0.95		1.00	1.00	1.00	1.00	1.00
Frbp, ped/bikes	1.00	0.96		1.00	1.00	0.98		1.00	1.00	1.00	1.00	0.98
Flpb, ped/bikes	0.92	1.00		1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.97		1.00	1.00	0.99		1.00	1.00	0.85	1.00	0.98
Flt Protected	0.95	1.00		0.95	0.95	1.00		0.95	1.00	1.00	0.95	1.00
Satd. Flow (prot)	1582	3200		1719	902	3316		1719	1810	1538	1719	1732
Flt Permitted	0.32	1.00		0.10	0.95	1.00		0.23	1.00	1.00	0.10	1.00
Satd. Flow (perm)	536	3200		186	902	3316		423	1810	1538	172	1732
Volume (vph)	50	700	175	300	10	525	50	75	525	300	75	350
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	1.00	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	54	761	190	326	10	571	54	82	571	326	82	380
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	54	951	0	326	10	625	0	82	571	326	82	434
Confl. Peds. (#/hr)	71		53	53			71	90		112	112	
Heavy Vehicles (%)	5%	5%	5%	5%	100%	5%	5%	5%	5%	5%	5%	5%
Turn Type	Perm			custom		Prot		Perm		Prot		Perm
Protected Phases		4		3	9	8 9			2	2		6
Permitted Phases	4			8				2				6
Actuated Green, G (s)	34.0	34.0		57.0	5.0	66.0		39.0	39.0	39.0	39.0	39.0
Effective Green, g (s)	37.0	37.0		59.0	13.0	74.0		42.0	42.0	42.0	42.0	42.0
Actuated g/C Ratio	0.31	0.31		0.49	0.11	0.62		0.35	0.35	0.35	0.35	0.35
Clearance Time (s)	5.0	5.0		4.0	10.0			5.0	5.0	5.0	5.0	5.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	165	987		347	98	2045		148	634	538	60	606
v/s Ratio Prot		c0.30		c0.16	0.01	c0.19			0.32	0.21		0.25
v/s Ratio Perm	0.10			0.31				0.19			c0.48	
v/c Ratio	0.33	0.96		0.94	0.10	0.31		0.55	0.90	0.61	1.37	0.72
Uniform Delay, d1	31.9	40.8		43.8	48.2	10.9		31.4	37.0	32.2	39.0	33.8
Progression Factor	1.00	1.00		0.84	0.82	0.46		1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	1.2	20.2		29.9	0.4	0.1		14.1	18.3	5.0	241.4	7.1
Delay (s)	33.1	61.0		66.6	40.2	5.0		45.6	55.3	37.2	280.4	40.9
Level of Service	C	E		E	D	A		D	E	D	F	D
Approach Delay (s)		59.5				26.3			48.4			79.0
Approach LOS		E				C			D			E

### Intersection Summary

HCM Average Control Delay	50.1	HCM Level of Service	D
HCM Volume to Capacity ratio	0.99		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	4.0
Intersection Capacity Utilization	96.7%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			





Movement	SBR2	NER
Lane Configurations		
Ideal Flow (vphpl)	1900	1900
Total Lost time (s)		2.0
Lane Util. Factor		1.00
Frbp, ped/bikes		1.00
Flpb, ped/bikes		1.00
Frt		0.86
Flt Protected		1.00
Satd. Flow (prot)		822
Flt Permitted		1.00
Satd. Flow (perm)		822
Volume (vph)	50	10
Peak-hour factor, PHF	0.92	1.00
Adj. Flow (vph)	54	10
RTOR Reduction (vph)	0	0
Lane Group Flow (vph)	0	10
Confl. Peds. (#/hr)	90	
Heavy Vehicles (%)	5%	100%
Turn Type		Over
Protected Phases		9
Permitted Phases		
Actuated Green, G (s)		5.0
Effective Green, g (s)		13.0
Actuated g/C Ratio		0.11
Clearance Time (s)		10.0
Vehicle Extension (s)		3.0
Lane Grp Cap (vph)		89
v/s Ratio Prot		0.01
v/s Ratio Perm		
v/c Ratio		0.11
Uniform Delay, d1		48.3
Progression Factor		1.00
Incremental Delay, d2		0.6
Delay (s)		48.9
Level of Service		D
Approach Delay (s)		
Approach LOS		
<b>Intersection Summary</b>		

# HCM Signalized Intersection Capacity Analysis

## 5: Cedar Ave & Wayne Ave.

6/10/2008



Movement	NBL	NBT	NBR	SBL	SBT	SBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations		↕		↕		↕		↕			↕	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		2.0		2.0		2.0		2.0			2.0	
Lane Util. Factor		1.00		1.00		1.00		0.95			0.95	
Frbp, ped/bikes		0.99		1.00		1.00		1.00			1.00	
Flpb, ped/bikes		1.00		1.00		1.00		1.00			1.00	
Frt		0.96		1.00		0.85		1.00			0.97	
Flt Protected		0.99		0.95		1.00		0.99			1.00	
Satd. Flow (prot)		1711		1719		1538		3399			3327	
Flt Permitted		0.99		0.37		1.00		0.53			1.00	
Satd. Flow (perm)		1711		676		1538		1824			3327	
Volume (vph)	75	225	125	250	0	200	250	835	0	0	760	175
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	82	245	136	272	0	217	272	908	0	0	826	190
RTOR Reduction (vph)	0	14	0	0	0	78	0	0	0	0	0	0
Lane Group Flow (vph)	0	449	0	272	0	139	0	1180	0	0	1016	0
Conf. Peds. (#/hr)			5	5			1					1
Turn Type	Perm		custom		custom		Perm					
Protected Phases		8						2			6	
Permitted Phases	8		4		4		2					
Actuated Green, G (s)		46.2		46.2		46.2		63.8			63.8	
Effective Green, g (s)		49.2		49.2		49.2		66.8			66.8	
Actuated g/C Ratio		0.41		0.41		0.41		0.56			0.56	
Clearance Time (s)		5.0		5.0		5.0		5.0			5.0	
Vehicle Extension (s)		3.0		3.0		3.0		0.2			0.2	
Lane Grp Cap (vph)		702		277		631		1015			1852	
v/s Ratio Prot											0.31	
v/s Ratio Perm		0.26		c0.40		0.09		c0.65				
v/c Ratio		0.64		0.98		0.22		1.50dl			0.55	
Uniform Delay, d1		28.3		35.0		23.0		26.6			17.0	
Progression Factor		1.00		1.00		1.00		0.65			1.32	
Incremental Delay, d2		2.0		48.8		0.2		78.4			0.4	
Delay (s)		30.3		83.8		23.1		95.6			22.7	
Level of Service		C		F		C		F			C	
Approach Delay (s)		30.3			56.9			95.6			22.7	
Approach LOS		C			E			F			C	

### Intersection Summary

HCM Average Control Delay	56.5	HCM Level of Service	E
HCM Volume to Capacity ratio	1.08		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	4.0
Intersection Capacity Utilization	107.9%	ICU Level of Service	G
Analysis Period (min)	15		

dl Defacto Left Lane. Recode with 1 though lane as a left lane.

c Critical Lane Group

# HCM Signalized Intersection Capacity Analysis

## 6: Wayne Ave. & Dale Dr

6/10/2008



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕↕			↕↕		↗	↘		↗	↘	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		2.0			2.0		2.0	2.0		2.0	2.0	
Lane Util. Factor		0.95			0.95		1.00	1.00		1.00	1.00	
Frbp, ped/bikes		1.00			1.00		1.00	0.99		1.00	1.00	
Flpb, ped/bikes		1.00			1.00		1.00	1.00		1.00	1.00	
Frt		0.98			0.98		1.00	0.95		1.00	0.98	
Flt Protected		0.99			0.99		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		3350			3330		1719	1716		1719	1764	
Flt Permitted		0.54			0.53		0.12	1.00		0.11	1.00	
Satd. Flow (perm)		1818			1776		221	1716		208	1764	
Volume (vph)	200	910	150	140	735	175	75	350	150	200	425	75
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	217	989	163	152	799	190	82	380	163	217	462	82
RTOR Reduction (vph)	0	9	0	0	0	0	0	13	0	0	6	0
Lane Group Flow (vph)	0	1360	0	0	1141	0	82	530	0	217	538	0
Conf. Peds. (#/hr)							2		6	6		2
Turn Type	Perm			Perm			pm+pt			pm+pt		
Protected Phases		2			2		3	8		7	4	
Permitted Phases	2			2			8			4		
Actuated Green, G (s)		69.2			69.2		33.0	29.8		39.6	33.6	
Effective Green, g (s)		72.2			72.2		38.0	32.8		43.8	36.6	
Actuated g/C Ratio		0.60			0.60		0.32	0.27		0.36	0.31	
Clearance Time (s)		5.0			5.0		4.0	5.0		5.0	5.0	
Vehicle Extension (s)		3.0			3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		1094			1069		135	469		189	538	
v/s Ratio Prot							0.03	c0.31		c0.09	0.31	
v/s Ratio Perm		c0.75			0.64		0.17			0.33		
v/c Ratio		1.24			1.17dl		0.61	1.13		1.15	1.00	
Uniform Delay, d1		23.9			23.9		33.4	43.6		57.7	41.7	
Progression Factor		0.82			0.83		1.00	1.00		1.00	1.00	
Incremental Delay, d2		110.3			46.7		7.5	82.2		111.0	39.0	
Delay (s)		129.9			66.4		40.9	125.8		168.7	80.7	
Level of Service		F			E		D	F		F	F	
Approach Delay (s)		129.9			66.4			114.7			105.8	
Approach LOS		F			E			F			F	

### Intersection Summary

HCM Average Control Delay	104.2	HCM Level of Service	F
HCM Volume to Capacity ratio	1.19		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	6.0
Intersection Capacity Utilization	117.9%	ICU Level of Service	H
Analysis Period (min)	15		
dl Defacto Left Lane. Recode with 1 though lane as a left lane.			
c Critical Lane Group			

# HCM Signalized Intersection Capacity Analysis

## 7: Wayne Ave. & Mansfield

6/10/2008



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑			↑↑			↑↓				
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		2.0			2.0			2.0				
Lane Util. Factor		0.95			0.95			1.00				
Frbp, ped/bikes		1.00			1.00			0.99				
Flpb, ped/bikes		1.00			1.00			1.00				
Frt		1.00			1.00			0.93				
Flt Protected		1.00			1.00			0.98				
Satd. Flow (prot)		3427			3438			1630				
Flt Permitted		1.00			1.00			0.98				
Satd. Flow (perm)		3427			3438			1630				
Volume (vph)	0	1335	25	0	950	0	5	0	5	0	0	0
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	1451	27	0	1033	0	5	0	5	0	0	0
RTOR Reduction (vph)	0	1	0	0	0	0	0	4	0	0	0	0
Lane Group Flow (vph)	0	1477	0	0	1033	0	0	6	0	0	0	0
Conf. Peds. (#/hr)			2	2					5			
Turn Type								Perm				
Protected Phases		6			2			4				
Permitted Phases							4					
Actuated Green, G (s)		85.0			85.0			24.0				
Effective Green, g (s)		89.0			89.0			27.0				
Actuated g/C Ratio		0.74			0.74			0.22				
Clearance Time (s)		6.0			6.0			5.0				
Vehicle Extension (s)		0.2			0.2			3.0				
Lane Grp Cap (vph)		2542			2550			367				
v/s Ratio Prot		c0.43			0.30							
v/s Ratio Perm								0.00				
v/c Ratio		0.58			0.41			0.02				
Uniform Delay, d1		7.0			5.7			36.2				
Progression Factor		1.26			0.90			1.00				
Incremental Delay, d2		0.1			0.4			0.0				
Delay (s)		9.0			5.5			36.2				
Level of Service		A			A			D				
Approach Delay (s)		9.0			5.5			36.2			0.0	
Approach LOS		A			A			D			A	

### Intersection Summary

HCM Average Control Delay	7.7	HCM Level of Service	A
HCM Volume to Capacity ratio	0.45		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	4.0
Intersection Capacity Utilization	64.4%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

# HCM Signalized Intersection Capacity Analysis

## 8: Wayne Ave. & Sligo Creek Pkwy

6/10/2008



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗			↔		↖	↗			↖	↗
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	2.0	2.0			2.0		2.0	2.0			2.0	2.0
Lane Util. Factor	1.00	1.00			0.95		1.00	1.00			1.00	1.00
Frbp, ped/bikes	1.00	1.00			1.00		1.00	1.00			1.00	1.00
Flpb, ped/bikes	0.99	1.00			1.00		1.00	1.00			1.00	1.00
Frt	1.00	0.98			0.99		1.00	0.99			1.00	0.85
Flt Protected	0.95	1.00			1.00		0.95	1.00			0.99	1.00
Satd. Flow (prot)	1705	1772			3414		1719	1790			1788	1538
Flt Permitted	0.28	1.00			0.65		0.19	1.00			0.57	1.00
Satd. Flow (perm)	511	1772			2225		337	1790			1039	1538
Volume (vph)	300	935	150	25	660	25	100	325	25	100	350	175
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	326	1016	163	27	717	27	109	353	27	109	380	190
RTOR Reduction (vph)	0	5	0	0	2	0	0	2	0	0	0	0
Lane Group Flow (vph)	326	1174	0	0	769	0	109	378	0	0	489	190
Confl. Peds. (#/hr)	11			10			10			7		
Turn Type	Perm			Perm			pm+pt			Perm		Prot
Protected Phases		2			6		7	4			8	8
Permitted Phases	2			6			4			8		
Actuated Green, G (s)	63.0	63.0			63.0		47.0	47.0			39.0	39.0
Effective Green, g (s)	66.0	66.0			66.0		50.0	50.0			42.0	42.0
Actuated g/C Ratio	0.55	0.55			0.55		0.42	0.42			0.35	0.35
Clearance Time (s)	5.0	5.0			5.0		5.0	5.0			5.0	5.0
Vehicle Extension (s)	0.2	0.2			0.2		3.0	3.0			3.0	3.0
Lane Grp Cap (vph)	281	975			1224		210	746			364	538
v/s Ratio Prot		c0.66					0.03	c0.21				0.12
v/s Ratio Perm	0.64				0.35		0.19				c0.47	
v/c Ratio	1.16	1.20			0.63		0.52	0.51			1.34	0.35
Uniform Delay, d1	27.0	27.0			18.6		44.8	25.9			39.0	28.9
Progression Factor	0.71	0.72			0.66		1.00	1.00			1.00	1.00
Incremental Delay, d2	100.0	100.2			2.0		2.2	0.5			171.9	0.4
Delay (s)	119.3	119.7			14.2		47.0	26.4			210.9	29.3
Level of Service	F	F			B		D	C			F	C
Approach Delay (s)		119.6			14.2			31.0			160.1	
Approach LOS		F			B			C			F	

### Intersection Summary

HCM Average Control Delay	91.4	HCM Level of Service	F
HCM Volume to Capacity ratio	1.20		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	4.0
Intersection Capacity Utilization	134.0%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group













HCM Signalized Intersection Capacity Analysis  
801: Campus Drive & Adelphi Rd.

Purple Line (UMD)  
7/30/2008

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑	↑	↘	↑	↗	↘	↑↑↑	↗	↘↘	↑↑	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Lane Util. Factor		0.95	1.00	1.00	1.00	1.00	1.00	0.91	1.00	0.97	0.95	
Frbp, ped/bikes		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Flpb, ped/bikes		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Frt		1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	
Flt Protected		1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)		3539	1583	1770	1863	1583	1770	5085	1583	3433	3539	
Flt Permitted		1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)		3539	1583	1770	1863	1583	1770	5085	1583	3433	3539	
Volume (vph)	0	192	207	95	233	65	208	888	331	357	1225	0
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	0	213	230	106	259	72	231	987	368	397	1361	0
RTOR Reduction (vph)	0	0	169	0	0	44	0	0	275	0	0	0
Lane Group Flow (vph)	0	213	61	106	259	28	231	987	93	397	1361	0
Confl. Peds. (#/hr)	49			3			2					
Turn Type			Perm	Split		Perm	Prot		Perm	Prot		
Protected Phases		2		6	6		3	8		1 7	1 4	
Permitted Phases			2			6			8			
Actuated Green, G (s)		62.6	62.6	30.0	30.0	30.0	30.0	60.0	60.0	72.4	103.4	
Effective Green, g (s)		65.6	65.6	33.0	33.0	33.0	32.0	63.0	63.0	74.4	105.4	
Actuated g/C Ratio		0.26	0.26	0.13	0.13	0.13	0.13	0.25	0.25	0.30	0.43	
Clearance Time (s)		6.0	6.0	6.0	6.0	6.0	5.0	6.0	6.0			
Vehicle Extension (s)		4.0	4.0	3.0	3.0	3.0	3.0	3.5	3.5			
Lane Grp Cap (vph)		936	419	236	248	211	228	1292	402	1030	1504	
v/s Ratio Prot		c0.06		0.06	c0.14		c0.13	0.19		0.12	c0.38	
v/s Ratio Perm			0.04			0.02			0.06			
v/c Ratio		0.23	0.15	0.45	1.04	0.13	1.01	0.76	0.23	0.39	0.90	
Uniform Delay, d1		71.4	69.8	99.1	107.5	94.9	108.0	85.6	73.3	68.7	66.6	
Progression Factor		0.56	0.66	1.00	1.00	1.00	1.00	1.00	1.00	0.40	0.36	
Incremental Delay, d2		0.1	0.1	1.4	69.2	0.3	63.0	2.8	0.4	0.2	6.3	
Delay (s)		40.3	46.2	100.5	176.7	95.1	171.0	88.4	73.7	27.7	30.0	
Level of Service		D	D	F	F	F	F	F	E	C	C	
Approach Delay (s)		43.3			144.8			97.0			29.5	
Approach LOS		D			F			F			C	
Intersection Summary												
HCM Average Control Delay			68.2		HCM Level of Service					E		
HCM Volume to Capacity ratio			0.75									
Actuated Cycle Length (s)			248.0		Sum of lost time (s)					12.0		
Intersection Capacity Utilization			84.8%		ICU Level of Service					E		
Analysis Period (min)			15									
c Critical Lane Group												

HCM Unsignalized Intersection Capacity Analysis  
 810: Campus Drive & Regents Drive

Purple Line (UMD)  
 7/30/2008

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Right Turn Channelized			Yes			Yes			Yes			Yes
Volume (veh/h)	9	54	19	52	86	277	4	77	39	93	76	11
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	10	59	21	57	93	301	4	84	42	101	83	12
Approach Volume (veh/h)		68			150			88			184	
Crossing Volume (veh/h)		240			98			170			154	
High Capacity (veh/h)		1147			1283			1213			1227	
High v/c (veh/h)		0.06			0.12			0.07			0.15	
Low Capacity (veh/h)		946			1069			1005			1018	
Low v/c (veh/h)		0.07			0.14			0.09			0.18	
Intersection Summary												
Maximum v/c High			0.15									
Maximum v/c Low			0.18									
Intersection Capacity Utilization			67.2%			ICU Level of Service						C

HCM Signalized Intersection Capacity Analysis  
812: Campus Drive & US 1














Purple Line (UMD)  
11/5/2007

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Util. Factor	0.95	0.95	1.00	0.91	0.91	0.88	0.97	0.95	1.00	0.97	0.95	1.00
Flt Protected	0.95	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Satd. Flow (prot)	1681	1770	1583	1610	3327	2787	3433	3539	1583	3433	3539	1583
Flt Permitted	0.95	1.00	1.00	0.95	0.98	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1681	1770	1583	1610	3327	2787	3433	3539	1583	3433	3539	1583
Volume (vph)	58	142	72	677	492	490	169	779	148	507	1718	496
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	64	158	80	752	547	544	188	866	164	563	1909	551
RTOR Reduction (vph)	0	0	71	0	0	174	0	0	94	0	0	134
Lane Group Flow (vph)	64	158	9	418	881	370	188	866	70	563	1909	417
Turn Type	Split		Perm	Split		pt+ov	Prot		Perm	Prot		Perm
Protected Phases	4	4		3	3	3.5	1	6		5	2	
Permitted Phases			4						6			2
Actuated Green, G (s)	14.9	14.9	14.9	30.5	30.5	55.6	13.6	57.5	57.5	25.1	69.0	69.0
Effective Green, g (s)	17.4	17.4	17.4	33.0	33.0	60.1	15.6	60.5	60.5	27.1	72.0	72.0
Actuated g/C Ratio	0.12	0.12	0.12	0.22	0.22	0.40	0.10	0.40	0.40	0.18	0.48	0.48
Clearance Time (s)	5.5	5.5	5.5	5.5	5.5		5.0	6.0	6.0	5.0	6.0	6.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	5.0	5.0	3.0	5.0	5.0
Lane Grp Cap (vph)	195	205	184	354	732	1117	357	1427	638	620	1699	760
v/s Ratio Prot	0.04	c0.09		0.26	c0.26	0.13	0.05	0.24		c0.16	c0.54	
v/s Ratio Perm			0.01						0.04			0.26
v/c Ratio	0.33	0.77	0.05	1.18	1.20	0.33	0.53	0.61	0.11	0.91	1.12	0.55
Uniform Delay, d1	60.9	64.4	59.0	58.5	58.5	31.1	63.7	35.4	27.9	60.2	39.0	27.5
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.13	0.94	1.56	1.16	0.77	0.50
Incremental Delay, d2	1.0	16.3	0.1	106.7	104.4	0.2	1.3	1.7	0.3	2.1	56.5	0.3
Delay (s)	61.9	80.6	59.1	165.2	162.9	31.2	73.3	35.1	43.9	71.7	86.4	14.0
Level of Service	E	F	E	F	F	C	E	D	D	E	F	B
Approach Delay (s)		71.0			124.5			42.1			70.5	
Approach LOS		E			F			D			E	
Intersection Summary												
HCM Average Control Delay	80.7			HCM Level of Service						F		
HCM Volume to Capacity ratio	1.08											
Actuated Cycle Length (s)	150.0			Sum of lost time (s)						12.0		
Intersection Capacity Utilization	95.3%			ICU Level of Service						F		
Analysis Period (min)	15											
c Critical Lane Group												



HCM Signalized Intersection Capacity Analysis  
 200: E. Campus Main Ent & US 1

Purple Line (UMD)  
 11/5/2007

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations			 			 
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0		4.0	4.0
Lane Util. Factor	1.00	1.00	0.95		1.00	0.95
Frt	1.00	0.85	0.99		1.00	1.00
Flt Protected	0.95	1.00	1.00		0.95	1.00
Satd. Flow (prot)	1770	1583	3513		1770	3539
Flt Permitted	0.95	1.00	1.00		0.95	1.00
Satd. Flow (perm)	1770	1583	3513		1770	3539
Volume (vph)	76	72	1307	68	116	2480
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	83	78	1421	74	126	2696
RTOR Reduction (vph)	0	71	2	0	0	0
Lane Group Flow (vph)	83	7	1493	0	126	2696
Turn Type		Perm			Prot	
Protected Phases	8		2		1	6
Permitted Phases		8				
Actuated Green, G (s)	12.0	12.0	106.5		15.0	126.5
Effective Green, g (s)	13.5	13.5	108.5		16.0	128.5
Actuated g/C Ratio	0.09	0.09	0.72		0.11	0.86
Clearance Time (s)	5.5	5.5	6.0		5.0	6.0
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	159	142	2541		189	3032
v/s Ratio Prot	c0.05		0.42		0.07	c0.76
v/s Ratio Perm		0.00				
v/c Ratio	0.52	0.05	0.59		0.67	0.89
Uniform Delay, d1	65.2	62.4	10.0		64.4	6.5
Progression Factor	1.00	1.00	1.46		0.83	2.45
Incremental Delay, d2	3.1	0.1	0.9		0.8	0.4
Delay (s)	68.2	62.5	15.5		54.3	16.3
Level of Service	E	E	B		D	B
Approach Delay (s)	65.5		15.5			18.0
Approach LOS	E		B			B
<b>Intersection Summary</b>						
HCM Average Control Delay			18.8		HCM Level of Service	
HCM Volume to Capacity ratio			0.85		B	
Actuated Cycle Length (s)			150.0		Sum of lost time (s)	
Intersection Capacity Utilization			79.4%		8.0	
Analysis Period (min)			15		ICU Level of Service	
					D	
c Critical Lane Group						

HCM Signalized Intersection Capacity Analysis  
 212: Rossborough Rd. & US 1

Purple Line (UMD)  
 7/30/2008

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0			3.0	3.0	3.0	3.0		3.0	3.0	
Lane Util. Factor	1.00	1.00			1.00	1.00	1.00	0.95		1.00	0.95	
Frt	1.00	0.93			1.00	0.85	1.00	1.00		1.00	0.98	
Flt Protected	0.95	1.00			0.96	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1723			1783	1583	1770	3531		1770	3474	
Flt Permitted	0.73	1.00			0.76	1.00	0.06	1.00		0.22	1.00	
Satd. Flow (perm)	1352	1723			1410	1583	120	3531		412	3474	
Volume (vph)	16	2	2	32	4	293	8	990	16	157	1680	236
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	18	2	2	36	4	326	9	1100	18	174	1867	262
RTOR Reduction (vph)	0	2	0	0	0	292	0	0	0	0	3	0
Lane Group Flow (vph)	18	2	0	0	40	34	9	1118	0	174	2126	0
Turn Type	Perm			Perm		Perm	pm+pt			pm+pt		
Protected Phases		4			8		1	6		5	2	
Permitted Phases	4			8		8	6			2		
Actuated Green, G (s)	11.1	11.1			11.1	11.1	116.8	114.5		127.4	120.6	
Effective Green, g (s)	13.6	13.6			13.6	13.6	121.3	117.5		130.4	123.6	
Actuated g/C Ratio	0.09	0.09			0.09	0.09	0.81	0.78		0.87	0.82	
Clearance Time (s)	5.5	5.5			5.5	5.5	4.5	6.0		4.5	6.0	
Vehicle Extension (s)	3.0	3.0			3.0	3.0	3.0	5.0		3.0	5.0	
Lane Grp Cap (vph)	123	156			128	144	139	2766		448	2863	
v/s Ratio Prot		0.00					0.00	0.32		c0.03	c0.61	
v/s Ratio Perm	0.01				c0.03	0.02	0.05			0.31		
v/c Ratio	0.15	0.01			0.31	0.24	0.06	0.40		0.39	0.74	
Uniform Delay, d1	62.9	62.1			63.8	63.4	6.9	5.2		2.7	6.0	
Progression Factor	1.00	1.00			1.00	1.00	0.95	0.52		1.26	1.73	
Incremental Delay, d2	0.6	0.0			1.4	0.9	0.2	0.4		0.3	0.8	
Delay (s)	63.4	62.1			65.2	64.2	6.8	3.1		3.7	11.2	
Level of Service	E	E			E	E	A	A		A	B	
Approach Delay (s)		63.2			64.3			3.1			10.6	
Approach LOS		E			E			A			B	
Intersection Summary												
HCM Average Control Delay			13.9				HCM Level of Service			B		
HCM Volume to Capacity ratio			0.69									
Actuated Cycle Length (s)			150.0				Sum of lost time (s)			9.0		
Intersection Capacity Utilization			76.8%				ICU Level of Service			D		
Analysis Period (min)			15									
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis  
 813: Paint Branch Pkwy & Fire Academy

Purple Line (UMD)  
 11/5/2007

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	2.0	2.0		2.0	2.0			2.0			2.0	
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00			1.00	
Flt Protected	1.00	0.97		1.00	0.99			0.98			0.92	
Satd. Flow (prot)	1770	3442		1770	3504			1762			1695	
Flt Permitted	0.13	1.00		0.43	1.00			0.87			0.95	
Satd. Flow (perm)	236	3442		794	3504			1580			1629	
Volume (vph)	220	421	94	50	1245	88	25	6	6	13	6	25
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	220	421	94	50	1245	88	25	6	6	13	6	25
RTOR Reduction (vph)	0	24	0	0	6	0	0	4	0	0	16	0
Lane Group Flow (vph)	220	491	0	50	1327	0	0	33	0	0	28	0
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	45.0	45.0		45.0	45.0			25.0			25.0	
Effective Green, g (s)	48.0	48.0		48.0	48.0			28.0			28.0	
Actuated g/C Ratio	0.60	0.60		0.60	0.60			0.35			0.35	
Clearance Time (s)	5.0	5.0		5.0	5.0			5.0			5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0			3.0	
Lane Grp Cap (vph)	142	2065		476	2102			553			570	
v/s Ratio Prot		0.14			0.38							
v/s Ratio Perm	c0.93			0.06				c0.02			0.02	
v/c Ratio	1.55	0.24		0.11	0.63			0.06			0.05	
Uniform Delay, d1	16.0	7.5		6.8	10.3			17.3			17.2	
Progression Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Incremental Delay, d2	278.9	0.1		0.1	0.6			0.2			0.2	
Delay (s)	294.9	7.5		6.9	10.9			17.5			17.4	
Level of Service	F	A		A	B			B			B	
Approach Delay (s)		93.5			10.8			17.5			17.4	
Approach LOS		F			B			B			B	
Intersection Summary												
HCM Average Control Delay			38.7			HCM Level of Service				D		
HCM Volume to Capacity ratio			0.99									
Actuated Cycle Length (s)			80.0			Sum of lost time (s)				4.0		
Intersection Capacity Utilization		63.7%				ICU Level of Service				B		
Analysis Period (min)			15									
c Critical Lane Group												







HCM Signalized Intersection Capacity Analysis  
 814: Paint Branch Pkwy & Metro Parking Garage

Purple Line (UMD)  
 7/30/2008

	→	↘	↙	←	↖	↗
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑	↑	↓	↑↑	↓	↑
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0			4.0		
Lane Util. Factor	0.95			0.95		
Frt	1.00			1.00		
Flt Protected	1.00			1.00		
Satd. Flow (prot)	3539			3539		
Flt Permitted	1.00			1.00		
Satd. Flow (perm)	3539			3539		
Volume (vph)	440	0	0	1383	0	0
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	478	0	0	1503	0	0
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	478	0	0	1503	0	0
Turn Type		Perm	pm+pt			pm+ov
Protected Phases	2		1	6	8	1
Permitted Phases		2	6			8
Actuated Green, G (s)	40.9			40.9		
Effective Green, g (s)	40.9			40.9		
Actuated g/C Ratio	0.52			0.52		
Clearance Time (s)	4.0			4.0		
Vehicle Extension (s)	3.0			3.0		
Lane Grp Cap (vph)	1828			1828		
v/s Ratio Prot	0.14			c0.42		
v/s Ratio Perm						
v/c Ratio	0.26			0.82		
Uniform Delay, d1	10.7			16.1		
Progression Factor	1.00			1.00		
Incremental Delay, d2	0.3			3.1		
Delay (s)	11.1			19.2		
Level of Service	B			B		
Approach Delay (s)	11.1			19.2	0.0	
Approach LOS	B			B	A	
<b>Intersection Summary</b>						
HCM Average Control Delay		17.2		HCM Level of Service		B
HCM Volume to Capacity ratio		0.82				
Actuated Cycle Length (s)		79.2		Sum of lost time (s)		38.3
Intersection Capacity Utilization		41.6%		ICU Level of Service		A
Analysis Period (min)		15				
c Critical Lane Group						













HCM Signalized Intersection Capacity Analysis  
 815: Paint Branch Pkwy & River Road

Purple Line (UMD)  
 11/5/2007

						
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑	↑	↑↑	↑↑	↑↑	↑
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	2.0	2.0	2.0	2.0	2.0	2.0
Lane Util. Factor	0.95	1.00	0.97	0.95	0.97	1.00
Frbp, ped/bikes	1.00	0.97	1.00	1.00	1.00	0.98
Flpb, ped/bikes	1.00	1.00	0.99	1.00	1.00	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (prot)	3539	1532	3398	3539	3419	1552
Flt Permitted	1.00	1.00	0.49	1.00	0.95	1.00
Satd. Flow (perm)	3539	1532	1755	3539	3419	1552
Volume (vph)	261	215	199	1242	87	269
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	261	215	199	1242	87	269
RTOR Reduction (vph)	0	148	0	0	0	146
Lane Group Flow (vph)	261	67	199	1242	87	123
Confl. Peds. (#/hr)		25	25		5	10
Turn Type		Perm	pm+pt			custom
Protected Phases	4		3	8		
Permitted Phases		4	8		2	2
Actuated Green, G (s)	18.9	18.9	32.1	32.1	30.3	30.3
Effective Green, g (s)	22.9	22.9	36.1	36.1	33.8	33.8
Actuated g/C Ratio	0.31	0.31	0.49	0.49	0.46	0.46
Clearance Time (s)	6.0	6.0	5.5	6.0	5.5	5.5
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	1097	475	1106	1729	1564	710
v/s Ratio Prot	0.07		0.03	c0.35		
v/s Ratio Perm		0.04	0.06		0.03	c0.08
v/c Ratio	0.24	0.14	0.18	0.72	0.06	0.17
Uniform Delay, d1	19.0	18.4	10.4	14.9	11.2	11.8
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.1	0.1	0.1	1.5	0.1	0.5
Delay (s)	19.1	18.5	10.5	16.3	11.2	12.3
Level of Service	B	B	B	B	B	B
Approach Delay (s)	18.9			15.5	12.1	
Approach LOS	B			B	B	
<b>Intersection Summary</b>						
HCM Average Control Delay		15.7			HCM Level of Service	B
HCM Volume to Capacity ratio		0.45				
Actuated Cycle Length (s)		73.9			Sum of lost time (s)	4.0
Intersection Capacity Utilization		63.5%			ICU Level of Service	B
Analysis Period (min)		15				
c Critical Lane Group						













HCM Signalized Intersection Capacity Analysis  
801: Campus Drive & Adelphi Rd.

Purple Line (UMD)  
7/30/2008

													
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations		↑↑	↑	↘	↑	↗	↘	↑↑↑	↗	↘↘	↑↑		
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		
Lane Util. Factor		0.95	1.00	1.00	1.00	1.00	1.00	0.91	1.00	0.97	0.95		
Frbp, ped/bikes		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		
Flpb, ped/bikes		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		
Frt		1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00		
Flt Protected		1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		
Satd. Flow (prot)		3539	1583	1770	1863	1583	1770	5085	1583	3433	3539		
Flt Permitted		1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		
Satd. Flow (perm)		3539	1583	1770	1863	1583	1770	5085	1583	3433	3539		
Volume (vph)	0	185	210	185	214	393	222	1304	180	228	917	0	
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	
Adj. Flow (vph)	0	206	233	206	238	437	247	1449	200	253	1019	0	
RTOR Reduction (vph)	0	0	173	0	0	293	0	0	115	0	0	0	
Lane Group Flow (vph)	0	206	60	206	238	144	247	1449	85	253	1019	0	
Confl. Peds. (#/hr)	17			20			9			3			
Turn Type			Perm	Split		Perm	Prot		Perm	Prot			
Protected Phases		2		6	6		3	8		17	14		
Permitted Phases			2			6			8				
Actuated Green, G (s)		60.0	60.0	30.0	30.0	30.0	25.0	60.0	60.0	73.7	109.7		
Effective Green, g (s)		63.0	63.0	33.0	33.0	33.0	27.0	63.0	63.0	75.7	111.7		
Actuated g/C Ratio		0.26	0.26	0.13	0.13	0.13	0.11	0.26	0.26	0.31	0.45		
Clearance Time (s)		6.0	6.0	6.0	6.0	6.0	5.0	6.0	6.0				
Vehicle Extension (s)		4.0	4.0	3.0	3.0	3.0	3.0	3.5	3.5				
Lane Grp Cap (vph)		904	404	237	249	212	194	1299	404	1053	1602		
v/s Ratio Prot		c0.06		0.12	c0.13		c0.14	c0.28		0.07	c0.29		
v/s Ratio Perm			0.04			0.09			0.05				
v/c Ratio		0.23	0.15	0.87	0.96	0.68	1.27	1.12	0.21	0.24	0.64		
Uniform Delay, d1		72.6	71.1	104.7	106.1	101.8	109.8	91.8	72.3	64.0	51.9		
Progression Factor		0.81	1.19	1.00	1.00	1.00	1.00	1.00	1.00	0.53	0.42		
Incremental Delay, d2		0.0	0.0	26.9	44.5	8.7	156.8	63.0	0.3	0.1	0.7		
Delay (s)		58.9	84.8	131.6	150.6	110.5	266.7	154.9	72.6	34.2	22.5		
Level of Service		E	F	F	F	F	F	F	E	C	C		
Approach Delay (s)		72.6			126.3			160.7			24.8		
Approach LOS		E			F			F			C		
Intersection Summary													
HCM Average Control Delay			106.8		HCM Level of Service					F			
HCM Volume to Capacity ratio			0.71										
Actuated Cycle Length (s)			246.7		Sum of lost time (s)					9.0			
Intersection Capacity Utilization			81.3%		ICU Level of Service					D			
Analysis Period (min)			15										
c Critical Lane Group													

HCM Unsignalized Intersection Capacity Analysis  
 810: Campus Drive & Regents Drive

Purple Line (UMD)  
 7/30/2008

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Right Turn Channelized			Yes			Yes			Yes			Yes
Volume (veh/h)	3	44	3	135	40	203	12	178	52	394	25	10
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	3	48	3	147	43	221	13	193	57	428	27	11
Approach Volume (veh/h)		51			190			207			455	
Crossing Volume (veh/h)		602			210			479			203	
High Capacity (veh/h)		860			1175			949			1181	
High v/c (veh/h)		0.06			0.16			0.22			0.39	
Low Capacity (veh/h)		689			971			768			976	
Low v/c (veh/h)		0.07			0.20			0.27			0.47	
Intersection Summary												
Maximum v/c High			0.39									
Maximum v/c Low			0.47									
Intersection Capacity Utilization			82.3%			ICU Level of Service					E	

HCM Signalized Intersection Capacity Analysis  
812: Campus Drive & US 1

Purple Line (UMD)  
11/5/2007












Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Util. Factor	0.95	0.95	1.00	0.91	0.91	0.88	0.97	0.95	1.00	0.97	0.95	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	0.98	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1681	1770	1583	1610	3325	2787	3433	3539	1583	3433	3539	1583
Flt Permitted	0.95	1.00	1.00	0.95	0.98	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1681	1770	1583	1610	3325	2787	3433	3539	1583	3433	3539	1583
Volume (vph)	254	312	142	334	232	851	162	1466	507	470	1280	287
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	282	347	158	371	258	946	180	1629	563	522	1422	319
RTOR Reduction (vph)	0	0	121	0	0	133	0	0	174	0	0	94
Lane Group Flow (vph)	282	347	37	203	426	813	180	1629	389	522	1422	225
Turn Type	Split		Perm	Split		pt+ov	Prot		Perm	Prot		Perm
Protected Phases	4	4		3	3	3 5	1	6		5	2	
Permitted Phases			4						6			2
Actuated Green, G (s)	32.3	32.3	32.3	13.5	13.5	36.7	12.8	59.0	59.0	23.2	69.4	69.4
Effective Green, g (s)	34.8	34.8	34.8	16.0	16.0	41.2	14.8	62.0	62.0	25.2	72.4	72.4
Actuated g/C Ratio	0.23	0.23	0.23	0.11	0.11	0.27	0.10	0.41	0.41	0.17	0.48	0.48
Clearance Time (s)	5.5	5.5	5.5	5.5	5.5		5.0	6.0	6.0	5.0	6.0	6.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	5.0	5.0	3.0	5.0	5.0
Lane Grp Cap (vph)	390	411	367	172	355	765	339	1463	654	577	1708	764
v/s Ratio Prot	0.17	c0.20		0.13	c0.13	c0.29	0.05	c0.46		0.15	0.40	
v/s Ratio Perm			0.02						0.25			0.14
v/c Ratio	0.72	0.84	0.10	1.18	1.20	1.06	0.53	1.11	0.60	0.90	0.83	0.29
Uniform Delay, d1	53.2	55.0	45.3	67.0	67.0	54.4	64.3	44.0	34.2	61.2	33.6	23.4
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.93	1.02	1.23	1.35	0.82	0.95
Incremental Delay, d2	6.5	14.6	0.1	125.4	114.0	50.3	0.1	52.1	0.4	2.1	0.5	0.1
Delay (s)	59.7	69.6	45.4	192.4	181.0	104.7	59.8	96.9	42.4	84.6	28.1	22.4
Level of Service	E	E	D	F	F	F	F	E	F	D	F	C
Approach Delay (s)		61.2			136.7							
Approach LOS		E			F							
Intersection Summary												
HCM Average Control Delay	78.2			HCM Level of Service						E		
HCM Volume to Capacity ratio	1.05											
Actuated Cycle Length (s)	150.0			Sum of lost time (s)						12.0		
Intersection Capacity Utilization	96.7%			ICU Level of Service						F		
Analysis Period (min)	15											
c Critical Lane Group												



# HCM Signalized Intersection Capacity Analysis

## 200: E. Campus Main Ent & US 1

Purple Line (UMD)  
11/5/2007

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0		4.0	4.0
Lane Util. Factor	1.00	1.00	0.95		1.00	0.95
Fr <sub>t</sub>	1.00	0.85	0.99		1.00	1.00
Flt Protected	0.95	1.00	1.00		0.95	1.00
Satd. Flow (prot)	1770	1583	3511		1770	3539
Flt Permitted	0.95	1.00	1.00		0.95	1.00
Satd. Flow (perm)	1770	1583	3511		1770	3539
Volume (vph)	117	133	2552	141	113	1769
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	127	145	2774	153	123	1923
RTOR Reduction (vph)	0	72	3	0	0	0
Lane Group Flow (vph)	127	73	2924	0	123	1923
Turn Type		Perm			Prot	
Protected Phases	8		2		1	6
Permitted Phases		8				
Actuated Green, G (s)	14.3	14.3	109.5		9.7	124.7
Effective Green, g (s)	15.8	15.8	111.5		10.7	126.2
Actuated g/C Ratio	0.11	0.11	0.74		0.07	0.84
Clearance Time (s)	5.5	5.5	6.0		5.0	5.5
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	186	167	2610		126	2977
v/s Ratio Prot	c0.07		c0.83		c0.07	0.54
v/s Ratio Perm		0.05				
v/c Ratio	0.68	0.44	1.12		0.98	0.65
Uniform Delay, d <sub>1</sub>	64.7	62.9	19.3		69.5	4.1
Progression Factor	1.00	1.00	1.63		0.86	2.94
Incremental Delay, d <sub>2</sub>	9.9	1.8	54.8		52.2	0.6
Delay (s)	74.6	64.8	86.2		112.3	12.8
Level of Service	E	E	F		F	B
Approach Delay (s)	69.4		86.2			18.8
Approach LOS	E		F			B
<b>Intersection Summary</b>						
HCM Average Control Delay		59.0			HCM Level of Service	E
HCM Volume to Capacity ratio		1.06			Sum of lost time (s)	12.0
Actuated Cycle Length (s)		150.0			ICU Level of Service	F
Intersection Capacity Utilization		97.8%				
Analysis Period (min)		15				
c Critical Lane Group						

HCM Signalized Intersection Capacity Analysis  
 212: Rossborough Rd. & US 1



















Purple Line (UMD)  
 7/30/2008

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0			3.0	3.0	3.0	3.0		3.0	3.0	
Lane Util. Factor	1.00	1.00			1.00	1.00	1.00	0.95		1.00	0.95	
Frt	1.00	0.88			1.00	0.85	1.00	0.99		1.00	1.00	
Flt Protected	0.95	1.00			0.96	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1641			1792	1583	1770	3520		1770	3534	
Flt Permitted	0.52	1.00			0.75	1.00	0.09	1.00		0.04	1.00	
Satd. Flow (perm)	960	1641			1398	1583	169	3520		83	3534	
Volume (vph)	67	5	21	118	31	669	45	1800	68	131	1424	14
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	74	6	23	131	34	743	50	2000	76	146	1582	16
RTOR Reduction (vph)	0	17	0	0	0	213	0	2	0	0	0	0
Lane Group Flow (vph)	74	12	0	0	165	530	50	2074	0	146	1598	0
Turn Type	Perm			Perm		Perm	pm+pt			pm+pt		
Protected Phases		4			8		1	6		5	2	
Permitted Phases	4			8		8	6			2		
Actuated Green, G (s)	36.5	36.5			36.5	36.5	89.2	83.9		102.0	92.2	
Effective Green, g (s)	39.0	39.0			39.0	39.0	93.7	86.9		105.0	95.2	
Actuated g/C Ratio	0.26	0.26			0.26	0.26	0.62	0.58		0.70	0.63	
Clearance Time (s)	5.5	5.5			5.5	5.5	4.5	6.0		4.5	6.0	
Vehicle Extension (s)	3.0	3.0			3.0	3.0	3.0	5.0		3.0	5.0	
Lane Grp Cap (vph)	250	427			363	412	178	2039		228	2243	
v/s Ratio Prot		0.01					0.01	c0.59		c0.06	0.45	
v/s Ratio Perm	0.08				0.12	c0.33	0.16			0.38		
v/c Ratio	0.30	0.03			0.45	1.29	0.28	1.02		0.64	0.71	
Uniform Delay, d1	44.5	41.4			46.6	55.5	16.3	31.5		47.5	18.3	
Progression Factor	1.00	1.00			1.00	1.00	1.56	0.41		1.23	1.11	
Incremental Delay, d2	0.7	0.0			0.9	146.1	0.6	21.0		4.6	1.5	
Delay (s)	45.2	41.4			47.5	201.6	26.0	33.9		63.1	21.7	
Level of Service	D	D			D	F	C	C		E	C	
Approach Delay (s)		44.1			173.6			33.7			25.1	
Approach LOS		D			F			C			C	
Intersection Summary												
HCM Average Control Delay			56.9				HCM Level of Service				E	
HCM Volume to Capacity ratio			1.05									
Actuated Cycle Length (s)			150.0				Sum of lost time (s)				9.0	
Intersection Capacity Utilization			110.0%				ICU Level of Service				H	
Analysis Period (min)			15									
c Critical Lane Group												

# HCM Signalized Intersection Capacity Analysis

## 813: Paint Branch Pkwy & Fire Academy

Purple Line (UMD)  
11/5/2007

Movement												
	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	2.0	2.0		2.0	2.0			2.0			2.0	
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00			1.00	
Fr't	1.00	1.00		1.00	1.00			0.96			0.96	
Flt Protected	0.95	1.00		0.95	1.00			0.98			0.98	
Satd. Flow (prot)	1770	3537		1770	3531			1750			1750	
Flt Permitted	0.24	1.00		0.12	1.00			0.96			0.96	
Satd. Flow (perm)	443	3537		230	3531			1706			1706	
Volume (vph)	13	1270	6	6	851	13	6	6	6	6	6	6
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	13	1270	6	6	851	13	6	6	6	6	6	6
RTOR Reduction (vph)	0	0	0	0	1	0	0	3	0	0	3	0
Lane Group Flow (vph)	13	1276	0	6	863	0	0	15	0	0	15	0
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	29.4	29.4		29.4	29.4			25.3			25.3	
Effective Green, g (s)	32.4	32.4		32.4	32.4			28.3			28.3	
Actuated g/C Ratio	0.50	0.50		0.50	0.50			0.44			0.44	
Clearance Time (s)	5.0	5.0		5.0	5.0			5.0			5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0			3.0	
Lane Grp Cap (vph)	222	1771		115	1768			746			746	
v/s Ratio Prot		c0.36			0.24							
v/s Ratio Perm	0.03			0.03				c0.01			0.01	
v/c Ratio	0.06	0.72		0.05	0.49			0.02			0.02	
Uniform Delay, d1	8.3	12.6		8.3	10.7			10.3			10.3	
Progression Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Incremental Delay, d2	0.1	1.5		0.2	0.2			0.0			0.0	
Delay (s)	8.4	14.1		8.5	10.9			10.4			10.4	
Level of Service	A	B		A	B			B			B	
Approach Delay (s)		14.0			10.9			10.4			10.4	
Approach LOS		B			B			B			B	
<b>Intersection Summary</b>												
HCM Average Control Delay			12.7									
HCM Volume to Capacity ratio			0.39									
Actuated Cycle Length (s)			64.7									
Intersection Capacity Utilization			46.1%									
Analysis Period (min)			15									
c Critical Lane Group												
<b>Summary</b>												
HCM Level of Service: B												
Sum of lost time (s): 4.0												
ICU Level of Service: A												

HCM Signalized Intersection Capacity Analysis  
 814: Paint Branch Pkwy & Metro Parking Garage

Purple Line (UMD)  
 7/30/2008

	→	↘	↙	←	↖	↗
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑	↑	↘	↑↑	↘	↑
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0			4.0		
Lane Util. Factor	0.95			0.95		
Frt	1.00			1.00		
Flt Protected	1.00			1.00		
Satd. Flow (prot)	3539			3539		
Flt Permitted	1.00			1.00		
Satd. Flow (perm)	3539			3539		
Volume (vph)	1282	0	0	849	0	0
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	1393	0	0	923	0	0
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	1393	0	0	923	0	0
Turn Type		Perm	pm+pt			pm+ov
Protected Phases	2		1	6	8	1
Permitted Phases		2	6			8
Actuated Green, G (s)	120.0			120.0		
Effective Green, g (s)	120.0			120.0		
Actuated g/C Ratio	1.00			1.00		
Clearance Time (s)	4.0			4.0		
Vehicle Extension (s)	3.0			3.0		
Lane Grp Cap (vph)	3539			3539		
v/s Ratio Prot	c0.39			0.26		
v/s Ratio Perm						
v/c Ratio	0.39			0.26		
Uniform Delay, d1	0.0			0.0		
Progression Factor	1.00			1.00		
Incremental Delay, d2	0.3			0.2		
Delay (s)	0.3			0.2		
Level of Service	A			A		
Approach Delay (s)	0.3			0.2	0.0	
Approach LOS	A			A	A	

Intersection Summary

HCM Average Control Delay	0.3	HCM Level of Service	A
HCM Volume to Capacity ratio	0.39		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	0.0
Intersection Capacity Utilization	38.8%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

# HCM Signalized Intersection Capacity Analysis

## 815: Paint Branch Pkwy & River Road

Purple Line (UMD)  
11/5/2007

	→	↘	↙	←	↖	↗
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑	↑	↑↑	↑↑	↑↑	↑
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	2.0	2.0	2.0	2.0	2.0	2.0
Lane Util. Factor	0.95	1.00	0.97	0.95	0.97	1.00
Frbp, ped/bikes	1.00	0.98	1.00	1.00	1.00	0.98
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (prot)	3539	1548	3432	3539	3430	1548
Flt Permitted	1.00	1.00	0.13	1.00	0.95	1.00
Satd. Flow (perm)	3539	1548	458	3539	3430	1548
Volume (vph)	989	304	50	568	186	277
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	989	304	50	568	186	277
RTOR Reduction (vph)	0	181	0	0	0	157
Lane Group Flow (vph)	989	123	50	568	186	120
Confl. Peds. (#/hr)		12	12		1	12
Turn Type		Perm	pm+pt		custom	
Protected Phases	4		3	8		
Permitted Phases		4	8		2	2
Actuated Green, G (s)	28.3	28.3	37.1	37.1	31.1	31.1
Effective Green, g (s)	32.3	32.3	41.1	41.1	34.6	34.6
Actuated g/C Ratio	0.41	0.41	0.52	0.52	0.43	0.43
Clearance Time (s)	6.0	6.0	5.5	6.0	5.5	5.5
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	1434	627	490	1825	1489	672
v/s Ratio Prot	c0.28		0.01	c0.16		
v/s Ratio Perm		0.08	0.04		0.05	c0.08
v/c Ratio	0.69	0.20	0.10	0.31	0.12	0.18
Uniform Delay, d1	19.6	15.3	11.9	11.1	13.5	13.8
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	1.4	0.2	0.1	0.1	0.2	0.6
Delay (s)	21.0	15.5	12.0	11.2	13.7	14.4
Level of Service	C	B	B	B	B	B
Approach Delay (s)	19.7			11.3	14.1	
Approach LOS	B			B	B	
<b>Intersection Summary</b>						
HCM Average Control Delay		16.4		HCM Level of Service		B
HCM Volume to Capacity ratio		0.41		Sum of lost time (s)		6.0
Actuated Cycle Length (s)		79.7		ICU Level of Service		B
Intersection Capacity Utilization		56.5%				
Analysis Period (min)		15				
c Critical Lane Group						

2030 Medium LRT

HCS Results

# HCM Signalized Intersection Capacity Analysis

## 9: Ellin Rd. & MD 410

6/11/2008



Movement	WBL	WBR	NBT	NBR	SBL2	SBL	SBT	NWL	NWR
Lane Configurations	↖↗	↖	↕↕	↖	↖	↖	↕↕↕		↖
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0
Lane Util. Factor	0.97	1.00	0.95	1.00	1.00	1.00	0.91		1.00
Frt	1.00	0.85	1.00	0.85	1.00	1.00	1.00		0.86
Flt Protected	0.95	1.00	1.00	1.00	0.95	0.95	1.00		1.00
Satd. Flow (prot)	3303	1524	3406	1524	1703	1703	4893		1550
Flt Permitted	0.95	1.00	1.00	1.00	0.95	0.95	1.00		1.00
Satd. Flow (perm)	3303	1524	3406	1524	1703	1703	4893		1550
Volume (vph)	400	125	2150	740	200	10	1470	0	10
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Growth Factor (vph)	100%	100%	100%	100%	100%	100%	100%	100%	100%
Adj. Flow (vph)	421	132	2263	779	211	11	1547	0	11
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	421	132	2263	779	211	11	1547	0	11
Heavy Vehicles (%)	6%	6%	6%	6%	6%	6%	6%	6%	6%
Turn Type		Free		custom	Prot	Prot			Over
Protected Phases	4		2	1 4 6!	1!	3	6		3
Permitted Phases		Free							
Actuated Green, G (s)	11.0	110.0	62.0	93.0	10.0	2.0	77.0		2.0
Effective Green, g (s)	12.0	110.0	63.0	94.0	11.0	8.0	78.0		8.0
Actuated g/C Ratio	0.11	1.00	0.57	0.85	0.10	0.07	0.71		0.07
Clearance Time (s)	5.0		5.0		5.0	10.0	5.0		10.0
Vehicle Extension (s)	3.0		6.0		3.0	3.0	6.0		3.0
Lane Grp Cap (vph)	360	1524	1951	1302	170	124	3470		113
v/s Ratio Prot	c0.13		c0.66	0.51	c0.12	0.01	0.32		0.01
v/s Ratio Perm		c0.09							
v/c Ratio	1.17	0.09	1.16	0.60	1.24	0.09	0.45		0.10
Uniform Delay, d1	49.0	0.0	23.5	2.4	49.5	47.6	6.8		47.6
Progression Factor	1.00	1.00	0.69	0.63	1.00	1.00	1.00		1.00
Incremental Delay, d2	102.0	0.1	74.9	0.3	148.4	0.3	0.4		0.4
Delay (s)	151.0	0.1	91.1	1.9	197.9	47.9	7.2		48.0
Level of Service	F	A	F	A	F	D	A		D
Approach Delay (s)	115.0		68.2				30.2	48.0	
Approach LOS	F		E				C	D	

### Intersection Summary

HCM Average Control Delay	60.5	HCM Level of Service	E
HCM Volume to Capacity ratio	1.04		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	91.9%	ICU Level of Service	F
Analysis Period (min)	15		

! Phase conflict between lane groups.

c Critical Lane Group

# HCM Signalized Intersection Capacity Analysis

9: Ellin Rd. & MD 410

6/11/2008



Movement	WBL	WBR	NBT	NBR	SBL2	SBL	SBT	NWL	NWR
Lane Configurations	↖↗	↖	↕↕	↖	↖	↖	↕↕↕		↖
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0
Lane Util. Factor	0.97	1.00	0.95	1.00	1.00	1.00	0.91		1.00
Frt	1.00	0.85	1.00	0.85	1.00	1.00	1.00		0.86
Flt Protected	0.95	1.00	1.00	1.00	0.95	0.95	1.00		1.00
Satd. Flow (prot)	3400	1568	3505	1568	1752	902	5036		822
Flt Permitted	0.95	1.00	1.00	1.00	0.95	0.95	1.00		1.00
Satd. Flow (perm)	3400	1568	3505	1568	1752	902	5036		822
Volume (vph)	745	80	1515	295	105	10	1865	0	10
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Growth Factor (vph)	100%	100%	100%	100%	100%	100%	100%	100%	100%
Adj. Flow (vph)	784	84	1595	311	111	11	1963	0	11
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	784	84	1595	311	111	11	1963	0	11
Heavy Vehicles (%)	3%	3%	3%	3%	3%	100%	3%	3%	100%
Turn Type		Free		custom	Prot	Prot			Over
Protected Phases	4		2 1 2 4 6!		1!	9	6		9
Permitted Phases		Free							
Actuated Green, G (s)	26.0	120.0	60.0	106.0	10.0	4.0	75.0		4.0
Effective Green, g (s)	27.0	120.0	61.0	107.0	11.0	5.0	76.0		5.0
Actuated g/C Ratio	0.22	1.00	0.51	0.89	0.09	0.04	0.63		0.04
Clearance Time (s)	5.0		5.0		5.0	5.0	5.0		5.0
Vehicle Extension (s)	3.0		6.0		3.0	3.0	6.0		3.0
Lane Grp Cap (vph)	765	1568	1782	1398	161	38	3189		34
v/s Ratio Prot	c0.23		c0.46	0.20	0.06	0.01	c0.39		c0.01
v/s Ratio Perm		0.05							
v/c Ratio	1.02	0.05	0.90	0.22	0.69	0.29	0.62		0.32
Uniform Delay, d1	46.5	0.0	26.6	0.9	52.8	55.8	13.2		55.9
Progression Factor	1.00	1.00	0.54	0.49	1.00	1.00	1.00		1.00
Incremental Delay, d2	39.0	0.1	7.1	0.1	11.6	4.2	0.9		5.5
Delay (s)	85.5	0.1	21.5	0.5	64.5	60.0	14.1		61.3
Level of Service	F	A	C	A	E	E	B		E
Approach Delay (s)	77.2		18.0				17.0	61.3	
Approach LOS	E		B				B	E	

## Intersection Summary

HCM Average Control Delay	28.3	HCM Level of Service	C
HCM Volume to Capacity ratio	0.85		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	81.5%	ICU Level of Service	D
Analysis Period (min)	15		

! Phase conflict between lane groups.

c Critical Lane Group



# HCM Signalized Intersection Capacity Analysis

## 2: MD 193 & Carroll Ave

6/10/2008



Movement	EBL2	EBL	EBT	EBR	WBT	WBR	NBL	NBT	NBR2	SBL	SBT	SBR
Lane Configurations	↖	↖	↕↕↕↕		↕↕↕↕		↖	↕		↖	↕	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	2.0	2.0	2.0		2.0		2.0	2.0		2.0	2.0	
Lane Util. Factor	1.00	1.00	0.91		0.91		1.00	1.00		1.00	1.00	
Frt	1.00	1.00	0.98		1.00		1.00	0.98		1.00	0.98	
Flt Protected	0.95	0.95	1.00		1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1703	902	4809		4869		1703	1760		1703	1748	
Flt Permitted	0.95	0.95	1.00		1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1703	902	4809		4869		1703	1760		1703	1748	
Volume (vph)	25	10	1650	215	1890	65	185	145	20	100	540	105
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	26	11	1737	226	1989	68	195	153	21	105	568	111
RTOR Reduction (vph)	0	0	14	0	0	0	0	4	0	0	6	0
Lane Group Flow (vph)	26	11	1949	0	2057	0	195	170	0	105	673	0
Heavy Vehicles (%)	6%	100%	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%
Turn Type	Prot	Split					Split			Split		
Protected Phases	1	6!	6		2!		3	3		4	4	
Permitted Phases												
Actuated Green, G (s)	3.0	48.0	48.0		40.0		23.0	23.0		31.0	31.0	
Effective Green, g (s)	6.0	52.0	52.0		44.0		27.0	27.0		35.0	35.0	
Actuated g/C Ratio	0.05	0.43	0.43		0.37		0.22	0.22		0.29	0.29	
Clearance Time (s)	5.0	6.0	6.0		6.0		6.0	6.0		6.0	6.0	
Vehicle Extension (s)	3.0	3.0	3.0		3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	85	391	2084		1785		383	396		497	510	
v/s Ratio Prot	0.02	0.01	c0.41		c0.42		c0.11	0.10		0.06	c0.39	
v/s Ratio Perm												
v/c Ratio	0.31	0.03	0.94		1.15		0.51	0.43		0.21	1.32	
Uniform Delay, d1	55.0	19.5	32.4		38.0		40.7	39.9		32.1	42.5	
Progression Factor	1.21	0.18	0.37		1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.7	0.0	3.6		75.5		1.1	0.8		0.2	157.4	
Delay (s)	67.4	3.6	15.6		113.5		41.8	40.6		32.3	199.9	
Level of Service	E	A	B		F		D	D		C	F	
Approach Delay (s)			16.2		113.5			41.2			177.5	
Approach LOS			B		F			D			F	

### Intersection Summary

HCM Average Control Delay	80.5	HCM Level of Service	F
HCM Volume to Capacity ratio	1.02		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	121.9%	ICU Level of Service	H
Analysis Period (min)	15		

! Phase conflict between lane groups.

c Critical Lane Group



Movement	SWR
Lane Configurations	↗
Ideal Flow (vphpl)	1900
Total Lost time (s)	2.0
Lane Util. Factor	1.00
Frt	0.86
Flt Protected	1.00
Satd. Flow (prot)	822
Flt Permitted	1.00
Satd. Flow (perm)	822
Volume (vph)	10
Peak-hour factor, PHF	0.95
Adj. Flow (vph)	11
RTOR Reduction (vph)	0
Lane Group Flow (vph)	11
Heavy Vehicles (%)	100%
Turn Type	custom
Protected Phases	2!
Permitted Phases	
Actuated Green, G (s)	40.0
Effective Green, g (s)	44.0
Actuated g/C Ratio	0.37
Clearance Time (s)	6.0
Vehicle Extension (s)	3.0
Lane Grp Cap (vph)	301
v/s Ratio Prot	0.01
v/s Ratio Perm	
v/c Ratio	0.04
Uniform Delay, d1	24.4
Progression Factor	1.00
Incremental Delay, d2	0.2
Delay (s)	24.6
Level of Service	C
Approach Delay (s)	
Approach LOS	
Intersection Summary	

# HCM Signalized Intersection Capacity Analysis

5: MD 193 & MD 320

6/10/2008



Movement	EBL2	EBT	EBR	WBL2	WBT	WBR	NBL	NBT	NBR2	SBL	SBT	SBR2
Lane Configurations	↖	↗↖↗		↖	↗↖↗		↖	↗↖		↖	↗↖	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lane Util. Factor	1.00	0.91		1.00	0.91		1.00	0.95		1.00	0.95	
Frt	1.00	0.99		1.00	1.00		1.00	0.94		1.00	0.95	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1703	4833		1703	4886		1703	3212		1703	3219	
Flt Permitted	0.95	1.00		0.95	1.00		0.09	1.00		0.40	1.00	
Satd. Flow (perm)	1703	4833		1703	4886		168	3212		722	3219	
Volume (vph)	245	1615	145	235	1925	20	213	360	220	30	950	545
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	258	1700	153	247	2026	21	224	379	232	32	1000	574
RTOR Reduction (vph)	0	0	0	0	0	0	0	74	0	0	66	0
Lane Group Flow (vph)	258	1853	0	247	2047	0	224	537	0	32	1508	0
Heavy Vehicles (%)	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%
Turn Type	Prot			Prot			pm+pt			pm+pt		
Protected Phases	5	2		1!	6!		3	8		7	4	
Permitted Phases							8			4		
Actuated Green, G (s)	12.0	38.4		13.0	39.4		48.8	48.8		44.6	43.6	
Effective Green, g (s)	14.0	41.4		15.0	42.4		51.8	51.8		46.6	46.6	
Actuated g/C Ratio	0.12	0.34		0.12	0.35		0.43	0.43		0.39	0.39	
Clearance Time (s)	4.0	5.0		4.0	5.0		4.0	5.0		4.0	5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	199	1667		213	1726		188	1387		311	1250	
v/s Ratio Prot	0.15	c0.38		0.15	c0.42		c0.09	0.17		0.00	c0.47	
v/s Ratio Perm							0.43			0.04		
v/c Ratio	1.30	1.11		1.16	1.19		1.19	0.39		0.10	1.21	
Uniform Delay, d1	53.0	39.3		52.5	38.8		57.7	23.3		24.6	36.7	
Progression Factor	1.00	1.00		0.70	0.56		1.00	1.00		1.00	1.00	
Incremental Delay, d2	165.3	59.3		77.0	84.3		126.7	0.8		0.1	100.6	
Delay (s)	218.3	98.6		113.5	105.9		184.4	24.1		24.8	137.3	
Level of Service	F	F		F	F		F	C		C	F	
Approach Delay (s)		113.2			106.7			67.1			135.1	
Approach LOS		F			F			E			F	

## Intersection Summary

HCM Average Control Delay	110.3	HCM Level of Service	F
HCM Volume to Capacity ratio	1.17		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	6.0
Intersection Capacity Utilization	134.6%	ICU Level of Service	H
Analysis Period (min)	15		

! Phase conflict between lane groups.

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis  
5: MD 193 & MD 320

6/10/2008

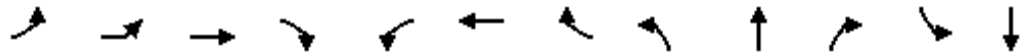


Movement	NER	SWL
Lane Configurations		
Ideal Flow (vphpl)	1900	1900
Total Lost time (s)	2.0	2.0
Lane Util. Factor	1.00	1.00
Frt	0.86	1.00
Flt Protected	1.00	0.95
Satd. Flow (prot)	822	902
Flt Permitted	1.00	0.95
Satd. Flow (perm)	822	902
Volume (vph)	10	10
Peak-hour factor, PHF	0.95	0.95
Adj. Flow (vph)	11	11
RTOR Reduction (vph)	0	0
Lane Group Flow (vph)	11	11
Heavy Vehicles (%)	100%	100%
Turn Type	custom	Prot
Protected Phases	1!	1!
Permitted Phases		
Actuated Green, G (s)	13.0	13.0
Effective Green, g (s)	15.0	15.0
Actuated g/C Ratio	0.12	0.12
Clearance Time (s)	4.0	4.0
Vehicle Extension (s)	3.0	3.0
Lane Grp Cap (vph)	103	113
v/s Ratio Prot	0.01	0.01
v/s Ratio Perm		
v/c Ratio	0.11	0.10
Uniform Delay, d1	46.6	46.5
Progression Factor	1.00	1.00
Incremental Delay, d2	0.5	0.4
Delay (s)	47.0	46.9
Level of Service	D	D
Approach Delay (s)		
Approach LOS		
Intersection Summary		

# HCM Signalized Intersection Capacity Analysis

## 14: MD 193 & MD 193 West SC

6/10/2008



Movement	EBL2	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR2	SBL	SBT
Lane Configurations	↖	↖	↑↑↑		↖	↑↑↑			↑	↗	↖	↗
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	2.0	2.0	2.0		2.0	2.0			2.0	2.0	2.0	2.0
Lane Util. Factor	1.00	1.00	0.91		1.00	0.91			1.00	1.00	1.00	1.00
Frt	1.00	1.00	1.00		1.00	1.00			1.00	0.85	1.00	0.89
Flt Protected	0.95	0.95	1.00		0.95	1.00			0.96	1.00	0.95	1.00
Satd. Flow (prot)	1703	902	4887		1703	4880			1814	1599	1787	1666
Flt Permitted	0.95	0.95	1.00		0.95	1.00			0.81	1.00	0.67	1.00
Satd. Flow (perm)	1703	902	4887		1703	4880			1526	1599	1263	1666
Volume (vph)	65	10	1690	15	25	1885	35	45	15	20	15	5
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	68	11	1779	16	26	1984	37	47	16	21	16	5
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	16	0	12
Lane Group Flow (vph)	68	11	1795	0	26	2021	0	0	63	5	16	9
Heavy Vehicles (%)	6%	100%	6%	6%	6%	6%	6%	1%	1%	1%	1%	1%
Turn Type	Prot	Split			Prot			Perm		Perm	Perm	
Protected Phases	5	2!	2		1	6!			3			3
Permitted Phases								3	3	3	3	
Actuated Green, G (s)	9.8	97.6	97.6		5.4	93.2			32.0	32.0	32.0	32.0
Effective Green, g (s)	12.8	100.6	100.6		8.4	96.2			35.0	35.0	35.0	35.0
Actuated g/C Ratio	0.09	0.67	0.67		0.06	0.64			0.23	0.23	0.23	0.23
Clearance Time (s)	5.0	5.0	5.0		5.0	5.0			5.0	5.0	5.0	5.0
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0			3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	145	605	3278		95	3130			356	373	295	389
v/s Ratio Prot	c0.04	0.01	0.37		0.02	c0.41						0.01
v/s Ratio Perm									c0.04	0.00	0.01	
v/c Ratio	0.47	0.02	0.55		0.27	0.65			0.18	0.01	0.05	0.02
Uniform Delay, d1	65.4	8.2	12.9		67.9	16.5			46.0	44.2	44.6	44.3
Progression Factor	1.00	1.00	1.00		1.42	0.29			1.00	1.00	1.00	1.00
Incremental Delay, d2	2.4	0.1	0.7		0.1	0.1			0.2	0.0	0.1	0.0
Delay (s)	67.7	8.3	13.5		96.2	4.9			46.2	44.2	44.7	44.3
Level of Service	E	A	B		F	A			D	D	D	D
Approach Delay (s)			15.5			6.1			45.7			44.5
Approach LOS			B			A			D			D

### Intersection Summary

HCM Average Control Delay	11.6	HCM Level of Service	B
HCM Volume to Capacity ratio	0.51		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	6.0
Intersection Capacity Utilization	79.7%	ICU Level of Service	D
Analysis Period (min)	15		

! Phase conflict between lane groups.

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis  
 14: MD 193 & MD 193 West SC

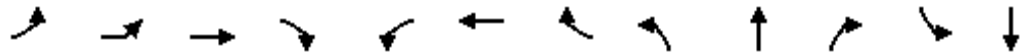
6/10/2008



Movement	SBR	SWR
<b>Lane Configurations</b>		
Ideal Flow (vphpl)	1900	1900
Total Lost time (s)		2.0
Lane Util. Factor		1.00
Frt		0.86
Flt Protected		1.00
Satd. Flow (prot)		822
Flt Permitted		1.00
Satd. Flow (perm)		822
Volume (vph)	15	10
Peak-hour factor, PHF	0.95	0.95
Adj. Flow (vph)	16	11
RTOR Reduction (vph)	0	0
Lane Group Flow (vph)	0	11
Heavy Vehicles (%)	1%	100%
Turn Type	custom	
Protected Phases	6!	
Permitted Phases		
Actuated Green, G (s)	93.2	
Effective Green, g (s)	96.2	
Actuated g/C Ratio	0.64	
Clearance Time (s)	5.0	
Vehicle Extension (s)	3.0	
Lane Grp Cap (vph)	527	
v/s Ratio Prot	0.01	
v/s Ratio Perm		
v/c Ratio	0.02	
Uniform Delay, d1	9.8	
Progression Factor	1.00	
Incremental Delay, d2	0.1	
Delay (s)	9.9	
Level of Service	A	
Approach Delay (s)		
Approach LOS		
<b>Intersection Summary</b>		

HCM Signalized Intersection Capacity Analysis  
 15: MD 193 & MD 193 East SC

6/10/2008



Movement	EBL2	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR2	SBL	SBT
Lane Configurations	↖	↖	↕↕↕↔		↖	↕↕↕↔		↖	↕		↖	↕
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	2.0	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0
Lane Util. Factor	1.00	1.00	0.91		1.00	0.91		1.00	1.00		0.95	0.95
Frt	1.00	1.00	1.00		1.00	1.00		1.00	0.92		1.00	1.00
Flt Protected	0.95	0.95	1.00		0.95	1.00		0.95	1.00		0.95	0.96
Satd. Flow (prot)	1703	902	4874		1703	4878		1787	1740		1698	1712
Flt Permitted	0.95	0.95	1.00		0.95	1.00		0.72	1.00		0.75	0.81
Satd. Flow (perm)	1703	902	4874		1703	4878		1347	1740		1342	1450
Volume (vph)	30	10	1315	35	20	1905	40	5	5	5	65	5
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	32	11	1384	37	21	2005	42	5	5	5	68	5
RTOR Reduction (vph)	0	0	1	0	0	0	0	0	4	0	0	0
Lane Group Flow (vph)	32	11	1420	0	21	2047	0	5	6	0	34	39
Heavy Vehicles (%)	6%	100%	6%	6%	6%	6%	6%	1%	1%	1%	1%	1%
Turn Type	Prot	Split			Prot			Perm			Perm	
Protected Phases	1	6!	6		5	2!			3			3
Permitted Phases			6			2!		3	3		3	
Actuated Green, G (s)	5.8	97.2	97.2		5.8	97.2		32.0	32.0		32.0	32.0
Effective Green, g (s)	8.8	100.2	100.2		8.8	100.2		35.0	35.0		35.0	35.0
Actuated g/C Ratio	0.06	0.67	0.67		0.06	0.67		0.23	0.23		0.23	0.23
Clearance Time (s)	5.0	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	100	603	3256		100	3259		314	406		313	338
v/s Ratio Prot	c0.02	0.01	0.29		0.01	c0.42			0.00			
v/s Ratio Perm								0.00			0.03	c0.03
v/c Ratio	0.32	0.02	0.44		0.21	0.63		0.02	0.02		0.11	0.12
Uniform Delay, d1	67.7	8.4	11.7		67.3	14.2		44.2	44.2		45.2	45.3
Progression Factor	0.88	0.42	0.28		1.00	1.00		1.00	1.00		1.00	1.00
Incremental Delay, d2	0.2	0.0	0.0		1.0	0.9		0.0	0.0		0.2	0.2
Delay (s)	59.8	3.5	3.3		68.3	15.2		44.3	44.3		45.4	45.5
Level of Service	E	A	A		E	B		D	D		D	D
Approach Delay (s)			4.5			15.7			44.3			45.2
Approach LOS			A			B			D			D

Intersection Summary			
HCM Average Control Delay	12.0	HCM Level of Service	B
HCM Volume to Capacity ratio	0.48		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	6.0
Intersection Capacity Utilization	92.7%	ICU Level of Service	F
Analysis Period (min)	15		

! Phase conflict between lane groups.

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis  
 15: MD 193 & MD 193 East SC

6/10/2008



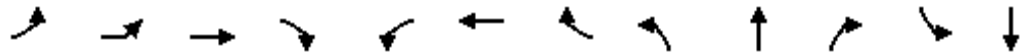
Movement	SBR	SWR
Lane Configurations	↗	↗
Ideal Flow (vphpl)	1900	1900
Total Lost time (s)	2.0	2.0
Lane Util. Factor	1.00	1.00
Frt	0.85	0.86
Flt Protected	1.00	1.00
Satd. Flow (prot)	1599	822
Flt Permitted	1.00	1.00
Satd. Flow (perm)	1599	822
Volume (vph)	15	10
Peak-hour factor, PHF	0.95	0.95
Adj. Flow (vph)	16	11
RTOR Reduction (vph)	12	0
Lane Group Flow (vph)	4	11
Heavy Vehicles (%)	1%	100%
Turn Type	Perm	custom
Protected Phases		2!
Permitted Phases	3	
Actuated Green, G (s)	32.0	97.2
Effective Green, g (s)	35.0	100.2
Actuated g/C Ratio	0.23	0.67
Clearance Time (s)	5.0	5.0
Vehicle Extension (s)	3.0	3.0
Lane Grp Cap (vph)	373	549
v/s Ratio Prot		0.01
v/s Ratio Perm	0.00	
v/c Ratio	0.01	0.02
Uniform Delay, d1	44.2	8.4
Progression Factor	1.00	1.00
Incremental Delay, d2	0.0	0.1
Delay (s)	44.2	8.4
Level of Service	D	A
Approach Delay (s)		
Approach LOS		
Intersection Summary		



# HCM Signalized Intersection Capacity Analysis

91: MD 193 & MD 212

6/10/2008



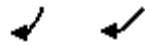
Movement	EBL2	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR2	SBL	SBT
Lane Configurations	↖	↖	↗↗↗	↗	↖↖	↗↗↗		↖↖	↑	↖	↖	↗↗
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	2.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0
Lane Util. Factor	1.00	1.00	0.91	1.00	0.97	0.91		0.97	1.00	1.00	1.00	0.95
Frt	1.00	1.00	1.00	0.85	1.00	0.99		1.00	1.00	0.85	1.00	0.98
Flt Protected	0.95	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00
Satd. Flow (prot)	1703	902	4893	1524	3303	4825		3303	1792	1524	1703	3322
Flt Permitted	0.95	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00
Satd. Flow (perm)	1703	902	4893	1524	3303	4825		3303	1792	1524	1703	3322
Volume (vph)	80	10	875	555	720	1220	125	780	520	395	155	485
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	84	11	921	584	758	1284	132	821	547	416	163	511
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	251	0	13
Lane Group Flow (vph)	84	11	921	584	758	1416	0	821	547	165	163	598
Heavy Vehicles (%)	6%	100%	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%
Turn Type	Prot	Split		Free	Prot			Split		Perm	Split	
Protected Phases	1	6!	6		5	2!		4	4		3	3
Permitted Phases				Free						4		
Actuated Green, G (s)	6.0	20.0	20.0	120.0	25.0	39.0		34.0	34.0	34.0	19.0	19.0
Effective Green, g (s)	8.0	25.0	24.0	120.0	27.0	43.0		36.0	36.0	36.0	21.0	21.0
Actuated g/C Ratio	0.07	0.21	0.20	1.00	0.22	0.36		0.30	0.30	0.30	0.18	0.18
Clearance Time (s)	5.0	7.0	7.0		5.0	7.0		5.0	5.0	5.0	5.0	5.0
Vehicle Extension (s)	2.5	5.0	5.0		2.5	5.0		2.5	2.5	2.5	2.5	2.5
Lane Grp Cap (vph)	114	188	979	1524	743	1729		991	538	457	298	581
v/s Ratio Prot	0.05	0.01	c0.19		c0.23	0.29		0.25	c0.31		0.10	c0.18
v/s Ratio Perm				0.38						0.11		
v/c Ratio	0.74	0.06	0.94	0.38	1.02	0.82		0.83	1.02	0.36	0.55	1.03
Uniform Delay, d1	55.0	38.1	47.3	0.0	46.5	35.0		39.1	42.0	33.0	45.2	49.5
Progression Factor	1.05	0.79	0.91	1.00	1.20	0.82		1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	19.5	0.6	16.8	0.7	34.5	3.6		5.7	43.1	0.4	1.6	44.9
Delay (s)	77.1	30.6	59.9	0.7	90.3	32.1		44.8	85.1	33.3	46.8	94.4
Level of Service	E	C	E	A	F	C		D	F	C	D	F
Approach Delay (s)			39.0			52.4			54.5			84.4
Approach LOS			D			D			D			F

## Intersection Summary

HCM Average Control Delay	53.5	HCM Level of Service	D
HCM Volume to Capacity ratio	1.00		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	102.8%	ICU Level of Service	G
Analysis Period (min)	15		

! Phase conflict between lane groups.

c Critical Lane Group

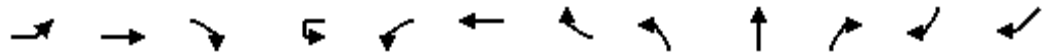


Movement	SBR	SWR
<b>Lane Configurations</b>		
Ideal Flow (vphpl)	1900	1900
Total Lost time (s)		2.0
Lane Util. Factor		1.00
Frt		0.86
Flt Protected		1.00
Satd. Flow (prot)		822
Flt Permitted		1.00
Satd. Flow (perm)		822
Volume (vph)	95	10
Peak-hour factor, PHF	0.95	0.95
Adj. Flow (vph)	100	11
RTOR Reduction (vph)	0	0
Lane Group Flow (vph)	0	11
Heavy Vehicles (%)	6%	100%
Turn Type	custom	
Protected Phases	2!	
Permitted Phases		
Actuated Green, G (s)	39.0	
Effective Green, g (s)	44.0	
Actuated g/C Ratio	0.37	
Clearance Time (s)	7.0	
Vehicle Extension (s)	5.0	
Lane Grp Cap (vph)	301	
v/s Ratio Prot	0.01	
v/s Ratio Perm		
v/c Ratio	0.04	
Uniform Delay, d1	24.4	
Progression Factor	1.00	
Incremental Delay, d2	0.2	
Delay (s)	24.6	
Level of Service	C	
Approach Delay (s)		
Approach LOS		
<b>Intersection Summary</b>		

# HCM Signalized Intersection Capacity Analysis

105: MD 193 & 23rd Ave

6/10/2008



Movement	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR2	SBR	SWR
Lane Configurations	↖	↑↑↑			↘	↑↑↑			↑	↗	↖	↗
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	2.0	3.0			3.0	3.0			3.0	3.0	3.0	2.0
Lane Util. Factor	1.00	0.91			1.00	0.91			1.00	1.00	1.00	1.00
Frt	1.00	0.98			1.00	1.00			1.00	0.85	0.86	0.86
Flt Protected	0.95	1.00			0.95	1.00			0.95	1.00	1.00	1.00
Satd. Flow (prot)	902	4817			1703	4878			1796	1599	1627	822
Flt Permitted	0.95	1.00			0.30	1.00			0.95	1.00	1.00	1.00
Satd. Flow (perm)	902	4817			535	4878			1796	1599	1627	822
Volume (vph)	10	1200	140	30	105	1925	40	200	10	115	5	10
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	11	1263	147	32	111	2026	42	211	11	121	5	11
RTOR Reduction (vph)	0	24	0	0	0	0	0	0	0	92	3	0
Lane Group Flow (vph)	11	1386	0	0	143	2068	0	0	222	29	2	11
Heavy Vehicles (%)	100%	6%	6%	6%	6%	6%	6%	1%	1%	1%	1%	100%
Turn Type	Split			custom	Prot			Perm			Perm	custom
Protected Phases	6!	6			5	2!			4			2!
Permitted Phases		6		5				4		4	6	
Actuated Green, G (s)	20.0	20.0			11.4	36.4			11.6	11.6	20.0	36.4
Effective Green, g (s)	24.0	23.0			13.4	39.4			14.6	14.6	23.0	40.4
Actuated g/C Ratio	0.40	0.38			0.22	0.66			0.24	0.24	0.38	0.67
Clearance Time (s)	6.0	6.0			5.0	6.0			6.0	6.0	6.0	6.0
Vehicle Extension (s)	5.0	5.0			3.0	5.0			3.0	3.0	5.0	5.0
Lane Grp Cap (vph)	361	1847			119	3203			437	389	624	553
v/s Ratio Prot	0.01	c0.29				0.42						0.01
v/s Ratio Perm					c0.27				0.12	0.02	0.00	
v/c Ratio	0.03	0.75			1.20	0.65			0.51	0.08	0.00	0.02
Uniform Delay, d1	10.9	16.0			23.3	6.1			19.6	17.5	11.4	3.2
Progression Factor	0.63	0.65			1.35	0.92			1.00	1.00	1.00	1.00
Incremental Delay, d2	0.1	1.8			130.0	0.6			0.9	0.1	0.0	0.1
Delay (s)	7.0	12.2			161.4	6.3			20.5	17.6	11.4	3.3
Level of Service	A	B			F	A			C	B	B	A
Approach Delay (s)		12.2				16.3			19.5			
Approach LOS		B				B			B			

## Intersection Summary

HCM Average Control Delay	15.1	HCM Level of Service	B
HCM Volume to Capacity ratio	0.80		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	96.4%	ICU Level of Service	F
Analysis Period (min)	15		

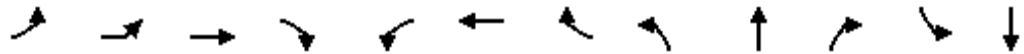
! Phase conflict between lane groups.

c Critical Lane Group

# HCM Signalized Intersection Capacity Analysis

107: MD 193 & W Park Dr

6/10/2008



Movement	EBL2	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR2	SBL	SBT
Lane Configurations	↖	↖	↗↗	↖	↖	↗↗		↖	↖		↖	↗
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	2.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0
Lane Util. Factor	1.00	1.00	0.95	1.00	1.00	0.95		1.00	1.00		1.00	1.00
Frt	1.00	1.00	1.00	0.85	1.00	1.00		1.00	0.87		1.00	0.90
Flt Protected	0.95	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00
Satd. Flow (prot)	1703	902	3406	1524	1703	3398		1787	1632		1787	1687
Flt Permitted	0.95	0.95	1.00	1.00	0.95	1.00		0.75	1.00		0.53	1.00
Satd. Flow (perm)	1703	902	3406	1524	1703	3398		1405	1632		1001	1687
Volume (vph)	25	10	1235	25	50	2070	30	20	10	80	30	5
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	26	11	1300	26	53	2179	32	21	11	84	32	5
RTOR Reduction (vph)	0	0	0	7	0	0	0	0	75	0	0	10
Lane Group Flow (vph)	26	11	1300	19	53	2211	0	21	20	0	32	6
Heavy Vehicles (%)	6%	100%	6%	6%	6%	6%	6%	1%	1%	1%	1%	1%
Turn Type	Prot	Split		Perm	Prot			Perm			Perm	
Protected Phases	1	6!	6		5	2!			8			4
Permitted Phases				6				8			4	
Actuated Green, G (s)	4.3	86.2	86.2	86.2	7.1	89.0		9.7	9.7		9.7	9.7
Effective Green, g (s)	6.3	90.2	89.2	89.2	9.1	92.0		12.7	12.7		12.7	12.7
Actuated g/C Ratio	0.05	0.75	0.74	0.74	0.08	0.77		0.11	0.11		0.11	0.11
Clearance Time (s)	5.0	6.0	6.0	6.0	5.0	6.0		6.0	6.0		6.0	6.0
Vehicle Extension (s)	3.0	5.0	5.0	5.0	3.0	5.0		3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	89	678	2532	1133	129	2605		149	173		106	179
v/s Ratio Prot	0.02	0.01	0.38		c0.03	c0.65			0.01			0.00
v/s Ratio Perm				0.01				0.01			c0.03	
v/c Ratio	0.29	0.02	0.51	0.02	0.41	0.85		0.14	0.11		0.30	0.03
Uniform Delay, d1	54.7	3.7	6.4	4.0	52.9	9.4		48.7	48.6		49.6	48.1
Progression Factor	1.10	0.25	0.48	0.00	1.00	1.00		1.00	1.00		1.00	1.00
Incremental Delay, d2	1.4	0.0	0.6	0.0	2.1	3.7		0.4	0.3		1.6	0.1
Delay (s)	61.5	1.0	3.7	0.0	55.0	13.0		49.1	48.9		51.2	48.2
Level of Service	E	A	A	A	E	B		D	D		D	D
Approach Delay (s)			4.7			14.0			48.9			50.2
Approach LOS			A			B			D			D

## Intersection Summary

HCM Average Control Delay	12.2	HCM Level of Service	B
HCM Volume to Capacity ratio	0.76		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	93.2%	ICU Level of Service	F
Analysis Period (min)	15		

! Phase conflict between lane groups.

c Critical Lane Group

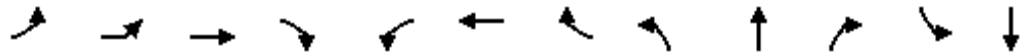


Movement	SBR	SWR
Lane Configurations		
Ideal Flow (vphpl)	1900	1900
Total Lost time (s)		2.0
Lane Util. Factor		1.00
Frt		0.86
Flt Protected		1.00
Satd. Flow (prot)		822
Flt Permitted		1.00
Satd. Flow (perm)		822
Volume (vph)	10	10
Peak-hour factor, PHF	0.95	0.95
Adj. Flow (vph)	11	11
RTOR Reduction (vph)	0	0
Lane Group Flow (vph)	0	11
Heavy Vehicles (%)	1%	100%
Turn Type	custom	
Protected Phases	2!	
Permitted Phases		
Actuated Green, G (s)	89.0	
Effective Green, g (s)	93.0	
Actuated g/C Ratio	0.78	
Clearance Time (s)	6.0	
Vehicle Extension (s)	5.0	
Lane Grp Cap (vph)	637	
v/s Ratio Prot	0.01	
v/s Ratio Perm		
v/c Ratio	0.02	
Uniform Delay, d1	3.1	
Progression Factor	1.00	
Incremental Delay, d2	0.0	
Delay (s)	3.1	
Level of Service	A	
Approach Delay (s)		
Approach LOS		
Intersection Summary		

# HCM Signalized Intersection Capacity Analysis

1621: MD 193 & MD 650

6/10/2008



Movement	EBL2	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR2	SBL	SBT
Lane Configurations	↖	↖	↗↗↗		↖	↗↗↗		↖↖	↗↗↗		↖	↗↗↗
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	2.0	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0
Lane Util. Factor	1.00	1.00	0.91		1.00	0.91		0.97	0.91		1.00	0.91
Frt	1.00	1.00	0.95		1.00	0.98		1.00	0.99		1.00	0.99
Flt Protected	0.95	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00
Satd. Flow (prot)	1703	902	4652		1703	4777		3303	4837		1703	4831
Flt Permitted	0.95	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00
Satd. Flow (perm)	1703	902	4652		1703	4777		3303	4837		1703	4831
Volume (vph)	100	10	1090	535	210	1430	270	300	950	80	210	2250
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	105	11	1147	563	221	1505	284	316	1000	84	221	2368
RTOR Reduction (vph)	0	0	59	0	0	0	0	0	6	0	0	7
Lane Group Flow (vph)	105	11	1651	0	221	1789	0	316	1078	0	221	2582
Heavy Vehicles (%)	6%	100%	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%
Turn Type	Prot	Split			Prot			Prot			Prot	
Protected Phases	7	4!	4		3	8!		1	6		5	2
Permitted Phases												
Actuated Green, G (s)	6.0	39.0	39.0		12.0	45.0		15.8	54.1		22.4	60.7
Effective Green, g (s)	9.0	43.0	43.0		15.0	49.0		18.8	58.6		25.4	65.2
Actuated g/C Ratio	0.06	0.29	0.29		0.10	0.33		0.13	0.39		0.17	0.43
Clearance Time (s)	5.0	6.0	6.0		5.0	6.0		5.0	6.5		5.0	6.5
Vehicle Extension (s)	3.0	5.0	5.0		3.0	5.0		3.0	5.0		3.0	5.0
Lane Grp Cap (vph)	102	259	1334		170	1560		414	1890		288	2100
v/s Ratio Prot	0.06	0.01	c0.35		c0.13	c0.37		0.10	0.22		c0.13	c0.53
v/s Ratio Perm												
v/c Ratio	1.03	0.04	1.24		1.30	1.15		0.76	0.57		0.77	1.23
Uniform Delay, d1	70.5	38.6	53.5		67.5	50.5		63.4	35.8		59.5	42.4
Progression Factor	0.82	0.94	0.81		0.80	0.75		1.10	0.72		1.14	0.82
Incremental Delay, d2	90.9	0.1	112.6		165.1	72.6		7.8	1.2		1.1	103.6
Delay (s)	148.5	36.3	155.8		219.1	110.6		77.6	27.0		68.8	138.5
Level of Service	F	D	F		F	F		E	C		E	F
Approach Delay (s)			154.7			122.5			38.4			133.0
Approach LOS			F			F			D			F

## Intersection Summary

HCM Average Control Delay	118.7	HCM Level of Service	F
HCM Volume to Capacity ratio	1.15		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	4.0
Intersection Capacity Utilization	129.2%	ICU Level of Service	H
Analysis Period (min)	15		

! Phase conflict between lane groups.

c Critical Lane Group



Movement	SBR	SWR
<b>Intersection Summary</b>		
Line Configurations		
Ideal Flow (vphpl)	1900	1900
Total Lost time (s)		2.0
Lane Util. Factor		1.00
Frt		0.86
Flt Protected		1.00
Satd. Flow (prot)		822
Flt Permitted		1.00
Satd. Flow (perm)		822
Volume (vph)	210	10
Peak-hour factor, PHF	0.95	0.95
Adj. Flow (vph)	221	11
RTOR Reduction (vph)	0	0
Lane Group Flow (vph)	0	11
Heavy Vehicles (%)	6%	100%
Turn Type	custom	
Protected Phases	8!	
Permitted Phases		
Actuated Green, G (s)	45.0	
Effective Green, g (s)	49.0	
Actuated g/C Ratio	0.33	
Clearance Time (s)	6.0	
Vehicle Extension (s)	5.0	
Lane Grp Cap (vph)	269	
v/s Ratio Prot	0.01	
v/s Ratio Perm		
v/c Ratio	0.04	
Uniform Delay, d1	34.5	
Progression Factor	1.00	
Incremental Delay, d2	0.1	
Delay (s)	34.6	
Level of Service	C	
Approach Delay (s)		
Approach LOS		
<b>Intersection Summary</b>		

# HCM Signalized Intersection Capacity Analysis

1629: MD 193 & 15th Ave

6/10/2008



Movement	EBL2	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR2	SBL	SBT	SBR
Lane Configurations	↖	↖	↖↖↖	↖	↖↖↖		↖	↖		↖	↖	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	2.0	2.0	2.0	3.0	2.0		2.0	3.0		3.0	3.0	
Lane Util. Factor	1.00	1.00	0.91	1.00	0.91		1.00	1.00		1.00	1.00	
Frt	1.00	1.00	1.00	1.00	0.99		1.00	0.92		1.00	0.85	
Flt Protected	0.95	0.95	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1703	902	4893	1703	4850		1787	1740		1787	1602	
Flt Permitted	0.95	0.95	1.00	0.95	1.00		0.65	1.00		0.76	1.00	
Satd. Flow (perm)	1703	902	4893	1703	4850		1225	1740		1423	1602	
Volume (vph)	60	10	1290	5	1895	120	1	1	1	220	1	85
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	63	11	1358	5	1995	126	1	1	1	232	1	89
RTOR Reduction (vph)	0	0	0	0	0	0	0	1	0	0	69	0
Lane Group Flow (vph)	63	11	1358	5	2121	0	1	1	0	232	21	0
Heavy Vehicles (%)	6%	100%	6%	6%	6%	6%	1%	1%	1%	1%	1%	1%
Turn Type	Prot	Split		Prot		custom	Prot		Perm			
Protected Phases	5	2!	2	1	6!		8				4	
Permitted Phases							8			4		
Actuated Green, G (s)	7.9	77.7	77.7	1.4	72.2		23.9	23.9		23.9	23.9	
Effective Green, g (s)	10.9	81.7	81.7	3.4	75.2		27.9	26.9		26.9	26.9	
Actuated g/C Ratio	0.09	0.68	0.68	0.03	0.63		0.23	0.22		0.22	0.22	
Clearance Time (s)	5.0	6.0	6.0	5.0	5.0		6.0	6.0		6.0	6.0	
Vehicle Extension (s)	3.0	5.0	5.0	3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	155	614	3331	48	3039		285	390		319	359	
v/s Ratio Prot	c0.04	0.01	0.28	0.00	c0.44			0.00			0.01	
v/s Ratio Perm							0.00			c0.16		
v/c Ratio	0.41	0.02	0.41	0.10	0.70		0.00	0.00		0.73	0.06	
Uniform Delay, d1	51.5	6.2	8.5	56.8	14.9		35.4	36.1		43.1	36.6	
Progression Factor	1.00	1.00	1.00	1.05	0.47		1.00	1.00		1.00	1.00	
Incremental Delay, d2	1.7	0.1	0.4	0.6	0.8		0.0	0.0		8.0	0.1	
Delay (s)	53.2	6.2	8.8	60.3	7.8		35.4	36.1		51.2	36.7	
Level of Service	D	A	A	E	A		D	D		D	D	
Approach Delay (s)			10.8		7.9			35.9			47.1	
Approach LOS			B		A			D			D	

## Intersection Summary

HCM Average Control Delay	12.2	HCM Level of Service	B
HCM Volume to Capacity ratio	0.67		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	7.0
Intersection Capacity Utilization	92.3%	ICU Level of Service	F
Analysis Period (min)	15		

! Phase conflict between lane groups.

c Critical Lane Group





Movement	SWR
Lane Configurations	↗
Ideal Flow (vphpl)	1900
Total Lost time (s)	2.0
Lane Util. Factor	1.00
Frt	0.86
Flt Protected	1.00
Satd. Flow (prot)	822
Flt Permitted	1.00
Satd. Flow (perm)	822
Volume (vph)	10
Peak-hour factor, PHF	0.95
Adj. Flow (vph)	11
RTOR Reduction (vph)	0
Lane Group Flow (vph)	11
Heavy Vehicles (%)	100%
Turn Type	custom
Protected Phases	6!
Permitted Phases	
Actuated Green, G (s)	72.2
Effective Green, g (s)	75.2
Actuated g/C Ratio	0.63
Clearance Time (s)	5.0
Vehicle Extension (s)	3.0
Lane Grp Cap (vph)	515
v/s Ratio Prot	0.01
v/s Ratio Perm	
v/c Ratio	0.02
Uniform Delay, d1	8.5
Progression Factor	1.00
Incremental Delay, d2	0.1
Delay (s)	8.6
Level of Service	A
Approach Delay (s)	
Approach LOS	
Intersection Summary	

# HCM Signalized Intersection Capacity Analysis

## 2: MD 193 & Carroll Ave

6/10/2008



Movement	EBL2	EBL	EBT	EBR	WBT	WBR	NBL	NBT	NBR2	SBL	SBT	SBR
Lane Configurations	↖	↖	↕↕↕↔		↕↕↕↔		↖	↕		↖	↔	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	2.0	2.0	2.0		2.0		2.0	2.0		2.0	2.0	
Lane Util. Factor	1.00	1.00	0.91		0.91		1.00	1.00		1.00	1.00	
Frt	1.00	1.00	0.99		0.99		1.00	0.98		1.00	0.98	
Flt Protected	0.95	0.95	1.00		1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1736	902	4920		4941		1736	1789		1736	1794	
Flt Permitted	0.95	0.95	1.00		1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1736	902	4920		4941		1736	1789		1736	1794	
Volume (vph)	40	10	2205	220	2200	145	285	340	55	120	225	30
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	42	11	2321	232	2316	153	300	358	58	126	237	32
RTOR Reduction (vph)	0	0	10	0	0	0	0	5	0	0	4	0
Lane Group Flow (vph)	42	11	2543	0	2469	0	300	411	0	126	265	0
Heavy Vehicles (%)	4%	100%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%
Turn Type	Prot	Split					Split			Split		
Protected Phases	1	6!	6		2!		3	3		4	4	
Permitted Phases												
Actuated Green, G (s)	4.0	66.0	66.0		57.0		23.0	23.0		13.0	13.0	
Effective Green, g (s)	7.0	70.0	70.0		61.0		27.0	27.0		17.0	17.0	
Actuated g/C Ratio	0.06	0.58	0.58		0.51		0.22	0.22		0.14	0.14	
Clearance Time (s)	5.0	6.0	6.0		6.0		6.0	6.0		6.0	6.0	
Vehicle Extension (s)	3.0	3.0	3.0		3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	101	526	2870		2512		391	403		246	254	
v/s Ratio Prot	0.02	0.01	c0.52		c0.50		0.17	c0.23		0.07	c0.15	
v/s Ratio Perm												
v/c Ratio	0.42	0.02	0.89		0.98		0.77	1.02		0.51	1.04	
Uniform Delay, d1	54.5	10.5	21.6		29.0		43.6	46.5		47.7	51.5	
Progression Factor	1.37	0.28	0.41		1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.3	0.0	0.4		14.4		13.4	50.2		1.8	67.9	
Delay (s)	75.1	2.9	9.3		43.3		57.0	96.7		49.5	119.4	
Level of Service	E	A	A		D		E	F		D	F	
Approach Delay (s)			10.3		43.3			80.1			97.1	
Approach LOS			B		D			F			F	

### Intersection Summary

HCM Average Control Delay	37.1	HCM Level of Service	D
HCM Volume to Capacity ratio	0.98		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	110.3%	ICU Level of Service	H
Analysis Period (min)	15		

! Phase conflict between lane groups.

c Critical Lane Group

































Movement	SWR
Lane Configurations	↗
Ideal Flow (vphpl)	1900
Total Lost time (s)	2.0
Lane Util. Factor	1.00
Frt	0.86
Flt Protected	1.00
Satd. Flow (prot)	822
Flt Permitted	1.00
Satd. Flow (perm)	822
Volume (vph)	10
Peak-hour factor, PHF	0.95
Adj. Flow (vph)	11
RTOR Reduction (vph)	0
Lane Group Flow (vph)	11
Heavy Vehicles (%)	100%
Turn Type	custom
Protected Phases	2!
Permitted Phases	
Actuated Green, G (s)	57.0
Effective Green, g (s)	61.0
Actuated g/C Ratio	0.51
Clearance Time (s)	6.0
Vehicle Extension (s)	3.0
Lane Grp Cap (vph)	418
v/s Ratio Prot	0.01
v/s Ratio Perm	
v/c Ratio	0.03
Uniform Delay, d1	14.7
Progression Factor	1.00
Incremental Delay, d2	0.1
Delay (s)	14.8
Level of Service	B
Approach Delay (s)	
Approach LOS	
Intersection Summary	

# HCM Signalized Intersection Capacity Analysis

5: MD 193 & MD 320

6/10/2008

												
Movement	EBL2	EBT	EBR	WBL2	WBT	WBR	NBL	NBT	NBR2	SBL	SBT	SBR2
Lane Configurations		  			  			 		 	 	 
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	2.0	2.0		2.0	2.0		2.0	2.0	2.0	2.0	2.0	
Lane Util. Factor	1.00	0.91		1.00	0.91		1.00	0.95	1.00	1.00	0.95	
Frt	1.00	0.98		1.00	1.00		1.00	1.00	0.85	1.00	0.96	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1736	4910		1736	4967		1736	3471	1553	1736	3337	
Flt Permitted	0.95	1.00		0.95	1.00		0.14	1.00	1.00	0.15	1.00	
Satd. Flow (perm)	1736	4910		1736	4967		254	3471	1553	273	3337	
Volume (vph)	280	2115	245	305	2145	60	350	970	265	75	590	205
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	295	2226	258	321	2258	63	368	1021	279	79	621	216
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	169	0	29	0
Lane Group Flow (vph)	295	2484	0	321	2321	0	368	1021	110	79	808	0
Heavy Vehicles (%)	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%
Turn Type	Prot		Prot		pm+pt		Perm		pm+pt			
Protected Phases	5	2		1!	6!		3!	8!		7	4!	
Permitted Phases							8!		8		4	
Actuated Green, G (s)	17.0	47.2		17.0	47.2		41.8	35.4	35.4	26.2	23.8	
Effective Green, g (s)	19.0	50.2		19.0	50.2		44.8	38.4	38.4	31.2	26.8	
Actuated g/C Ratio	0.16	0.42		0.16	0.42		0.37	0.32	0.32	0.26	0.22	
Clearance Time (s)	4.0	5.0		4.0	5.0		4.0	5.0	5.0	4.0	5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	275	2054		275	2078		292	1111	497	125	745	
v/s Ratio Prot	0.17	c0.51		c0.18	0.47		c0.17	0.29		0.02	c0.24	
v/s Ratio Perm							0.30		0.07	0.14		
v/c Ratio	1.07	1.21		1.17	1.12		1.26	0.92	0.22	0.63	1.08	
Uniform Delay, d1	50.5	34.9		50.5	34.9		34.6	39.3	29.9	36.4	46.6	
Progression Factor	1.00	1.00		0.66	1.47		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	74.9	99.0		88.7	55.3		141.8	13.4	1.0	10.0	58.4	
Delay (s)	125.4	133.9		121.9	106.5		176.4	52.7	30.9	46.4	105.0	
Level of Service	F	F		F	F		F	D	C	D	F	
Approach Delay (s)		133.0			108.4			76.4			100.0	
Approach LOS		F			F			E			F	
<b>Intersection Summary</b>												
HCM Average Control Delay			109.1	HCM Level of Service				F				
HCM Volume to Capacity ratio			1.16									
Actuated Cycle Length (s)			120.0	Sum of lost time (s)				8.0				
Intersection Capacity Utilization			137.1%	ICU Level of Service				H				
Analysis Period (min)			15									
! Phase conflict between lane groups.												
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis  
 5: MD 193 & MD 320

6/10/2008

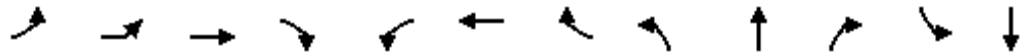


Movement	NER	SWL
Lane Configurations		
Ideal Flow (vphpl)	1900	1900
Total Lost time (s)	2.0	2.0
Lane Util. Factor	1.00	1.00
Frt	0.86	1.00
Flt Protected	1.00	0.95
Satd. Flow (prot)	822	902
Flt Permitted	1.00	0.95
Satd. Flow (perm)	822	902
Volume (vph)	10	10
Peak-hour factor, PHF	0.95	0.95
Adj. Flow (vph)	11	11
RTOR Reduction (vph)	0	0
Lane Group Flow (vph)	11	11
Heavy Vehicles (%)	100%	100%
Turn Type	custom	Prot
Protected Phases	1 8!	1!
Permitted Phases		
Actuated Green, G (s)	57.4	17.0
Effective Green, g (s)	59.4	19.0
Actuated g/C Ratio	0.50	0.16
Clearance Time (s)		4.0
Vehicle Extension (s)		3.0
Lane Grp Cap (vph)	407	143
v/s Ratio Prot	0.01	0.01
v/s Ratio Perm		
v/c Ratio	0.03	0.08
Uniform Delay, d1	15.5	43.0
Progression Factor	1.00	1.00
Incremental Delay, d2	0.0	0.2
Delay (s)	15.5	43.3
Level of Service	B	D
Approach Delay (s)		
Approach LOS		
Intersection Summary		

# HCM Signalized Intersection Capacity Analysis

## 14: MD 193 & MD 193 West SC

6/10/2008



Movement	EBL2	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR2	SBL	SBT
Lane Configurations	↖	↖	↗↗↗		↖	↗↗↗			↖	↖	↖	↗
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	2.0	2.0	2.0		2.0	2.0			2.0	2.0	2.0	2.0
Lane Util. Factor	1.00	1.00	0.91		1.00	0.91			1.00	1.00	1.00	1.00
Frt	1.00	1.00	1.00		1.00	1.00			1.00	0.85	1.00	0.92
Flt Protected	0.95	0.95	1.00		0.95	1.00			0.98	1.00	0.95	1.00
Satd. Flow (prot)	1736	902	4977		1736	4978			1835	1599	1787	1740
Flt Permitted	0.95	0.95	1.00		0.95	1.00			0.86	1.00	0.66	1.00
Satd. Flow (perm)	1736	902	4977		1736	4978			1615	1599	1247	1740
Volume (vph)	30	10	2210	30	30	2325	30	30	30	30	30	30
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	32	11	2326	32	32	2447	32	32	32	32	32	32
RTOR Reduction (vph)	0	0	1	0	0	0	0	0	0	25	0	24
Lane Group Flow (vph)	32	11	2357	0	32	2479	0	0	64	7	32	40
Heavy Vehicles (%)	4%	100%	4%	4%	4%	4%	4%	1%	1%	1%	1%	1%
Turn Type	Prot	Split			Prot			Perm		Perm	Perm	
Protected Phases	5	2!	2		1	6!			3			3
Permitted Phases								3	3	3	3	
Actuated Green, G (s)	14.0	87.0	87.0		19.0	92.0			29.0	29.0	29.0	29.0
Effective Green, g (s)	17.0	90.0	90.0		22.0	95.0			32.0	32.0	32.0	32.0
Actuated g/C Ratio	0.11	0.60	0.60		0.15	0.63			0.21	0.21	0.21	0.21
Clearance Time (s)	5.0	5.0	5.0		5.0	5.0			5.0	5.0	5.0	5.0
Lane Grp Cap (vph)	197	541	2986		255	3153			345	341	266	371
v/s Ratio Prot	c0.02	0.01	0.47		0.02	c0.50						0.02
v/s Ratio Perm								c0.04	0.00	0.03		
v/c Ratio	0.16	0.02	0.79		0.13	0.79			0.19	0.02	0.12	0.11
Uniform Delay, d1	60.1	12.1	22.8		55.6	20.1			48.3	46.6	47.6	47.5
Progression Factor	1.00	1.00	1.00		1.41	0.15			1.00	1.00	1.00	1.00
Incremental Delay, d2	1.8	0.1	2.2		0.1	0.2			1.2	0.1	0.9	0.6
Delay (s)	61.8	12.2	25.0		78.6	3.3			49.5	46.7	48.6	48.1
Level of Service	E	B	C		E	A			D	D	D	D
Approach Delay (s)			25.4			4.2			48.6			48.2
Approach LOS			C			A			D			D

### Intersection Summary

HCM Average Control Delay	15.9	HCM Level of Service	B
HCM Volume to Capacity ratio	0.58		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	6.0
Intersection Capacity Utilization	86.7%	ICU Level of Service	E
Analysis Period (min)	15		

! Phase conflict between lane groups.

c Critical Lane Group

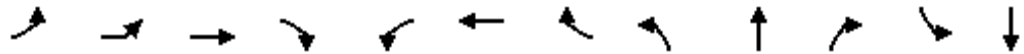


Movement	SBR	SWR
Lane Configurations		
Ideal Flow (vphpl)	1900	1900
Total Lost time (s)		2.0
Lane Util. Factor		1.00
Frt		0.86
Flt Protected		1.00
Satd. Flow (prot)		822
Flt Permitted		1.00
Satd. Flow (perm)		822
Volume (vph)	30	10
Peak-hour factor, PHF	0.95	0.95
Adj. Flow (vph)	32	11
RTOR Reduction (vph)	0	0
Lane Group Flow (vph)	0	11
Heavy Vehicles (%)	1%	100%
Turn Type	custom	
Protected Phases	6!	
Permitted Phases		
Actuated Green, G (s)	92.0	
Effective Green, g (s)	95.0	
Actuated g/C Ratio	0.63	
Clearance Time (s)	5.0	
Lane Grp Cap (vph)	521	
v/s Ratio Prot	0.01	
v/s Ratio Perm		
v/c Ratio	0.02	
Uniform Delay, d1	10.2	
Progression Factor	1.00	
Incremental Delay, d2	0.1	
Delay (s)	10.3	
Level of Service	B	
Approach Delay (s)		
Approach LOS		
<b>Intersection Summary</b>		

# HCM Signalized Intersection Capacity Analysis

15: MD 193 & MD 193 East SC

6/10/2008



Movement	EBL2	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR2	SBL	SBT
Lane Configurations	↖	↖	↕↕↕		↖	↕↕↕		↖	↕		↖	↖
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	2.0	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0
Lane Util. Factor	1.00	1.00	0.91		1.00	0.91		1.00	1.00		0.95	0.95
Frt	1.00	1.00	1.00		1.00	0.99		1.00	0.87		1.00	1.00
Flt Protected	0.95	0.95	1.00		0.95	1.00		0.95	1.00		0.95	0.97
Satd. Flow (prot)	1736	902	4977		1736	4949		1787	1638		1698	1731
Flt Permitted	0.95	0.95	1.00		0.95	1.00		0.70	1.00		0.55	0.81
Satd. Flow (perm)	1736	902	4977		1736	4949		1315	1638		986	1448
Volume (vph)	45	10	2195	30	70	2120	115	95	15	95	55	15
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	47	11	2311	32	74	2232	121	100	16	100	58	16
RTOR Reduction (vph)	0	0	1	0	0	0	0	0	79	0	0	0
Lane Group Flow (vph)	47	11	2342	0	74	2353	0	100	37	0	29	45
Heavy Vehicles (%)	4%	100%	4%	4%	4%	4%	4%	1%	1%	1%	1%	1%
Turn Type	Prot	Split			Prot			Perm			Perm	
Protected Phases	1	6!	6		5	2!		3				3
Permitted Phases			6			2!		3	3		3	
Actuated Green, G (s)	19.0	88.0	88.0		18.0	87.0		29.0	29.0		29.0	29.0
Effective Green, g (s)	22.0	91.0	91.0		21.0	90.0		32.0	32.0		32.0	32.0
Actuated g/C Ratio	0.15	0.61	0.61		0.14	0.60		0.21	0.21		0.21	0.21
Clearance Time (s)	5.0	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0
Lane Grp Cap (vph)	255	547	3019		243	2969		281	349		210	309
v/s Ratio Prot	0.03	0.01	0.47		c0.04	c0.48			0.02			
v/s Ratio Perm								c0.08			0.03	0.03
v/c Ratio	0.18	0.02	0.78		0.30	0.79		0.36	0.11		0.14	0.15
Uniform Delay, d1	56.1	11.7	21.9		57.9	22.9		50.2	47.5		47.8	47.9
Progression Factor	1.43	0.27	0.25		1.00	1.00		1.00	1.00		1.00	1.00
Incremental Delay, d2	0.1	0.0	0.2		3.2	2.3		3.5	0.6		1.4	1.0
Delay (s)	80.6	3.2	5.7		61.2	25.1		53.7	48.1		49.2	48.9
Level of Service	F	A	A		E	C		D	D		D	D
Approach Delay (s)			7.2			26.2			50.7			48.2
Approach LOS			A			C			D			D

## Intersection Summary

HCM Average Control Delay	18.9	HCM Level of Service	B
HCM Volume to Capacity ratio	0.61		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	6.0
Intersection Capacity Utilization	98.5%	ICU Level of Service	F
Analysis Period (min)	15		

! Phase conflict between lane groups.

c Critical Lane Group



HCM Signalized Intersection Capacity Analysis  
 15: MD 193 & MD 193 East SC

6/10/2008

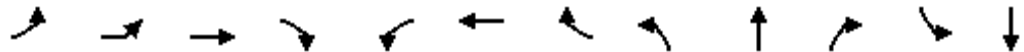


Movement	SBR	SWR
Lane Configurations	↗	↗
Ideal Flow (vphpl)	1900	1900
Total Lost time (s)	2.0	2.0
Lane Util. Factor	1.00	1.00
Frt	0.85	0.86
Flt Protected	1.00	1.00
Satd. Flow (prot)	1599	822
Flt Permitted	1.00	1.00
Satd. Flow (perm)	1599	822
Volume (vph)	40	10
Peak-hour factor, PHF	0.95	0.95
Adj. Flow (vph)	42	11
RTOR Reduction (vph)	33	0
Lane Group Flow (vph)	9	11
Heavy Vehicles (%)	1%	100%
Turn Type	Perm custom	
Protected Phases	2!	
Permitted Phases	3	
Actuated Green, G (s)	29.0	87.0
Effective Green, g (s)	32.0	90.0
Actuated g/C Ratio	0.21	0.60
Clearance Time (s)	5.0	5.0
Lane Grp Cap (vph)	341	493
v/s Ratio Prot	0.01	
v/s Ratio Perm	0.01	
v/c Ratio	0.03	0.02
Uniform Delay, d1	46.7	12.2
Progression Factor	1.00	1.00
Incremental Delay, d2	0.1	0.1
Delay (s)	46.8	12.2
Level of Service	D	B
Approach Delay (s)		
Approach LOS		
<b>Intersection Summary</b>		

# HCM Signalized Intersection Capacity Analysis

91: MD 193 & Riggs Rd

6/10/2008



Movement	EBL2	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR2	SBL	SBT
Lane Configurations	↙	↙	↗↗↗	↗	↙↙	↗↗↗		↙↙	↑	↗	↙	↗↗
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	2.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0
Lane Util. Factor	1.00	1.00	0.91	1.00	0.97	0.91		0.97	1.00	1.00	1.00	0.95
Frt	1.00	1.00	1.00	0.85	1.00	0.98		1.00	1.00	0.85	1.00	0.98
Flt Protected	0.95	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00
Satd. Flow (prot)	1736	902	4988	1553	3367	4912		3367	1827	1553	1736	3397
Flt Permitted	0.95	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00
Satd. Flow (perm)	1736	902	4988	1553	3367	4912		3367	1827	1553	1736	3397
Volume (vph)	140	10	1625	665	670	1550	175	800	635	670	270	479
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	147	11	1711	700	705	1632	184	842	668	705	284	504
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	178	0	11
Lane Group Flow (vph)	147	11	1711	700	705	1816	0	842	668	527	284	577
Heavy Vehicles (%)	4%	100%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%
Turn Type	Prot	Split		Free	Prot			Split		Perm	Split	
Protected Phases	1	6!	6		5	2!		4	4		3	3
Permitted Phases				Free						4		
Actuated Green, G (s)	9.0	33.0	33.0	120.0	18.0	42.0		33.0	33.0	33.0	14.0	14.0
Effective Green, g (s)	11.0	38.0	37.0	120.0	20.0	46.0		35.0	35.0	35.0	16.0	16.0
Actuated g/C Ratio	0.09	0.32	0.31	1.00	0.17	0.38		0.29	0.29	0.29	0.13	0.13
Clearance Time (s)	5.0	7.0	7.0		5.0	7.0		5.0	5.0	5.0	5.0	5.0
Vehicle Extension (s)	2.5	5.0	5.0		2.5	5.0		2.5	2.5	2.5	2.5	2.5
Lane Grp Cap (vph)	159	286	1538	1553	561	1883		982	533	453	231	453
v/s Ratio Prot	0.08	0.01	c0.34		c0.21	0.37		0.25	c0.37		0.16	c0.17
v/s Ratio Perm				0.45						0.34		
v/c Ratio	0.92	0.04	1.11	0.45	1.26	0.96		0.86	1.25	1.16	1.23	1.27
Uniform Delay, d1	54.1	28.4	41.5	0.0	50.0	36.2		40.1	42.5	42.5	52.0	52.0
Progression Factor	1.21	0.75	0.84	1.00	0.99	1.17		1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	39.8	0.2	57.9	0.7	126.5	11.6		7.4	128.8	95.5	135.1	139.3
Delay (s)	105.4	21.4	92.6	0.7	175.9	54.0		47.6	171.3	138.0	187.1	191.3
Level of Service	F	C	F	A	F	D		D	F	F	F	F
Approach Delay (s)			68.0			88.1			113.7			189.9
Approach LOS			E			F			F			F

## Intersection Summary

HCM Average Control Delay	99.5	HCM Level of Service	F
HCM Volume to Capacity ratio	1.21		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	123.3%	ICU Level of Service	H
Analysis Period (min)	15		

! Phase conflict between lane groups.

c Critical Lane Group



Movement	SBR	SWR
<b>Lane Configurations</b>		
Ideal Flow (vphpl)	1900	1900
Total Lost time (s)		2.0
Lane Util. Factor		1.00
Frt		0.86
Flt Protected		1.00
Satd. Flow (prot)		822
Flt Permitted		1.00
Satd. Flow (perm)		822
Volume (vph)	80	10
Peak-hour factor, PHF	0.95	0.95
Adj. Flow (vph)	84	11
RTOR Reduction (vph)	0	0
Lane Group Flow (vph)	0	11
Heavy Vehicles (%)	4%	100%
Turn Type	custom	
Protected Phases	2!	
Permitted Phases		
Actuated Green, G (s)	42.0	
Effective Green, g (s)	47.0	
Actuated g/C Ratio	0.39	
Clearance Time (s)	7.0	
Vehicle Extension (s)	5.0	
Lane Grp Cap (vph)	322	
v/s Ratio Prot	0.01	
v/s Ratio Perm		
v/c Ratio	0.03	
Uniform Delay, d1	22.5	
Progression Factor	1.00	
Incremental Delay, d2	0.2	
Delay (s)	22.7	
Level of Service	C	
Approach Delay (s)		
Approach LOS		
<b>Intersection Summary</b>		

# HCM Signalized Intersection Capacity Analysis

105: MD 193 & 23rd Ave

6/10/2008



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR2	SBR	SWR
Lane Configurations	↘	↑↑↑		↘	↑↑↑			↑	↗	↗	↘
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	2.0	3.0		3.0	3.0			3.0	3.0	3.0	2.0
Lane Util. Factor	1.00	0.91		1.00	0.91			1.00	1.00	1.00	1.00
Frt	1.00	0.98		1.00	1.00			1.00	0.85	0.86	0.86
Flt Protected	0.95	1.00		0.95	1.00			0.95	1.00	1.00	1.00
Satd. Flow (prot)	902	4894		1736	4976			1793	1599	1627	822
Flt Permitted	0.95	1.00		0.95	1.00			0.95	1.00	1.00	1.00
Satd. Flow (perm)	902	4894		1736	4976			1793	1599	1627	822
Volume (vph)	10	2215	315	185	1970	30	400	5	145	75	10
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	11	2332	332	195	2074	32	421	5	153	79	11
RTOR Reduction (vph)	0	15	0	0	0	0	0	0	115	36	0
Lane Group Flow (vph)	11	2649	0	195	2106	0	0	426	38	43	11
Heavy Vehicles (%)	100%	4%	4%	4%	4%	4%	1%	1%	1%	1%	100%
Turn Type	Split		Prot		Perm		Perm		custom	custom	
Protected Phases	6!	6		5	2!			4			2!
Permitted Phases		6					4		4	6	
Actuated Green, G (s)	63.0	63.0		13.0	81.0			27.0	27.0	63.0	81.0
Effective Green, g (s)	67.0	66.0		15.0	84.0			30.0	30.0	66.0	85.0
Actuated g/C Ratio	0.56	0.55		0.12	0.70			0.25	0.25	0.55	0.71
Clearance Time (s)	6.0	6.0		5.0	6.0			6.0	6.0	6.0	6.0
Vehicle Extension (s)	5.0	5.0		3.0	5.0			3.0	3.0	5.0	5.0
Lane Grp Cap (vph)	504	2692		217	3483			448	400	895	582
v/s Ratio Prot	0.01	c0.54		c0.11	0.42						0.01
v/s Ratio Perm								0.24	0.02	0.03	
v/c Ratio	0.02	0.98		0.90	0.60			0.95	0.10	0.05	0.02
Uniform Delay, d1	11.8	26.5		51.8	9.4			44.3	34.6	12.5	5.2
Progression Factor	0.57	0.49		0.82	1.44			1.00	1.00	1.00	1.00
Incremental Delay, d2	0.0	2.7		24.9	0.5			30.2	0.1	0.1	0.1
Delay (s)	6.8	15.6		67.5	14.0			74.5	34.7	12.6	5.2
Level of Service	A	B		E	B			E	C	B	A
Approach Delay (s)		15.6			18.6			64.0			
Approach LOS		B			B			E			

## Intersection Summary

HCM Average Control Delay	21.7	HCM Level of Service	C
HCM Volume to Capacity ratio	0.96		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	107.8%	ICU Level of Service	G
Analysis Period (min)	15		

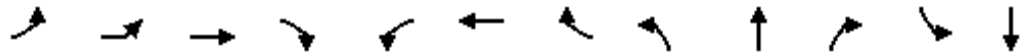
! Phase conflict between lane groups.

c Critical Lane Group

# HCM Signalized Intersection Capacity Analysis

107: MD 193 & W Park Dr

6/10/2008



Movement	EBL2	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR2	SBL	SBT
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	2.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0
Lane Util. Factor	1.00	1.00	0.95	1.00	1.00	0.95		1.00	1.00		1.00	1.00
Frt	1.00	1.00	1.00	0.85	1.00	1.00		1.00	0.86		1.00	0.90
Flt Protected	0.95	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00
Satd. Flow (prot)	1736	902	3471	1553	1736	3454		1787	1612		1787	1696
Flt Permitted	0.95	0.95	1.00	1.00	0.95	1.00		0.74	1.00		0.53	1.00
Satd. Flow (perm)	1736	902	3471	1553	1736	3454		1385	1612		1004	1696
Volume (vph)	25	10	2235	40	35	2070	69	25	5	95	80	10
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	26	11	2353	42	37	2179	73	26	5	100	84	11
RTOR Reduction (vph)	0	0	0	10	0	0	0	0	64	0	0	18
Lane Group Flow (vph)	26	11	2353	32	37	2252	0	26	41	0	84	14
Heavy Vehicles (%)	4%	100%	4%	4%	4%	4%	4%	1%	1%	1%	1%	1%
Turn Type	Prot	Split		Perm	Prot			Perm			Perm	
Protected Phases	1	6!	6		5	2!			8			4
Permitted Phases				6				8				4
Actuated Green, G (s)	3.0	87.6	87.6	87.6	3.0	87.6		12.4	12.4		12.4	12.4
Effective Green, g (s)	5.0	91.6	90.6	90.6	5.0	90.6		15.4	15.4		15.4	15.4
Actuated g/C Ratio	0.04	0.76	0.76	0.76	0.04	0.76		0.13	0.13		0.13	0.13
Clearance Time (s)	5.0	6.0	6.0	6.0	5.0	6.0		6.0	6.0		6.0	6.0
Vehicle Extension (s)	3.0	5.0	5.0	5.0	3.0	5.0		3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	72	689	2621	1173	72	2608		178	207		129	218
v/s Ratio Prot	0.01	0.01	c0.68		c0.02	0.65			0.03			0.01
v/s Ratio Perm				0.02				0.02			c0.08	
v/c Ratio	0.36	0.02	0.90	0.03	0.51	0.86		0.15	0.20		0.65	0.06
Uniform Delay, d1	55.9	3.4	11.2	3.7	56.3	10.3		46.5	46.8		49.7	46.0
Progression Factor	1.19	0.12	0.71	0.00	1.00	1.00		1.00	1.00		1.00	1.00
Incremental Delay, d2	1.3	0.0	2.4	0.0	6.1	4.1		0.4	0.5		11.2	0.1
Delay (s)	67.7	0.4	10.4	0.0	62.4	14.4		46.8	47.3		60.9	46.1
Level of Service	E	A	B	A	E	B		D	D		E	D
Approach Delay (s)			10.8			15.2			47.2			56.8
Approach LOS			B			B			D			E

## Intersection Summary

HCM Average Control Delay	14.8	HCM Level of Service	B
HCM Volume to Capacity ratio	0.85		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	99.5%	ICU Level of Service	F
Analysis Period (min)	15		

! Phase conflict between lane groups.

c Critical Lane Group

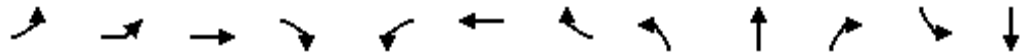


Movement	SBR	SWR
Lane Configurations		
Ideal Flow (vphpl)	1900	1900
Total Lost time (s)		2.0
Lane Util. Factor		1.00
Frt		0.86
Flt Protected		1.00
Satd. Flow (prot)		822
Flt Permitted		1.00
Satd. Flow (perm)		822
Volume (vph)	20	10
Peak-hour factor, PHF	0.95	0.95
Adj. Flow (vph)	21	11
RTOR Reduction (vph)	0	0
Lane Group Flow (vph)	0	11
Heavy Vehicles (%)	1%	100%
Turn Type	custom	
Protected Phases	2!	
Permitted Phases		
Actuated Green, G (s)	87.6	
Effective Green, g (s)	91.6	
Actuated g/C Ratio	0.76	
Clearance Time (s)	6.0	
Vehicle Extension (s)	5.0	
Lane Grp Cap (vph)	627	
v/s Ratio Prot	0.01	
v/s Ratio Perm		
v/c Ratio	0.02	
Uniform Delay, d1	3.4	
Progression Factor	1.00	
Incremental Delay, d2	0.1	
Delay (s)	3.5	
Level of Service	A	
Approach Delay (s)		
Approach LOS		
Intersection Summary		

# HCM Signalized Intersection Capacity Analysis

1621: MD 193 & MD 650

6/10/2008



Movement	EBL2	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR2	SBL	SBT
Lane Configurations	↘	↘	↑↑↑		↘	↑↑↑		↘↘	↑↑↑		↘	↑↑↑
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	2.0	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0
Lane Util. Factor	1.00	1.00	0.91		1.00	0.91		0.97	0.91		1.00	0.91
Frt	1.00	1.00	0.97		1.00	0.98		1.00	0.99		1.00	0.99
Flt Protected	0.95	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00
Satd. Flow (prot)	1736	902	4840		1736	4896		3367	4917		1736	4938
Flt Permitted	0.95	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00
Satd. Flow (perm)	1736	902	4840		1736	4896		3367	4917		1736	4938
Volume (vph)	135	10	1715	420	265	1770	245	535	2120	220	360	1270
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	142	11	1805	442	279	1863	258	563	2232	232	379	1337
RTOR Reduction (vph)	0	0	28	0	0	0	0	0	8	0	0	5
Lane Group Flow (vph)	142	11	2219	0	279	2121	0	563	2456	0	379	1427
Heavy Vehicles (%)	4%	100%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%
Turn Type	Prot	Split			Prot			Prot			Prot	
Protected Phases	7	4!	4		3	8!		1	6		5	2
Permitted Phases												
Actuated Green, G (s)	7.0	45.0	45.0		14.0	52.0		23.0	50.5		18.0	45.5
Effective Green, g (s)	10.0	49.0	49.0		17.0	56.0		26.0	55.0		21.0	50.0
Actuated g/C Ratio	0.07	0.33	0.33		0.11	0.37		0.17	0.37		0.14	0.33
Clearance Time (s)	5.0	6.0	6.0		5.0	6.0		5.0	6.5		5.0	6.5
Vehicle Extension (s)	3.0	5.0	5.0		3.0	5.0		3.0	5.0		3.0	5.0
Lane Grp Cap (vph)	116	295	1581		197	1828		584	1803		243	1646
v/s Ratio Prot	0.08	0.01	c0.46		c0.16	c0.43		0.17	c0.50		c0.22	0.29
v/s Ratio Perm												
v/c Ratio	1.22	0.04	1.40		1.42	1.16		0.96	1.36		1.56	0.87
Uniform Delay, d1	70.0	34.4	50.5		66.5	47.0		61.5	47.5		64.5	46.9
Progression Factor	0.69	0.83	0.67		0.71	0.62		0.71	0.70		0.79	0.68
Incremental Delay, d2	138.9	0.1	184.1		205.6	76.5		20.1	165.1		268.4	5.5
Delay (s)	186.9	28.7	218.2		252.8	105.7		64.0	198.4		319.1	37.6
Level of Service	F	C	F		F	F		E	F		F	D
Approach Delay (s)			215.4			122.8			173.4			96.5
Approach LOS			F			F			F			F

## Intersection Summary

HCM Average Control Delay	156.7	HCM Level of Service	F
HCM Volume to Capacity ratio	1.38		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	6.0
Intersection Capacity Utilization	146.3%	ICU Level of Service	H
Analysis Period (min)	15		

! Phase conflict between lane groups.

c Critical Lane Group



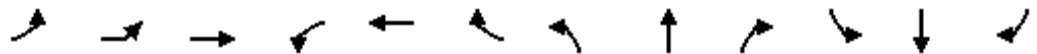
Movement	SBR	SWR
<b>Intersection Summary</b>		
Line Configurations		
Ideal Flow (vphpl)	1900	1900
Total Lost time (s)		2.0
Lane Util. Factor		1.00
Frt		0.86
Flt Protected		1.00
Satd. Flow (prot)		822
Flt Permitted		1.00
Satd. Flow (perm)		822
Volume (vph)	90	10
Peak-hour factor, PHF	0.95	0.95
Adj. Flow (vph)	95	11
RTOR Reduction (vph)	0	0
Lane Group Flow (vph)	0	11
Heavy Vehicles (%)	4%	100%
Turn Type	custom	
Protected Phases	8!	
Permitted Phases		
Actuated Green, G (s)	52.0	
Effective Green, g (s)	56.0	
Actuated g/C Ratio	0.37	
Clearance Time (s)	6.0	
Vehicle Extension (s)	5.0	
Lane Grp Cap (vph)	307	
v/s Ratio Prot	0.01	
v/s Ratio Perm		
v/c Ratio	0.04	
Uniform Delay, d1	29.9	
Progression Factor	1.00	
Incremental Delay, d2	0.1	
Delay (s)	30.0	
Level of Service	C	
Approach Delay (s)		
Approach LOS		
<b>Intersection Summary</b>		



# HCM Signalized Intersection Capacity Analysis

1629: MD 193 & 15th Ave

6/10/2008



Movement	EBL2	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR2	SBL	SBT	SBR
Lane Configurations	↖	↖	↖↖↖	↖	↖↖↖		↖	↑		↖	↗	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	2.0	2.0	2.0		2.0		2.0	3.0		3.0	3.0	
Lane Util. Factor	1.00	1.00	0.91		0.91		1.00	1.00		1.00	1.00	
Frt	1.00	1.00	1.00		0.98		1.00	0.92		1.00	0.85	
Flt Protected	0.95	0.95	1.00		1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1736	902	4988		4903		1787	1740		1787	1602	
Flt Permitted	0.95	0.95	1.00		1.00		0.65	1.00		0.76	1.00	
Satd. Flow (perm)	1736	902	4988		4903		1218	1740		1423	1602	
Volume (vph)	225	10	2105	0	2195	280	1	1	1	375	1	95
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	237	11	2216	0	2311	295	1	1	1	395	1	100
RTOR Reduction (vph)	0	0	0	0	0	0	0	1	0	0	73	0
Lane Group Flow (vph)	237	11	2216	0	2606	0	1	1	0	395	29	0
Heavy Vehicles (%)	4%	100%	4%	4%	4%	4%	1%	1%	1%	1%	1%	1%
Turn Type	Prot	Split		Prot		custom	Prot		Perm			
Protected Phases	5	2!	2	1	6!		8				4	
Permitted Phases							8			4		
Actuated Green, G (s)	13.0	78.0	78.0		62.0		30.0	30.0		30.0	30.0	
Effective Green, g (s)	16.0	82.0	82.0		64.0		34.0	33.0		33.0	33.0	
Actuated g/C Ratio	0.13	0.68	0.68		0.53		0.28	0.28		0.28	0.28	
Clearance Time (s)	5.0	6.0	6.0		4.0		6.0	6.0		6.0	6.0	
Vehicle Extension (s)	3.0	5.0	5.0		3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	231	616	3408		2615		345	479		391	441	
v/s Ratio Prot	c0.14	0.01	0.44		c0.53			0.00			0.02	
v/s Ratio Perm								0.00		c0.28		
v/c Ratio	1.03	0.02	0.65		1.00		0.00	0.00		1.01	0.06	
Uniform Delay, d1	52.0	6.1	10.8		27.9		30.8	31.6		43.5	32.1	
Progression Factor	1.00	1.00	1.00		0.53		1.00	1.00		1.00	1.00	
Incremental Delay, d2	66.1	0.1	1.0		11.0		0.0	0.0		48.1	0.1	
Delay (s)	118.1	6.1	11.8		25.7		30.8	31.6		91.6	32.2	
Level of Service	F	A	B		C		C	C		F	C	
Approach Delay (s)			22.0		25.7			31.3			79.5	
Approach LOS			C		C			C			E	

## Intersection Summary

HCM Average Control Delay	28.8	HCM Level of Service	C
HCM Volume to Capacity ratio	1.00		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	7.0
Intersection Capacity Utilization	105.2%	ICU Level of Service	G
Analysis Period (min)	15		

! Phase conflict between lane groups.

c Critical Lane Group



Movement	SWR
Lane Configurations	↗
Ideal Flow (vphpl)	1900
Total Lost time (s)	2.0
Lane Util. Factor	1.00
Frt	0.86
Flt Protected	1.00
Satd. Flow (prot)	1580
Flt Permitted	1.00
Satd. Flow (perm)	1580
Volume (vph)	10
Peak-hour factor, PHF	0.95
Adj. Flow (vph)	11
RTOR Reduction (vph)	0
Lane Group Flow (vph)	11
Heavy Vehicles (%)	4%
Turn Type	custom
Protected Phases	6!
Permitted Phases	
Actuated Green, G (s)	62.0
Effective Green, g (s)	64.0
Actuated g/C Ratio	0.53
Clearance Time (s)	4.0
Vehicle Extension (s)	3.0
Lane Grp Cap (vph)	843
v/s Ratio Prot	0.01
v/s Ratio Perm	
v/c Ratio	0.01
Uniform Delay, d1	13.2
Progression Factor	1.00
Incremental Delay, d2	0.0
Delay (s)	13.2
Level of Service	B
Approach Delay (s)	
Approach LOS	
Intersection Summary	

HCM Signalized Intersection Capacity Analysis  
 4: Shopping Center & MD 201

6/11/2008



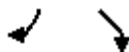
Movement	EBL	EBT	EBR	WBL	WBT	WBR2	NBL2	NBL	NBT	NBR	SBL	SBT
Lane Configurations		↕	↗		↕		↗	↗	↕↕	↗	↗	↕↕↕
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		3.0	3.0		3.0		3.0	3.0	3.0	3.0	3.0	3.0
Lane Util. Factor		1.00	1.00		1.00		1.00	1.00	0.95	1.00	1.00	0.91
Frt		1.00	0.85		0.91		1.00	1.00	1.00	0.85	1.00	1.00
Flt Protected		0.96	1.00		0.99		0.95	0.95	1.00	1.00	0.95	1.00
Satd. Flow (prot)		1812	1599		1690		1703	902	3406	1524	1703	4892
Flt Permitted		0.84	1.00		0.92		0.95	0.95	1.00	1.00	0.08	1.00
Satd. Flow (perm)		1582	1599		1570		1703	902	3406	1524	142	4892
Volume (vph)	15	5	15	15	5	40	25	10	1750	15	15	2245
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Growth Factor (vph)	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Adj. Flow (vph)	16	5	16	16	5	42	26	11	1842	16	16	2363
RTOR Reduction (vph)	0	0	14	0	37	0	0	0	0	3	0	0
Lane Group Flow (vph)	0	21	2	0	26	0	26	11	1842	13	16	2368
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	6%	100%	6%	6%	6%	6%
Turn Type	Perm		Perm	Perm			Prot	Split		Perm	pm+pt	
Protected Phases		8			4		5	2!	2		1	6!
Permitted Phases	8		8	4						2	6	
Actuated Green, G (s)		6.4	6.4		6.4		3.0	55.1	55.1	55.1	54.1	53.1
Effective Green, g (s)		9.4	9.4		9.4		5.0	58.6	58.6	58.6	59.6	56.6
Actuated g/C Ratio		0.12	0.12		0.12		0.06	0.73	0.73	0.73	0.75	0.71
Clearance Time (s)		6.0	6.0		6.0		5.0	6.5	6.5	6.5	5.0	6.5
Vehicle Extension (s)		3.0	3.0		3.0		3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)		186	188		184		106	661	2495	1116	164	3461
v/s Ratio Prot							c0.02	0.01	c0.54		0.00	0.48
v/s Ratio Perm		0.01	0.00		c0.02					0.01	0.07	
v/c Ratio		0.11	0.01		0.14		0.25	0.02	0.74	0.01	0.10	0.68
Uniform Delay, d1		31.6	31.2		31.7		35.7	2.9	6.2	2.9	5.3	6.6
Progression Factor		1.00	1.00		1.00		1.07	0.75	1.39	0.66	0.96	1.21
Incremental Delay, d2		0.3	0.0		0.4		0.9	0.0	1.5	0.0	0.2	0.6
Delay (s)		31.8	31.2		32.0		39.2	2.2	10.1	1.9	5.3	8.6
Level of Service		C	C		C		D	A	B	A	A	A
Approach Delay (s)		31.6			32.0			10.4				8.6
Approach LOS		C			C			B				A

Intersection Summary			
HCM Average Control Delay	9.9	HCM Level of Service	A
HCM Volume to Capacity ratio	0.61		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	6.0
Intersection Capacity Utilization	86.8%	ICU Level of Service	E
Analysis Period (min)	15		

! Phase conflict between lane groups.  
 c Critical Lane Group

HCM Signalized Intersection Capacity Analysis  
 4: Shopping Center & MD 201

6/11/2008

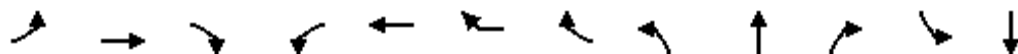


Movement	SBR	SER
<b>Intersection Summary</b>		
Lane Configurations		
Ideal Flow (vphpl)	1900	1900
Total Lost time (s)		3.0
Lane Util. Factor		1.00
Frt		0.86
Flt Protected		1.00
Satd. Flow (prot)		822
Flt Permitted		1.00
Satd. Flow (perm)		822
Volume (vph)	5	10
Peak-hour factor, PHF	0.95	0.95
Growth Factor (vph)	100%	100%
Adj. Flow (vph)	5	11
RTOR Reduction (vph)	0	0
Lane Group Flow (vph)	0	11
Heavy Vehicles (%)	6%	100%
Turn Type	custom	
Protected Phases	6!	
Permitted Phases		
Actuated Green, G (s)	53.1	
Effective Green, g (s)	56.6	
Actuated g/C Ratio	0.71	
Clearance Time (s)	6.5	
Vehicle Extension (s)	3.0	
Lane Grp Cap (vph)	582	
v/s Ratio Prot	0.01	
v/s Ratio Perm		
v/c Ratio	0.02	
Uniform Delay, d1	3.5	
Progression Factor	1.00	
Incremental Delay, d2	0.1	
Delay (s)	3.5	
Level of Service	A	
Approach Delay (s)		
Approach LOS		
<b>Intersection Summary</b>		

# HCM Signalized Intersection Capacity Analysis

## 5: MD 410 & MD 201

6/11/2008



Movement	EBL	EBT	EBR	WBL	WBT	WBR	WBR2	NBL2	NBT	NBR	SBL	SBT
Lane Configurations	↖↗	↑↑	↖	↖	↑↑	↖	↖	↖↗	↑↑	↖	↖	↑↑
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Util. Factor	0.97	0.95	1.00	1.00	0.95	1.00	1.00	0.97	0.95	1.00	1.00	0.95
Frt	1.00	1.00	0.85	1.00	1.00	0.85	0.85	1.00	1.00	0.85	1.00	1.00
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Satd. Flow (prot)	3303	3406	1524	1703	3406	808	1524	3303	3406	1524	1703	3406
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Satd. Flow (perm)	3303	3406	1524	1703	3406	808	1524	3303	3406	1524	1703	3406
Volume (vph)	345	955	365	50	1675	10	550	405	895	40	125	1815
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Growth Factor (vph)	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Adj. Flow (vph)	363	1005	384	53	1763	11	579	426	942	42	132	1911
RTOR Reduction (vph)	0	0	201	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	363	1005	183	53	1763	11	579	426	942	42	132	1911
Heavy Vehicles (%)	6%	6%	6%	6%	6%	100%	6%	6%	6%	6%	6%	6%
Turn Type	Prot		Perm	Prot		Over	Free	Prot		Free	Prot	
Protected Phases	3	8		7	4	9		5	2		1	6
Permitted Phases			8				Free			Free		
Actuated Green, G (s)	14.0	51.0	51.0	4.0	42.0	6.0	160.0	18.0	58.2	160.0	13.8	54.0
Effective Green, g (s)	16.0	54.0	54.0	6.0	44.0	8.0	160.0	20.0	61.2	160.0	15.8	57.0
Actuated g/C Ratio	0.10	0.34	0.34	0.04	0.28	0.05	1.00	0.12	0.38	1.00	0.10	0.36
Clearance Time (s)	5.0	6.0	6.0	5.0	5.0	5.0		5.0	6.0		5.0	6.0
Vehicle Extension (s)	3.0	5.0	5.0	3.0	5.0	5.0		3.0	5.0		3.0	5.0
Lane Grp Cap (vph)	330	1150	514	64	937	40	1524	413	1303	1524	168	1213
v/s Ratio Prot	c0.11	0.30		0.03	c0.52	0.01		c0.13	0.28		0.08	c0.56
v/s Ratio Perm			0.12				c0.38			0.03		
v/c Ratio	1.10	0.87	0.36	0.83	1.88	0.28	0.38	1.03	0.72	0.03	0.79	1.58
Uniform Delay, d1	72.0	49.8	39.9	76.5	58.0	73.2	0.0	70.0	42.2	0.0	70.4	51.5
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.21	0.82	1.00	0.89	0.81
Incremental Delay, d2	79.1	9.3	1.9	56.0	400.8	7.7	0.7	50.5	3.2	0.0	16.9	262.0
Delay (s)	151.1	59.1	41.8	132.5	458.8	80.9	0.7	135.4	37.7	0.0	79.8	303.8
Level of Service	F	E	D	F	F	F	A	F	D	A	E	F
Approach Delay (s)		74.4			339.6				66.1			246.9
Approach LOS		E			F				E			F

### Intersection Summary

HCM Average Control Delay	204.8	HCM Level of Service	F
HCM Volume to Capacity ratio	1.45		
Actuated Cycle Length (s)	160.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	142.9%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			



Movement	SBR	SEL
Lane Configurations	↖ ↗	↖ ↗
Ideal Flow (vphpl)	1900	1900
Total Lost time (s)	3.0	3.0
Lane Util. Factor	1.00	1.00
Frt	0.85	1.00
Flt Protected	1.00	0.95
Satd. Flow (prot)	1524	902
Flt Permitted	1.00	0.95
Satd. Flow (perm)	1524	902
Volume (vph)	335	10
Peak-hour factor, PHF	0.95	0.95
Growth Factor (vph)	100%	100%
Adj. Flow (vph)	353	11
RTOR Reduction (vph)	0	0
Lane Group Flow (vph)	353	11
Heavy Vehicles (%)	6%	100%
Turn Type	custom	
Protected Phases	9	
Permitted Phases	1 2 3 4	
Actuated Green, G (s)	144.0	6.0
Effective Green, g (s)	146.0	8.0
Actuated g/C Ratio	0.91	0.05
Clearance Time (s)	5.0	
Vehicle Extension (s)	5.0	
Lane Grp Cap (vph)	1391	45
v/s Ratio Prot	0.01	
v/s Ratio Perm	0.23	
v/c Ratio	0.25	0.24
Uniform Delay, d1	0.8	73.1
Progression Factor	2.14	1.00
Incremental Delay, d2	0.1	5.9
Delay (s)	1.8	78.9
Level of Service	A	E
Approach Delay (s)	78.9	
Approach LOS	E	

Intersection Summary

HCM Signalized Intersection Capacity Analysis  
4: Shopping Center & MD 201

6/11/2008



Movement	EBL	EBT	EBR	WBL	WBT	WBR2	NBL2	NBL	NBT	NBR	SBL	SBT
Lane Configurations		↕	↗		↕		↗	↘	↕	↘	↘	↕
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		3.0	3.0		3.0		3.0	3.0	3.0	3.0	3.0	3.0
Lane Util. Factor		1.00	1.00		1.00		1.00	1.00	0.95	1.00	1.00	0.91
Frt		1.00	0.85		0.91		1.00	1.00	1.00	0.85	1.00	1.00
Flt Protected		0.96	1.00		0.99		0.95	0.95	1.00	1.00	0.95	1.00
Satd. Flow (prot)		1800	1599		1686		1752	902	3505	1568	1752	5034
Flt Permitted		0.53	1.00		0.92		0.95	0.95	1.00	1.00	0.04	1.00
Satd. Flow (perm)		989	1599		1573		1752	902	3505	1568	73	5034
Volume (vph)	45	5	40	15	5	45	80	10	2155	35	100	1980
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Growth Factor (vph)	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Adj. Flow (vph)	47	5	42	16	5	47	84	11	2268	37	105	2084
RTOR Reduction (vph)	0	0	38	0	43	0	0	0	0	3	0	0
Lane Group Flow (vph)	0	52	4	0	25	0	84	11	2268	34	105	2089
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	3%	100%	3%	3%	3%	3%
Turn Type	Perm		Perm	Perm			Prot	Split		Perm	pm+pt	
Protected Phases		8			4		5	2!	2		1	6!
Permitted Phases	8		8	4						2		6
Actuated Green, G (s)		12.9	12.9		12.9		12.9	138.5	138.5	138.5	147.8	136.7
Effective Green, g (s)		15.9	15.9		15.9		14.9	142.0	142.0	142.0	153.3	140.2
Actuated g/C Ratio		0.09	0.09		0.09		0.08	0.79	0.79	0.79	0.85	0.78
Clearance Time (s)		6.0	6.0		6.0		5.0	6.5	6.5	6.5	5.0	6.5
Vehicle Extension (s)		3.0	3.0		3.0		3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)		87	141		139		145	712	2765	1237	184	3921
v/s Ratio Prot							c0.05	0.01	c0.65		0.04	0.41
v/s Ratio Perm		c0.05	0.00		0.02					0.02	0.45	
v/c Ratio		0.60	0.03		0.18		0.58	0.02	0.82	0.03	0.57	0.53
Uniform Delay, d1		79.0	75.0		76.0		79.5	4.1	11.4	4.1	45.0	7.5
Progression Factor		1.00	1.00		1.00		1.17	0.13	1.48	0.00	0.77	0.88
Incremental Delay, d2		10.6	0.1		0.6		0.5	0.0	0.3	0.0	3.3	0.4
Delay (s)		89.5	75.1		76.6		93.6	0.5	17.1	0.0	37.9	7.0
Level of Service		F	E		E		F	A	B	A	D	A
Approach Delay (s)		83.1			76.6				19.4			8.5
Approach LOS		F			E				B			A

Intersection Summary

HCM Average Control Delay	16.4	HCM Level of Service	B
HCM Volume to Capacity ratio	0.77		
Actuated Cycle Length (s)	180.0	Sum of lost time (s)	6.0
Intersection Capacity Utilization	85.6%	ICU Level of Service	E
Analysis Period (min)	15		

! Phase conflict between lane groups.

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis  
 4: Shopping Center & MD 201

6/11/2008



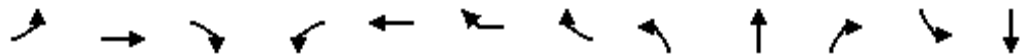
Movement	SBR	SER
<b>Line Configurations</b>		
Ideal Flow (vphpl)	1900	1900
Total Lost time (s)		3.0
Lane Util. Factor		1.00
Frt		0.86
Flt Protected		1.00
Satd. Flow (prot)		822
Flt Permitted		1.00
Satd. Flow (perm)		822
Volume (vph)	5	10
Peak-hour factor, PHF	0.95	0.95
Growth Factor (vph)	100%	100%
Adj. Flow (vph)	5	11
RTOR Reduction (vph)	0	0
Lane Group Flow (vph)	0	11
Heavy Vehicles (%)	3%	100%
Turn Type	custom	
Protected Phases	6!	
Permitted Phases		
Actuated Green, G (s)	136.7	
Effective Green, g (s)	140.2	
Actuated g/C Ratio	0.78	
Clearance Time (s)	6.5	
Vehicle Extension (s)	3.0	
Lane Grp Cap (vph)	640	
v/s Ratio Prot	0.01	
v/s Ratio Perm		
v/c Ratio	0.02	
Uniform Delay, d1	4.5	
Progression Factor	1.00	
Incremental Delay, d2	0.0	
Delay (s)	4.5	
Level of Service	A	
Approach Delay (s)		
Approach LOS		
<b>Intersection Summary</b>		



# HCM Signalized Intersection Capacity Analysis

5: MD 410 & MD 201

6/11/2008



Movement	EBL	EBT	EBR	WBL	WBT	WBR	WBR2	NBL2	NBT	NBR	SBL	SBT
Lane Configurations	↖↗	↕	↖	↖	↕	↖	↖	↖↗	↕	↖	↖	↕
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	11	11	11	11	11	12	11	11	11	11	11	11
Total Lost time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Util. Factor	0.97	0.95	1.00	1.00	0.95	1.00	1.00	0.97	0.95	1.00	1.00	0.95
Fr <sub>t</sub>	1.00	1.00	0.85	1.00	1.00	0.85	0.85	1.00	1.00	0.85	1.00	1.00
Fl <sub>t</sub> Protected	0.95	1.00	1.00	0.95	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Satd. Flow (prot)	3286	3388	1516	1694	3388	808	1516	3286	3388	1516	1694	3388
Fl <sub>t</sub> Permitted	0.95	1.00	1.00	0.95	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Satd. Flow (perm)	3286	3388	1516	1694	3388	808	1516	3286	3388	1516	1694	3388
Volume (vph)	665	1595	495	155	1630	10	300	455	1305	55	415	1430
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Growth Factor (vph)	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Adj. Flow (vph)	700	1679	521	163	1716	11	316	479	1374	58	437	1505
RTOR Reduction (vph)	0	0	214	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	700	1679	307	163	1716	11	316	479	1374	58	437	1505
Heavy Vehicles (%)	3%	3%	3%	3%	3%	100%	3%	3%	3%	3%	3%	3%
Turn Type	Prot		Perm	Prot		custom	Free	Prot		Free	Prot	
Protected Phases	3	8		7	4			5	2		1	6
Permitted Phases			8			9	Free			Free		
Actuated Green, G (s)	21.0	53.6	53.6	18.4	51.0	6.0	180.0	20.0	44.0	180.0	31.0	55.0
Effective Green, g (s)	23.0	56.6	56.6	20.4	54.0	8.0	180.0	22.0	47.0	180.0	33.0	58.0
Actuated g/C Ratio	0.13	0.31	0.31	0.11	0.30	0.04	1.00	0.12	0.26	1.00	0.18	0.32
Clearance Time (s)	5.0	6.0	6.0	5.0	6.0	5.0		5.0	6.0		5.0	6.0
Vehicle Extension (s)	3.0	3.5	3.5	3.0	3.5	3.5		3.0	5.0		3.0	5.0
Lane Grp Cap (vph)	420	1065	477	192	1016	36	1516	402	885	1516	311	1092
v/s Ratio Prot	c0.21	0.50		0.10	c0.51			0.15	c0.41		c0.26	0.44
v/s Ratio Perm			0.20			c0.01	c0.21			0.04		
v/c Ratio	1.67	1.58	0.64	0.85	1.69	0.31	0.21	1.19	1.55	0.04	1.41	1.38
Uniform Delay, d <sub>1</sub>	78.5	61.7	53.0	78.3	63.0	83.3	0.0	79.0	66.5	0.0	73.5	61.0
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.39	0.80	1.00	1.15	1.04
Incremental Delay, d <sub>2</sub>	310.4	264.0	3.1	27.8	314.3	5.6	0.3	101.8	252.4	0.0	198.3	175.2
Delay (s)	388.9	325.7	56.1	106.1	377.3	88.9	0.3	211.7	305.5	0.0	282.9	238.8
Level of Service	F	F	E	F	F	F	A	F	F	A	F	F
Approach Delay (s)		292.5			301.8				272.7			225.6
Approach LOS		F			F				F			F

## Intersection Summary

HCM Average Control Delay	274.8	HCM Level of Service	F
HCM Volume to Capacity ratio	1.51		
Actuated Cycle Length (s)	180.0	Sum of lost time (s)	15.0
Intersection Capacity Utilization	148.1%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group



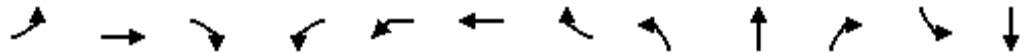
Movement	SBR	SEL
Lane Configurations	↖ ↗	↖ ↗
Ideal Flow (vphpl)	1900	1900
Lane Width	11	12
Total Lost time (s)	3.0	3.0
Lane Util. Factor	1.00	1.00
Flt	0.85	1.00
Flt Protected	1.00	0.95
Satd. Flow (prot)	1516	902
Flt Permitted	1.00	0.95
Satd. Flow (perm)	1516	902
Volume (vph)	190	10
Peak-hour factor, PHF	0.95	0.95
Growth Factor (vph)	100%	100%
Adj. Flow (vph)	200	11
RTOR Reduction (vph)	0	0
Lane Group Flow (vph)	200	11
Heavy Vehicles (%)	3%	100%
Turn Type	custom	
Protected Phases		9
Permitted Phases	1 2 3 4	
Actuated Green, G (s)	163.0	6.0
Effective Green, g (s)	166.0	8.0
Actuated g/C Ratio	0.92	0.04
Clearance Time (s)		5.0
Vehicle Extension (s)		3.5
Lane Grp Cap (vph)	1398	40
v/s Ratio Prot		0.01
v/s Ratio Perm	0.13	
v/c Ratio	0.14	0.28
Uniform Delay, d1	0.6	83.2
Progression Factor	1.08	1.00
Incremental Delay, d2	0.0	4.4
Delay (s)	0.7	87.6
Level of Service	A	F
Approach Delay (s)		87.6
Approach LOS		F

Intersection Summary

# HCM Signalized Intersection Capacity Analysis

1601: MD 410 & 62nd Pl.

6/10/2008



Movement	EBL	EBT	EBR	WBL2	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations	↖	↗		↖	↖	↗			↕			↖
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0	4.0			4.0			4.0
Lane Util. Factor	1.00	0.95		1.00	1.00	0.95			1.00			1.00
Frt	1.00	1.00		1.00	1.00	1.00			0.94			0.97
Flt Protected	0.95	1.00		0.95	0.95	1.00			0.97			0.96
Satd. Flow (prot)	1703	3404		1703	902	3399			1726			1757
Flt Permitted	0.95	1.00		0.95	0.95	1.00			0.97			0.96
Satd. Flow (perm)	1703	3404		1703	902	3399			1726			1757
Volume (vph)	30	1375	5	5	10	2210	30	65	0	45	55	0
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	32	1447	5	5	11	2326	32	68	0	47	58	0
RTOR Reduction (vph)	0	0	0	0	0	1	0	0	22	0	0	9
Lane Group Flow (vph)	32	1452	0	5	11	2357	0	0	93	0	0	65
Heavy Vehicles (%)	6%	6%	6%	6%	100%	6%	6%	1%	1%	1%	1%	1%
Turn Type	Prot			Prot	Split			Split			Split	
Protected Phases	1	2!		1	2!	2		3	3		4	4
Permitted Phases												
Actuated Green, G (s)	3.0	73.8		3.0	73.8	73.8			7.5			4.7
Effective Green, g (s)	4.0	75.8		4.0	75.8	75.8			8.5			5.7
Actuated g/C Ratio	0.04	0.69		0.04	0.69	0.69			0.08			0.05
Clearance Time (s)	5.0	6.0		5.0	6.0	6.0			5.0			5.0
Vehicle Extension (s)	3.0	6.0		3.0	6.0	6.0			3.0			3.0
Lane Grp Cap (vph)	62	2346		62	622	2342			133			91
v/s Ratio Prot	c0.02	0.43		0.00	0.01	c0.69			c0.05			c0.04
v/s Ratio Perm												
v/c Ratio	0.52	0.62		0.08	0.02	1.01			0.70			0.71
Uniform Delay, d1	52.0	9.3		51.2	5.4	17.1			49.5			51.3
Progression Factor	1.00	1.00		0.76	0.59	0.37			1.00			1.00
Incremental Delay, d2	7.1	1.2		0.3	0.0	14.3			14.8			22.2
Delay (s)	59.1	10.5		39.3	3.2	20.7			64.3			73.6
Level of Service	E	B		D	A	C			E			E
Approach Delay (s)		11.6				20.7			64.3			73.6
Approach LOS		B				C			E			E
<b>Intersection Summary</b>												
HCM Average Control Delay			19.5				HCM Level of Service		B			
HCM Volume to Capacity ratio			0.94									
Actuated Cycle Length (s)			110.0				Sum of lost time (s)		16.0			
Intersection Capacity Utilization			83.0%				ICU Level of Service		E			
Analysis Period (min)			15									
! Phase conflict between lane groups.												
c Critical Lane Group												



Movement	SBR2	NER
Lane Configurations		
Ideal Flow (vphpl)	1900	1900
Total Lost time (s)		4.0
Lane Util. Factor		1.00
Frt		0.86
Flt Protected		1.00
Satd. Flow (prot)		822
Flt Permitted		1.00
Satd. Flow (perm)		822
Volume (vph)	15	10
Peak-hour factor, PHF	0.95	0.95
Adj. Flow (vph)	16	11
RTOR Reduction (vph)	0	0
Lane Group Flow (vph)	0	11
Heavy Vehicles (%)	1%	100%
Turn Type		Over
Protected Phases		2!
Permitted Phases		
Actuated Green, G (s)		73.8
Effective Green, g (s)		75.8
Actuated g/C Ratio		0.69
Clearance Time (s)		6.0
Vehicle Extension (s)		6.0
Lane Grp Cap (vph)		566
v/s Ratio Prot		0.01
v/s Ratio Perm		
v/c Ratio		0.02
Uniform Delay, d1		5.4
Progression Factor		1.00
Incremental Delay, d2		0.1
Delay (s)		5.5
Level of Service		A
Approach Delay (s)		
Approach LOS		
Intersection Summary		

# HCM Signalized Intersection Capacity Analysis

1602: MD 410 & 64th Ave.

6/10/2008



Movement	EBL	EBT	EBR	WBL	WBT	WBR	SBL	SBR	SBR2	NEL	NER
Lane Configurations											
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0		4.0		4.0
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00		1.00		1.00
Frt	1.00	1.00		1.00	0.99		1.00		0.85		0.86
Flt Protected	0.95	1.00		0.95	1.00		0.95		1.00		1.00
Satd. Flow (prot)	1703	3406		902	3384		1787		1599		822
Flt Permitted	0.95	1.00		0.95	1.00		0.95		1.00		1.00
Satd. Flow (perm)	1703	3406		902	3384		1787		1599		822
Volume (vph)	30	1445	0	10	2150	95	100	0	95	0	10
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	32	1521	0	11	2263	100	105	0	100	0	11
RTOR Reduction (vph)	0	0	0	0	3	0	0	0	73	0	0
Lane Group Flow (vph)	32	1521	0	11	2360	0	105	0	27	0	11
Heavy Vehicles (%)	6%	6%	6%	100%	6%	6%	1%	1%	1%	1%	100%
Turn Type	Prot		Split			Prot		custom		custom	
Protected Phases	1	6!		2!	2		4				6!
Permitted Phases									4		
Actuated Green, G (s)	3.0	91.3		83.3	83.3		8.7		8.7		91.3
Effective Green, g (s)	4.0	92.3		84.3	84.3		9.7		9.7		92.3
Actuated g/C Ratio	0.04	0.84		0.77	0.77		0.09		0.09		0.84
Clearance Time (s)	5.0	5.0		5.0	5.0		5.0		5.0		5.0
Vehicle Extension (s)	3.0	6.0		6.0	6.0		3.0		3.0		6.0
Lane Grp Cap (vph)	62	2858		691	2593		158		141		690
v/s Ratio Prot	0.02	c0.45		0.01	c0.70		c0.06				0.01
v/s Ratio Perm									0.02		
v/c Ratio	0.52	0.53		0.02	0.91		0.66		0.19		0.02
Uniform Delay, d1	52.0	2.6		3.0	9.9		48.6		46.5		1.4
Progression Factor	0.83	0.45		0.47	0.32		1.00		1.00		1.00
Incremental Delay, d2	5.7	0.6		0.0	2.8		10.1		0.7		0.0
Delay (s)	48.9	1.7		1.4	6.0		58.6		47.2		1.5
Level of Service	D	A		A	A		E		D		A
Approach Delay (s)		2.7			6.0		53.1			1.5	
Approach LOS		A			A		D			A	

## Intersection Summary













HCM Average Control Delay	7.1	HCM Level of Service	A
HCM Volume to Capacity ratio	0.85		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	75.0%	ICU Level of Service	D
Analysis Period (min)	15		

! Phase conflict between lane groups.

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis  
 1603: MD 410 & BW Parkway S/B Ramps

6/10/2008

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑↑	↑	↑	↑↑			↑		↑↑		↑
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0	4.0	4.0			4.0		4.0		4.0
Lane Util. Factor		0.91	1.00	1.00	0.95			1.00		0.97		1.00
Frt		1.00	0.85	1.00	1.00			1.00		1.00		0.85
Flt Protected		1.00	1.00	0.95	1.00			1.00		0.95		1.00
Satd. Flow (prot)		4893	1524	1703	3406			950		3303		1524
Flt Permitted		1.00	1.00	0.95	1.00			1.00		0.95		1.00
Satd. Flow (perm)		4893	1524	1703	3406			950		3303		1524
Volume (vph)	0	1350	195	320	2010	0	0	10	0	105	0	320
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	1421	205	337	2116	0	0	11	0	111	0	337
RTOR Reduction (vph)	0	0	140	0	0	0	0	0	0	0	0	14
Lane Group Flow (vph)	0	1421	65	337	2116	0	0	11	0	111	0	323
Heavy Vehicles (%)	6%	6%	6%	6%	6%	6%	6%	100%	6%	6%	6%	6%
Turn Type			Perm	Prot						Prot		custom
Protected Phases		6		5	2 3!			3!		4		
Permitted Phases			6									4
Actuated Green, G (s)		33.7	33.7	22.5	76.2			10.0		23.8		23.8
Effective Green, g (s)		34.7	34.7	23.5	77.2			11.0		24.8		24.8
Actuated g/C Ratio		0.32	0.32	0.21	0.70			0.10		0.23		0.23
Clearance Time (s)		5.0	5.0	5.0				5.0		5.0		5.0
Vehicle Extension (s)		6.0	6.0	3.0				6.0		3.0		3.0
Lane Grp Cap (vph)		1544	481	364	2390			95		745		344
v/s Ratio Prot		0.29		0.20	c0.62			0.01		0.03		
v/s Ratio Perm			0.04									c0.21
v/c Ratio		0.92	0.13	0.93	0.89			0.12		0.15		0.94
Uniform Delay, d1		36.3	26.9	42.4	12.9			45.1		34.1		41.9
Progression Factor		0.83	0.84	1.68	0.68			1.00		1.00		1.00
Incremental Delay, d2		9.2	0.5	16.1	2.4			2.5		0.1		32.7
Delay (s)		39.2	23.1	87.5	11.3			47.5		34.2		74.5
Level of Service		D	C	F	B			D		C		E
Approach Delay (s)		37.2			21.7			47.5			64.6	
Approach LOS		D			C			D			E	
<b>Intersection Summary</b>												
HCM Average Control Delay			31.6			HCM Level of Service				C		
HCM Volume to Capacity ratio			0.90									
Actuated Cycle Length (s)			110.0			Sum of lost time (s)				8.0		
Intersection Capacity Utilization			82.0%			ICU Level of Service				E		
Analysis Period (min)			15									
! Phase conflict between lane groups.												
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis  
 1604: MD 410 & BW Parkway N/B Ramps

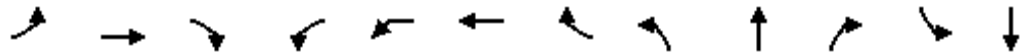
6/10/2008

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0			4.0	4.0	4.0		4.0		4.0	
Lane Util. Factor	1.00	0.95			0.91	1.00	0.97		1.00		1.00	
Frt	1.00	1.00			1.00	0.85	1.00		0.85		1.00	
Flt Protected	0.95	1.00			1.00	1.00	0.95		1.00		1.00	
Satd. Flow (prot)	1703	3406			4893	1524	3303		1524		950	
Flt Permitted	0.95	1.00			1.00	1.00	0.95		1.00		1.00	
Satd. Flow (perm)	1703	3406			4893	1524	3303		1524		950	
Volume (vph)	315	1225	0	0	1875	315	370	0	70	0	10	0
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	332	1289	0	0	1974	332	389	0	74	0	11	0
RTOR Reduction (vph)	0	0	0	0	0	165	0	0	65	0	0	0
Lane Group Flow (vph)	332	1289	0	0	1974	167	389	0	9	0	11	0
Heavy Vehicles (%)	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%	100%	6%
Turn Type	Prot				Perm		Prot	custom				
Protected Phases	1	6 3!			2		4				3!	
Permitted Phases						2			4			
Actuated Green, G (s)	21.9	87.0			45.1	45.1	13.0		13.0		10.0	
Effective Green, g (s)	22.9	88.0			46.1	46.1	14.0		14.0		11.0	
Actuated g/C Ratio	0.21	0.80			0.42	0.42	0.13		0.13		0.10	
Clearance Time (s)	5.0				5.0	5.0	5.0		5.0		5.0	
Vehicle Extension (s)	3.0				6.0	6.0	3.0		3.0		6.0	
Lane Grp Cap (vph)	355	2725			2051	639	420		194		95	
v/s Ratio Prot	c0.19	c0.38			c0.40		c0.12				0.01	
v/s Ratio Perm						0.11			0.01			
v/c Ratio	0.94	0.47			0.96	0.26	0.93		0.05		0.12	
Uniform Delay, d1	42.8	3.5			31.1	20.8	47.5		42.2		45.1	
Progression Factor	1.29	0.74			0.97	1.60	1.00		1.00		1.00	
Incremental Delay, d2	20.7	0.2			8.1	0.5	26.2		0.1		1.5	
Delay (s)	76.0	2.8			38.4	33.8	73.7		42.3		46.6	
Level of Service	E	A			D	C	E		D		D	
Approach Delay (s)		17.8			37.7			68.7			46.6	
Approach LOS		B			D			E			D	
<b>Intersection Summary</b>												
HCM Average Control Delay			33.7				HCM Level of Service				C	
HCM Volume to Capacity ratio			0.87									
Actuated Cycle Length (s)			110.0				Sum of lost time (s)			12.0		
Intersection Capacity Utilization			80.9%				ICU Level of Service				D	
Analysis Period (min)			15									
! Phase conflict between lane groups.												
c Critical Lane Group												

# HCM Signalized Intersection Capacity Analysis

1605: MD 410 & 67th. Ave.

6/10/2008



Movement	EBL	EBT	EBR	WBL2	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations	↗	↕		↖	↖	↕		↗	↕		↖	↖
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0	4.0		4.0	4.0			4.0
Lane Util. Factor	1.00	0.95		1.00	1.00	0.95		1.00	1.00			1.00
Frt	1.00	1.00		1.00	1.00	1.00		1.00	0.86			0.94
Flt Protected	0.95	1.00		0.95	0.95	1.00		0.95	1.00			0.98
Satd. Flow (prot)	1703	3399		1703	902	3404		1787	1618			1734
Flt Permitted	0.95	1.00		0.95	0.95	1.00		0.81	1.00			0.88
Satd. Flow (perm)	1703	3399		1703	902	3404		1515	1618			1561
Volume (vph)	5	1190	15	15	10	2000	5	175	5	65	15	5
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	5	1253	16	16	11	2105	5	184	5	68	16	5
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	57	0	0	13
Lane Group Flow (vph)	5	1269	0	16	11	2110	0	184	16	0	0	24
Heavy Vehicles (%)	6%	6%	6%	6%	100%	6%	6%	1%	1%	1%	1%	1%
Turn Type	Prot		Prot		Split		Perm			Perm		
Protected Phases	1	2!		1	2!	2			8			4
Permitted Phases								8				4
Actuated Green, G (s)	2.0	76.5		2.0	76.5	76.5		16.5	16.5			16.5
Effective Green, g (s)	3.0	77.5		3.0	77.5	77.5		17.5	17.5			17.5
Actuated g/C Ratio	0.03	0.70		0.03	0.70	0.70		0.16	0.16			0.16
Clearance Time (s)	5.0	5.0		5.0	5.0	5.0		5.0	5.0			5.0
Vehicle Extension (s)	3.0	6.0		3.0	6.0	6.0		3.0	3.0			3.0
Lane Grp Cap (vph)	46	2395		46	636	2398		241	257			248
v/s Ratio Prot	0.00	0.37		c0.01	0.01	c0.62			0.01			
v/s Ratio Perm								c0.12				0.02
v/c Ratio	0.11	0.53		0.35	0.02	0.88		0.76	0.06			0.09
Uniform Delay, d1	52.2	7.7		52.5	4.9	12.6		44.3	39.3			39.5
Progression Factor	0.87	0.32		0.90	0.46	0.38		1.00	1.00			1.00
Incremental Delay, d2	0.9	0.8		2.6	0.0	3.0		13.4	0.1			0.2
Delay (s)	46.2	3.2		50.0	2.3	7.9		57.6	39.4			39.7
Level of Service	D	A		D	A	A		E	D			D
Approach Delay (s)		3.4				8.1			52.4			39.7
Approach LOS		A				A			D			D

## Intersection Summary

HCM Average Control Delay	9.9	HCM Level of Service	A
HCM Volume to Capacity ratio	0.84		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	79.7%	ICU Level of Service	D
Analysis Period (min)	15		

! Phase conflict between lane groups.

c Critical Lane Group

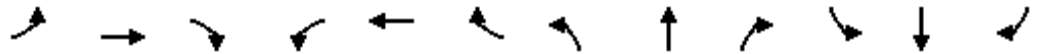




Movement	SBR2	NER
Lane Configurations		
Ideal Flow (vphpl)	1900	1900
Total Lost time (s)		4.0
Lane Util. Factor		1.00
Frt		0.86
Flt Protected		1.00
Satd. Flow (prot)		822
Flt Permitted		1.00
Satd. Flow (perm)		822
Volume (vph)	15	10
Peak-hour factor, PHF	0.95	0.95
Adj. Flow (vph)	16	11
RTOR Reduction (vph)	0	0
Lane Group Flow (vph)	0	11
Heavy Vehicles (%)	1%	100%
Turn Type		Over
Protected Phases		2!
Permitted Phases		
Actuated Green, G (s)		76.5
Effective Green, g (s)		77.5
Actuated g/C Ratio		0.70
Clearance Time (s)		5.0
Vehicle Extension (s)		6.0
Lane Grp Cap (vph)		579
v/s Ratio Prot		0.01
v/s Ratio Perm		
v/c Ratio		0.02
Uniform Delay, d1		4.9
Progression Factor		1.00
Incremental Delay, d2		0.1
Delay (s)		4.9
Level of Service		A
Approach Delay (s)		
Approach LOS		
Intersection Summary		

HCM Signalized Intersection Capacity Analysis  
 1606: MD 410 & Veterans Pkwy

6/10/2008



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑		↖	↑↑		↖↖	↑	↖		↑	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0		4.0	4.0		4.0	4.0	4.0		4.0	
Lane Util. Factor		0.95		1.00	0.95		0.97	1.00	1.00		1.00	
Frt		0.91		1.00	1.00		1.00	1.00	0.85		1.00	
Flt Protected		1.00		0.95	1.00		0.95	1.00	1.00		1.00	
Satd. Flow (prot)		3113		1703	3406		3303	950	1524		950	
Flt Permitted		1.00		0.08	1.00		0.95	1.00	1.00		1.00	
Satd. Flow (perm)		3113		149	3406		3303	950	1524		950	
Volume (vph)	0	620	830	345	950	0	1115	10	315	0	10	0
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	653	874	363	1000	0	1174	11	332	0	11	0
RTOR Reduction (vph)	0	220	0	0	0	0	0	0	220	0	0	0
Lane Group Flow (vph)	0	1307	0	363	1000	0	1174	11	112	0	11	0
Heavy Vehicles (%)	6%	6%	6%	6%	6%	6%	6%	100%	6%	6%	100%	6%
Turn Type				pm+pt			Split		Perm			
Protected Phases		6		5	2		4!	4			4!	
Permitted Phases				2					4			
Actuated Green, G (s)		43.0		64.0	64.0		36.0	36.0	36.0		36.0	
Effective Green, g (s)		44.0		65.0	65.0		37.0	37.0	37.0		37.0	
Actuated g/C Ratio		0.40		0.59	0.59		0.34	0.34	0.34		0.34	
Clearance Time (s)		5.0		5.0	5.0		5.0	5.0	5.0		5.0	
Vehicle Extension (s)		6.0		3.0	6.0		3.0	3.0	3.0		3.0	
Lane Grp Cap (vph)		1245		328	2013		1111	320	513		320	
v/s Ratio Prot		0.42		c0.17	0.29		c0.36	0.01			0.01	
v/s Ratio Perm				c0.48					0.07			
v/c Ratio		1.05		1.11	0.50		1.06	0.03	0.22		0.03	
Uniform Delay, d1		33.0		43.1	13.0		36.5	24.5	26.1		24.5	
Progression Factor		0.35		1.00	1.00		1.00	1.00	1.00		1.00	
Incremental Delay, d2		38.6		81.5	0.9		43.3	0.0	0.2		0.0	
Delay (s)		50.2		124.7	13.9		79.8	24.6	26.4		24.6	
Level of Service		D		F	B		E	C	C		C	
Approach Delay (s)		50.2			43.4			67.7			24.6	
Approach LOS		D			D			E			C	

Intersection Summary

HCM Average Control Delay	54.1	HCM Level of Service	D
HCM Volume to Capacity ratio	1.06		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	111.4%	ICU Level of Service	H
Analysis Period (min)	15		

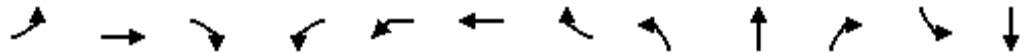
! Phase conflict between lane groups.

c Critical Lane Group

# HCM Signalized Intersection Capacity Analysis

1601: MD 410 & 62nd Pl.

6/10/2008



Movement	EBL	EBT	EBR	WBL2	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations	↖	↗		↖	↖	↗			↕			↖
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0	4.0			4.0			4.0
Lane Util. Factor	1.00	0.95		1.00	1.00	0.95			1.00			1.00
Frt	1.00	0.99		1.00	1.00	1.00			0.97			0.96
Flt Protected	0.95	1.00		0.95	0.95	1.00			0.96			0.97
Satd. Flow (prot)	1752	3484		1752	902	3495			1760			1742
Flt Permitted	0.95	1.00		0.95	0.95	1.00			0.96			0.97
Satd. Flow (perm)	1752	3484		1752	902	3495			1760			1742
Volume (vph)	30	2280	95	25	10	2185	40	80	0	20	120	0
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	32	2400	100	26	11	2300	42	84	0	21	126	0
RTOR Reduction (vph)	0	0	0	0	0	1	0	0	9	0	0	15
Lane Group Flow (vph)	32	2500	0	26	11	2341	0	0	96	0	0	169
Heavy Vehicles (%)	3%	3%	3%	3%	100%	3%	3%	1%	1%	1%	1%	1%
Turn Type	Prot			Prot	Split			Split			Split	
Protected Phases	1	2!		1	2!	2		3	3		4	4
Permitted Phases												
Actuated Green, G (s)	4.0	71.0		4.0	71.0	71.0			5.0			9.0
Effective Green, g (s)	5.0	73.0		5.0	73.0	73.0			6.0			10.0
Actuated g/C Ratio	0.05	0.66		0.05	0.66	0.66			0.05			0.09
Clearance Time (s)	5.0	6.0		5.0	6.0	6.0			5.0			5.0
Vehicle Extension (s)	3.0	6.0		3.0	6.0	6.0			3.0			3.0
Lane Grp Cap (vph)	80	2312		80	599	2319			96			158
v/s Ratio Prot	c0.02	c0.72		0.01	0.01	0.67			c0.05			c0.10
v/s Ratio Perm												
v/c Ratio	0.40	1.08		0.33	0.02	1.01			1.01			1.07
Uniform Delay, d1	51.0	18.5		50.9	6.3	18.5			52.0			50.0
Progression Factor	1.00	1.00		1.11	0.81	0.43			1.00			1.00
Incremental Delay, d2	3.3	45.0		0.9	0.0	14.0			93.2			90.5
Delay (s)	54.3	63.5		57.1	5.1	22.0			145.2			140.5
Level of Service	D	E		E	A	C			F			F
Approach Delay (s)		63.4				22.3			145.2			140.5
Approach LOS		E				C			F			F

## Intersection Summary

HCM Average Control Delay	48.9	HCM Level of Service	D
HCM Volume to Capacity ratio	1.04		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	107.3%	ICU Level of Service	G
Analysis Period (min)	15		

! Phase conflict between lane groups.

c Critical Lane Group



Movement	SBR2	NER
Lane Configurations		
Ideal Flow (vphpl)	1900	1900
Total Lost time (s)		4.0
Lane Util. Factor		1.00
Frt		0.86
Flt Protected		1.00
Satd. Flow (prot)		822
Flt Permitted		1.00
Satd. Flow (perm)		822
Volume (vph)	55	10
Peak-hour factor, PHF	0.95	0.95
Adj. Flow (vph)	58	11
RTOR Reduction (vph)	0	0
Lane Group Flow (vph)	0	11
Heavy Vehicles (%)	1%	100%
Turn Type		Over
Protected Phases		2!
Permitted Phases		
Actuated Green, G (s)		71.0
Effective Green, g (s)		73.0
Actuated g/C Ratio		0.66
Clearance Time (s)		6.0
Vehicle Extension (s)		6.0
Lane Grp Cap (vph)		546
v/s Ratio Prot		0.01
v/s Ratio Perm		
v/c Ratio		0.02
Uniform Delay, d1		6.3
Progression Factor		1.00
Incremental Delay, d2		0.1
Delay (s)		6.4
Level of Service		A
Approach Delay (s)		
Approach LOS		
Intersection Summary		

# HCM Signalized Intersection Capacity Analysis

1602: MD 410 & 64th Ave.

6/10/2008



Movement	EBL	EBT	EBR	WBL	WBT	WBR	SBL	SBR	SBR2	NEL	NER
Lane Configurations	↖	↑↑		↖	↑↑		↖		↖		↖
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0		4.0		4.0
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00		1.00		1.00
Frt	1.00	1.00		1.00	0.99		1.00		0.85		0.86
Flt Protected	0.95	1.00		0.95	1.00		0.95		1.00		1.00
Satd. Flow (prot)	1752	3505		902	3478		1787		1599		822
Flt Permitted	0.95	1.00		0.95	1.00		0.95		1.00		1.00
Satd. Flow (perm)	1752	3505		902	3478		1787		1599		822
Volume (vph)	100	2320	0	10	2170	115	80	0	80	0	10
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	105	2442	0	11	2284	121	84	0	84	0	11
RTOR Reduction (vph)	0	0	0	0	3	0	0	0	78	0	0
Lane Group Flow (vph)	105	2442	0	11	2402	0	84	0	6	0	11
Heavy Vehicles (%)	3%	3%	3%	100%	3%	3%	1%	1%	1%	1%	100%
Turn Type	Prot			Split			Prot		custom		custom
Protected Phases	1	6!		2!	2		4				6!
Permitted Phases									4		
Actuated Green, G (s)	8.0	93.0		80.0	80.0		7.0		7.0		93.0
Effective Green, g (s)	9.0	94.0		81.0	81.0		8.0		8.0		94.0
Actuated g/C Ratio	0.08	0.85		0.74	0.74		0.07		0.07		0.85
Clearance Time (s)	5.0	5.0		5.0	5.0		5.0		5.0		5.0
Vehicle Extension (s)	3.0	6.0		6.0	6.0		3.0		3.0		6.0
Lane Grp Cap (vph)	143	2995		664	2561		130		116		702
v/s Ratio Prot	0.06	c0.70		0.01	c0.69		c0.05				0.01
v/s Ratio Perm									0.00		
v/c Ratio	0.73	0.82		0.02	0.94		0.65		0.05		0.02
Uniform Delay, d1	49.3	3.8		3.9	12.4		49.6		47.5		1.2
Progression Factor	0.70	0.66		0.60	0.46		1.00		1.00		1.00
Incremental Delay, d2	1.8	0.2		0.0	4.0		10.5		0.2		0.0
Delay (s)	36.4	2.8		2.3	9.7		60.2		47.7		1.2
Level of Service	D	A		A	A		E		D		A
Approach Delay (s)		4.2			9.7		53.9			1.2	
Approach LOS		A			A		D			A	

## Intersection Summary

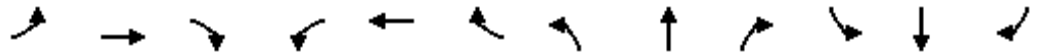
HCM Average Control Delay	8.4	HCM Level of Service	A
HCM Volume to Capacity ratio	0.89		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	94.2%	ICU Level of Service	F
Analysis Period (min)	15		

! Phase conflict between lane groups.

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis  
 1603: MD 410 & BW Parkway S/B Ramps

6/10/2008



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑↑	↑	↑	↑↑			↑		↑↑		↑
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0	4.0	4.0			4.0		4.0		4.0
Lane Util. Factor		0.91	1.00	1.00	0.95			1.00		0.97		1.00
Frt		1.00	0.85	1.00	1.00			1.00		1.00		0.85
Flt Protected		1.00	1.00	0.95	1.00			1.00		0.95		1.00
Satd. Flow (prot)		5036	1568	1752	3505			950		3400		1568
Flt Permitted		1.00	1.00	0.95	1.00			1.00		0.95		1.00
Satd. Flow (perm)		5036	1568	1752	3505			950		3400		1568
Volume (vph)	0	2010	390	345	1970	0	0	10	0	225	0	395
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	2116	411	363	2074	0	0	11	0	237	0	416
RTOR Reduction (vph)	0	0	191	0	0	0	0	0	0	0	0	19
Lane Group Flow (vph)	0	2116	220	363	2074	0	0	11	0	237	0	397
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%	3%	100%	3%	3%	3%	3%
Turn Type			Perm	Prot						Prot		custom
Protected Phases		6		5	2 3!			3!		4		
Permitted Phases			6									4
Actuated Green, G (s)		41.0	41.0	19.0	80.0			10.0		20.0		20.0
Effective Green, g (s)		42.0	42.0	20.0	81.0			11.0		21.0		21.0
Actuated g/C Ratio		0.38	0.38	0.18	0.74			0.10		0.19		0.19
Clearance Time (s)		5.0	5.0	5.0				5.0		5.0		5.0
Vehicle Extension (s)		6.0	6.0	3.0				6.0		3.0		3.0
Lane Grp Cap (vph)		1923	599	319	2581			95		649		299
v/s Ratio Prot		c0.42		c0.21	c0.59			0.01		0.07		
v/s Ratio Perm			0.14									c0.25
v/c Ratio		1.10	0.37	1.14	0.80			0.12		0.37		1.33
Uniform Delay, d1		34.0	24.4	45.0	9.4			45.1		38.7		44.5
Progression Factor		1.02	1.48	1.61	0.65			1.00		1.00		1.00
Incremental Delay, d2		50.4	1.0	75.9	1.2			2.5		0.4		168.2
Delay (s)		85.2	37.2	148.4	7.3			47.5		39.1		212.7
Level of Service		F	D	F	A			D		D		F
Approach Delay (s)		77.4			28.3			47.5			149.7	
Approach LOS		E			C			D			F	

Intersection Summary

HCM Average Control Delay	64.5	HCM Level of Service	E
HCM Volume to Capacity ratio	1.10		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	85.6%	ICU Level of Service	E
Analysis Period (min)	15		

! Phase conflict between lane groups.

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis  
 1604: MD 410 & BW Parkway N/B Ramps

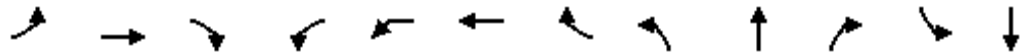
6/10/2008

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0			4.0	4.0	4.0		4.0		4.0	
Lane Util. Factor	1.00	0.95			0.91	1.00	0.97		1.00		1.00	
Frt	1.00	1.00			1.00	0.85	1.00		0.85		1.00	
Flt Protected	0.95	1.00			1.00	1.00	0.95		1.00		1.00	
Satd. Flow (prot)	1752	3505			5036	1568	3400		1568		950	
Flt Permitted	0.95	1.00			1.00	1.00	0.95		1.00		1.00	
Satd. Flow (perm)	1752	3505			5036	1568	3400		1568		950	
Volume (vph)	200	2120	0	0	1850	170	380	0	275	0	10	0
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	211	2232	0	0	1947	179	400	0	289	0	11	0
RTOR Reduction (vph)	0	0	0	0	0	90	0	0	18	0	0	0
Lane Group Flow (vph)	211	2232	0	0	1947	89	400	0	271	0	11	0
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	100%	3%
Turn Type	Prot				Perm		Prot	custom				
Protected Phases	1	3 6!			2		4				3!	
Permitted Phases						2			4			
Actuated Green, G (s)	12.0	84.0			41.0	41.0	16.0		16.0		21.0	
Effective Green, g (s)	13.0	85.0			42.0	42.0	17.0		17.0		22.0	
Actuated g/C Ratio	0.12	0.77			0.38	0.38	0.15		0.15		0.20	
Clearance Time (s)	5.0				5.0	5.0	5.0		5.0		5.0	
Vehicle Extension (s)	3.0				6.0	6.0	3.0		3.0		6.0	
Lane Grp Cap (vph)	207	2708			1923	599	525		242		190	
v/s Ratio Prot	c0.12	c0.64			c0.39		0.12				0.01	
v/s Ratio Perm						0.06			c0.17			
v/c Ratio	1.02	0.82			1.01	0.15	0.76		1.12		0.06	
Uniform Delay, d1	48.5	7.8			34.0	22.3	44.6		46.5		35.6	
Progression Factor	1.32	1.55			1.01	1.38	1.00		1.00		1.00	
Incremental Delay, d2	34.7	0.9			19.0	0.3	6.5		94.2		0.4	
Delay (s)	98.9	13.0			53.3	31.0	51.0		140.7		36.0	
Level of Service	F	B			D	C	D		F		D	
Approach Delay (s)		20.4			51.4			88.6			36.0	
Approach LOS		C			D			F			D	
<b>Intersection Summary</b>												
HCM Average Control Delay			41.9				HCM Level of Service				D	
HCM Volume to Capacity ratio			0.97									
Actuated Cycle Length (s)			110.0				Sum of lost time (s)			12.0		
Intersection Capacity Utilization			82.8%				ICU Level of Service				E	
Analysis Period (min)			15									
! Phase conflict between lane groups.												
c Critical Lane Group												

# HCM Signalized Intersection Capacity Analysis

1605: MD 410 & 67th. Ave.

6/10/2008



Movement	EBL	EBT	EBR	WBL2	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations	↖	↗		↖	↖	↗		↖	↗			↖
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0	4.0		4.0	4.0			4.0
Lane Util. Factor	1.00	0.95		1.00	1.00	0.95		1.00	1.00			1.00
Frt	1.00	1.00		1.00	1.00	1.00		1.00	0.86			0.95
Flt Protected	0.95	1.00		0.95	0.95	1.00		0.95	1.00			0.98
Satd. Flow (prot)	1752	3499		1752	902	3498		1787	1609			1767
Flt Permitted	0.95	1.00		0.95	0.95	1.00		0.75	1.00			0.92
Satd. Flow (perm)	1752	3499		1752	902	3498		1407	1609			1646
Volume (vph)	5	2280	25	25	10	1840	25	175	5	125	5	5
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	5	2400	26	26	11	1937	26	184	5	132	5	5
RTOR Reduction (vph)	0	0	0	0	0	1	0	0	64	0	0	4
Lane Group Flow (vph)	5	2426	0	26	11	1962	0	184	73	0	0	11
Heavy Vehicles (%)	3%	3%	3%	3%	100%	3%	3%	1%	1%	1%	1%	1%
Turn Type	Prot			Prot	Split			Perm				Perm
Protected Phases	1	2!		1	2!	2			8			4
Permitted Phases								8				4
Actuated Green, G (s)	3.0	75.8		3.0	75.8	75.8		16.2	16.2			16.2
Effective Green, g (s)	4.0	76.8		4.0	76.8	76.8		17.2	17.2			17.2
Actuated g/C Ratio	0.04	0.70		0.04	0.70	0.70		0.16	0.16			0.16
Clearance Time (s)	5.0	5.0		5.0	5.0	5.0		5.0	5.0			5.0
Vehicle Extension (s)	3.0	6.0		3.0	6.0	6.0		3.0	3.0			3.0
Lane Grp Cap (vph)	64	2443		64	630	2442		220	252			257
v/s Ratio Prot	0.00	c0.69		c0.01	0.01	0.56			0.05			
v/s Ratio Perm								c0.13				0.01
v/c Ratio	0.08	0.99		0.41	0.02	0.80		0.84	0.29			0.04
Uniform Delay, d1	51.2	16.3		51.8	5.1	11.4		45.0	41.0			39.4
Progression Factor	0.88	0.56		0.89	0.55	0.50		1.00	1.00			1.00
Incremental Delay, d2	0.3	11.2		2.9	0.0	2.0		23.2	0.6			0.1
Delay (s)	45.4	20.4		49.0	2.8	7.7		68.2	41.6			39.5
Level of Service	D	C		D	A	A		E	D			D
Approach Delay (s)		20.4				8.2			56.9			39.5
Approach LOS		C				A			E			D

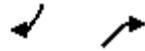
## Intersection Summary

HCM Average Control Delay	17.8	HCM Level of Service	B
HCM Volume to Capacity ratio	0.94		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	102.7%	ICU Level of Service	G
Analysis Period (min)	15		

! Phase conflict between lane groups.

c Critical Lane Group





Movement	SBR2	NER
Lane Configurations		
Ideal Flow (vphpl)	1900	1900
Total Lost time (s)		4.0
Lane Util. Factor		1.00
Frt		0.86
Flt Protected		1.00
Satd. Flow (prot)		822
Flt Permitted		1.00
Satd. Flow (perm)		822
Volume (vph)	5	10
Peak-hour factor, PHF	0.95	0.95
Adj. Flow (vph)	5	11
RTOR Reduction (vph)	0	0
Lane Group Flow (vph)	0	11
Heavy Vehicles (%)	1%	100%
Turn Type		Over
Protected Phases		2!
Permitted Phases		
Actuated Green, G (s)		75.8
Effective Green, g (s)		76.8
Actuated g/C Ratio		0.70
Clearance Time (s)		5.0
Vehicle Extension (s)		6.0
Lane Grp Cap (vph)		574
v/s Ratio Prot		0.01
v/s Ratio Perm		
v/c Ratio		0.02
Uniform Delay, d1		5.1
Progression Factor		1.00
Incremental Delay, d2		0.1
Delay (s)		5.1
Level of Service		A
Approach Delay (s)		
Approach LOS		
Intersection Summary		

HCM Signalized Intersection Capacity Analysis  
 1606: MD 410 & Veterans Pkwy

6/10/2008



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑		↖	↑↑		↖↖	↑	↖		↑	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0		4.0	4.0		4.0	4.0	4.0		4.0	
Lane Util. Factor		0.95		1.00	0.95		0.97	1.00	1.00		1.00	
Frt		0.92		1.00	1.00		1.00	1.00	0.85		1.00	
Flt Protected		1.00		0.95	1.00		0.95	1.00	1.00		1.00	
Satd. Flow (prot)		3231		1752	3505		3400	950	1568		950	
Flt Permitted		1.00		0.06	1.00		0.95	1.00	1.00		1.00	
Satd. Flow (perm)		3231		112	3505		3400	950	1568		950	
Volume (vph)	0	1105	1200	295	895	0	845	10	290	0	10	0
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	1163	1263	311	942	0	889	11	305	0	11	0
RTOR Reduction (vph)	0	178	0	0	0	0	0	0	177	0	0	0
Lane Group Flow (vph)	0	2248	0	311	942	0	889	11	128	0	11	0
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%	3%	100%	3%	3%	100%	3%
Turn Type				pm+pt			Split		Perm			
Protected Phases		6		5	2		4!	4			4!	
Permitted Phases				2					4			
Actuated Green, G (s)		61.0		77.0	77.0		23.0	23.0	23.0		23.0	
Effective Green, g (s)		62.0		78.0	78.0		24.0	24.0	24.0		24.0	
Actuated g/C Ratio		0.56		0.71	0.71		0.22	0.22	0.22		0.22	
Clearance Time (s)		5.0		5.0	5.0		5.0	5.0	5.0		5.0	
Vehicle Extension (s)		6.0		3.0	6.0		3.0	3.0	3.0		3.0	
Lane Grp Cap (vph)		1821		258	2485		742	207	342		207	
v/s Ratio Prot		c0.70		c0.13	0.27		c0.26	0.01			0.01	
v/s Ratio Perm				0.72					0.08			
v/c Ratio		1.23		1.21	0.38		1.20	0.05	0.38		0.05	
Uniform Delay, d1		24.0		45.7	6.4		43.0	34.0	36.6		34.0	
Progression Factor		0.96		1.00	1.00		1.00	1.00	1.00		1.00	
Incremental Delay, d2		107.3		123.2	0.4		102.0	0.1	0.7		0.1	
Delay (s)		130.4		168.8	6.8		145.0	34.1	37.3		34.1	
Level of Service		F		F	A		F	C	D		C	
Approach Delay (s)		130.4			47.0			116.7			34.1	
Approach LOS		F			D			F			C	

Intersection Summary

HCM Average Control Delay	105.5	HCM Level of Service	F
HCM Volume to Capacity ratio	1.18		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	126.2%	ICU Level of Service	H
Analysis Period (min)	15		

! Phase conflict between lane groups.

c Critical Lane Group

# HCM Signalized Intersection Capacity Analysis

9: MD 450 & MD 410

6/11/2008



Movement	EBL	EBT	EBR	WBL	WBT	WBR2	NBL2	NBL	NBT	NBR	SBL	SBT
Lane Configurations	↘	↑↑↑	↗	↘↗	↑↑↑	↗	↘	↘	↑↑	↗	↘↗	↑↑
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	0.91	1.00	0.97	0.91	1.00	1.00	1.00	0.95	1.00	0.97	0.95
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	1.00	0.85	1.00	1.00
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	0.95	1.00	1.00	0.95	1.00
Satd. Flow (prot)	1703	4893	1524	3303	4893	1524	1703	902	3406	1524	3303	3406
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	0.95	1.00	1.00	0.95	1.00
Satd. Flow (perm)	1703	4893	1524	3303	4893	1524	1703	902	3406	1524	3303	3406
Volume (vph)	280	670	455	470	2090	135	770	10	1065	440	180	745
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Growth Factor (vph)	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Adj. Flow (vph)	295	705	479	495	2200	142	811	11	1121	463	189	784
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	208	0	0
Lane Group Flow (vph)	295	705	479	495	2200	142	811	11	1121	255	189	784
Heavy Vehicles (%)	6%	6%	6%	6%	6%	6%	6%	100%	6%	6%	6%	6%
Turn Type	Prot		Free	Prot		Free	Prot	Prot		Perm	Prot	
Protected Phases	1	6		5	2		3	4!		8	7	4!
Permitted Phases			Free			Free				8		
Actuated Green, G (s)	10.0	26.0	100.0	16.0	32.0	100.0	23.0	13.0	31.0	31.0	5.0	13.0
Effective Green, g (s)	11.0	28.0	100.0	17.0	34.0	100.0	24.0	15.0	33.0	33.0	6.0	15.0
Actuated g/C Ratio	0.11	0.28	1.00	0.17	0.34	1.00	0.24	0.15	0.33	0.33	0.06	0.15
Clearance Time (s)	5.0	6.0		5.0	6.0		5.0	6.0	6.0	6.0	5.0	6.0
Vehicle Extension (s)	3.0	6.0		3.0	6.0		3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	187	1370	1524	562	1664	1524	409	135	1124	503	198	511
v/s Ratio Prot	c0.17	0.14		0.15	c0.45		c0.48	0.01	0.33		0.06	c0.23
v/s Ratio Perm			0.31			0.09				0.17		
v/c Ratio	1.58	0.51	0.31	0.88	1.32	0.09	1.98	0.08	1.00	0.51	0.95	1.53
Uniform Delay, d1	44.5	30.3	0.0	40.5	33.0	0.0	38.0	36.6	33.5	27.0	46.9	42.5
Progression Factor	0.79	0.91	1.00	1.04	0.62	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	282.4	1.3	0.5	11.6	148.2	0.1	451.0	0.3	26.0	0.8	50.6	250.1
Delay (s)	317.7	28.7	0.5	53.6	168.6	0.1	489.0	36.8	59.5	27.8	97.4	292.6
Level of Service	F	C	A	D	F	A	F	D	E	C	F	F
Approach Delay (s)		77.2			140.1				198.0			232.0
Approach LOS		E			F				F			F

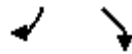
Intersection Summary			
HCM Average Control Delay	160.0	HCM Level of Service	F
HCM Volume to Capacity ratio	1.58		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	142.5%	ICU Level of Service	H
Analysis Period (min)	15		

! Phase conflict between lane groups.  
 c Critical Lane Group

# HCM Signalized Intersection Capacity Analysis

9: MD 450 & MD 410

6/11/2008



Movement	SBR	SER
Lane Configurations	↑	↑
Ideal Flow (vphpl)	1900	1900
Total Lost time (s)	4.0	4.0
Lane Util. Factor	1.00	1.00
Frt	0.85	0.86
Flt Protected	1.00	1.00
Satd. Flow (prot)	1524	822
Flt Permitted	1.00	1.00
Satd. Flow (perm)	1524	822
Volume (vph)	250	10
Peak-hour factor, PHF	0.95	0.95
Growth Factor (vph)	100%	100%
Adj. Flow (vph)	263	11
RTOR Reduction (vph)	0	0
Lane Group Flow (vph)	263	11
Heavy Vehicles (%)	6%	100%
Turn Type	Perm	Over
Protected Phases		4!
Permitted Phases	4!	
Actuated Green, G (s)	13.0	13.0
Effective Green, g (s)	15.0	15.0
Actuated g/C Ratio	0.15	0.15
Clearance Time (s)	6.0	6.0
Vehicle Extension (s)	3.0	3.0
Lane Grp Cap (vph)	229	123
v/s Ratio Prot		0.01
v/s Ratio Perm	0.17	
v/c Ratio	1.15	0.09
Uniform Delay, d1	42.5	36.6
Progression Factor	1.00	1.00
Incremental Delay, d2	105.4	0.3
Delay (s)	147.9	36.9
Level of Service	F	D
Approach Delay (s)		
Approach LOS		
<b>Intersection Summary</b>		

# HCM Signalized Intersection Capacity Analysis

9: MD 450 & MD 410

6/11/2008



Movement	EBL	EBT	EBR	WBL	WBT	WBR2	NBL2	NBL	NBT	NBR	SBL	SBT
Lane Configurations	↙	↑↑↑	↘	↙↘	↑↑↑	↙	↙	↙	↑↑	↘	↙↘	↑↑
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	0.91	1.00	0.97	0.91	1.00	1.00	1.00	0.95	1.00	0.97	0.95
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	1.00	0.85	1.00	1.00
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	0.95	1.00	1.00	0.95	1.00
Satd. Flow (prot)	1752	5036	1568	3400	5036	1568	1752	902	3505	1568	3400	3505
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	0.95	1.00	1.00	0.95	1.00
Satd. Flow (perm)	1752	5036	1568	3400	5036	1568	1752	902	3505	1568	3400	3505
Volume (vph)	195	1740	665	280	1355	165	555	10	775	265	195	1025
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Growth Factor (vph)	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Adj. Flow (vph)	205	1832	700	295	1426	174	584	11	816	279	205	1079
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	115	0	0
Lane Group Flow (vph)	205	1832	700	295	1426	174	584	11	816	164	205	1079
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%	3%	100%	3%	3%	3%	3%
Turn Type	Prot		Free	Prot		Free	Prot	Prot		Perm	Prot	
Protected Phases	1	6		5	2		3	4!	8		7	4!
Permitted Phases			Free			Free				8		
Actuated Green, G (s)	7.0	28.0	90.0	6.0	27.0	90.0	17.0	17.0	28.0	28.0	6.0	17.0
Effective Green, g (s)	8.0	30.0	90.0	7.0	29.0	90.0	18.0	19.0	30.0	30.0	7.0	19.0
Actuated g/C Ratio	0.09	0.33	1.00	0.08	0.32	1.00	0.20	0.21	0.33	0.33	0.08	0.21
Clearance Time (s)	5.0	6.0		5.0	6.0		5.0	6.0	6.0	6.0	5.0	6.0
Vehicle Extension (s)	3.0	6.0		3.0	6.0		3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	156	1679	1568	264	1623	1568	350	190	1168	523	264	740
v/s Ratio Prot	c0.12	c0.36		0.09	0.28		c0.33	0.01	0.23		0.06	c0.31
v/s Ratio Perm			c0.45			0.11				0.10		
v/c Ratio	1.31	1.09	0.45	1.12	0.88	0.11	1.67	0.06	0.70	0.31	0.78	1.46
Uniform Delay, d1	41.0	30.0	0.0	41.5	28.8	0.0	36.0	28.4	26.1	22.3	40.7	35.5
Progression Factor	1.27	0.63	1.00	0.75	0.89	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	164.5	47.2	0.5	88.2	6.5	0.1	313.2	0.1	1.8	0.3	13.3	213.6
Delay (s)	216.4	66.2	0.5	119.4	32.3	0.1	349.2	28.5	27.9	22.7	54.1	249.1
Level of Service	F	E	A	F	C	A	F	C	C	C	D	F
Approach Delay (s)		60.7			42.9			138.1				188.2
Approach LOS		E			D			F				F

## Intersection Summary

HCM Average Control Delay	98.3	HCM Level of Service	F
HCM Volume to Capacity ratio	1.30		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	124.0%	ICU Level of Service	H
Analysis Period (min)	15		

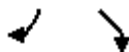
! Phase conflict between lane groups.

c Critical Lane Group

# HCM Signalized Intersection Capacity Analysis

9: MD 450 & MD 410

6/11/2008



Movement	SBR	SER
Lane Configurations	↑	↑
Ideal Flow (vphpl)	1900	1900
Total Lost time (s)	4.0	4.0
Lane Util. Factor	1.00	1.00
Frt	0.85	0.86
Flt Protected	1.00	1.00
Satd. Flow (prot)	1568	822
Flt Permitted	1.00	1.00
Satd. Flow (perm)	1568	822
Volume (vph)	275	10
Peak-hour factor, PHF	0.95	0.95
Growth Factor (vph)	100%	100%
Adj. Flow (vph)	289	11
RTOR Reduction (vph)	0	0
Lane Group Flow (vph)	289	11
Heavy Vehicles (%)	3%	100%
Turn Type	Perm	Over
Protected Phases		4!
Permitted Phases	4!	
Actuated Green, G (s)	17.0	17.0
Effective Green, g (s)	19.0	19.0
Actuated g/C Ratio	0.21	0.21
Clearance Time (s)	6.0	6.0
Vehicle Extension (s)	3.0	3.0
Lane Grp Cap (vph)	331	174
v/s Ratio Prot		0.01
v/s Ratio Perm	0.18	
v/c Ratio	0.87	0.06
Uniform Delay, d1	34.3	28.4
Progression Factor	1.00	1.00
Incremental Delay, d2	21.5	0.2
Delay (s)	55.9	28.5
Level of Service	E	C
Approach Delay (s)		
Approach LOS		
<b>Intersection Summary</b>		

# HCM Signalized Intersection Capacity Analysis

## 12: Piney Branch Rd. & Arliss

6/10/2008



Movement	EBL	EBT	EBR2	WBL	WBT	WBR	NBL	NBT	NBR	SBL2	SBL	SBT
Lane Configurations	↘	↑↑		↘	↑↑			↕		↘	↘	↗
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	2.0	2.0		2.0	2.0			2.0		2.0	2.0	2.0
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00		1.00	1.00	1.00
Frbp, ped/bikes	1.00	1.00		1.00	1.00			1.00		1.00	1.00	1.00
Flpb, ped/bikes	1.00	1.00		0.99	1.00			1.00		1.00	1.00	1.00
Frt	1.00	1.00		1.00	0.96			0.93		1.00	1.00	0.87
Flt Protected	0.95	1.00		0.95	1.00			0.99		0.95	0.95	1.00
Satd. Flow (prot)	1687	3370		1675	3230			1728		1687	902	1551
Flt Permitted	0.08	1.00		0.40	1.00			0.99		0.95	1.00	1.00
Satd. Flow (perm)	138	3370		705	3230			1728		1687	950	1551
Volume (vph)	15	550	5	10	1200	475	5	5	10	175	10	5
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	16	598	5	11	1304	516	5	5	11	190	11	5
RTOR Reduction (vph)	0	0	0	0	19	0	0	0	0	0	0	23
Lane Group Flow (vph)	16	603	0	11	1801	0	0	21	0	190	11	9
Confl. Peds. (#/hr)	4			5			17			10		
Heavy Vehicles (%)	7%	7%	7%	7%	7%	7%	1%	1%	1%	7%	100%	7%
Turn Type	Perm			Perm			Split			Split	Perm	
Protected Phases		6			2		3	3		4!		4
Permitted Phases	6			2							4	
Actuated Green, G (s)	108.1	108.1		108.1	108.1			5.0		21.9	21.9	21.9
Effective Green, g (s)	111.1	111.1		111.1	111.1			8.0		24.9	24.9	24.9
Actuated g/C Ratio	0.74	0.74		0.74	0.74			0.05		0.17	0.17	0.17
Clearance Time (s)	5.0	5.0		5.0	5.0			5.0		5.0	5.0	5.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	102	2496		522	2392			92		280	158	257
v/s Ratio Prot		0.18			c0.56			c0.01		c0.11		0.01
v/s Ratio Perm	0.12			0.02							0.01	
v/c Ratio	0.16	0.24		0.02	0.75			0.23		0.68	0.07	0.04
Uniform Delay, d1	5.7	6.1		5.1	11.4			68.0		58.8	52.8	52.5
Progression Factor	0.82	0.78		0.98	0.66			1.00		1.00	1.00	1.00
Incremental Delay, d2	3.2	0.2		0.1	1.6			1.3		6.4	0.2	0.1
Delay (s)	7.9	5.0		5.1	9.1			69.3		65.2	53.0	52.5
Level of Service	A	A		A	A			E		E	D	D
Approach Delay (s)		5.1			9.0			69.3				62.9
Approach LOS		A			A			E				E

### Intersection Summary

HCM Average Control Delay	13.4	HCM Level of Service	B
HCM Volume to Capacity ratio	0.70		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	6.0
Intersection Capacity Utilization	78.1%	ICU Level of Service	D
Analysis Period (min)	15		

! Phase conflict between lane groups.

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis  
 12: Piney Branch Rd. & Arliss

6/10/2008



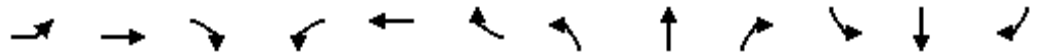
Movement	SBR	NWR
Lane Configurations		
Ideal Flow (vphpl)	1900	1900
Total Lost time (s)		2.0
Lane Util. Factor		1.00
Frbp, ped/bikes		1.00
Flpb, ped/bikes		1.00
Frt		0.86
Flt Protected		1.00
Satd. Flow (prot)		822
Flt Permitted		1.00
Satd. Flow (perm)		822
Volume (vph)	25	10
Peak-hour factor, PHF	0.92	0.92
Adj. Flow (vph)	27	11
RTOR Reduction (vph)	0	0
Lane Group Flow (vph)	0	11
Confl. Peds. (#/hr)		
Heavy Vehicles (%)	7%	100%
Turn Type	custom	
Protected Phases	4!	
Permitted Phases		
Actuated Green, G (s)	21.9	
Effective Green, g (s)	24.9	
Actuated g/C Ratio	0.17	
Clearance Time (s)	5.0	
Vehicle Extension (s)	3.0	
Lane Grp Cap (vph)	136	
v/s Ratio Prot	0.01	
v/s Ratio Perm		
v/c Ratio	0.08	
Uniform Delay, d1	52.9	
Progression Factor	1.00	
Incremental Delay, d2	0.3	
Delay (s)	53.1	
Level of Service	D	
Approach Delay (s)		
Approach LOS		
<b>Intersection Summary</b>		



# HCM Signalized Intersection Capacity Analysis

## 13: Piney Branch Rd. & Barron St

6/10/2008



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR2	SBL	SBT	SBR
Lane Configurations	↘	↕			↕			↕	↘		↕	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	2.0	2.0			2.0			2.0	2.0		2.0	
Lane Util. Factor	1.00	0.95			0.95			1.00	1.00		1.00	
Frt	1.00	0.98			1.00			1.00	0.85		0.97	
Flt Protected	0.95	1.00			1.00			0.95	1.00		0.96	
Satd. Flow (prot)	902	3323			3365			1795	1599		1754	
Flt Permitted	0.95	1.00			0.88			0.74	1.00		0.72	
Satd. Flow (perm)	902	3323			2958			1391	1599		1309	
Volume (vph)	10	675	75	50	1450	10	225	10	75	15	0	5
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	11	734	82	54	1576	11	245	11	82	16	0	5
RTOR Reduction (vph)	0	4	0	0	0	0	0	0	63	0	4	0
Lane Group Flow (vph)	11	812	0	0	1641	0	0	256	19	0	17	0
Heavy Vehicles (%)	100%	7%	7%	7%	7%	7%	1%	1%	1%	1%	1%	1%
Turn Type	Prot			Perm			Perm		Perm	Perm		
Protected Phases	6!	2			6!			8				4
Permitted Phases				6			8		8		4	
Actuated Green, G (s)	107.8	107.8			107.8			31.2	31.2		31.2	
Effective Green, g (s)	111.8	111.8			111.8			34.2	34.2		34.2	
Actuated g/C Ratio	0.75	0.75			0.75			0.23	0.23		0.23	
Clearance Time (s)	6.0	6.0			6.0			5.0	5.0		5.0	
Vehicle Extension (s)	3.0	3.0			3.0			3.0	3.0		3.0	
Lane Grp Cap (vph)	672	2477			2205			317	365		298	
v/s Ratio Prot	0.01	0.24										
v/s Ratio Perm					c0.55			c0.18	0.01		0.01	
v/c Ratio	0.02	0.33			0.74			0.81	0.05		0.06	
Uniform Delay, d1	4.9	6.4			10.9			54.8	45.2		45.3	
Progression Factor	0.60	0.78			1.00			1.00	1.00		1.00	
Incremental Delay, d2	0.0	0.3			2.3			14.0	0.1		0.1	
Delay (s)	3.0	5.3			13.3			68.7	45.3		45.4	
Level of Service	A	A			B			E	D		D	
Approach Delay (s)		5.3			13.3			63.1			45.4	
Approach LOS		A			B			E			D	

### Intersection Summary

HCM Average Control Delay	17.1	HCM Level of Service	B
HCM Volume to Capacity ratio	0.75		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	4.0
Intersection Capacity Utilization	92.5%	ICU Level of Service	F
Analysis Period (min)	15		

! Phase conflict between lane groups.

c Critical Lane Group



Movement	SWR
Lane Configurations	↗
Ideal Flow (vphpl)	1900
Total Lost time (s)	2.0
Lane Util. Factor	1.00
Frt	0.86
Flt Protected	1.00
Satd. Flow (prot)	822
Flt Permitted	1.00
Satd. Flow (perm)	822
Volume (vph)	10
Peak-hour factor, PHF	0.92
Adj. Flow (vph)	11
RTOR Reduction (vph)	0
Lane Group Flow (vph)	11
Heavy Vehicles (%)	100%
Turn Type	Over
Protected Phases	6!
Permitted Phases	
Actuated Green, G (s)	107.8
Effective Green, g (s)	111.8
Actuated g/C Ratio	0.75
Clearance Time (s)	6.0
Vehicle Extension (s)	3.0
Lane Grp Cap (vph)	613
v/s Ratio Prot	0.01
v/s Ratio Perm	
v/c Ratio	0.02
Uniform Delay, d1	4.9
Progression Factor	1.00
Incremental Delay, d2	0.1
Delay (s)	5.0
Level of Service	A
Approach Delay (s)	
Approach LOS	
Intersection Summary	

# HCM Signalized Intersection Capacity Analysis

## 12: Piney Branch Rd. & Arliss

6/10/2008



Movement	EBL	EBT	EBR2	WBL	WBT	WBR	NBL	NBT	NBR	SBL2	SBL	SBT
Lane Configurations	↖	↑↑		↖	↑↑			↕		↖	↖	↖
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	2.0	2.0		2.0	2.0			2.0		2.0	2.0	2.0
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00		1.00	1.00	1.00
Frbp, ped/bikes	1.00	1.00		1.00	1.00			1.00		1.00	1.00	1.00
Flpb, ped/bikes	1.00	1.00		1.00	1.00			1.00		1.00	1.00	1.00
Frt	1.00	1.00		1.00	0.97			0.90		1.00	1.00	0.90
Flt Protected	0.95	1.00		0.95	1.00			0.99		0.95	0.95	1.00
Satd. Flow (prot)	1715	3432		1719	3330			1684		1719	902	1629
Flt Permitted	0.16	1.00		0.12	1.00			0.99		0.95	0.95	1.00
Satd. Flow (perm)	285	3432		214	3330			1684		1719	902	1629
Volume (vph)	50	1200	15	25	850	225	5	5	25	425	10	25
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor (vph)	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Adj. Flow (vph)	54	1304	16	27	924	245	5	5	27	462	11	27
RTOR Reduction (vph)	0	1	0	0	21	0	0	0	0	0	0	39
Lane Group Flow (vph)	54	1319	0	27	1148	0	0	37	0	462	11	42
Confl. Peds. (#/hr)	10			12			24			40		
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%	1%	1%	1%	5%	100%	5%
Turn Type	Perm			Perm			Split			Split		Split
Protected Phases		6			2		3	3		4!	4	4
Permitted Phases	6			2								
Actuated Green, G (s)	42.6	42.6		42.6	42.6			3.4		19.0	19.0	19.0
Effective Green, g (s)	45.6	45.6		45.6	45.6			6.4		22.0	22.0	22.0
Actuated g/C Ratio	0.57	0.57		0.57	0.57			0.08		0.28	0.28	0.28
Clearance Time (s)	5.0	5.0		5.0	5.0			5.0		5.0	5.0	5.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	162	1956		122	1898			135		473	248	448
v/s Ratio Prot		c0.38			0.34			c0.02		c0.27	0.01	0.03
v/s Ratio Perm	0.19			0.13								
v/c Ratio	0.33	0.67		0.22	0.61			0.27		0.98	0.04	0.09
Uniform Delay, d1	9.1	12.0		8.5	11.3			34.6		28.7	21.3	21.6
Progression Factor	0.63	0.58		1.00	1.00			1.00		1.00	1.00	1.00
Incremental Delay, d2	4.6	1.6		4.1	1.4			1.1		35.0	0.1	0.1
Delay (s)	10.3	8.5		12.6	12.7			35.7		63.8	21.4	21.7
Level of Service	B	A		B	B			D		E	C	C
Approach Delay (s)		8.6			12.7			35.7				56.8
Approach LOS		A			B			D				E

### Intersection Summary

HCM Average Control Delay	18.9	HCM Level of Service	B
HCM Volume to Capacity ratio	0.72		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	6.0
Intersection Capacity Utilization	85.1%	ICU Level of Service	E
Analysis Period (min)	15		

! Phase conflict between lane groups.

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis  
 12: Piney Branch Rd. & Arliss

6/10/2008



Movement	SBR	NWR
<b>Lane Configurations</b>		
Ideal Flow (vphpl)	1900	1900
Total Lost time (s)		2.0
Lane Util. Factor		1.00
Frbp, ped/bikes		1.00
Flpb, ped/bikes		1.00
Frt		0.86
Flt Protected		1.00
Satd. Flow (prot)		822
Flt Permitted		1.00
Satd. Flow (perm)		822
Volume (vph)	50	10
Peak-hour factor, PHF	0.92	0.92
Growth Factor (vph)	100%	100%
Adj. Flow (vph)	54	11
RTOR Reduction (vph)	0	0
Lane Group Flow (vph)	0	11
Confl. Peds. (#/hr)		
Heavy Vehicles (%)	5%	100%
Turn Type		Over
Protected Phases		4!
Permitted Phases		
Actuated Green, G (s)		19.0
Effective Green, g (s)		22.0
Actuated g/C Ratio		0.28
Clearance Time (s)		5.0
Vehicle Extension (s)		3.0
Lane Grp Cap (vph)		226
v/s Ratio Prot		0.01
v/s Ratio Perm		
v/c Ratio		0.05
Uniform Delay, d1		21.3
Progression Factor		1.00
Incremental Delay, d2		0.1
Delay (s)		21.4
Level of Service		C
Approach Delay (s)		
Approach LOS		
<b>Intersection Summary</b>		

# HCM Signalized Intersection Capacity Analysis

## 13: Piney Branch Rd. & Barron St

6/10/2008



Movement	EBL	EBT	EBR	WBT	WBR	NBL	NBT	NBR2	SBL	SBT	SBR	SWR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	2.0	2.0		2.0			2.0	2.0		2.0		2.0
Lane Util. Factor	1.00	0.95		0.95			1.00	1.00		1.00		1.00
Frt	1.00	0.98		1.00			1.00	0.85		0.98		0.86
Flt Protected	0.95	1.00		1.00			0.95	1.00		0.96		1.00
Satd. Flow (prot)	902	3378		3426			1794	1599		1782		822
Flt Permitted	0.95	1.00		1.00			0.74	1.00		0.78		1.00
Satd. Flow (perm)	902	3378		3426			1388	1599		1436		822
Volume (vph)	10	1500	200	1075	25	175	5	100	25	5	5	10
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor (vph)	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Adj. Flow (vph)	11	1630	217	1168	27	190	5	109	27	5	5	11
RTOR Reduction (vph)	0	9	0	0	0	0	0	28	0	4	0	0
Lane Group Flow (vph)	11	1838	0	1195	0	0	195	81	0	33	0	11
Heavy Vehicles (%)	100%	5%	5%	5%	5%	1%	1%	1%	1%	1%	1%	100%
Turn Type	Prot			Perm			Perm		Perm		Over	
Protected Phases	6!	2		6!			8	8		4		6!
Permitted Phases						8		8	4			
Actuated Green, G (s)	61.8	61.8		61.8			17.2	17.2		17.2		61.8
Effective Green, g (s)	65.8	65.8		65.8			20.2	20.2		20.2		65.8
Actuated g/C Ratio	0.73	0.73		0.73			0.22	0.22		0.22		0.73
Clearance Time (s)	6.0	6.0		6.0			5.0	5.0		5.0		6.0
Vehicle Extension (s)	3.0	3.0		3.0			3.0	3.0		3.0		3.0
Lane Grp Cap (vph)	659	2470		2505			312	359		322		601
v/s Ratio Prot	0.01	c0.54		0.35								0.01
v/s Ratio Perm							c0.14	0.05		0.02		
v/c Ratio	0.02	0.74		0.48			0.62	0.23		0.10		0.02
Uniform Delay, d1	3.3	7.1		5.0			31.5	28.5		27.7		3.3
Progression Factor	1.00	1.00		1.00			1.00	1.00		1.00		1.00
Incremental Delay, d2	0.0	2.1		0.7			3.9	0.3		0.1		0.1
Delay (s)	3.3	9.2		5.6			35.4	28.8		27.8		3.4
Level of Service	A	A		A			D	C		C		A
Approach Delay (s)		9.2		5.6			33.0			27.8		
Approach LOS		A		A			C			C		

### Intersection Summary

HCM Average Control Delay	10.3	HCM Level of Service	B
HCM Volume to Capacity ratio	0.71		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	4.0
Intersection Capacity Utilization	78.1%	ICU Level of Service	D
Analysis Period (min)	15		

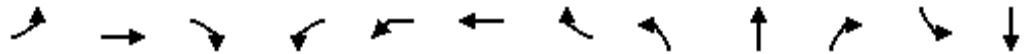
! Phase conflict between lane groups.

c Critical Lane Group

# HCM Signalized Intersection Capacity Analysis

## 4: Wayne Ave. & Fenton St

6/10/2008



Movement	EBL	EBT	EBR	WBL2	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations	↖	↖↗		↖	↖	↖↗		↖	↖	↖	↖	↖
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	2.0	2.0		2.0	2.0	2.0		2.0	2.0	2.0	2.0	2.0
Lane Util. Factor	1.00	0.95		1.00	1.00	0.95		1.00	1.00	1.00	1.00	1.00
Frbp, ped/bikes	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00
Flpb, ped/bikes	1.00	1.00		0.98	1.00	1.00		1.00	1.00	1.00	0.99	1.00
Frt	1.00	0.96		1.00	1.00	0.99		1.00	1.00	0.85	1.00	0.97
Flt Protected	0.95	1.00		0.95	0.95	1.00		0.95	1.00	1.00	0.95	1.00
Satd. Flow (prot)	1683	3247		1657	902	3328		1687	1776	1509	1665	1716
Flt Permitted	0.29	1.00		0.46	0.95	1.00		0.22	1.00	1.00	0.43	1.00
Satd. Flow (perm)	510	3247		800	902	3328		399	1776	1509	749	1716
Volume (vph)	50	300	100	375	10	750	75	125	275	200	25	350
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	1.00	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	54	326	109	408	10	815	82	136	299	217	27	380
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	54	435	0	408	10	897	0	136	299	217	27	489
Confl. Peds. (#/hr)	19			29				34			17	
Heavy Vehicles (%)	7%	7%	7%	7%	100%	7%	7%	7%	7%	7%	7%	7%
Turn Type	pm+pt			pm+pt	Prot			Perm		Perm	Perm	
Protected Phases	7	4		3	9	8			2			6
Permitted Phases	4			8				2		2	6	
Actuated Green, G (s)	16.1	16.1		30.1	2.0	29.1		31.7	31.7	31.7	31.7	31.7
Effective Green, g (s)	19.1	19.1		32.1	10.0	32.1		34.7	34.7	34.7	34.7	34.7
Actuated g/C Ratio	0.21	0.21		0.36	0.11	0.36		0.39	0.39	0.39	0.39	0.39
Clearance Time (s)	4.0	5.0		4.0	10.0	5.0		5.0	5.0	5.0	5.0	5.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	176	689		459	100	1187		154	685	582	289	662
v/s Ratio Prot	0.02	c0.13		c0.18	0.01	0.27			0.17			0.28
v/s Ratio Perm	0.05			c0.14				c0.34		0.14	0.04	
v/c Ratio	0.31	0.63		0.89	0.10	0.76		0.88	0.44	0.37	0.09	0.74
Uniform Delay, d1	29.9	32.2		27.2	36.0	25.5		25.8	20.4	19.8	17.6	23.8
Progression Factor	1.00	1.00		0.63	0.63	0.58		1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	1.0	1.9		14.4	0.3	2.1		46.8	2.0	1.8	0.6	7.2
Delay (s)	30.9	34.1		31.5	22.8	16.9		72.5	22.4	21.7	18.3	31.0
Level of Service	C	C		C	C	B		E	C	C	B	C
Approach Delay (s)		33.8				21.5			32.6			30.3
Approach LOS		C				C			C			C

### Intersection Summary

HCM Average Control Delay	27.5	HCM Level of Service	C
HCM Volume to Capacity ratio	0.75		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	84.5%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis  
 4: Wayne Ave. & Fenton St

6/10/2008





















Movement	SBR2	NER
Lane Configurations		
Ideal Flow (vphpl)	1900	1900
Total Lost time (s)		2.0
Lane Util. Factor		1.00
Frbp, ped/bikes		1.00
Flpb, ped/bikes		1.00
Frt		0.86
Flt Protected		1.00
Satd. Flow (prot)		822
Flt Permitted		1.00
Satd. Flow (perm)		822
Volume (vph)	100	10
Peak-hour factor, PHF	0.92	1.00
Adj. Flow (vph)	109	10
RTOR Reduction (vph)	0	0
Lane Group Flow (vph)	0	10
Confl. Peds. (#/hr)		
Heavy Vehicles (%)	7%	100%
Turn Type		Over
Protected Phases		9
Permitted Phases		
Actuated Green, G (s)		2.0
Effective Green, g (s)		10.0
Actuated g/C Ratio		0.11
Clearance Time (s)		10.0
Vehicle Extension (s)		3.0
Lane Grp Cap (vph)		91
v/s Ratio Prot		c0.01
v/s Ratio Perm		
v/c Ratio		0.11
Uniform Delay, d1		36.0
Progression Factor		1.00
Incremental Delay, d2		0.5
Delay (s)		36.5
Level of Service		D
Approach Delay (s)		
Approach LOS		
<b>Intersection Summary</b>		

# HCM Signalized Intersection Capacity Analysis

## 5: Cedar Ave & Wayne Ave.

6/10/2008

												
Movement	NBL	NBT	NBR	SBL	SBT	SBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		2.0		2.0		2.0	2.0	2.0			2.0	
Lane Util. Factor		1.00		1.00		1.00	1.00	0.95			0.95	
Frbp, ped/bikes		1.00		1.00		0.93	1.00	1.00			0.99	
Flpb, ped/bikes		0.99		1.00		1.00	1.00	1.00			1.00	
Frt		0.97		1.00		0.85	1.00	1.00			0.97	
Flt Protected		0.99		0.95		1.00	0.95	1.00			1.00	
Satd. Flow (prot)		1685		1680		1407	1687	3374			3231	
Flt Permitted		0.99		0.39		1.00	0.10	1.00			1.00	
Satd. Flow (perm)		1685		691		1407	183	3374			3231	
Volume (vph)	25	125	50	125	0	100	75	485	0	0	1110	300
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	27	136	54	136	0	109	82	527	0	0	1207	326
RTOR Reduction (vph)	0	14	0	0	0	85	0	0	0	0	0	0
Lane Group Flow (vph)	0	203	0	136	0	24	82	527	0	0	1533	0
Conf. Peds. (#/hr)	36		5	5		36	12		6	6		12
Turn Type	Perm		custom		custom		pm+pt					
Protected Phases		8					5	2			6	
Permitted Phases	8		4		4		2					
Actuated Green, G (s)		16.9		16.9		16.9	63.1	63.1			55.7	
Effective Green, g (s)		19.9		19.9		19.9	66.1	66.1			58.7	
Actuated g/C Ratio		0.22		0.22		0.22	0.73	0.73			0.65	
Clearance Time (s)		5.0		5.0		5.0	5.0	5.0			5.0	
Vehicle Extension (s)		0.2		0.2		0.2	3.0	3.0			3.0	
Lane Grp Cap (vph)		373		153		311	225	2478			2107	
v/s Ratio Prot							c0.02	0.16			c0.47	
v/s Ratio Perm		0.12		c0.20		0.02	0.25					
v/c Ratio		0.54		0.89		0.08	0.36	0.21			0.73	
Uniform Delay, d1		31.0		34.0		27.8	17.2	3.8			10.4	
Progression Factor		1.00		1.00		1.00	0.50	0.22			0.65	
Incremental Delay, d2		0.9		40.7		0.0	0.9	0.2			1.4	
Delay (s)		31.9		74.7		27.8	9.4	1.0			8.1	
Level of Service		C		E		C	A	A			A	
Approach Delay (s)		31.9			53.8			2.1			8.1	
Approach LOS		C			D			A			A	
<b>Intersection Summary</b>												
HCM Average Control Delay			13.0				HCM Level of Service				B	
HCM Volume to Capacity ratio			0.72									
Actuated Cycle Length (s)			90.0				Sum of lost time (s)			4.0		
Intersection Capacity Utilization			81.0%				ICU Level of Service			D		
Analysis Period (min)			15									
c Critical Lane Group												



# HCM Signalized Intersection Capacity Analysis

## 6: Wayne Ave. & Dale Dr

6/10/2008



Movement	EBL2	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR2	SBL	SBT	SBR
Lane Configurations	↶	↷			↶↷		↶	↷		↶	↷	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	2.0	2.0			2.0		2.0	2.0		2.0	2.0	
Lane Util. Factor	1.00	0.95			0.95		1.00	1.00		1.00	1.00	
Frbp, ped/bikes	1.00	0.99			0.99		1.00	0.99		1.00	0.97	
Flpb, ped/bikes	1.00	1.00			1.00		1.00	1.00		0.99	1.00	
Frt	1.00	0.99			0.99		1.00	0.98		1.00	0.94	
Flt Protected	0.95	1.00			1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1687	3326			3268		1687	1732		1669	1627	
Flt Permitted	0.08	1.00			0.85		0.14	1.00		0.20	1.00	
Satd. Flow (perm)	137	3326			2788		246	1732		356	1627	
Volume (vph)	75	410	25	110	1075	100	50	350	50	100	275	175
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	82	446	27	120	1168	109	54	380	54	109	299	190
RTOR Reduction (vph)	0	5	0	0	0	0	0	6	0	0	26	0
Lane Group Flow (vph)	82	468	0	0	1397	0	54	428	0	109	463	0
Confl. Peds. (#/hr)	52		30	30		52	41		25	25		41
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		6			2			8			4	
Permitted Phases	6			2			8			4		
Actuated Green, G (s)	54.1	54.1			46.1		25.9	25.9		25.9	25.9	
Effective Green, g (s)	57.1	57.1			49.1		28.9	28.9		28.9	28.9	
Actuated g/C Ratio	0.63	0.63			0.55		0.32	0.32		0.32	0.32	
Clearance Time (s)	5.0	5.0			5.0		5.0	5.0		5.0	5.0	
Vehicle Extension (s)	3.0	3.0			3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	87	2110			1521		79	556		114	522	
v/s Ratio Prot		0.14						0.25			0.28	
v/s Ratio Perm	c0.60				0.50		0.22			c0.31		
v/c Ratio	0.94	0.22			0.92		0.68	0.77		0.96	0.89	
Uniform Delay, d1	15.0	7.0			18.6		26.6	27.5		29.9	29.0	
Progression Factor	1.03	1.05			0.57		1.00	1.00		1.00	1.00	
Incremental Delay, d2	80.1	0.2			7.8		21.7	6.4		69.8	16.5	
Delay (s)	95.6	7.5			18.4		48.3	33.9		99.7	45.6	
Level of Service	F	A			B		D	C		F	D	
Approach Delay (s)		20.6			18.4			35.5			55.4	
Approach LOS		C			B			D			E	

### Intersection Summary

HCM Average Control Delay	28.9	HCM Level of Service	C
HCM Volume to Capacity ratio	0.94		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	4.0
Intersection Capacity Utilization	110.4%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group



Movement	SWR
Lane Configurations	↗
Ideal Flow (vphpl)	1900
Total Lost time (s)	2.0
Lane Util. Factor	1.00
Frbp, ped/bikes	1.00
Flpb, ped/bikes	1.00
Frt	0.86
Flt Protected	1.00
Satd. Flow (prot)	1536
Flt Permitted	1.00
Satd. Flow (perm)	1536
Volume (vph)	10
Peak-hour factor, PHF	0.92
Adj. Flow (vph)	11
RTOR Reduction (vph)	0
Lane Group Flow (vph)	11
Confl. Peds. (#/hr)	
Turn Type	custom
Protected Phases	1
Permitted Phases	
Actuated Green, G (s)	3.0
Effective Green, g (s)	6.0
Actuated g/C Ratio	0.07
Clearance Time (s)	5.0
Vehicle Extension (s)	3.0
Lane Grp Cap (vph)	102
v/s Ratio Prot	0.01
v/s Ratio Perm	
v/c Ratio	0.11
Uniform Delay, d1	39.5
Progression Factor	1.00
Incremental Delay, d2	0.5
Delay (s)	40.0
Level of Service	D
Approach Delay (s)	
Approach LOS	
<b>Intersection Summary</b>	

# HCM Signalized Intersection Capacity Analysis

## 7: Wayne Ave. & Mansfield

6/10/2008



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑			↑↑			↑↓				
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		2.0			2.0			2.0				
Lane Util. Factor		0.95			0.95			1.00				
Frbp, ped/bikes		1.00			1.00			1.00				
Flpb, ped/bikes		1.00			1.00			1.00				
Frt		1.00			1.00			0.93				
Flt Protected		1.00			1.00			0.98				
Satd. Flow (prot)		3368			3374			1615				
Flt Permitted		1.00			1.00			0.98				
Satd. Flow (perm)		3368			3374			1615				
Volume (vph)	0	485	5	0	1420	0	5	0	5	0	0	0
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	527	5	0	1543	0	5	0	5	0	0	0
RTOR Reduction (vph)	0	1	0	0	0	0	0	4	0	0	0	0
Lane Group Flow (vph)	0	531	0	0	1543	0	0	7	0	0	0	0
Conf. Peds. (#/hr)	1		22	22			11			5		
Turn Type								Split				
Protected Phases		2			6		4	4				
Permitted Phases												
Actuated Green, G (s)		55.0			55.0			24.0				
Effective Green, g (s)		59.0			59.0			27.0				
Actuated g/C Ratio		0.66			0.66			0.30				
Clearance Time (s)		6.0			6.0			5.0				
Vehicle Extension (s)		0.2			3.0			0.2				
Lane Grp Cap (vph)		2208			2212			485				
v/s Ratio Prot		0.16			0.46			0.00				
v/s Ratio Perm												
v/c Ratio		0.24			0.70			0.01				
Uniform Delay, d1		6.3			9.8			22.1				
Progression Factor		0.98			0.41			1.00				
Incremental Delay, d2		0.2			1.3			0.0				
Delay (s)		6.4			5.3			22.1				
Level of Service		A			A			C				
Approach Delay (s)		6.4			5.3			22.1			0.0	
Approach LOS		A			A			C			A	

### Intersection Summary

HCM Average Control Delay	5.7	HCM Level of Service	A
HCM Volume to Capacity ratio	0.48		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	4.0
Intersection Capacity Utilization	49.3%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

# HCM Signalized Intersection Capacity Analysis

## 8: Wayne Ave. & Sligo Creek Pkwy

6/10/2008



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↕		↖	↕		↖	↕			↕	↖
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	2.0	2.0		2.0	2.0		2.0	2.0			2.0	2.0
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00			1.00	1.00
Frbp, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00			1.00	1.00
Flpb, ped/bikes	1.00	1.00		0.99	1.00		1.00	1.00			1.00	1.00
Frt	1.00	0.98		1.00	0.99		1.00	0.99			1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00			0.99	1.00
Satd. Flow (prot)	1687	3296		1670	3343		1687	1757			1762	1509
Flt Permitted	0.11	1.00		0.45	1.00		0.17	1.00			0.91	1.00
Satd. Flow (perm)	191	3296		786	3343		293	1757			1613	1509
Volume (vph)	50	360	50	20	1060	50	175	350	20	50	350	175
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	54	391	54	22	1152	54	190	380	22	54	380	190
RTOR Reduction (vph)	0	11	0	0	4	0	0	2	0	0	0	0
Lane Group Flow (vph)	54	434	0	22	1202	0	190	400	0	0	434	190
Conf. Peds. (#/hr)	14		8	8		14	2		11	11		2
Turn Type	pm+pt			Perm			pm+pt			Perm		Prot
Protected Phases	5	2			6		7	4			8	8
Permitted Phases	2			6			4			8		
Actuated Green, G (s)	47.6	46.6		39.4	39.4		33.4	33.4			24.4	24.4
Effective Green, g (s)	49.6	49.6		42.4	42.4		36.4	36.4			27.4	27.4
Actuated g/C Ratio	0.55	0.55		0.47	0.47		0.40	0.40			0.30	0.30
Clearance Time (s)	4.0	5.0		5.0	5.0		5.0	5.0			5.0	5.0
Vehicle Extension (s)	3.0	0.2		0.2	0.2		3.0	3.0			0.2	0.2
Lane Grp Cap (vph)	192	1816		370	1575		227	711			491	459
v/s Ratio Prot	0.02	c0.13			c0.36		c0.07	0.23				0.13
v/s Ratio Perm	0.14			0.03			0.27				c0.27	
v/c Ratio	0.28	0.24		0.06	0.76		0.84	0.56			0.88	0.41
Uniform Delay, d1	26.4	10.4		13.0	19.7		20.8	20.7			29.8	24.9
Progression Factor	1.15	1.29		0.86	0.87		1.00	1.00			1.00	1.00
Incremental Delay, d2	0.8	0.3		0.3	3.2		22.6	1.0			16.6	0.2
Delay (s)	31.2	13.8		11.5	20.2		43.4	21.7			46.4	25.1
Level of Service	C	B		B	C		D	C			D	C
Approach Delay (s)		15.7			20.0			28.7			39.9	
Approach LOS		B			C			C			D	

### Intersection Summary



























HCM Average Control Delay	25.2	HCM Level of Service	C
HCM Volume to Capacity ratio	0.75		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	6.0
Intersection Capacity Utilization	88.5%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

# HCM Signalized Intersection Capacity Analysis

## 3: Wayne Ave. #1 & Georgia Ave

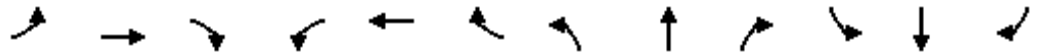
7/28/2008

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		 			 			  			  	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	0.91		1.00	0.91	
Frbp, ped/bikes	1.00	0.97		1.00	0.99		1.00	0.99		1.00	0.99	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.96		1.00	0.98		1.00	0.99		1.00	0.98	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1687	3148		1687	3269		1687	4789		1687	4720	
Flt Permitted	0.15	1.00		0.30	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	263	3148		525	3269		1687	4789		1687	4720	
Volume (vph)	120	325	115	95	690	85	110	1385	65	85	2290	285
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	126	342	121	100	726	89	116	1458	68	89	2411	300
RTOR Reduction (vph)	0	29	0	0	8	0	0	4	0	0	13	0
Lane Group Flow (vph)	126	434	0	100	807	0	116	1522	0	89	2698	0
Confl. Peds. (#/hr)			67			84			66			46
Heavy Vehicles (%)	7%	7%	7%	7%	7%	7%	7%	7%	7%	7%	7%	7%
Turn Type	pm+pt			pm+pt			Prot			Prot		
Protected Phases	7	4		3	8		1	5		6	2	
Permitted Phases	4			8								
Actuated Green, G (s)	29.0	25.0		29.0	25.0		8.0	49.8		19.2	63.0	
Effective Green, g (s)	31.0	27.0		31.0	27.0		8.0	51.8		21.2	65.0	
Actuated g/C Ratio	0.26	0.22		0.26	0.22		0.07	0.43		0.18	0.54	
Clearance Time (s)	4.0	6.0		4.0	6.0		4.0	6.0		6.0	6.0	
Vehicle Extension (s)	3.0	4.0		3.0	4.0		3.0	0.2		3.0	0.2	
Lane Grp Cap (vph)	115	708		174	736		112	2067		298	2557	
v/s Ratio Prot	c0.04	0.14		0.02	c0.25		c0.07	0.32		0.05	c0.57	
v/s Ratio Perm	0.25			0.13								
v/c Ratio	1.10	0.61		0.57	1.10		1.04	0.74		0.30	1.06	
Uniform Delay, d1	45.3	41.8		38.3	46.5		56.0	28.4		42.9	27.5	
Progression Factor	1.00	1.00		1.00	1.00		1.34	0.58		0.68	0.43	
Incremental Delay, d2	112.0	3.9		4.5	62.8		93.4	2.3		0.4	32.3	
Delay (s)	157.3	45.7		42.9	109.3		168.6	18.9		29.5	44.1	
Level of Service	F	D		D	F		F	B		C	D	
Approach Delay (s)		69.6			102.0			29.5			43.6	
Approach LOS		E			F			C			D	
<b>Intersection Summary</b>												
HCM Average Control Delay			51.3			HCM Level of Service				D		
HCM Volume to Capacity ratio			1.07									
Actuated Cycle Length (s)			120.0			Sum of lost time (s)			16.0			
Intersection Capacity Utilization			99.5%			ICU Level of Service			F			
Analysis Period (min)			15									
c Critical Lane Group												

# HCM Signalized Intersection Capacity Analysis

65: Wayne Ave. #1 & Dixon Rd

7/28/2008



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑↑			↑↑↑			↑	↑		↑	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		2.0			2.0			2.0	2.0		2.0	
Lane Util. Factor		0.91			0.91			0.95	0.95		1.00	
Frt		0.97			1.00			0.89	0.85		0.92	
Flt Protected		1.00			0.99			0.99	1.00		0.99	
Satd. Flow (prot)		4692			4773			1572	1519		1708	
Flt Permitted		0.91			0.71			0.93	1.00		0.96	
Satd. Flow (perm)		4264			3451			1484	1519		1661	
Volume (vph)	10	355	95	305	765	10	25	0	165	5	5	15
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	11	374	100	321	805	11	26	0	174	5	5	16
RTOR Reduction (vph)	0	18	0	0	1	0	0	50	79	0	12	0
Lane Group Flow (vph)	0	467	0	0	1136	0	0	43	28	0	14	0
Heavy Vehicles (%)	7%	7%	7%	7%	7%	7%	1%	1%	1%	1%	1%	1%
Turn Type	Perm			pm+pt			Perm		Perm	Perm		
Protected Phases		6		5	2			4				8
Permitted Phases	6			2			4		4	8		
Actuated Green, G (s)		81.0			81.0			27.0	27.0			27.0
Effective Green, g (s)		85.0			85.0			31.0	31.0			31.0
Actuated g/C Ratio		0.71			0.71			0.26	0.26			0.26
Clearance Time (s)		6.0			6.0			6.0	6.0			6.0
Vehicle Extension (s)		3.0			3.0			3.0	3.0			3.0
Lane Grp Cap (vph)		3020			2444			383	392			429
v/s Ratio Prot												
v/s Ratio Perm		0.11			c0.33			c0.03	0.02			0.01
v/c Ratio		0.15			0.46			0.11	0.07			0.03
Uniform Delay, d1		5.7			7.6			34.0	33.6			33.3
Progression Factor		1.00			1.00			1.07	1.13			1.00
Incremental Delay, d2		0.1			0.1			0.1	0.1			0.0
Delay (s)		5.8			7.8			36.5	38.0			33.3
Level of Service		A			A			D	D			C
Approach Delay (s)		5.8			7.8			37.3				33.3
Approach LOS		A			A			D				C

## Intersection Summary

HCM Average Control Delay	10.8	HCM Level of Service	B
HCM Volume to Capacity ratio	0.37		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	4.0
Intersection Capacity Utilization	48.7%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis  
 131: Bonifant Street & Georgia Ave

7/28/2008

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑			↑		↗	↑↑↑		↗	↑↑↑	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		2.0			2.0		2.0	2.0		2.0	2.0	
Lane Util. Factor		1.00			1.00		1.00	0.91		1.00	0.91	
Frt		1.00			1.00		1.00	1.00		1.00	0.99	
Flt Protected		1.00			1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1863			1863		1770	5075		1770	5022	
Flt Permitted		1.00			1.00		0.06	1.00		0.11	1.00	
Satd. Flow (perm)		1863			1863		105	5075		212	5022	
Volume (vph)	0	10	0	0	10	0	185	1475	20	35	2265	205
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	11	0	0	11	0	195	1553	21	37	2384	216
RTOR Reduction (vph)	0	0	0	0	0	0	0	1	0	0	9	0
Lane Group Flow (vph)	0	11	0	0	11	0	195	1573	0	37	2591	0
Turn Type							pm+pt			pm+pt		
Protected Phases		4			8		5	2		1	6	
Permitted Phases							2			6		
Actuated Green, G (s)		25.0			25.0		85.0	77.6		68.7	66.3	
Effective Green, g (s)		28.0			28.0		88.0	80.6		74.7	69.3	
Actuated g/C Ratio		0.23			0.23		0.73	0.67		0.62	0.58	
Clearance Time (s)		5.0			5.0		5.0	5.0		5.0	5.0	
Vehicle Extension (s)		3.0			3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		435			435		309	3409		202	2900	
v/s Ratio Prot		c0.01			0.01		c0.09	0.31		0.01	c0.52	
v/s Ratio Perm							0.38			0.11		
v/c Ratio		0.03			0.03		0.63	0.46		0.18	0.89	
Uniform Delay, d1		35.5			35.5		39.7	9.4		18.4	22.1	
Progression Factor		1.00			0.77		1.29	0.81		0.34	0.33	
Incremental Delay, d2		0.0			0.0		3.3	0.4		0.0	0.5	
Delay (s)		35.5			27.4		54.5	7.9		6.2	7.8	
Level of Service		D			C		D	A		A	A	
Approach Delay (s)		35.5			27.4			13.1			7.7	
Approach LOS		D			C			B			A	
<b>Intersection Summary</b>												
HCM Average Control Delay			10.0				HCM Level of Service			A		
HCM Volume to Capacity ratio			0.62									
Actuated Cycle Length (s)			120.0				Sum of lost time (s)			4.0		
Intersection Capacity Utilization			71.9%				ICU Level of Service			C		
Analysis Period (min)			15									
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis  
 132: Thayer Ave. & Georgia Ave

7/28/2008



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↔		↑↑↑		↘	↑↑↑
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0		4.0		4.0	4.0
Lane Util. Factor	1.00		0.91		1.00	0.91
Frt	0.90		1.00		1.00	1.00
Flt Protected	0.99		1.00		0.95	1.00
Satd. Flow (prot)	1655		5078		1770	5085
Flt Permitted	0.99		1.00		0.09	1.00
Satd. Flow (perm)	1655		5078		164	5085
Volume (vph)	80	225	1540	15	55	2255
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	84	237	1621	16	58	2374
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	321	0	1637	0	58	2374
Turn Type					pm+pt	
Protected Phases	4		5		6	2
Permitted Phases					2	
Actuated Green, G (s)	26.8		61.4		83.2	83.2
Effective Green, g (s)	27.8		62.4		84.2	84.2
Actuated g/C Ratio	0.23		0.52		0.70	0.70
Clearance Time (s)	5.0		5.0		5.0	5.0
Vehicle Extension (s)	3.0		3.0		3.0	3.0
Lane Grp Cap (vph)	383		2641		353	3568
v/s Ratio Prot	c0.19		0.32		0.02	c0.47
v/s Ratio Perm					0.09	
v/c Ratio	0.84		0.62		0.16	0.67
Uniform Delay, d1	44.0		20.4		19.7	10.0
Progression Factor	1.00		1.00		0.14	0.01
Incremental Delay, d2	14.7		1.1		0.1	0.5
Delay (s)	58.7		21.5		2.9	0.6
Level of Service	E		C		A	A
Approach Delay (s)	58.7		21.5			0.7
Approach LOS	E		C			A

Intersection Summary

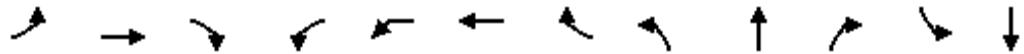
HCM Average Control Delay	12.7	HCM Level of Service	B
HCM Volume to Capacity ratio	0.71		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	68.5%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			



# HCM Signalized Intersection Capacity Analysis

## 4: Wayne Ave. & Fenton St

6/10/2008



Movement	EBL	EBT	EBR	WBL2	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations	↖	↗		↖	↖	↗		↖	↗	↗	↖	↗
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	2.0	2.0		2.0	2.0	2.0		2.0	2.0	2.0	2.0	2.0
Lane Util. Factor	1.00	0.95		1.00	1.00	0.95		1.00	1.00	1.00	1.00	1.00
Frbp, ped/bikes	1.00	0.96		1.00	1.00	0.98		1.00	1.00	1.00	1.00	0.98
Flpb, ped/bikes	0.99	1.00		1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.97		1.00	1.00	0.99		1.00	1.00	0.85	1.00	0.98
Flt Protected	0.95	1.00		0.95	0.95	1.00		0.95	1.00	1.00	0.95	1.00
Satd. Flow (prot)	1697	3200		1719	902	3316		1719	1810	1538	1719	1732
Flt Permitted	0.25	1.00		0.11	0.95	1.00		0.21	1.00	1.00	0.10	1.00
Satd. Flow (perm)	440	3200		208	902	3316		387	1810	1538	180	1732
Volume (vph)	50	700	175	300	10	525	50	75	525	300	75	350
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	1.00	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	54	761	190	326	10	571	54	82	571	326	82	380
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	54	951	0	326	10	625	0	82	571	326	82	434
Confl. Peds. (#/hr)	71		53	53			71	90		112	112	
Heavy Vehicles (%)	5%	5%	5%	5%	100%	5%	5%	5%	5%	5%	5%	5%
Turn Type	pm+pt		pm+pt		Prot		Perm		Prot		Perm	
Protected Phases	7	4	3		9	8	2		2	2	6	
Permitted Phases	4		8				2				6	
Actuated Green, G (s)	37.1	37.1	54.6		2.0	53.6	37.2		37.2	37.2	37.2	37.2
Effective Green, g (s)	40.1	40.1	56.6		10.0	56.6	40.2		40.2	40.2	40.2	40.2
Actuated g/C Ratio	0.33	0.33	0.47		0.08	0.47	0.34		0.34	0.34	0.34	0.34
Clearance Time (s)	4.0	5.0	4.0		10.0	5.0	5.0		5.0	5.0	5.0	5.0
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0	3.0		3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	202	1069	371		75	1564	130		606	515	60	580
v/s Ratio Prot	0.01	c0.30	c0.16		0.01	0.19	0.32		0.21	0.21	0.25	
v/s Ratio Perm	0.08		0.26				0.21				c0.46	
v/c Ratio	0.27	0.89	0.88		0.13	0.40	0.63		0.94	0.63	1.37	0.75
Uniform Delay, d1	28.4	37.9	40.5		51.0	20.6	33.6		38.8	33.7	39.9	35.4
Progression Factor	1.00	1.00	0.52		0.80	0.29	1.00		1.00	1.00	1.00	1.00
Incremental Delay, d2	0.7	9.2	15.8		0.6	0.6	21.0		24.8	5.8	241.4	8.6
Delay (s)	29.1	47.1	37.1		41.5	6.5	54.6		63.6	39.5	281.3	44.0
Level of Service	C	D	D		D	A	D		E	D	F	D
Approach Delay (s)	46.1				17.2		54.8				81.7	
Approach LOS	D				B		D				F	

### Intersection Summary

HCM Average Control Delay	45.9	HCM Level of Service	D
HCM Volume to Capacity ratio	0.96		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	6.0
Intersection Capacity Utilization	96.7%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis  
 4: Wayne Ave. & Fenton St

6/10/2008





















Movement	SBR2	NER
Lane Configurations		
Ideal Flow (vphpl)	1900	1900
Total Lost time (s)		2.0
Lane Util. Factor		1.00
Frbp, ped/bikes		1.00
Flpb, ped/bikes		1.00
Frt		0.86
Flt Protected		1.00
Satd. Flow (prot)		822
Flt Permitted		1.00
Satd. Flow (perm)		822
Volume (vph)	50	10
Peak-hour factor, PHF	0.92	1.00
Adj. Flow (vph)	54	10
RTOR Reduction (vph)	0	0
Lane Group Flow (vph)	0	10
Confl. Peds. (#/hr)	90	
Heavy Vehicles (%)	5%	100%
Turn Type		Over
Protected Phases		9
Permitted Phases		
Actuated Green, G (s)		2.0
Effective Green, g (s)		10.0
Actuated g/C Ratio		0.08
Clearance Time (s)		10.0
Vehicle Extension (s)		3.0
Lane Grp Cap (vph)		69
v/s Ratio Prot		c0.01
v/s Ratio Perm		
v/c Ratio		0.14
Uniform Delay, d1		51.0
Progression Factor		1.00
Incremental Delay, d2		1.0
Delay (s)		52.0
Level of Service		D
Approach Delay (s)		
Approach LOS		
<b>Intersection Summary</b>		

# HCM Signalized Intersection Capacity Analysis

## 5: Cedar Ave & Wayne Ave.

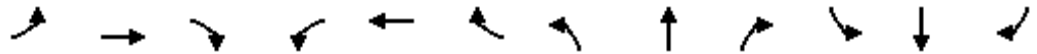
6/10/2008

												
Movement	NBL	NBT	NBR	SBL	SBT	SBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		2.0		2.0		2.0	2.0	2.0			2.0	
Lane Util. Factor		1.00		1.00		1.00	1.00	0.95			0.95	
Frbp, ped/bikes		0.99		1.00		1.00	1.00	1.00			1.00	
Flpb, ped/bikes		1.00		1.00		1.00	1.00	1.00			1.00	
Frt		0.96		1.00		0.85	1.00	1.00			0.97	
Flt Protected		0.99		0.95		1.00	0.95	1.00			1.00	
Satd. Flow (prot)		1711		1719		1538	1719	3438			3327	
Flt Permitted		0.99		0.37		1.00	0.11	1.00			1.00	
Satd. Flow (perm)		1711		676		1538	208	3438			3327	
Volume (vph)	75	225	125	250	0	200	250	835	0	0	760	175
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	82	245	136	272	0	217	272	908	0	0	826	190
RTOR Reduction (vph)	0	14	0	0	0	128	0	0	0	0	0	0
Lane Group Flow (vph)	0	449	0	272	0	89	272	908	0	0	1016	0
Confl. Peds. (#/hr)			5	5			1					1
Turn Type	Perm		custom		custom	pm+pt						
Protected Phases		8				5		2			6	
Permitted Phases	8		4		4	2						
Actuated Green, G (s)		46.2		46.2		46.2	63.8	63.8			43.8	
Effective Green, g (s)		49.2		49.2		49.2	66.8	66.8			46.8	
Actuated g/C Ratio		0.41		0.41		0.41	0.56	0.56			0.39	
Clearance Time (s)		5.0		5.0		5.0	5.0	5.0			5.0	
Vehicle Extension (s)		3.0		3.0		3.0	3.0	0.2			0.2	
Lane Grp Cap (vph)		702		277		631	342	1914			1298	
v/s Ratio Prot							c0.12	0.26			0.31	
v/s Ratio Perm		0.26		c0.40		0.06	c0.32					
v/c Ratio		0.64		0.98		0.14	0.80	0.47			0.78	
Uniform Delay, d1		28.3		35.0		22.2	38.3	16.0			32.1	
Progression Factor		1.00		1.00		1.00	0.52	0.28			0.78	
Incremental Delay, d2		2.0		48.8		0.1	7.4	0.5			2.9	
Delay (s)		30.3		83.8		22.3	27.4	5.0			27.9	
Level of Service		C		F		C	C	A			C	
Approach Delay (s)		30.3			56.5			10.2			27.9	
Approach LOS		C			E			B			C	
<b>Intersection Summary</b>												
HCM Average Control Delay			26.0				HCM Level of Service				C	
HCM Volume to Capacity ratio			0.85									
Actuated Cycle Length (s)			120.0				Sum of lost time (s)				4.0	
Intersection Capacity Utilization			91.4%				ICU Level of Service				F	
Analysis Period (min)			15									
c	Critical Lane Group											

# HCM Signalized Intersection Capacity Analysis

## 6: Wayne Ave. & Dale Dr

6/10/2008



Movement	EBL2	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR2	SBL	SBT	SBR
Lane Configurations	↖	↗			↖		↖	↗		↖	↗	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	2.0	2.0			2.0		2.0	2.0		2.0	2.0	
Lane Util. Factor	1.00	0.95			0.95		1.00	1.00		1.00	1.00	
Frbp, ped/bikes	1.00	1.00			1.00		1.00	0.99		1.00	1.00	
Flpb, ped/bikes	1.00	1.00			1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.98			0.97		1.00	0.95		1.00	0.98	
Flt Protected	0.95	1.00			0.99		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1719	3365			3321		1719	1716		1719	1764	
Flt Permitted	0.20	1.00			0.57		0.13	1.00		0.12	1.00	
Satd. Flow (perm)	353	3365			1921		228	1716		214	1764	
Volume (vph)	200	910	150	125	650	175	75	350	150	200	425	75
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	217	989	163	136	707	190	82	380	163	217	462	82
RTOR Reduction (vph)	0	11	0	0	0	0	0	12	0	0	5	0
Lane Group Flow (vph)	217	1141	0	0	1033	0	82	531	0	217	539	0
Conf. Peds. (#/hr)							2		6	6		2
Turn Type	Perm			Perm			pm+pt			pm+pt		
Protected Phases		6			2		3	8		7	4	
Permitted Phases	6			2			8			4		
Actuated Green, G (s)	70.2	70.2			62.2		32.0	28.8		38.6	32.6	
Effective Green, g (s)	73.2	73.2			65.2		37.0	31.8		42.8	35.6	
Actuated g/C Ratio	0.61	0.61			0.54		0.31	0.27		0.36	0.30	
Clearance Time (s)	5.0	5.0			5.0		4.0	5.0		5.0	5.0	
Vehicle Extension (s)	3.0	3.0			3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	215	2053			1044		135	455		189	523	
v/s Ratio Prot		0.34					0.03	c0.31		c0.09	0.31	
v/s Ratio Perm	c0.61				0.54		0.16			0.32		
v/c Ratio	1.01	0.56			0.99		0.61	1.17		1.15	1.03	
Uniform Delay, d1	23.4	13.8			27.1		34.1	44.1		57.7	42.2	
Progression Factor	0.99	0.88			1.17		1.00	1.00		1.00	1.00	
Incremental Delay, d2	59.0	0.9			24.5		7.5	96.2		111.0	47.5	
Delay (s)	82.3	13.1			56.2		41.6	140.3		168.7	89.7	
Level of Service	F	B			E		D	F		F	F	
Approach Delay (s)		24.1			56.2			127.4			112.2	
Approach LOS		C			E			F			F	

### Intersection Summary

HCM Average Control Delay	67.5	HCM Level of Service	E
HCM Volume to Capacity ratio	1.05		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	6.0
Intersection Capacity Utilization	125.1%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

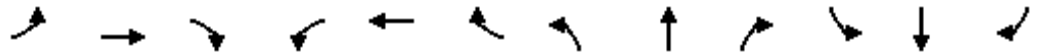


Movement	SWR
Lane Configurations	↗
Ideal Flow (vphpl)	1900
Total Lost time (s)	2.0
Lane Util. Factor	1.00
Frbp, ped/bikes	1.00
Flpb, ped/bikes	1.00
Frt	0.86
Flt Protected	1.00
Satd. Flow (prot)	1565
Flt Permitted	1.00
Satd. Flow (perm)	1565
Volume (vph)	10
Peak-hour factor, PHF	0.92
Adj. Flow (vph)	11
RTOR Reduction (vph)	0
Lane Group Flow (vph)	11
Confl. Peds. (#/hr)	
Turn Type	custom
Protected Phases	1
Permitted Phases	
Actuated Green, G (s)	3.0
Effective Green, g (s)	6.0
Actuated g/C Ratio	0.05
Clearance Time (s)	5.0
Vehicle Extension (s)	3.0
Lane Grp Cap (vph)	78
v/s Ratio Prot	0.01
v/s Ratio Perm	
v/c Ratio	0.14
Uniform Delay, d1	54.5
Progression Factor	1.00
Incremental Delay, d2	0.8
Delay (s)	55.4
Level of Service	E
Approach Delay (s)	
Approach LOS	
<b>Intersection Summary</b>	

# HCM Signalized Intersection Capacity Analysis

## 7: Wayne Ave. & Mansfield

6/10/2008



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑			↑↑			↑↓				
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		2.0			2.0			2.0				
Lane Util. Factor		0.95			0.95			1.00				
Frbp, ped/bikes		1.00			1.00			0.99				
Flpb, ped/bikes		1.00			1.00			1.00				
Frt		1.00			1.00			0.93				
Flt Protected		1.00			1.00			0.98				
Satd. Flow (prot)		3427			3438			1630				
Flt Permitted		1.00			1.00			0.98				
Satd. Flow (perm)		3427			3438			1630				
Volume (vph)	0	1335	25	0	950	0	5	0	5	0	0	0
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	1451	27	0	1033	0	5	0	5	0	0	0
RTOR Reduction (vph)	0	1	0	0	0	0	0	4	0	0	0	0
Lane Group Flow (vph)	0	1477	0	0	1033	0	0	6	0	0	0	0
Confl. Peds. (#/hr)			2	2					5			
Turn Type								Perm				
Protected Phases		6			2			4				
Permitted Phases							4					
Actuated Green, G (s)		85.0			85.0			24.0				
Effective Green, g (s)		89.0			89.0			27.0				
Actuated g/C Ratio		0.74			0.74			0.22				
Clearance Time (s)		6.0			6.0			5.0				
Vehicle Extension (s)		0.2			0.2			3.0				
Lane Grp Cap (vph)		2542			2550			367				
v/s Ratio Prot		c0.43			0.30							
v/s Ratio Perm								0.00				
v/c Ratio		0.58			0.41			0.02				
Uniform Delay, d1		7.0			5.7			36.2				
Progression Factor		0.64			1.05			1.00				
Incremental Delay, d2		0.7			0.4			0.0				
Delay (s)		5.2			6.4			36.2				
Level of Service		A			A			D				
Approach Delay (s)		5.2			6.4			36.2			0.0	
Approach LOS		A			A			D			A	

### Intersection Summary

HCM Average Control Delay	5.8	HCM Level of Service	A
HCM Volume to Capacity ratio	0.45		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	4.0
Intersection Capacity Utilization	64.4%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

# HCM Signalized Intersection Capacity Analysis

## 8: Wayne Ave. & Sligo Creek Pkwy

6/10/2008



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗		↖	↗		↖	↗			↖	↗
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	2.0	2.0		2.0	2.0		2.0	2.0			2.0	2.0
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00			1.00	1.00
Frbp, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00			1.00	1.00
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00			1.00	1.00
Frt	1.00	0.98		1.00	0.99		1.00	0.99			1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00			0.99	1.00
Satd. Flow (prot)	1719	3361		1719	3419		1719	1790			1786	1538
Flt Permitted	0.13	1.00		0.12	1.00		0.26	1.00			0.67	1.00
Satd. Flow (perm)	243	3361		220	3419		468	1790			1218	1538
Volume (vph)	300	850	150	25	660	25	100	325	25	100	350	175
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	326	924	163	27	717	27	109	353	27	109	380	190
RTOR Reduction (vph)	0	12	0	0	2	0	0	3	0	0	0	0
Lane Group Flow (vph)	326	1075	0	27	742	0	109	377	0	0	489	190
Conf. Peds. (#/hr)	11			10			10			7		
Turn Type	pm+pt			Perm			pm+pt			Perm		Prot
Protected Phases	5	2			6		7	4			8	8
Permitted Phases	2			6			4			8		
Actuated Green, G (s)	53.9	53.9		29.9	29.9		56.1	56.1			46.8	46.8
Effective Green, g (s)	56.9	56.9		32.9	32.9		59.1	59.1			49.8	49.8
Actuated g/C Ratio	0.47	0.47		0.27	0.27		0.49	0.49			0.41	0.41
Clearance Time (s)	5.0	5.0		5.0	5.0		5.0	5.0			5.0	5.0
Vehicle Extension (s)	3.0	0.2		0.2	0.2		3.0	3.0			3.0	3.0
Lane Grp Cap (vph)	386	1594		60	937		307	882			505	638
v/s Ratio Prot	c0.15	0.32			0.22		0.02	c0.21				0.12
v/s Ratio Perm	c0.25			0.12			0.15				c0.40	
v/c Ratio	0.84	0.67		0.45	0.79		0.36	0.43			0.97	0.30
Uniform Delay, d1	39.9	24.4		36.1	40.4		34.4	19.6			34.3	23.4
Progression Factor	0.71	0.63		1.04	1.02		1.00	1.00			1.00	1.00
Incremental Delay, d2	13.0	1.9		18.2	5.5		0.7	0.3			31.7	0.3
Delay (s)	41.4	17.3		55.6	46.5		35.1	19.9			66.0	23.7
Level of Service	D	B		E	D		D	B			E	C
Approach Delay (s)		22.8			46.9			23.3			54.2	
Approach LOS		C			D			C			D	

### Intersection Summary

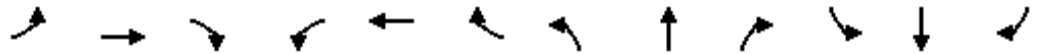
HCM Average Control Delay	34.8	HCM Level of Service	C
HCM Volume to Capacity ratio	0.84		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	4.0
Intersection Capacity Utilization	91.6%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

# HCM Signalized Intersection Capacity Analysis

## 3: Wayne Ave. #1 & Georgia Ave

7/28/2008



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↗	↗↘		↗	↗↘		↗	↗↘↙		↗	↗↘↙	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	0.91		1.00	0.91	
Frbp, ped/bikes	1.00	0.94		1.00	0.93		1.00	0.98		1.00	0.98	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.95		1.00	0.94		1.00	0.99		1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1719	3083		1719	3004		1719	4796		1719	4798	
Flt Permitted	0.14	1.00		0.16	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	245	3083		283	3004		1719	4796		1719	4798	
Volume (vph)	370	570	265	135	380	245	180	1730	120	105	1530	150
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	389	600	279	142	400	258	189	1821	126	111	1611	158
RTOR Reduction (vph)	0	45	0	0	88	0	0	6	0	0	10	0
Lane Group Flow (vph)	389	834	0	142	570	0	189	1941	0	111	1759	0
Confl. Peds. (#/hr)			117			116			173			97
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%
Turn Type	pm+pt			pm+pt			Prot			Prot		
Protected Phases	7	4		3	8		1	5		6	2	
Permitted Phases	4			8								
Actuated Green, G (s)	44.6	30.3		33.9	23.6		14.2	50.4		7.0	45.2	
Effective Green, g (s)	46.6	32.3		35.9	25.6		14.2	52.4		9.0	47.2	
Actuated g/C Ratio	0.39	0.27		0.30	0.21		0.12	0.44		0.08	0.39	
Clearance Time (s)	4.0	6.0		4.0	6.0		4.0	6.0		6.0	6.0	
Vehicle Extension (s)	3.0	4.0		3.0	4.0		3.0	0.2		3.0	0.2	
Lane Grp Cap (vph)	304	830		208	641		203	2094		129	1887	
v/s Ratio Prot	c0.18	0.27		0.06	0.19		0.11	c0.40		0.06	c0.37	
v/s Ratio Perm	c0.32			0.15								
v/c Ratio	1.28	1.00		0.68	0.89		0.93	0.93		0.86	0.93	
Uniform Delay, d1	34.5	43.8		33.9	45.8		52.4	32.0		54.9	34.9	
Progression Factor	1.00	1.00		1.00	1.00		1.24	0.45		0.69	0.52	
Incremental Delay, d2	148.7	32.3		8.9	14.5		34.5	6.3		45.2	9.1	
Delay (s)	183.3	76.2		42.8	60.3		99.5	20.5		83.1	27.1	
Level of Service	F	E		D	E		F	C		F	C	
Approach Delay (s)		109.0			57.2			27.5			30.4	
Approach LOS		F			E			C			C	

### Intersection Summary

























HCM Average Control Delay	49.3	HCM Level of Service	D
HCM Volume to Capacity ratio	1.05		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	98.1%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			



# HCM Signalized Intersection Capacity Analysis

65: Wayne Ave. #1 & Dixon Rd

7/28/2008

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		  			  			 			  	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		2.0			2.0			2.0	2.0		2.0	
Lane Util. Factor		0.91			0.91			0.95	0.95		1.00	
Frt		0.99			1.00			0.91	0.85		0.93	
Flt Protected		1.00			0.99			0.98	1.00		0.98	
Satd. Flow (prot)		4877			4897			1600	1519		1725	
Flt Permitted		0.92			0.79			0.87	1.00		0.89	
Satd. Flow (perm)		4515			3877			1411	1519		1555	
Volume (vph)	10	575	50	80	615	15	100	5	515	10	5	15
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	11	605	53	84	647	16	105	5	542	11	5	16
RTOR Reduction (vph)	0	4	0	0	1	0	0	50	287	0	12	0
Lane Group Flow (vph)	0	665	0	0	746	0	0	212	103	0	20	0
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%	1%	1%	1%	1%	1%	1%
Turn Type	Perm			pm+pt			Perm		Perm	Perm		
Protected Phases		6		5	2			4				8
Permitted Phases	6			2			4		4	8		
Actuated Green, G (s)		80.2			80.2			27.8	27.8			27.8
Effective Green, g (s)		84.2			84.2			31.8	31.8			31.8
Actuated g/C Ratio		0.70			0.70			0.26	0.26			0.26
Clearance Time (s)		6.0			6.0			6.0	6.0			6.0
Vehicle Extension (s)		3.0			3.0			3.0	3.0			3.0
Lane Grp Cap (vph)		3168			2720			374	403			412
v/s Ratio Prot												
v/s Ratio Perm		0.15			c0.19			c0.15	0.07			0.01
v/c Ratio		0.21			0.27			0.57	0.26			0.05
Uniform Delay, d1		6.3			6.6			38.1	34.8			32.8
Progression Factor		1.00			1.00			0.98	0.95			1.00
Incremental Delay, d2		0.2			0.1			2.0	0.3			0.0
Delay (s)		6.4			6.7			39.2	33.2			32.9
Level of Service		A			A			D	C			C
Approach Delay (s)		6.4			6.7			35.6				32.9
Approach LOS		A			A			D				C
<b>Intersection Summary</b>												
HCM Average Control Delay			16.0			HCM Level of Service				B		
HCM Volume to Capacity ratio			0.35									
Actuated Cycle Length (s)			120.0			Sum of lost time (s)				4.0		
Intersection Capacity Utilization			58.4%			ICU Level of Service				B		
Analysis Period (min)			15									

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis  
 131: Bonifant Street & Georgia Ave

7/28/2008

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑			↑		↗	↑↑↑		↗	↑↑↑	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		2.0			2.0		2.0	2.0		2.0	2.0	
Lane Util. Factor		1.00			1.00		1.00	0.91		1.00	0.91	
Frt		1.00			1.00		1.00	0.99		1.00	1.00	
Flt Protected		1.00			1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1863			1863		1770	5040		1770	5067	
Flt Permitted		1.00			1.00		0.07	1.00		0.07	1.00	
Satd. Flow (perm)		1863			1863		132	5040		123	5067	
Volume (vph)	0	10	0	0	10	0	85	1965	125	90	1660	40
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	11	0	0	11	0	89	2068	132	95	1747	42
RTOR Reduction (vph)	0	0	0	0	0	0	0	5	0	0	2	0
Lane Group Flow (vph)	0	11	0	0	11	0	89	2195	0	95	1787	0
Turn Type							pm+pt			pm+pt		
Protected Phases		4			4		5	2		1	6	
Permitted Phases							2			6		
Actuated Green, G (s)		25.0			25.0		67.0	67.0		73.8	73.8	
Effective Green, g (s)		28.0			28.0		70.0	70.0		76.8	76.8	
Actuated g/C Ratio		0.23			0.23		0.58	0.58		0.64	0.64	
Clearance Time (s)		5.0			5.0		5.0	5.0		5.0	5.0	
Vehicle Extension (s)		3.0			3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		435			435		203	2940		298	3243	
v/s Ratio Prot		c0.01			0.01		0.03	c0.44		0.04	c0.35	
v/s Ratio Perm							0.22			0.16		
v/c Ratio		0.03			0.03		0.44	0.75		0.32	0.55	
Uniform Delay, d1		35.5			35.5		15.2	18.5		30.9	12.0	
Progression Factor		1.00			0.96		1.65	0.14		0.38	0.35	
Incremental Delay, d2		0.0			0.0		0.9	1.1		0.2	0.3	
Delay (s)		35.5			34.0		26.0	3.7		12.0	4.5	
Level of Service		D			C		C	A		B	A	
Approach Delay (s)		35.5			34.0			4.6			4.9	
Approach LOS		D			C			A			A	
<b>Intersection Summary</b>												
HCM Average Control Delay			4.9				HCM Level of Service			A		
HCM Volume to Capacity ratio			0.54									
Actuated Cycle Length (s)			120.0				Sum of lost time (s)			4.0		
Intersection Capacity Utilization			59.1%				ICU Level of Service			B		
Analysis Period (min)			15									
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis  
 132: Thayer Ave. & Georgia Ave

7/28/2008



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↔		↑↑↑		↗	↑↑↑
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0		4.0		4.0	4.0
Lane Util. Factor	1.00		0.91		1.00	0.91
Frt	0.90		0.99		1.00	1.00
Flt Protected	0.99		1.00		0.95	1.00
Satd. Flow (prot)	1655		5048		1770	5085
Flt Permitted	0.99		1.00		0.06	1.00
Satd. Flow (perm)	1655		5048		103	5085
Volume (vph)	65	185	2050	105	140	1660
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	68	195	2158	111	147	1747
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	263	0	2269	0	147	1747
Turn Type					pm+pt	
Protected Phases	4		5		6	2
Permitted Phases					2	
Actuated Green, G (s)	22.6		67.4		87.4	87.4
Effective Green, g (s)	23.6		68.4		88.4	88.4
Actuated g/C Ratio	0.20		0.57		0.74	0.74
Clearance Time (s)	5.0		5.0		5.0	5.0
Vehicle Extension (s)	3.0		3.0		3.0	3.0
Lane Grp Cap (vph)	325		2877		298	3746
v/s Ratio Prot	c0.16		c0.45		0.07	c0.34
v/s Ratio Perm					0.30	
v/c Ratio	0.81		0.79		0.49	0.47
Uniform Delay, d1	46.0		20.2		32.3	6.3
Progression Factor	1.00		1.00		0.36	0.13
Incremental Delay, d2	13.8		2.3		1.1	0.4
Delay (s)	59.8		22.4		12.8	1.2
Level of Service	E		C		B	A
Approach Delay (s)	59.8		22.4			2.1
Approach LOS	E		C			A

Intersection Summary

HCM Average Control Delay	15.9	HCM Level of Service	B
HCM Volume to Capacity ratio	0.73		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	74.7%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			













HCM Signalized Intersection Capacity Analysis  
801: Campus Drive & Adelphi Rd.

Purple Line (UMD)  
7/30/2008

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations		↑↑	↑	↖	↑	↗	↖	↑↑↑	↗	↖↗	↑↑		
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		
Lane Util. Factor		0.95	1.00	1.00	1.00	1.00	1.00	0.91	1.00	0.97	0.95		
Frbp, ped/bikes		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		
Flpb, ped/bikes		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		
Frt		1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00		
Flt Protected		1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		
Satd. Flow (prot)		3539	1583	1770	1863	1583	1770	5085	1583	3433	3539		
Flt Permitted		1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		
Satd. Flow (perm)		3539	1583	1770	1863	1583	1770	5085	1583	3433	3539		
Volume (vph)	0	192	207	95	233	65	208	888	331	357	1225	0	
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	
Adj. Flow (vph)	0	213	230	106	259	72	231	987	368	397	1361	0	
RTOR Reduction (vph)	0	0	169	0	0	44	0	0	275	0	0	0	
Lane Group Flow (vph)	0	213	61	106	259	28	231	987	93	397	1361	0	
Confl. Peds. (#/hr)	49			3			2						
Turn Type			Perm	Split		Perm	Prot		Perm	Prot			
Protected Phases		2		6	6		3	8		1 7	1 4		
Permitted Phases			2			6			8				
Actuated Green, G (s)		62.6	62.6	30.0	30.0	30.0	30.0	60.0	60.0	72.4	103.4		
Effective Green, g (s)		65.6	65.6	33.0	33.0	33.0	32.0	63.0	63.0	74.4	105.4		
Actuated g/C Ratio		0.26	0.26	0.13	0.13	0.13	0.13	0.25	0.25	0.30	0.43		
Clearance Time (s)		6.0	6.0	6.0	6.0	6.0	5.0	6.0	6.0				
Vehicle Extension (s)		4.0	4.0	3.0	3.0	3.0	3.0	3.5	3.5				
Lane Grp Cap (vph)		936	419	236	248	211	228	1292	402	1030	1504		
v/s Ratio Prot		c0.06		0.06	c0.14		c0.13	0.19		0.12	c0.38		
v/s Ratio Perm			0.04			0.02			0.06				
v/c Ratio		0.23	0.15	0.45	1.04	0.13	1.01	0.76	0.23	0.39	0.90		
Uniform Delay, d1		71.4	69.8	99.1	107.5	94.9	108.0	85.6	73.3	68.7	66.6		
Progression Factor		0.56	0.66	1.00	1.00	1.00	1.00	1.00	1.00	0.40	0.36		
Incremental Delay, d2		0.1	0.1	1.4	69.2	0.3	63.0	2.8	0.4	0.2	6.3		
Delay (s)		40.3	46.2	100.5	176.7	95.1	171.0	88.4	73.7	27.7	30.0		
Level of Service		D	D	F	F	F	F	F	E	C	C		
Approach Delay (s)		43.3			144.8			97.0			29.5		
Approach LOS		D			F			F			C		
Intersection Summary													
HCM Average Control Delay			68.2		HCM Level of Service					E			
HCM Volume to Capacity ratio			0.75										
Actuated Cycle Length (s)			248.0		Sum of lost time (s)					12.0			
Intersection Capacity Utilization			84.8%		ICU Level of Service					E			
Analysis Period (min)			15										
c Critical Lane Group													

HCM Unsignalized Intersection Capacity Analysis  
 810: Campus Drive & Regents Drive

Purple Line (UMD)  
 7/30/2008

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Right Turn Channelized			Yes			Yes			Yes			Yes
Volume (veh/h)	9	54	19	52	86	277	4	77	39	93	76	11
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	10	59	21	57	93	301	4	84	42	101	83	12
Approach Volume (veh/h)		68			150			88			184	
Crossing Volume (veh/h)		240			98			170			154	
High Capacity (veh/h)		1147			1283			1213			1227	
High v/c (veh/h)		0.06			0.12			0.07			0.15	
Low Capacity (veh/h)		946			1069			1005			1018	
Low v/c (veh/h)		0.07			0.14			0.09			0.18	
Intersection Summary												
Maximum v/c High			0.15									
Maximum v/c Low			0.18									
Intersection Capacity Utilization			67.2%			ICU Level of Service						C












HCM Signalized Intersection Capacity Analysis  
812: Campus Drive & US 1

Purple Line (UMD)  
11/5/2007

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Util. Factor	0.95	0.95	1.00	0.91	0.91	0.88	0.97	0.95	1.00	0.97	0.95	1.00
Frnt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	1.00
Flt Protected	0.95	1.00	1.00	0.95	0.98	1.00	0.95	1.00	1.00	0.95	1.00	0.85
Satd. Flow (prot)	1681	1770	1583	1610	3327	2787	3433	3539	1583	3433	3539	1583
Flt Permitted	0.95	1.00	1.00	0.95	0.98	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1681	1770	1583	1610	3327	2787	3433	3539	1583	3433	3539	1583
Volume (vph)	58	142	72	677	492	490	169	779	148	507	1718	496
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	64	158	80	752	547	544	188	866	164	563	1909	551
RTOR Reduction (vph)	0	0	71	0	0	174	0	0	94	0	0	134
Lane Group Flow (vph)	64	158	9	418	881	370	188	866	70	563	1909	417
Turn Type	Split		Perm	Split		pt+ov	Prot		Perm	Prot		Perm
Protected Phases	4	4		3	3	3.5	1	6		5	2	
Permitted Phases			4						6			2
Actuated Green, G (s)	14.9	14.9	14.9	30.5	30.5	55.6	13.6	57.5	57.5	25.1	69.0	69.0
Effective Green, g (s)	17.4	17.4	17.4	33.0	33.0	60.1	15.6	60.5	60.5	27.1	72.0	72.0
Actuated g/C Ratio	0.12	0.12	0.12	0.22	0.22	0.40	0.10	0.40	0.40	0.18	0.48	0.48
Clearance Time (s)	5.5	5.5	5.5	5.5	5.5		5.0	6.0	6.0	5.0	6.0	6.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	5.0	5.0	3.0	5.0	5.0
Lane Grp Cap (vph)	195	205	184	354	732	1117	357	1427	638	620	1699	760
v/s Ratio Prot	0.04	c0.09		0.26	c0.26	0.13	0.05	0.24		c0.16	c0.54	
v/s Ratio Perm			0.01						0.04			0.26
v/c Ratio	0.33	0.77	0.05	1.18	1.20	0.33	0.53	0.61	0.11	0.91	1.12	0.55
Uniform Delay, d1	60.9	64.4	59.0	58.5	58.5	31.1	63.7	35.4	27.9	60.2	39.0	27.5
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.13	0.94	1.56	1.16	0.77	0.50
Incremental Delay, d2	1.0	16.3	0.1	106.7	104.4	0.2	1.3	1.7	0.3	2.1	56.5	0.3
Delay (s)	61.9	80.6	59.1	165.2	162.9	31.2	73.3	35.1	43.9	71.7	86.4	14.0
Level of Service	E	F	E	F	F	C	E	D	D	E	F	B
Approach Delay (s)		71.0			124.5			42.1			70.5	
Approach LOS		E			F			D			E	
Intersection Summary												
HCM Average Control Delay	80.7			HCM Level of Service						F		
HCM Volume to Capacity ratio	1.08											
Actuated Cycle Length (s)	150.0			Sum of lost time (s)						12.0		
Intersection Capacity Utilization	95.3%			ICU Level of Service						F		
Analysis Period (min)	15											
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis  
 200: E. Campus Main Ent & US 1

Purple Line (UMD)  
 11/5/2007

Movement						
	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0		4.0	4.0
Lane Util. Factor	1.00	1.00	0.95		1.00	0.95
Frt	1.00	0.85	0.99		1.00	1.00
Flt Protected	0.95	1.00	1.00		0.95	1.00
Satd. Flow (prot)	1770	1583	3513		1770	3539
Flt Permitted	0.95	1.00	1.00		0.95	1.00
Satd. Flow (perm)	1770	1583	3513		1770	3539
Volume (vph)	76	72	1307	68	116	2480
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	83	78	1421	74	126	2696
RTOR Reduction (vph)	0	71	2	0	0	0
Lane Group Flow (vph)	83	7	1493	0	126	2696
Turn Type		Perm			Prot	
Protected Phases	8		2		1	6
Permitted Phases		8				
Actuated Green, G (s)	12.0	12.0	106.5		15.0	126.5
Effective Green, g (s)	13.5	13.5	108.5		16.0	128.5
Actuated g/C Ratio	0.09	0.09	0.72		0.11	0.86
Clearance Time (s)	5.5	5.5	6.0		5.0	6.0
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	159	142	2541		189	3032
v/s Ratio Prot	c0.05		0.42		0.07	c0.76
v/s Ratio Perm		0.00				
v/c Ratio	0.52	0.05	0.59		0.67	0.89
Uniform Delay, d1	65.2	62.4	10.0		64.4	6.5
Progression Factor	1.00	1.00	1.46		0.83	2.45
Incremental Delay, d2	3.1	0.1	0.9		0.8	0.4
Delay (s)	68.2	62.5	15.5		54.3	16.3
Level of Service	E	E	B		D	B
Approach Delay (s)	65.5		15.5			18.0
Approach LOS	E		B			B
<b>Intersection Summary</b>						
HCM Average Control Delay			18.8		HCM Level of Service	B
HCM Volume to Capacity ratio			0.85			
Actuated Cycle Length (s)			150.0		Sum of lost time (s)	8.0
Intersection Capacity Utilization			79.4%		ICU Level of Service	D
Analysis Period (min)			15			
c Critical Lane Group						

HCM Signalized Intersection Capacity Analysis  
 212: Rossborough Rd. & US 1

Purple Line (UMD)  
 7/30/2008

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0			3.0	3.0	3.0	3.0		3.0	3.0	
Lane Util. Factor	1.00	1.00			1.00	1.00	1.00	0.95		1.00	0.95	
Frt	1.00	0.93			1.00	0.85	1.00	1.00		1.00	0.98	
Flt Protected	0.95	1.00			0.96	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1723			1783	1583	1770	3531		1770	3474	
Flt Permitted	0.73	1.00			0.76	1.00	0.06	1.00		0.22	1.00	
Satd. Flow (perm)	1352	1723			1410	1583	120	3531		412	3474	
Volume (vph)	16	2	2	32	4	293	8	990	16	157	1680	236
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	18	2	2	36	4	326	9	1100	18	174	1867	262
RTOR Reduction (vph)	0	2	0	0	0	292	0	0	0	0	3	0
Lane Group Flow (vph)	18	2	0	0	40	34	9	1118	0	174	2126	0
Turn Type	Perm			Perm		Perm	pm+pt			pm+pt		
Protected Phases		4			8		1	6		5	2	
Permitted Phases	4			8		8	6			2		
Actuated Green, G (s)	11.1	11.1			11.1	11.1	116.8	114.5		127.4	120.6	
Effective Green, g (s)	13.6	13.6			13.6	13.6	121.3	117.5		130.4	123.6	
Actuated g/C Ratio	0.09	0.09			0.09	0.09	0.81	0.78		0.87	0.82	
Clearance Time (s)	5.5	5.5			5.5	5.5	4.5	6.0		4.5	6.0	
Vehicle Extension (s)	3.0	3.0			3.0	3.0	3.0	5.0		3.0	5.0	
Lane Grp Cap (vph)	123	156			128	144	139	2766		448	2863	
v/s Ratio Prot		0.00					0.00	0.32		c0.03	c0.61	
v/s Ratio Perm	0.01				c0.03	0.02	0.05			0.31		
v/c Ratio	0.15	0.01			0.31	0.24	0.06	0.40		0.39	0.74	
Uniform Delay, d1	62.9	62.1			63.8	63.4	6.9	5.2		2.7	6.0	
Progression Factor	1.00	1.00			1.00	1.00	0.95	0.52		1.26	1.73	
Incremental Delay, d2	0.6	0.0			1.4	0.9	0.2	0.4		0.3	0.8	
Delay (s)	63.4	62.1			65.2	64.2	6.8	3.1		3.7	11.2	
Level of Service	E	E			E	E	A	A		A	B	
Approach Delay (s)		63.2			64.3			3.1			10.6	
Approach LOS		E			E			A			B	
Intersection Summary												
HCM Average Control Delay			13.9				HCM Level of Service			B		
HCM Volume to Capacity ratio			0.69									
Actuated Cycle Length (s)			150.0				Sum of lost time (s)			9.0		
Intersection Capacity Utilization			76.8%				ICU Level of Service			D		
Analysis Period (min)			15									
c Critical Lane Group												



HCM Signalized Intersection Capacity Analysis  
 813: Paint Branch Pkwy & Fire Academy

Purple Line (UMD)  
 11/5/2007

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	2.0	2.0		2.0	2.0			2.0			2.0	
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00			1.00	
Flt Protected	0.95	1.00		0.95	1.00			0.98			0.92	
Satd. Flow (prot)	1770	3442		1770	3504			1762			1695	
Flt Permitted	0.13	1.00		0.43	1.00			0.87			0.95	
Satd. Flow (perm)	236	3442		794	3504			1580			1629	
Volume (vph)	220	421	94	50	1245	88	25	6	6	13	6	25
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	220	421	94	50	1245	88	25	6	6	13	6	25
RTOR Reduction (vph)	0	24	0	0	6	0	0	4	0	0	16	0
Lane Group Flow (vph)	220	491	0	50	1327	0	0	33	0	0	28	0
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	45.0	45.0		45.0	45.0			25.0			25.0	
Effective Green, g (s)	48.0	48.0		48.0	48.0			28.0			28.0	
Actuated g/C Ratio	0.60	0.60		0.60	0.60			0.35			0.35	
Clearance Time (s)	5.0	5.0		5.0	5.0			5.0			5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0			3.0	
Lane Grp Cap (vph)	142	2065		476	2102			553			570	
v/s Ratio Prot		0.14			0.38							
v/s Ratio Perm	c0.93			0.06				c0.02			0.02	
v/c Ratio	1.55	0.24		0.11	0.63			0.06			0.05	
Uniform Delay, d1	16.0	7.5		6.8	10.3			17.3			17.2	
Progression Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Incremental Delay, d2	278.9	0.1		0.1	0.6			0.2			0.2	
Delay (s)	294.9	7.5		6.9	10.9			17.5			17.4	
Level of Service	F	A		A	B			B			B	
Approach Delay (s)		93.5			10.8			17.5			17.4	
Approach LOS		F			B			B			B	
Intersection Summary												
HCM Average Control Delay			38.7			HCM Level of Service				D		
HCM Volume to Capacity ratio			0.99									
Actuated Cycle Length (s)			80.0			Sum of lost time (s)				4.0		
Intersection Capacity Utilization		63.7%				ICU Level of Service				B		
Analysis Period (min)			15									
c Critical Lane Group												







HCM Signalized Intersection Capacity Analysis  
 814: Paint Branch Pkwy & Metro Parking Garage

Purple Line (UMD)  
 7/30/2008

	→	↘	↙	←	↖	↗
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑	↗	↘	↑↑	↘	↗
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0			4.0		
Lane Util. Factor	0.95			0.95		
Frt	1.00			1.00		
Flt Protected	1.00			1.00		
Satd. Flow (prot)	3539			3539		
Flt Permitted	1.00			1.00		
Satd. Flow (perm)	3539			3539		
Volume (vph)	440	0	0	1383	0	0
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	478	0	0	1503	0	0
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	478	0	0	1503	0	0
Turn Type		Perm	pm+pt		pm+ov	
Protected Phases	2		1	6	8	1
Permitted Phases		2	6			8
Actuated Green, G (s)	40.9			40.9		
Effective Green, g (s)	40.9			40.9		
Actuated g/C Ratio	0.52			0.52		
Clearance Time (s)	4.0			4.0		
Vehicle Extension (s)	3.0			3.0		
Lane Grp Cap (vph)	1828			1828		
v/s Ratio Prot	0.14			c0.42		
v/s Ratio Perm						
v/c Ratio	0.26			0.82		
Uniform Delay, d1	10.7			16.1		
Progression Factor	1.00			1.00		
Incremental Delay, d2	0.3			3.1		
Delay (s)	11.1			19.2		
Level of Service	B			B		
Approach Delay (s)	11.1			19.2	0.0	
Approach LOS	B			B	A	
<b>Intersection Summary</b>						
HCM Average Control Delay		17.2		HCM Level of Service		B
HCM Volume to Capacity ratio		0.82				
Actuated Cycle Length (s)		79.2		Sum of lost time (s)		38.3
Intersection Capacity Utilization		41.6%		ICU Level of Service		A
Analysis Period (min)		15				
c Critical Lane Group						













HCM Signalized Intersection Capacity Analysis  
 815: Paint Branch Pkwy & River Road

Purple Line (UMD)  
 11/5/2007

						
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑	↑	↑↑	↑↑	↑↑	↑
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	2.0	2.0	2.0	2.0	2.0	2.0
Lane Util. Factor	0.95	1.00	0.97	0.95	0.97	1.00
Frbp, ped/bikes	1.00	0.97	1.00	1.00	1.00	0.98
Flpb, ped/bikes	1.00	1.00	0.99	1.00	1.00	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (prot)	3539	1532	3398	3539	3419	1552
Flt Permitted	1.00	1.00	0.49	1.00	0.95	1.00
Satd. Flow (perm)	3539	1532	1755	3539	3419	1552
Volume (vph)	261	215	199	1242	87	269
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	261	215	199	1242	87	269
RTOR Reduction (vph)	0	148	0	0	0	146
Lane Group Flow (vph)	261	67	199	1242	87	123
Confl. Peds. (#/hr)		25	25		5	10
Turn Type		Perm	pm+pt			custom
Protected Phases	4		3	8		
Permitted Phases		4	8		2	2
Actuated Green, G (s)	18.9	18.9	32.1	32.1	30.3	30.3
Effective Green, g (s)	22.9	22.9	36.1	36.1	33.8	33.8
Actuated g/C Ratio	0.31	0.31	0.49	0.49	0.46	0.46
Clearance Time (s)	6.0	6.0	5.5	6.0	5.5	5.5
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	1097	475	1106	1729	1564	710
v/s Ratio Prot	0.07		0.03	c0.35		
v/s Ratio Perm		0.04	0.06		0.03	c0.08
v/c Ratio	0.24	0.14	0.18	0.72	0.06	0.17
Uniform Delay, d1	19.0	18.4	10.4	14.9	11.2	11.8
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.1	0.1	0.1	1.5	0.1	0.5
Delay (s)	19.1	18.5	10.5	16.3	11.2	12.3
Level of Service	B	B	B	B	B	B
Approach Delay (s)	18.9			15.5	12.1	
Approach LOS	B			B	B	
<b>Intersection Summary</b>						
HCM Average Control Delay		15.7			HCM Level of Service	B
HCM Volume to Capacity ratio		0.45				
Actuated Cycle Length (s)		73.9			Sum of lost time (s)	4.0
Intersection Capacity Utilization		63.5%			ICU Level of Service	B
Analysis Period (min)		15				
c Critical Lane Group						













HCM Signalized Intersection Capacity Analysis  
801: Campus Drive & Adelphi Rd.

Purple Line (UMD)  
7/30/2008

													
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations		↑↑	↑	↘	↑	↗	↘	↑↑↑	↗	↘↘	↑↑		
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		
Lane Util. Factor		0.95	1.00	1.00	1.00	1.00	1.00	0.91	1.00	0.97	0.95		
Frbp, ped/bikes		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		
Flpb, ped/bikes		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		
Frt		1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00		
Flt Protected		1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		
Satd. Flow (prot)		3539	1583	1770	1863	1583	1770	5085	1583	3433	3539		
Flt Permitted		1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		
Satd. Flow (perm)		3539	1583	1770	1863	1583	1770	5085	1583	3433	3539		
Volume (vph)	0	185	210	185	214	393	222	1304	180	228	917	0	
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	
Adj. Flow (vph)	0	206	233	206	238	437	247	1449	200	253	1019	0	
RTOR Reduction (vph)	0	0	173	0	0	293	0	0	115	0	0	0	
Lane Group Flow (vph)	0	206	60	206	238	144	247	1449	85	253	1019	0	
Confl. Peds. (#/hr)	17			20			9			3			
Turn Type			Perm	Split		Perm	Prot		Perm	Prot			
Protected Phases		2		6	6		3	8		17	14		
Permitted Phases			2			6			8				
Actuated Green, G (s)		60.0	60.0	30.0	30.0	30.0	25.0	60.0	60.0	73.7	109.7		
Effective Green, g (s)		63.0	63.0	33.0	33.0	33.0	27.0	63.0	63.0	75.7	111.7		
Actuated g/C Ratio		0.26	0.26	0.13	0.13	0.13	0.11	0.26	0.26	0.31	0.45		
Clearance Time (s)		6.0	6.0	6.0	6.0	6.0	5.0	6.0	6.0				
Vehicle Extension (s)		4.0	4.0	3.0	3.0	3.0	3.0	3.5	3.5				
Lane Grp Cap (vph)		904	404	237	249	212	194	1299	404	1053	1602		
v/s Ratio Prot		c0.06		0.12	c0.13		c0.14	c0.28		0.07	c0.29		
v/s Ratio Perm			0.04			0.09			0.05				
v/c Ratio		0.23	0.15	0.87	0.96	0.68	1.27	1.12	0.21	0.24	0.64		
Uniform Delay, d1		72.6	71.1	104.7	106.1	101.8	109.8	91.8	72.3	64.0	51.9		
Progression Factor		0.81	1.19	1.00	1.00	1.00	1.00	1.00	1.00	0.53	0.42		
Incremental Delay, d2		0.0	0.0	26.9	44.5	8.7	156.8	63.0	0.3	0.1	0.7		
Delay (s)		58.9	84.8	131.6	150.6	110.5	266.7	154.9	72.6	34.2	22.5		
Level of Service		E	F	F	F	F	F	F	E	C	C		
Approach Delay (s)		72.6			126.3			160.7			24.8		
Approach LOS		E			F			F			C		
Intersection Summary													
HCM Average Control Delay			106.8		HCM Level of Service					F			
HCM Volume to Capacity ratio			0.71										
Actuated Cycle Length (s)			246.7		Sum of lost time (s)					9.0			
Intersection Capacity Utilization			81.3%		ICU Level of Service					D			
Analysis Period (min)			15										
c Critical Lane Group													

HCM Unsignalized Intersection Capacity Analysis  
 810: Campus Drive & Regents Drive

Purple Line (UMD)  
 7/30/2008

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Right Turn Channelized			Yes			Yes			Yes			Yes
Volume (veh/h)	3	44	3	135	40	203	12	178	52	394	25	10
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	3	48	3	147	43	221	13	193	57	428	27	11
Approach Volume (veh/h)		51			190			207			455	
Crossing Volume (veh/h)		602			210			479			203	
High Capacity (veh/h)		860			1175			949			1181	
High v/c (veh/h)		0.06			0.16			0.22			0.39	
Low Capacity (veh/h)		689			971			768			976	
Low v/c (veh/h)		0.07			0.20			0.27			0.47	
Intersection Summary												
Maximum v/c High			0.39									
Maximum v/c Low			0.47									
Intersection Capacity Utilization			82.3%			ICU Level of Service					E	

HCM Signalized Intersection Capacity Analysis  
812: Campus Drive & US 1












Purple Line (UMD)  
11/5/2007

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Util. Factor	0.95	0.95	1.00	0.91	0.91	0.88	0.97	0.95	1.00	0.97	0.95	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	0.98	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1681	1770	1583	1610	3325	2787	3433	3539	1583	3433	3539	1583
Flt Permitted	0.95	1.00	1.00	0.95	0.98	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1681	1770	1583	1610	3325	2787	3433	3539	1583	3433	3539	1583
Volume (vph)	254	312	142	334	232	851	162	1466	507	470	1280	287
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	282	347	158	371	258	946	180	1629	563	522	1422	319
RTOR Reduction (vph)	0	0	121	0	0	133	0	0	174	0	0	94
Lane Group Flow (vph)	282	347	37	203	426	813	180	1629	389	522	1422	225
Turn Type	Split		Perm	Split		pt+ov	Prot		Perm	Prot		Perm
Protected Phases	4	4		3	3	3 5	1	6		5	2	
Permitted Phases			4						6			2
Actuated Green, G (s)	32.3	32.3	32.3	13.5	13.5	36.7	12.8	59.0	59.0	23.2	69.4	69.4
Effective Green, g (s)	34.8	34.8	34.8	16.0	16.0	41.2	14.8	62.0	62.0	25.2	72.4	72.4
Actuated g/C Ratio	0.23	0.23	0.23	0.11	0.11	0.27	0.10	0.41	0.41	0.17	0.48	0.48
Clearance Time (s)	5.5	5.5	5.5	5.5	5.5		5.0	6.0	6.0	5.0	6.0	6.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	5.0	5.0	3.0	5.0	5.0
Lane Grp Cap (vph)	390	411	367	172	355	765	339	1463	654	577	1708	764
v/s Ratio Prot	0.17	c0.20		0.13	c0.13	c0.29	0.05	c0.46		0.15	0.40	
v/s Ratio Perm			0.02						0.25			0.14
v/c Ratio	0.72	0.84	0.10	1.18	1.20	1.06	0.53	1.11	0.60	0.90	0.83	0.29
Uniform Delay, d1	53.2	55.0	45.3	67.0	67.0	54.4	64.3	44.0	34.2	61.2	33.6	23.4
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.93	1.02	1.23	1.35	0.82	0.95
Incremental Delay, d2	6.5	14.6	0.1	125.4	114.0	50.3	0.1	52.1	0.4	2.1	0.5	0.1
Delay (s)	59.7	69.6	45.4	192.4	181.0	104.7	59.8	96.9	42.4	84.6	28.1	22.4
Level of Service	E	E	D	F	F	F	E	F	D	F	C	C
Approach Delay (s)		61.2			136.7			81.1			40.3	
Approach LOS		E			F			F			D	
Intersection Summary												
HCM Average Control Delay	78.2			HCM Level of Service						E		
HCM Volume to Capacity ratio	1.05											
Actuated Cycle Length (s)	150.0			Sum of lost time (s)						12.0		
Intersection Capacity Utilization	96.7%			ICU Level of Service						F		
Analysis Period (min)	15											
c Critical Lane Group												

# HCM Signalized Intersection Capacity Analysis

## 200: E. Campus Main Ent & US 1

Purple Line (UMD)  
11/5/2007

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0		4.0	4.0
Lane Util. Factor	1.00	1.00	0.95		1.00	0.95
Fr <sub>t</sub>	1.00	0.85	0.99		1.00	1.00
Flt Protected	0.95	1.00	1.00		0.95	1.00
Satd. Flow (prot)	1770	1583	3511		1770	3539
Flt Permitted	0.95	1.00	1.00		0.95	1.00
Satd. Flow (perm)	1770	1583	3511		1770	3539
Volume (vph)	117	133	2552	141	113	1769
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	127	145	2774	153	123	1923
RTOR Reduction (vph)	0	72	3	0	0	0
Lane Group Flow (vph)	127	73	2924	0	123	1923
Turn Type		Perm			Prot	
Protected Phases	8		2		1	6
Permitted Phases		8				
Actuated Green, G (s)	14.3	14.3	109.5		9.7	124.7
Effective Green, g (s)	15.8	15.8	111.5		10.7	126.2
Actuated g/C Ratio	0.11	0.11	0.74		0.07	0.84
Clearance Time (s)	5.5	5.5	6.0		5.0	5.5
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	186	167	2610		126	2977
v/s Ratio Prot	c0.07		c0.83		c0.07	0.54
v/s Ratio Perm		0.05				
v/c Ratio	0.68	0.44	1.12		0.98	0.65
Uniform Delay, d <sub>1</sub>	64.7	62.9	19.3		69.5	4.1
Progression Factor	1.00	1.00	1.63		0.86	2.94
Incremental Delay, d <sub>2</sub>	9.9	1.8	54.8		52.2	0.6
Delay (s)	74.6	64.8	86.2		112.3	12.8
Level of Service	E	E	F		F	B
Approach Delay (s)	69.4		86.2			18.8
Approach LOS	E		F			B
<b>Intersection Summary</b>						
HCM Average Control Delay		59.0			HCM Level of Service	E
HCM Volume to Capacity ratio		1.06			Sum of lost time (s)	12.0
Actuated Cycle Length (s)		150.0			ICU Level of Service	F
Intersection Capacity Utilization		97.8%				
Analysis Period (min)		15				
c Critical Lane Group						

HCM Signalized Intersection Capacity Analysis  
 212: Rossborough Rd. & US 1

Purple Line (UMD)  
 7/30/2008

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0			3.0	3.0	3.0	3.0		3.0	3.0	
Lane Util. Factor	1.00	1.00			1.00	1.00	1.00	0.95		1.00	0.95	
Frt	1.00	0.88			1.00	0.85	1.00	0.99		1.00	1.00	
Flt Protected	0.95	1.00			0.96	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1641			1792	1583	1770	3520		1770	3534	
Flt Permitted	0.52	1.00			0.75	1.00	0.09	1.00		0.04	1.00	
Satd. Flow (perm)	960	1641			1398	1583	169	3520		83	3534	
Volume (vph)	67	5	21	118	31	669	45	1800	68	131	1424	14
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	74	6	23	131	34	743	50	2000	76	146	1582	16
RTOR Reduction (vph)	0	17	0	0	0	213	0	2	0	0	0	0
Lane Group Flow (vph)	74	12	0	0	165	530	50	2074	0	146	1598	0
Turn Type	Perm			Perm		Perm	pm+pt			pm+pt		
Protected Phases		4			8		1	6		5	2	
Permitted Phases	4			8		8	6			2		
Actuated Green, G (s)	36.5	36.5			36.5	36.5	89.2	83.9		102.0	92.2	
Effective Green, g (s)	39.0	39.0			39.0	39.0	93.7	86.9		105.0	95.2	
Actuated g/C Ratio	0.26	0.26			0.26	0.26	0.62	0.58		0.70	0.63	
Clearance Time (s)	5.5	5.5			5.5	5.5	4.5	6.0		4.5	6.0	
Vehicle Extension (s)	3.0	3.0			3.0	3.0	3.0	5.0		3.0	5.0	
Lane Grp Cap (vph)	250	427			363	412	178	2039		228	2243	
v/s Ratio Prot		0.01					0.01	c0.59		c0.06	0.45	
v/s Ratio Perm	0.08				0.12	c0.33	0.16			0.38		
v/c Ratio	0.30	0.03			0.45	1.29	0.28	1.02		0.64	0.71	
Uniform Delay, d1	44.5	41.4			46.6	55.5	16.3	31.5		47.5	18.3	
Progression Factor	1.00	1.00			1.00	1.00	1.56	0.41		1.23	1.11	
Incremental Delay, d2	0.7	0.0			0.9	146.1	0.6	21.0		4.6	1.5	
Delay (s)	45.2	41.4			47.5	201.6	26.0	33.9		63.1	21.7	
Level of Service	D	D			D	F	C	C		E	C	
Approach Delay (s)		44.1			173.6			33.7			25.1	
Approach LOS		D			F			C			C	
<b>Intersection Summary</b>												
HCM Average Control Delay			56.9				HCM Level of Service				E	
HCM Volume to Capacity ratio			1.05									
Actuated Cycle Length (s)			150.0				Sum of lost time (s)				9.0	
Intersection Capacity Utilization			110.0%				ICU Level of Service				H	
Analysis Period (min)			15									
c Critical Lane Group												





HCM Signalized Intersection Capacity Analysis  
 814: Paint Branch Pkwy & Metro Parking Garage

Purple Line (UMD)  
 7/30/2008

	→	↘	↙	←	↖	↗
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑	↑	↘	↑↑	↘	↑
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0			4.0		
Lane Util. Factor	0.95			0.95		
Frt	1.00			1.00		
Flt Protected	1.00			1.00		
Satd. Flow (prot)	3539			3539		
Flt Permitted	1.00			1.00		
Satd. Flow (perm)	3539			3539		
Volume (vph)	1282	0	0	849	0	0
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	1393	0	0	923	0	0
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	1393	0	0	923	0	0
Turn Type		Perm	pm+pt			pm+ov
Protected Phases	2		1	6	8	1
Permitted Phases		2	6			8
Actuated Green, G (s)	120.0			120.0		
Effective Green, g (s)	120.0			120.0		
Actuated g/C Ratio	1.00			1.00		
Clearance Time (s)	4.0			4.0		
Vehicle Extension (s)	3.0			3.0		
Lane Grp Cap (vph)	3539			3539		
v/s Ratio Prot	c0.39			0.26		
v/s Ratio Perm						
v/c Ratio	0.39			0.26		
Uniform Delay, d1	0.0			0.0		
Progression Factor	1.00			1.00		
Incremental Delay, d2	0.3			0.2		
Delay (s)	0.3			0.2		
Level of Service	A			A		
Approach Delay (s)	0.3			0.2	0.0	
Approach LOS	A			A	A	

Intersection Summary

HCM Average Control Delay	0.3	HCM Level of Service	A
HCM Volume to Capacity ratio	0.39		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	0.0
Intersection Capacity Utilization	38.8%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

# HCM Signalized Intersection Capacity Analysis

## 815: Paint Branch Pkwy & River Road

Purple Line (UMD)  
11/5/2007

	→	↘	↙	←	↖	↗
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑	↑	↑↑	↑↑	↑↑	↑
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	2.0	2.0	2.0	2.0	2.0	2.0
Lane Util. Factor	0.95	1.00	0.97	0.95	0.97	1.00
Frbp, ped/bikes	1.00	0.98	1.00	1.00	1.00	0.98
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (prot)	3539	1548	3432	3539	3430	1548
Flt Permitted	1.00	1.00	0.13	1.00	0.95	1.00
Satd. Flow (perm)	3539	1548	458	3539	3430	1548
Volume (vph)	989	304	50	568	186	277
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	989	304	50	568	186	277
RTOR Reduction (vph)	0	181	0	0	0	157
Lane Group Flow (vph)	989	123	50	568	186	120
Confl. Peds. (#/hr)		12	12		1	12
Turn Type		Perm	pm+pt		custom	
Protected Phases	4		3	8		
Permitted Phases		4	8		2	2
Actuated Green, G (s)	28.3	28.3	37.1	37.1	31.1	31.1
Effective Green, g (s)	32.3	32.3	41.1	41.1	34.6	34.6
Actuated g/C Ratio	0.41	0.41	0.52	0.52	0.43	0.43
Clearance Time (s)	6.0	6.0	5.5	6.0	5.5	5.5
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	1434	627	490	1825	1489	672
v/s Ratio Prot	c0.28		0.01	c0.16		
v/s Ratio Perm		0.08	0.04		0.05	c0.08
v/c Ratio	0.69	0.20	0.10	0.31	0.12	0.18
Uniform Delay, d1	19.6	15.3	11.9	11.1	13.5	13.8
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	1.4	0.2	0.1	0.1	0.2	0.6
Delay (s)	21.0	15.5	12.0	11.2	13.7	14.4
Level of Service	C	B	B	B	B	B
Approach Delay (s)	19.7			11.3	14.1	
Approach LOS	B			B	B	
<b>Intersection Summary</b>						
HCM Average Control Delay		16.4			HCM Level of Service	B
HCM Volume to Capacity ratio		0.41				
Actuated Cycle Length (s)		79.7			Sum of lost time (s)	6.0
Intersection Capacity Utilization		56.5%			ICU Level of Service	B
Analysis Period (min)		15				
c Critical Lane Group						

2030 High LRT

HCS Results

# HCM Signalized Intersection Capacity Analysis

## 9: Ellin Rd. & MD 410

6/11/2008



Movement	WBL	WBR	NBT	NBR	SBL2	SBL	SBT	NWL	NWR
Lane Configurations	↖↗	↖	↕↕	↖	↖	↖	↕↕↕		↖
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0
Lane Util. Factor	0.97	1.00	0.95	1.00	1.00	1.00	0.91		1.00
Frt	1.00	0.85	1.00	0.85	1.00	1.00	1.00		0.86
Flt Protected	0.95	1.00	1.00	1.00	0.95	0.95	1.00		1.00
Satd. Flow (prot)	3303	1524	3406	1524	1703	1703	4893		1550
Flt Permitted	0.95	1.00	1.00	1.00	0.95	0.95	1.00		1.00
Satd. Flow (perm)	3303	1524	3406	1524	1703	1703	4893		1550
Volume (vph)	400	125	2150	740	200	10	1470	0	10
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Growth Factor (vph)	100%	100%	100%	100%	100%	100%	100%	100%	100%
Adj. Flow (vph)	421	132	2263	779	211	11	1547	0	11
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	421	132	2263	779	211	11	1547	0	11
Heavy Vehicles (%)	6%	6%	6%	6%	6%	6%	6%	6%	6%
Turn Type		Free		custom	Prot	Prot			Over
Protected Phases	4		2	1 4 6!	1!	3	6		3
Permitted Phases		Free							
Actuated Green, G (s)	11.0	110.0	62.0	93.0	10.0	2.0	77.0		2.0
Effective Green, g (s)	12.0	110.0	63.0	94.0	11.0	8.0	78.0		8.0
Actuated g/C Ratio	0.11	1.00	0.57	0.85	0.10	0.07	0.71		0.07
Clearance Time (s)	5.0		5.0		5.0	10.0	5.0		10.0
Vehicle Extension (s)	3.0		6.0		3.0	3.0	6.0		3.0
Lane Grp Cap (vph)	360	1524	1951	1302	170	124	3470		113
v/s Ratio Prot	c0.13		c0.66	0.51	c0.12	0.01	0.32		0.01
v/s Ratio Perm		c0.09							
v/c Ratio	1.17	0.09	1.16	0.60	1.24	0.09	0.45		0.10
Uniform Delay, d1	49.0	0.0	23.5	2.4	49.5	47.6	6.8		47.6
Progression Factor	1.00	1.00	0.69	0.63	1.00	1.00	1.00		1.00
Incremental Delay, d2	102.0	0.1	74.9	0.3	148.4	0.3	0.4		0.4
Delay (s)	151.0	0.1	91.1	1.9	197.9	47.9	7.2		48.0
Level of Service	F	A	F	A	F	D	A		D
Approach Delay (s)	115.0		68.2				30.2	48.0	
Approach LOS	F		E				C	D	

### Intersection Summary

HCM Average Control Delay	60.5	HCM Level of Service	E
HCM Volume to Capacity ratio	1.04		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	91.9%	ICU Level of Service	F
Analysis Period (min)	15		

! Phase conflict between lane groups.

c Critical Lane Group

# HCM Signalized Intersection Capacity Analysis

9: Ellin Rd. & MD 410

6/11/2008



Movement	WBL	WBR	NBT	NBR	SBL2	SBL	SBT	NWL	NWR
Lane Configurations	↖↗	↖	↕↕	↖	↖	↖	↕↕↕		↖
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0
Lane Util. Factor	0.97	1.00	0.95	1.00	1.00	1.00	0.91		1.00
Frt	1.00	0.85	1.00	0.85	1.00	1.00	1.00		0.86
Flt Protected	0.95	1.00	1.00	1.00	0.95	0.95	1.00		1.00
Satd. Flow (prot)	3400	1568	3505	1568	1752	902	5036		822
Flt Permitted	0.95	1.00	1.00	1.00	0.95	0.95	1.00		1.00
Satd. Flow (perm)	3400	1568	3505	1568	1752	902	5036		822
Volume (vph)	745	80	1515	295	105	10	1865	0	10
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Growth Factor (vph)	100%	100%	100%	100%	100%	100%	100%	100%	100%
Adj. Flow (vph)	784	84	1595	311	111	11	1963	0	11
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	784	84	1595	311	111	11	1963	0	11
Heavy Vehicles (%)	3%	3%	3%	3%	3%	100%	3%	3%	100%
Turn Type		Free		custom		Prot	Prot		Over
Protected Phases	4			2 1 2 4 6!		1!	9	6	9
Permitted Phases		Free							
Actuated Green, G (s)	26.0	120.0	60.0	106.0	10.0	4.0	75.0		4.0
Effective Green, g (s)	27.0	120.0	61.0	107.0	11.0	5.0	76.0		5.0
Actuated g/C Ratio	0.22	1.00	0.51	0.89	0.09	0.04	0.63		0.04
Clearance Time (s)	5.0		5.0		5.0	5.0	5.0		5.0
Vehicle Extension (s)	3.0		6.0		3.0	3.0	6.0		3.0
Lane Grp Cap (vph)	765	1568	1782	1398	161	38	3189		34
v/s Ratio Prot	c0.23		c0.46	0.20	0.06	0.01	c0.39		c0.01
v/s Ratio Perm		0.05							
v/c Ratio	1.02	0.05	0.90	0.22	0.69	0.29	0.62		0.32
Uniform Delay, d1	46.5	0.0	26.6	0.9	52.8	55.8	13.2		55.9
Progression Factor	1.00	1.00	0.54	0.49	1.00	1.00	1.00		1.00
Incremental Delay, d2	39.0	0.1	7.1	0.1	11.6	4.2	0.9		5.5
Delay (s)	85.5	0.1	21.5	0.5	64.5	60.0	14.1		61.3
Level of Service	F	A	C	A	E	E	B		E
Approach Delay (s)	77.2		18.0				17.0	61.3	
Approach LOS	E		B				B	E	

## Intersection Summary

HCM Average Control Delay	28.3	HCM Level of Service	C
HCM Volume to Capacity ratio	0.85		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	81.5%	ICU Level of Service	D
Analysis Period (min)	15		

! Phase conflict between lane groups.

c Critical Lane Group

# HCM Signalized Intersection Capacity Analysis

## 2: MD 193 & Carroll Ave

6/10/2008



Movement	EBL2	EBL	EBT	EBR	WBT	WBR	NBL	NBT	NBR2	SBL	SBT	SBR
Lane Configurations	↖	↖	↖↖↖		↖↖↖		↖	↖		↖	↖	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	2.0	2.0	2.0		2.0		2.0	2.0		2.0	2.0	
Lane Util. Factor	1.00	1.00	0.91		0.91		1.00	1.00		1.00	1.00	
Frt	1.00	1.00	0.98		1.00		1.00	0.98		1.00	0.98	
Flt Protected	0.95	0.95	1.00		1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1703	902	4809		4869		1703	1760		1703	1748	
Flt Permitted	0.95	0.95	1.00		1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1703	902	4809		4869		1703	1760		1703	1748	
Volume (vph)	25	10	1650	215	1890	65	185	145	20	100	540	105
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	26	11	1737	226	1989	68	195	153	21	105	568	111
RTOR Reduction (vph)	0	0	14	0	0	0	0	4	0	0	6	0
Lane Group Flow (vph)	26	11	1949	0	2057	0	195	170	0	105	673	0
Heavy Vehicles (%)	6%	100%	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%
Turn Type	Prot	Split					Split			Split		
Protected Phases	1	6!	6		2!		3	3		4	4	
Permitted Phases												
Actuated Green, G (s)	3.0	48.0	48.0		40.0		23.0	23.0		31.0	31.0	
Effective Green, g (s)	6.0	52.0	52.0		44.0		27.0	27.0		35.0	35.0	
Actuated g/C Ratio	0.05	0.43	0.43		0.37		0.22	0.22		0.29	0.29	
Clearance Time (s)	5.0	6.0	6.0		6.0		6.0	6.0		6.0	6.0	
Vehicle Extension (s)	3.0	3.0	3.0		3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	85	391	2084		1785		383	396		497	510	
v/s Ratio Prot	0.02	0.01	c0.41		c0.42		c0.11	0.10		0.06	c0.39	
v/s Ratio Perm												
v/c Ratio	0.31	0.03	0.94		1.15		0.51	0.43		0.21	1.32	
Uniform Delay, d1	55.0	19.5	32.4		38.0		40.7	39.9		32.1	42.5	
Progression Factor	1.21	0.18	0.37		1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.7	0.0	3.6		75.5		1.1	0.8		0.2	157.4	
Delay (s)	67.4	3.6	15.6		113.5		41.8	40.6		32.3	199.9	
Level of Service	E	A	B		F		D	D		C	F	
Approach Delay (s)			16.2		113.5			41.2			177.5	
Approach LOS			B		F			D			F	

### Intersection Summary

HCM Average Control Delay	80.5	HCM Level of Service	F
HCM Volume to Capacity ratio	1.02		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	121.9%	ICU Level of Service	H
Analysis Period (min)	15		

! Phase conflict between lane groups.

c Critical Lane Group



Movement	SWR
Lane Configurations	↗
Ideal Flow (vphpl)	1900
Total Lost time (s)	2.0
Lane Util. Factor	1.00
Frt	0.86
Flt Protected	1.00
Satd. Flow (prot)	822
Flt Permitted	1.00
Satd. Flow (perm)	822
Volume (vph)	10
Peak-hour factor, PHF	0.95
Adj. Flow (vph)	11
RTOR Reduction (vph)	0
Lane Group Flow (vph)	11
Heavy Vehicles (%)	100%
Turn Type	custom
Protected Phases	2!
Permitted Phases	
Actuated Green, G (s)	40.0
Effective Green, g (s)	44.0
Actuated g/C Ratio	0.37
Clearance Time (s)	6.0
Vehicle Extension (s)	3.0
Lane Grp Cap (vph)	301
v/s Ratio Prot	0.01
v/s Ratio Perm	
v/c Ratio	0.04
Uniform Delay, d1	24.4
Progression Factor	1.00
Incremental Delay, d2	0.2
Delay (s)	24.6
Level of Service	C
Approach Delay (s)	
Approach LOS	
Intersection Summary	



# HCM Signalized Intersection Capacity Analysis

5: MD 193 & MD 320

6/10/2008



Movement	EBL2	EBT	EBR	WBL2	WBT	WBR	NBL	NBT	NBR2	SBL	SBT	SBR2
Lane Configurations	↖	↕↕↕		↖	↕↕↕		↖	↕↕		↖	↕↕	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lane Util. Factor	1.00	0.91		1.00	0.91		1.00	0.95		1.00	0.95	
Frt	1.00	0.99		1.00	1.00		1.00	0.94		1.00	0.95	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1703	4833		1703	4886		1703	3212		1703	3219	
Flt Permitted	0.95	1.00		0.95	1.00		0.09	1.00		0.40	1.00	
Satd. Flow (perm)	1703	4833		1703	4886		168	3212		722	3219	
Volume (vph)	245	1615	145	235	1925	20	213	360	220	30	950	545
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	258	1700	153	247	2026	21	224	379	232	32	1000	574
RTOR Reduction (vph)	0	0	0	0	0	0	0	74	0	0	66	0
Lane Group Flow (vph)	258	1853	0	247	2047	0	224	537	0	32	1508	0
Heavy Vehicles (%)	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%
Turn Type	Prot			Prot			pm+pt			pm+pt		
Protected Phases	5	2		1!	6!		3	8		7	4	
Permitted Phases							8			4		
Actuated Green, G (s)	12.0	38.4		13.0	39.4		48.8	48.8		44.6	43.6	
Effective Green, g (s)	14.0	41.4		15.0	42.4		51.8	51.8		46.6	46.6	
Actuated g/C Ratio	0.12	0.34		0.12	0.35		0.43	0.43		0.39	0.39	
Clearance Time (s)	4.0	5.0		4.0	5.0		4.0	5.0		4.0	5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	199	1667		213	1726		188	1387		311	1250	
v/s Ratio Prot	0.15	c0.38		0.15	c0.42		c0.09	0.17		0.00	c0.47	
v/s Ratio Perm							0.43			0.04		
v/c Ratio	1.30	1.11		1.16	1.19		1.19	0.39		0.10	1.21	
Uniform Delay, d1	53.0	39.3		52.5	38.8		57.7	23.3		24.6	36.7	
Progression Factor	1.00	1.00		0.70	0.56		1.00	1.00		1.00	1.00	
Incremental Delay, d2	165.3	59.3		77.0	84.3		126.7	0.8		0.1	100.6	
Delay (s)	218.3	98.6		113.5	105.9		184.4	24.1		24.8	137.3	
Level of Service	F	F		F	F		F	C		C	F	
Approach Delay (s)		113.2			106.7			67.1			135.1	
Approach LOS		F			F			E			F	

## Intersection Summary

HCM Average Control Delay	110.3	HCM Level of Service	F
HCM Volume to Capacity ratio	1.17		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	6.0
Intersection Capacity Utilization	134.6%	ICU Level of Service	H
Analysis Period (min)	15		

! Phase conflict between lane groups.

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis  
 5: MD 193 & MD 320

6/10/2008

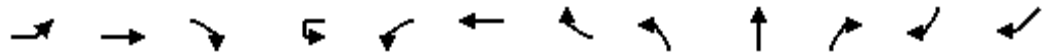


Movement	NER	SWL
Lane Configurations		
Ideal Flow (vphpl)	1900	1900
Total Lost time (s)	2.0	2.0
Lane Util. Factor	1.00	1.00
Frt	0.86	1.00
Flt Protected	1.00	0.95
Satd. Flow (prot)	822	902
Flt Permitted	1.00	0.95
Satd. Flow (perm)	822	902
Volume (vph)	10	10
Peak-hour factor, PHF	0.95	0.95
Adj. Flow (vph)	11	11
RTOR Reduction (vph)	0	0
Lane Group Flow (vph)	11	11
Heavy Vehicles (%)	100%	100%
Turn Type	custom	Prot
Protected Phases	1!	1!
Permitted Phases		
Actuated Green, G (s)	13.0	13.0
Effective Green, g (s)	15.0	15.0
Actuated g/C Ratio	0.12	0.12
Clearance Time (s)	4.0	4.0
Vehicle Extension (s)	3.0	3.0
Lane Grp Cap (vph)	103	113
v/s Ratio Prot	0.01	0.01
v/s Ratio Perm		
v/c Ratio	0.11	0.10
Uniform Delay, d1	46.6	46.5
Progression Factor	1.00	1.00
Incremental Delay, d2	0.5	0.4
Delay (s)	47.0	46.9
Level of Service	D	D
Approach Delay (s)		
Approach LOS		
Intersection Summary		

# HCM Signalized Intersection Capacity Analysis

105: MD 193 & 23rd Ave

6/10/2008



Movement	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR2	SBR	SWR
Lane Configurations	↖	↑↑↑			↘	↑↑↑			↑	↗	↖	↗
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	2.0	3.0			3.0	3.0			3.0	3.0	3.0	2.0
Lane Util. Factor	1.00	0.91			1.00	0.91			1.00	1.00	1.00	1.00
Frt	1.00	0.98			1.00	1.00			1.00	0.85	0.86	0.86
Flt Protected	0.95	1.00			0.95	1.00			0.95	1.00	1.00	1.00
Satd. Flow (prot)	902	4817			1703	4878			1796	1599	1627	822
Flt Permitted	0.95	1.00			0.30	1.00			0.95	1.00	1.00	1.00
Satd. Flow (perm)	902	4817			535	4878			1796	1599	1627	822
Volume (vph)	10	1200	140	30	105	1925	40	200	10	115	5	10
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	11	1263	147	32	111	2026	42	211	11	121	5	11
RTOR Reduction (vph)	0	24	0	0	0	0	0	0	0	92	3	0
Lane Group Flow (vph)	11	1386	0	0	143	2068	0	0	222	29	2	11
Heavy Vehicles (%)	100%	6%	6%	6%	6%	6%	6%	1%	1%	1%	1%	100%
Turn Type	Split			custom	Prot			Perm			Perm	custom
Protected Phases	6!	6			5	2!			4			2!
Permitted Phases		6		5				4		4	6	
Actuated Green, G (s)	20.0	20.0			11.4	36.4			11.6	11.6	20.0	36.4
Effective Green, g (s)	24.0	23.0			13.4	39.4			14.6	14.6	23.0	40.4
Actuated g/C Ratio	0.40	0.38			0.22	0.66			0.24	0.24	0.38	0.67
Clearance Time (s)	6.0	6.0			5.0	6.0			6.0	6.0	6.0	6.0
Vehicle Extension (s)	5.0	5.0			3.0	5.0			3.0	3.0	5.0	5.0
Lane Grp Cap (vph)	361	1847			119	3203			437	389	624	553
v/s Ratio Prot	0.01	c0.29				0.42						0.01
v/s Ratio Perm					c0.27				0.12	0.02	0.00	
v/c Ratio	0.03	0.75			1.20	0.65			0.51	0.08	0.00	0.02
Uniform Delay, d1	10.9	16.0			23.3	6.1			19.6	17.5	11.4	3.2
Progression Factor	0.63	0.65			1.35	0.92			1.00	1.00	1.00	1.00
Incremental Delay, d2	0.1	1.8			130.0	0.6			0.9	0.1	0.0	0.1
Delay (s)	7.0	12.2			161.4	6.3			20.5	17.6	11.4	3.3
Level of Service	A	B			F	A			C	B	B	A
Approach Delay (s)		12.2				16.3			19.5			
Approach LOS		B				B			B			

## Intersection Summary

HCM Average Control Delay	15.1	HCM Level of Service	B
HCM Volume to Capacity ratio	0.80		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	96.4%	ICU Level of Service	F
Analysis Period (min)	15		

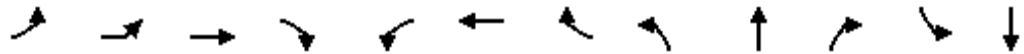
! Phase conflict between lane groups.

c Critical Lane Group

# HCM Signalized Intersection Capacity Analysis

107: MD 193 & W Park Dr

6/10/2008



Movement	EBL2	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR2	SBL	SBT
Lane Configurations	↖	↖	↕	↗	↖	↕	↗	↖	↕		↖	↗
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	2.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0
Lane Util. Factor	1.00	1.00	0.95	1.00	1.00	0.95		1.00	1.00		1.00	1.00
Frt	1.00	1.00	1.00	0.85	1.00	1.00		1.00	0.87		1.00	0.90
Flt Protected	0.95	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00
Satd. Flow (prot)	1703	902	3406	1524	1703	3398		1787	1632		1787	1687
Flt Permitted	0.95	0.95	1.00	1.00	0.95	1.00		0.75	1.00		0.53	1.00
Satd. Flow (perm)	1703	902	3406	1524	1703	3398		1405	1632		1001	1687
Volume (vph)	25	10	1235	25	50	2070	30	20	10	80	30	5
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	26	11	1300	26	53	2179	32	21	11	84	32	5
RTOR Reduction (vph)	0	0	0	7	0	0	0	0	75	0	0	10
Lane Group Flow (vph)	26	11	1300	19	53	2211	0	21	20	0	32	6
Heavy Vehicles (%)	6%	100%	6%	6%	6%	6%	6%	1%	1%	1%	1%	1%
Turn Type	Prot	Split		Perm	Prot			Perm			Perm	
Protected Phases	1	6!	6		5	2!			8			4
Permitted Phases				6				8			4	
Actuated Green, G (s)	4.3	86.2	86.2	86.2	7.1	89.0		9.7	9.7		9.7	9.7
Effective Green, g (s)	6.3	90.2	89.2	89.2	9.1	92.0		12.7	12.7		12.7	12.7
Actuated g/C Ratio	0.05	0.75	0.74	0.74	0.08	0.77		0.11	0.11		0.11	0.11
Clearance Time (s)	5.0	6.0	6.0	6.0	5.0	6.0		6.0	6.0		6.0	6.0
Vehicle Extension (s)	3.0	5.0	5.0	5.0	3.0	5.0		3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	89	678	2532	1133	129	2605		149	173		106	179
v/s Ratio Prot	0.02	0.01	0.38		c0.03	c0.65			0.01			0.00
v/s Ratio Perm				0.01				0.01			c0.03	
v/c Ratio	0.29	0.02	0.51	0.02	0.41	0.85		0.14	0.11		0.30	0.03
Uniform Delay, d1	54.7	3.7	6.4	4.0	52.9	9.4		48.7	48.6		49.6	48.1
Progression Factor	1.10	0.25	0.48	0.00	1.00	1.00		1.00	1.00		1.00	1.00
Incremental Delay, d2	1.4	0.0	0.6	0.0	2.1	3.7		0.4	0.3		1.6	0.1
Delay (s)	61.5	1.0	3.7	0.0	55.0	13.0		49.1	48.9		51.2	48.2
Level of Service	E	A	A	A	E	B		D	D		D	D
Approach Delay (s)			4.7			14.0			48.9			50.2
Approach LOS			A			B			D			D

## Intersection Summary

HCM Average Control Delay	12.2	HCM Level of Service	B
HCM Volume to Capacity ratio	0.76		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	93.2%	ICU Level of Service	F
Analysis Period (min)	15		

! Phase conflict between lane groups.

c Critical Lane Group



Movement	SBR	SWR
Lane Configurations		
Ideal Flow (vphpl)	1900	1900
Total Lost time (s)		2.0
Lane Util. Factor		1.00
Frt		0.86
Flt Protected		1.00
Satd. Flow (prot)		822
Flt Permitted		1.00
Satd. Flow (perm)		822
Volume (vph)	10	10
Peak-hour factor, PHF	0.95	0.95
Adj. Flow (vph)	11	11
RTOR Reduction (vph)	0	0
Lane Group Flow (vph)	0	11
Heavy Vehicles (%)	1%	100%
Turn Type	custom	
Protected Phases	2!	
Permitted Phases		
Actuated Green, G (s)	89.0	
Effective Green, g (s)	93.0	
Actuated g/C Ratio	0.78	
Clearance Time (s)	6.0	
Vehicle Extension (s)	5.0	
Lane Grp Cap (vph)	637	
v/s Ratio Prot	0.01	
v/s Ratio Perm		
v/c Ratio	0.02	
Uniform Delay, d1	3.1	
Progression Factor	1.00	
Incremental Delay, d2	0.0	
Delay (s)	3.1	
Level of Service	A	
Approach Delay (s)		
Approach LOS		
Intersection Summary		

# HCM Signalized Intersection Capacity Analysis

1629: MD 193 & 15th Ave

6/10/2008

Movement	EBL2	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR2	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	2.0	2.0	2.0	3.0	2.0		2.0	3.0		3.0	3.0	
Lane Util. Factor	1.00	1.00	0.91	1.00	0.91		1.00	1.00		1.00	1.00	
Frt	1.00	1.00	1.00	1.00	0.99		1.00	0.92		1.00	0.85	
Flt Protected	0.95	0.95	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1703	902	4893	1703	4850		1787	1740		1787	1602	
Flt Permitted	0.95	0.95	1.00	0.95	1.00		0.65	1.00		0.76	1.00	
Satd. Flow (perm)	1703	902	4893	1703	4850		1225	1740		1423	1602	
Volume (vph)	60	10	1290	5	1895	120	1	1	1	220	1	85
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	63	11	1358	5	1995	126	1	1	1	232	1	89
RTOR Reduction (vph)	0	0	0	0	0	0	0	1	0	0	69	0
Lane Group Flow (vph)	63	11	1358	5	2121	0	1	1	0	232	21	0
Heavy Vehicles (%)	6%	100%	6%	6%	6%	6%	1%	1%	1%	1%	1%	1%
Turn Type	Prot	Split		Prot			custom	Prot		Perm		
Protected Phases	5	2!	2	1	6!			8				4
Permitted Phases							8			4		
Actuated Green, G (s)	7.9	77.7	77.7	1.4	72.2		23.9	23.9		23.9	23.9	
Effective Green, g (s)	10.9	81.7	81.7	3.4	75.2		27.9	26.9		26.9	26.9	
Actuated g/C Ratio	0.09	0.68	0.68	0.03	0.63		0.23	0.22		0.22	0.22	
Clearance Time (s)	5.0	6.0	6.0	5.0	5.0		6.0	6.0		6.0	6.0	
Vehicle Extension (s)	3.0	5.0	5.0	3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	155	614	3331	48	3039		285	390		319	359	
v/s Ratio Prot	c0.04	0.01	0.28	0.00	c0.44			0.00			0.01	
v/s Ratio Perm							0.00			c0.16		
v/c Ratio	0.41	0.02	0.41	0.10	0.70		0.00	0.00		0.73	0.06	
Uniform Delay, d1	51.5	6.2	8.5	56.8	14.9		35.4	36.1		43.1	36.6	
Progression Factor	1.00	1.00	1.00	1.05	0.47		1.00	1.00		1.00	1.00	
Incremental Delay, d2	1.7	0.1	0.4	0.6	0.8		0.0	0.0		8.0	0.1	
Delay (s)	53.2	6.2	8.8	60.3	7.8		35.4	36.1		51.2	36.7	
Level of Service	D	A	A	E	A		D	D		D	D	
Approach Delay (s)			10.8		7.9			35.9			47.1	
Approach LOS			B		A			D			D	
<b>Intersection Summary</b>												
HCM Average Control Delay			12.2			HCM Level of Service				B		
HCM Volume to Capacity ratio			0.67									
Actuated Cycle Length (s)			120.0			Sum of lost time (s)				7.0		
Intersection Capacity Utilization			92.3%			ICU Level of Service				F		
Analysis Period (min)			15									
! Phase conflict between lane groups.												
c Critical Lane Group												



Movement	SWR
Lane Configurations	↗
Ideal Flow (vphpl)	1900
Total Lost time (s)	2.0
Lane Util. Factor	1.00
Frt	0.86
Flt Protected	1.00
Satd. Flow (prot)	822
Flt Permitted	1.00
Satd. Flow (perm)	822
Volume (vph)	10
Peak-hour factor, PHF	0.95
Adj. Flow (vph)	11
RTOR Reduction (vph)	0
Lane Group Flow (vph)	11
Heavy Vehicles (%)	100%
Turn Type	custom
Protected Phases	6!
Permitted Phases	
Actuated Green, G (s)	72.2
Effective Green, g (s)	75.2
Actuated g/C Ratio	0.63
Clearance Time (s)	5.0
Vehicle Extension (s)	3.0
Lane Grp Cap (vph)	515
v/s Ratio Prot	0.01
v/s Ratio Perm	
v/c Ratio	0.02
Uniform Delay, d1	8.5
Progression Factor	1.00
Incremental Delay, d2	0.1
Delay (s)	8.6
Level of Service	A
Approach Delay (s)	
Approach LOS	
Intersection Summary	

# HCM Signalized Intersection Capacity Analysis

## 2: MD 193 & Carroll Ave

6/10/2008



Movement	EBL2	EBL	EBT	EBR	WBT	WBR	NBL	NBT	NBR2	SBL	SBT	SBR
Lane Configurations	↖	↖	↕↕↕↕		↕↕↕↕		↖	↕		↖	↕	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	2.0	2.0	2.0		2.0		2.0	2.0		2.0	2.0	
Lane Util. Factor	1.00	1.00	0.91		0.91		1.00	1.00		1.00	1.00	
Frt	1.00	1.00	0.99		0.99		1.00	0.98		1.00	0.98	
Flt Protected	0.95	0.95	1.00		1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1736	902	4920		4941		1736	1789		1736	1794	
Flt Permitted	0.95	0.95	1.00		1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1736	902	4920		4941		1736	1789		1736	1794	
Volume (vph)	40	10	2205	220	2200	145	285	340	55	120	225	30
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	42	11	2321	232	2316	153	300	358	58	126	237	32
RTOR Reduction (vph)	0	0	10	0	0	0	0	5	0	0	4	0
Lane Group Flow (vph)	42	11	2543	0	2469	0	300	411	0	126	265	0
Heavy Vehicles (%)	4%	100%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%
Turn Type	Prot	Split					Split			Split		
Protected Phases	1	6!	6		2!		3	3		4	4	
Permitted Phases												
Actuated Green, G (s)	4.0	66.0	66.0		57.0		23.0	23.0		13.0	13.0	
Effective Green, g (s)	7.0	70.0	70.0		61.0		27.0	27.0		17.0	17.0	
Actuated g/C Ratio	0.06	0.58	0.58		0.51		0.22	0.22		0.14	0.14	
Clearance Time (s)	5.0	6.0	6.0		6.0		6.0	6.0		6.0	6.0	
Vehicle Extension (s)	3.0	3.0	3.0		3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	101	526	2870		2512		391	403		246	254	
v/s Ratio Prot	0.02	0.01	c0.52		c0.50		0.17	c0.23		0.07	c0.15	
v/s Ratio Perm												
v/c Ratio	0.42	0.02	0.89		0.98		0.77	1.02		0.51	1.04	
Uniform Delay, d1	54.5	10.5	21.6		29.0		43.6	46.5		47.7	51.5	
Progression Factor	1.37	0.28	0.41		1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.3	0.0	0.4		14.4		13.4	50.2		1.8	67.9	
Delay (s)	75.1	2.9	9.3		43.3		57.0	96.7		49.5	119.4	
Level of Service	E	A	A		D		E	F		D	F	
Approach Delay (s)			10.3		43.3			80.1			97.1	
Approach LOS			B		D			F			F	

### Intersection Summary

HCM Average Control Delay	37.1	HCM Level of Service	D
HCM Volume to Capacity ratio	0.98		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	110.3%	ICU Level of Service	H
Analysis Period (min)	15		

! Phase conflict between lane groups.

c Critical Lane Group





Movement	SWR
Lane Configurations	↗
Ideal Flow (vphpl)	1900
Total Lost time (s)	2.0
Lane Util. Factor	1.00
Frt	0.86
Flt Protected	1.00
Satd. Flow (prot)	822
Flt Permitted	1.00
Satd. Flow (perm)	822
Volume (vph)	10
Peak-hour factor, PHF	0.95
Adj. Flow (vph)	11
RTOR Reduction (vph)	0
Lane Group Flow (vph)	11
Heavy Vehicles (%)	100%
Turn Type	custom
Protected Phases	2!
Permitted Phases	
Actuated Green, G (s)	57.0
Effective Green, g (s)	61.0
Actuated g/C Ratio	0.51
Clearance Time (s)	6.0
Vehicle Extension (s)	3.0
Lane Grp Cap (vph)	418
v/s Ratio Prot	0.01
v/s Ratio Perm	
v/c Ratio	0.03
Uniform Delay, d1	14.7
Progression Factor	1.00
Incremental Delay, d2	0.1
Delay (s)	14.8
Level of Service	B
Approach Delay (s)	
Approach LOS	
Intersection Summary	

# HCM Signalized Intersection Capacity Analysis

5: MD 193 & MD 320

6/10/2008



Movement	EBL2	EBT	EBR	WBL2	WBT	WBR	NBL	NBT	NBR2	SBL	SBT	SBR2
Lane Configurations	↖	↑↑↑		↖	↑↑↑		↖	↑↑	↖	↖	↑↑	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	2.0	2.0		2.0	2.0		2.0	2.0	2.0	2.0	2.0	
Lane Util. Factor	1.00	0.91		1.00	0.91		1.00	0.95	1.00	1.00	0.95	
Frt	1.00	0.98		1.00	1.00		1.00	1.00	0.85	1.00	0.96	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1736	4910		1736	4967		1736	3471	1553	1736	3337	
Flt Permitted	0.95	1.00		0.95	1.00		0.14	1.00	1.00	0.15	1.00	
Satd. Flow (perm)	1736	4910		1736	4967		254	3471	1553	273	3337	
Volume (vph)	280	2115	245	305	2145	60	350	970	265	75	590	205
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	295	2226	258	321	2258	63	368	1021	279	79	621	216
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	169	0	29	0
Lane Group Flow (vph)	295	2484	0	321	2321	0	368	1021	110	79	808	0
Heavy Vehicles (%)	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%
Turn Type	Prot		Prot		pm+pt			Perm		pm+pt		
Protected Phases	5	2		1!	6!		3!	8!		7	4!	
Permitted Phases							8!		8		4	
Actuated Green, G (s)	17.0	47.2		17.0	47.2		41.8	35.4	35.4	26.2	23.8	
Effective Green, g (s)	19.0	50.2		19.0	50.2		44.8	38.4	38.4	31.2	26.8	
Actuated g/C Ratio	0.16	0.42		0.16	0.42		0.37	0.32	0.32	0.26	0.22	
Clearance Time (s)	4.0	5.0		4.0	5.0		4.0	5.0	5.0	4.0	5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	275	2054		275	2078		292	1111	497	125	745	
v/s Ratio Prot	0.17	c0.51		c0.18	0.47		c0.17	0.29		0.02	c0.24	
v/s Ratio Perm							0.30		0.07	0.14		
v/c Ratio	1.07	1.21		1.17	1.12		1.26	0.92	0.22	0.63	1.08	
Uniform Delay, d1	50.5	34.9		50.5	34.9		34.6	39.3	29.9	36.4	46.6	
Progression Factor	1.00	1.00		0.66	1.47		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	74.9	99.0		88.7	55.3		141.8	13.4	1.0	10.0	58.4	
Delay (s)	125.4	133.9		121.9	106.5		176.4	52.7	30.9	46.4	105.0	
Level of Service	F	F		F	F		F	D	C	D	F	
Approach Delay (s)		133.0			108.4			76.4			100.0	
Approach LOS		F			F			E			F	

## Intersection Summary

HCM Average Control Delay	109.1	HCM Level of Service	F
HCM Volume to Capacity ratio	1.16		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	137.1%	ICU Level of Service	H
Analysis Period (min)	15		

! Phase conflict between lane groups.

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis  
 5: MD 193 & MD 320

6/10/2008



Movement	NER	SWL
Lane Configurations		
Ideal Flow (vphpl)	1900	1900
Total Lost time (s)	2.0	2.0
Lane Util. Factor	1.00	1.00
Frt	0.86	1.00
Flt Protected	1.00	0.95
Satd. Flow (prot)	822	902
Flt Permitted	1.00	0.95
Satd. Flow (perm)	822	902
Volume (vph)	10	10
Peak-hour factor, PHF	0.95	0.95
Adj. Flow (vph)	11	11
RTOR Reduction (vph)	0	0
Lane Group Flow (vph)	11	11
Heavy Vehicles (%)	100%	100%
Turn Type	custom	Prot
Protected Phases	1 8!	1!
Permitted Phases		
Actuated Green, G (s)	57.4	17.0
Effective Green, g (s)	59.4	19.0
Actuated g/C Ratio	0.50	0.16
Clearance Time (s)		4.0
Vehicle Extension (s)		3.0
Lane Grp Cap (vph)	407	143
v/s Ratio Prot	0.01	0.01
v/s Ratio Perm		
v/c Ratio	0.03	0.08
Uniform Delay, d1	15.5	43.0
Progression Factor	1.00	1.00
Incremental Delay, d2	0.0	0.2
Delay (s)	15.5	43.3
Level of Service	B	D
Approach Delay (s)		
Approach LOS		
Intersection Summary		

# HCM Signalized Intersection Capacity Analysis

105: MD 193 & 23rd Ave

6/10/2008



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR2	SBR	SWR
Lane Configurations	↘	↑↑↑		↘	↑↑↑			↑	↗	↗	↘
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	2.0	3.0		3.0	3.0			3.0	3.0	3.0	2.0
Lane Util. Factor	1.00	0.91		1.00	0.91			1.00	1.00	1.00	1.00
Frt	1.00	0.98		1.00	1.00			1.00	0.85	0.86	0.86
Flt Protected	0.95	1.00		0.95	1.00			0.95	1.00	1.00	1.00
Satd. Flow (prot)	902	4894		1736	4976			1793	1599	1627	822
Flt Permitted	0.95	1.00		0.95	1.00			0.95	1.00	1.00	1.00
Satd. Flow (perm)	902	4894		1736	4976			1793	1599	1627	822
Volume (vph)	10	2215	315	185	1970	30	400	5	145	75	10
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	11	2332	332	195	2074	32	421	5	153	79	11
RTOR Reduction (vph)	0	15	0	0	0	0	0	0	115	36	0
Lane Group Flow (vph)	11	2649	0	195	2106	0	0	426	38	43	11
Heavy Vehicles (%)	100%	4%	4%	4%	4%	4%	1%	1%	1%	1%	100%
Turn Type	Split		Prot		Perm		Perm custom custom				
Protected Phases	6!	6		5	2!			4			2!
Permitted Phases		6				4		4	6		
Actuated Green, G (s)	63.0	63.0		13.0	81.0			27.0	27.0	63.0	81.0
Effective Green, g (s)	67.0	66.0		15.0	84.0			30.0	30.0	66.0	85.0
Actuated g/C Ratio	0.56	0.55		0.12	0.70			0.25	0.25	0.55	0.71
Clearance Time (s)	6.0	6.0		5.0	6.0			6.0	6.0	6.0	6.0
Vehicle Extension (s)	5.0	5.0		3.0	5.0			3.0	3.0	5.0	5.0
Lane Grp Cap (vph)	504	2692		217	3483			448	400	895	582
v/s Ratio Prot	0.01	c0.54		c0.11	0.42						0.01
v/s Ratio Perm								0.24	0.02	0.03	
v/c Ratio	0.02	0.98		0.90	0.60			0.95	0.10	0.05	0.02
Uniform Delay, d1	11.8	26.5		51.8	9.4			44.3	34.6	12.5	5.2
Progression Factor	0.57	0.49		0.82	1.44			1.00	1.00	1.00	1.00
Incremental Delay, d2	0.0	2.7		24.9	0.5			30.2	0.1	0.1	0.1
Delay (s)	6.8	15.6		67.5	14.0			74.5	34.7	12.6	5.2
Level of Service	A	B		E	B			E	C	B	A
Approach Delay (s)		15.6			18.6			64.0			
Approach LOS		B			B			E			

## Intersection Summary

HCM Average Control Delay	21.7	HCM Level of Service	C
HCM Volume to Capacity ratio	0.96		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	107.8%	ICU Level of Service	G
Analysis Period (min)	15		

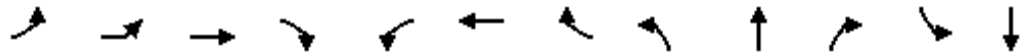
! Phase conflict between lane groups.

c Critical Lane Group

# HCM Signalized Intersection Capacity Analysis

107: MD 193 & W Park Dr

6/10/2008



Movement	EBL2	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR2	SBL	SBT
Lane Configurations	↖	↖	↕	↗	↖	↕	↗	↖	↕		↖	↗
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	2.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0
Lane Util. Factor	1.00	1.00	0.95	1.00	1.00	0.95		1.00	1.00		1.00	1.00
Frt	1.00	1.00	1.00	0.85	1.00	1.00		1.00	0.86		1.00	0.90
Flt Protected	0.95	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00
Satd. Flow (prot)	1736	902	3471	1553	1736	3454		1787	1612		1787	1696
Flt Permitted	0.95	0.95	1.00	1.00	0.95	1.00		0.74	1.00		0.53	1.00
Satd. Flow (perm)	1736	902	3471	1553	1736	3454		1385	1612		1004	1696
Volume (vph)	25	10	2235	40	35	2070	69	25	5	95	80	10
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	26	11	2353	42	37	2179	73	26	5	100	84	11
RTOR Reduction (vph)	0	0	0	10	0	0	0	0	64	0	0	18
Lane Group Flow (vph)	26	11	2353	32	37	2252	0	26	41	0	84	14
Heavy Vehicles (%)	4%	100%	4%	4%	4%	4%	4%	1%	1%	1%	1%	1%
Turn Type	Prot	Split		Perm	Prot			Perm			Perm	
Protected Phases	1	6!	6		5	2!			8			4
Permitted Phases				6				8				4
Actuated Green, G (s)	3.0	87.6	87.6	87.6	3.0	87.6		12.4	12.4		12.4	12.4
Effective Green, g (s)	5.0	91.6	90.6	90.6	5.0	90.6		15.4	15.4		15.4	15.4
Actuated g/C Ratio	0.04	0.76	0.76	0.76	0.04	0.76		0.13	0.13		0.13	0.13
Clearance Time (s)	5.0	6.0	6.0	6.0	5.0	6.0		6.0	6.0		6.0	6.0
Vehicle Extension (s)	3.0	5.0	5.0	5.0	3.0	5.0		3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	72	689	2621	1173	72	2608		178	207		129	218
v/s Ratio Prot	0.01	0.01	c0.68		c0.02	0.65			0.03			0.01
v/s Ratio Perm				0.02				0.02			c0.08	
v/c Ratio	0.36	0.02	0.90	0.03	0.51	0.86		0.15	0.20		0.65	0.06
Uniform Delay, d1	55.9	3.4	11.2	3.7	56.3	10.3		46.5	46.8		49.7	46.0
Progression Factor	1.19	0.12	0.71	0.00	1.00	1.00		1.00	1.00		1.00	1.00
Incremental Delay, d2	1.3	0.0	2.4	0.0	6.1	4.1		0.4	0.5		11.2	0.1
Delay (s)	67.7	0.4	10.4	0.0	62.4	14.4		46.8	47.3		60.9	46.1
Level of Service	E	A	B	A	E	B		D	D		E	D
Approach Delay (s)			10.8			15.2			47.2			56.8
Approach LOS			B			B			D			E

## Intersection Summary

HCM Average Control Delay	14.8	HCM Level of Service	B
HCM Volume to Capacity ratio	0.85		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	99.5%	ICU Level of Service	F
Analysis Period (min)	15		

! Phase conflict between lane groups.

c Critical Lane Group



Movement	SBR	SWR
<b>Lane Configurations</b>		
Ideal Flow (vphpl)	1900	1900
Total Lost time (s)		2.0
Lane Util. Factor		1.00
Frt		0.86
Flt Protected		1.00
Satd. Flow (prot)		822
Flt Permitted		1.00
Satd. Flow (perm)		822
Volume (vph)	20	10
Peak-hour factor, PHF	0.95	0.95
Adj. Flow (vph)	21	11
RTOR Reduction (vph)	0	0
Lane Group Flow (vph)	0	11
Heavy Vehicles (%)	1%	100%
Turn Type	custom	
Protected Phases	2!	
Permitted Phases		
Actuated Green, G (s)	87.6	
Effective Green, g (s)	91.6	
Actuated g/C Ratio	0.76	
Clearance Time (s)	6.0	
Vehicle Extension (s)	5.0	
Lane Grp Cap (vph)	627	
v/s Ratio Prot	0.01	
v/s Ratio Perm		
v/c Ratio	0.02	
Uniform Delay, d1	3.4	
Progression Factor	1.00	
Incremental Delay, d2	0.1	
Delay (s)	3.5	
Level of Service	A	
Approach Delay (s)		
Approach LOS		
<b>Intersection Summary</b>		

# HCM Signalized Intersection Capacity Analysis

1629: MD 193 & 15th Ave

6/10/2008



Movement	EBL2	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR2	SBL	SBT	SBR
Lane Configurations	↖	↖	↗↗↗	↖	↗↗↗		↖	↑		↖	↗	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	2.0	2.0	2.0		2.0		2.0	3.0		3.0	3.0	
Lane Util. Factor	1.00	1.00	0.91		0.91		1.00	1.00		1.00	1.00	
Frt	1.00	1.00	1.00		0.98		1.00	0.92		1.00	0.85	
Flt Protected	0.95	0.95	1.00		1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1736	902	4988		4903		1787	1740		1787	1602	
Flt Permitted	0.95	0.95	1.00		1.00		0.65	1.00		0.76	1.00	
Satd. Flow (perm)	1736	902	4988		4903		1218	1740		1423	1602	
Volume (vph)	225	10	2105	0	2195	280	1	1	1	375	1	95
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	237	11	2216	0	2311	295	1	1	1	395	1	100
RTOR Reduction (vph)	0	0	0	0	0	0	0	1	0	0	73	0
Lane Group Flow (vph)	237	11	2216	0	2606	0	1	1	0	395	29	0
Heavy Vehicles (%)	4%	100%	4%	4%	4%	4%	1%	1%	1%	1%	1%	1%
Turn Type	Prot	Split		Prot		custom	Prot		Perm			
Protected Phases	5	2!	2	1	6!		8				4	
Permitted Phases							8			4		
Actuated Green, G (s)	13.0	78.0	78.0		62.0		30.0	30.0		30.0	30.0	
Effective Green, g (s)	16.0	82.0	82.0		64.0		34.0	33.0		33.0	33.0	
Actuated g/C Ratio	0.13	0.68	0.68		0.53		0.28	0.28		0.28	0.28	
Clearance Time (s)	5.0	6.0	6.0		4.0		6.0	6.0		6.0	6.0	
Vehicle Extension (s)	3.0	5.0	5.0		3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	231	616	3408		2615		345	479		391	441	
v/s Ratio Prot	c0.14	0.01	0.44		c0.53			0.00			0.02	
v/s Ratio Perm								0.00		c0.28		
v/c Ratio	1.03	0.02	0.65		1.00		0.00	0.00		1.01	0.06	
Uniform Delay, d1	52.0	6.1	10.8		27.9		30.8	31.6		43.5	32.1	
Progression Factor	1.00	1.00	1.00		0.53		1.00	1.00		1.00	1.00	
Incremental Delay, d2	66.1	0.1	1.0		11.0		0.0	0.0		48.1	0.1	
Delay (s)	118.1	6.1	11.8		25.7		30.8	31.6		91.6	32.2	
Level of Service	F	A	B		C		C	C		F	C	
Approach Delay (s)			22.0		25.7			31.3			79.5	
Approach LOS			C		C			C			E	

## Intersection Summary

HCM Average Control Delay	28.8	HCM Level of Service	C
HCM Volume to Capacity ratio	1.00		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	7.0
Intersection Capacity Utilization	105.2%	ICU Level of Service	G
Analysis Period (min)	15		

! Phase conflict between lane groups.

c Critical Lane Group



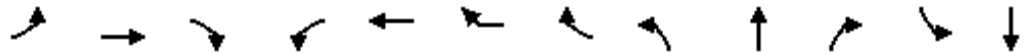
Movement	SWR
Lane Configurations	↗
Ideal Flow (vphpl)	1900
Total Lost time (s)	2.0
Lane Util. Factor	1.00
Frt	0.86
Flt Protected	1.00
Satd. Flow (prot)	1580
Flt Permitted	1.00
Satd. Flow (perm)	1580
Volume (vph)	10
Peak-hour factor, PHF	0.95
Adj. Flow (vph)	11
RTOR Reduction (vph)	0
Lane Group Flow (vph)	11
Heavy Vehicles (%)	4%
Turn Type	custom
Protected Phases	6!
Permitted Phases	
Actuated Green, G (s)	62.0
Effective Green, g (s)	64.0
Actuated g/C Ratio	0.53
Clearance Time (s)	4.0
Vehicle Extension (s)	3.0
Lane Grp Cap (vph)	843
v/s Ratio Prot	0.01
v/s Ratio Perm	
v/c Ratio	0.01
Uniform Delay, d1	13.2
Progression Factor	1.00
Incremental Delay, d2	0.0
Delay (s)	13.2
Level of Service	B
Approach Delay (s)	
Approach LOS	
Intersection Summary	



# HCM Signalized Intersection Capacity Analysis

5: MD 410 & MD 201

6/11/2008



Movement	EBL	EBT	EBR	WBL	WBT	WBR	WBR2	NBL2	NBT	NBR	SBL	SBT
Lane Configurations	↖↗	↑↑	↖	↖	↑↑	↖	↖	↖↗	↑↑	↖	↖	↑↑
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Util. Factor	0.97	0.95	1.00	1.00	0.95	1.00	1.00	0.97	0.95	1.00	1.00	0.95
Frt	1.00	1.00	0.85	1.00	1.00	0.85	0.85	1.00	1.00	0.85	1.00	1.00
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Satd. Flow (prot)	3303	3406	1524	1703	3406	808	1524	3303	3406	1524	1703	3406
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Satd. Flow (perm)	3303	3406	1524	1703	3406	808	1524	3303	3406	1524	1703	3406
Volume (vph)	345	955	365	50	1675	10	550	405	895	40	125	1815
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Growth Factor (vph)	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Adj. Flow (vph)	363	1005	384	53	1763	11	579	426	942	42	132	1911
RTOR Reduction (vph)	0	0	124	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	363	1005	260	53	1763	11	579	426	942	42	132	1911
Heavy Vehicles (%)	6%	6%	6%	6%	6%	100%	6%	6%	6%	6%	6%	6%
Turn Type	Prot		Perm	Prot		Prot	Free	Prot		Free	Prot	
Protected Phases	3!	8!		7	4!	4!		5	2		1	6
Permitted Phases			8				Free			Free		
Actuated Green, G (s)	15.0	58.0	58.0	4.0	48.0	48.0	160.0	13.0	60.3	160.0	15.7	63.0
Effective Green, g (s)	17.0	61.0	61.0	6.0	50.0	50.0	160.0	15.0	63.3	160.0	17.7	66.0
Actuated g/C Ratio	0.11	0.38	0.38	0.04	0.31	0.31	1.00	0.09	0.40	1.00	0.11	0.41
Clearance Time (s)	5.0	6.0	6.0	5.0	5.0	5.0		5.0	6.0		5.0	6.0
Vehicle Extension (s)	3.0	5.0	5.0	3.0	5.0	5.0		3.0	5.0		3.0	5.0
Lane Grp Cap (vph)	351	1299	581	64	1064	253	1524	310	1347	1524	188	1405
v/s Ratio Prot	c0.11	0.30		0.03	c0.52	0.01		c0.13	0.28		0.08	c0.56
v/s Ratio Perm			0.17				c0.38			0.03		
v/c Ratio	1.03	0.77	0.45	0.83	1.66	0.04	0.38	1.37	0.70	0.03	0.70	1.36
Uniform Delay, d1	71.5	43.4	36.9	76.5	55.0	38.3	0.0	72.5	40.4	0.0	68.6	47.0
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.14	0.72	1.00	1.01	0.70
Incremental Delay, d2	57.1	4.5	2.5	56.0	299.8	0.1	0.7	185.9	2.8	0.0	9.2	165.9
Delay (s)	128.6	48.0	39.4	132.5	354.8	38.5	0.7	268.5	31.7	0.0	78.9	198.8
Level of Service	F	D	D	F	F	D	A	F	C	A	E	F
Approach Delay (s)		62.8			263.3				102.3			163.0
Approach LOS		E			F				F			F

## Intersection Summary

HCM Average Control Delay	160.3	HCM Level of Service	F
HCM Volume to Capacity ratio	1.40		
Actuated Cycle Length (s)	160.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	147.0%	ICU Level of Service	H
Analysis Period (min)	15		

! Phase conflict between lane groups.

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis  
 5: MD 410 & MD 201

6/11/2008



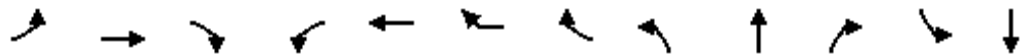
Movement	SBR	SEL
Lane Configurations	↖ ↗	↖ ↗
Ideal Flow (vphpl)	1900	1900
Total Lost time (s)	3.0	3.0
Lane Util. Factor	1.00	1.00
Frt	0.85	1.00
Flt Protected	1.00	0.95
Satd. Flow (prot)	1524	902
Flt Permitted	1.00	0.95
Satd. Flow (perm)	1524	902
Volume (vph)	335	10
Peak-hour factor, PHF	0.95	0.95
Growth Factor (vph)	100%	100%
Adj. Flow (vph)	353	11
RTOR Reduction (vph)	0	0
Lane Group Flow (vph)	353	11
Heavy Vehicles (%)	6%	100%
Turn Type	Free	
Protected Phases		8!
Permitted Phases	Free!	
Actuated Green, G (s)	160.0	58.0
Effective Green, g (s)	160.0	61.0
Actuated g/C Ratio	1.00	0.38
Clearance Time (s)		6.0
Vehicle Extension (s)		5.0
Lane Grp Cap (vph)	1524	344
v/s Ratio Prot		0.01
v/s Ratio Perm	0.23	
v/c Ratio	0.23	0.03
Uniform Delay, d1	0.0	31.0
Progression Factor	1.00	1.00
Incremental Delay, d2	0.3	0.2
Delay (s)	0.3	31.2
Level of Service	A	C
Approach Delay (s)		31.2
Approach LOS		C

Intersection Summary

# HCM Signalized Intersection Capacity Analysis

5: MD 410 & MD 201

6/11/2008



Movement	EBL	EBT	EBR	WBL	WBT	WBR	WBR2	NBL2	NBT	NBR	SBL	SBT
Lane Configurations	↔↔	↑↑	↗	↖	↑↑	↗	↗	↔↔	↑↑	↗	↖	↑↑
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	11	11	11	11	11	12	11	11	11	11	11	11
Total Lost time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Util. Factor	0.97	0.95	1.00	1.00	0.95	1.00	1.00	0.97	0.95	1.00	1.00	0.95
Fr <sub>t</sub>	1.00	1.00	0.85	1.00	1.00	0.85	0.85	1.00	1.00	0.85	1.00	1.00
Fl <sub>t</sub> Protected	0.95	1.00	1.00	0.95	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Satd. Flow (prot)	3286	3388	1516	1694	3388	808	1516	3286	3388	1516	1694	3388
Fl <sub>t</sub> Permitted	0.95	1.00	1.00	0.95	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Satd. Flow (perm)	3286	3388	1516	1694	3388	808	1516	3286	3388	1516	1694	3388
Volume (vph)	665	1595	495	155	1630	10	300	455	1305	55	415	1430
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Growth Factor (vph)	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Adj. Flow (vph)	700	1679	521	163	1716	11	316	479	1374	58	437	1505
RTOR Reduction (vph)	0	0	145	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	700	1679	376	163	1716	11	316	479	1374	58	437	1505
Heavy Vehicles (%)	3%	3%	3%	3%	3%	100%	3%	3%	3%	3%	3%	3%
Turn Type	Prot		Perm	Prot		Perm	Free	Prot		Free	Prot	
Protected Phases	3!	8!		7	4!			5	2		1	6
Permitted Phases			8			4!	Free			Free		
Actuated Green, G (s)	15.0	39.4	39.4	13.6	38.0	38.0	130.0	10.0	36.0	130.0	19.0	45.0
Effective Green, g (s)	17.0	42.4	42.4	15.6	41.0	41.0	130.0	12.0	39.0	130.0	21.0	48.0
Actuated g/C Ratio	0.13	0.33	0.33	0.12	0.32	0.32	1.00	0.09	0.30	1.00	0.16	0.37
Clearance Time (s)	5.0	6.0	6.0	5.0	6.0	6.0		5.0	6.0		5.0	6.0
Vehicle Extension (s)	3.0	3.5	3.5	3.0	3.5	3.5		3.0	5.0		3.0	5.0
Lane Grp Cap (vph)	430	1105	494	203	1069	255	1516	303	1016	1516	274	1251
v/s Ratio Prot	c0.21	0.50		0.10	c0.51			0.15	c0.41		c0.26	0.44
v/s Ratio Perm			0.25			0.01	c0.21			0.04		
v/c Ratio	1.63	1.52	0.76	0.80	1.61	0.04	0.21	1.58	1.35	0.04	1.59	1.20
Uniform Delay, d <sub>1</sub>	56.5	43.8	39.3	55.7	44.5	30.9	0.0	59.0	45.5	0.0	54.5	41.0
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.45	0.57	1.00	0.94	0.92
Incremental Delay, d <sub>2</sub>	293.0	238.4	7.0	20.0	276.8	0.1	0.3	271.4	162.8	0.0	282.3	98.3
Delay (s)	349.5	282.2	46.3	75.7	321.3	31.0	0.3	357.1	188.8	0.0	333.3	136.0
Level of Service	F	F	D	E	F	C	A	F	F	A	F	F
Approach Delay (s)		256.1			255.7				225.3			163.6
Approach LOS		F			F				F			F

## Intersection Summary

HCM Average Control Delay	227.7	HCM Level of Service	F
HCM Volume to Capacity ratio	1.51		
Actuated Cycle Length (s)	130.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	152.3%	ICU Level of Service	H
Analysis Period (min)	15		

! Phase conflict between lane groups.

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis  
 5: MD 410 & MD 201

6/11/2008

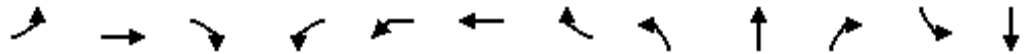


Movement	SBR	SEL
Lane Configurations	↗	↘
Ideal Flow (vphpl)	1900	1900
Lane Width	11	12
Total Lost time (s)	3.0	3.0
Lane Util. Factor	1.00	1.00
Flt	0.85	1.00
Flt Protected	1.00	0.95
Satd. Flow (prot)	1516	902
Flt Permitted	1.00	0.95
Satd. Flow (perm)	1516	902
Volume (vph)	190	10
Peak-hour factor, PHF	0.95	0.95
Growth Factor (vph)	100%	100%
Adj. Flow (vph)	200	11
RTOR Reduction (vph)	0	0
Lane Group Flow (vph)	200	11
Heavy Vehicles (%)	3%	100%
Turn Type	Free	
Protected Phases		8!
Permitted Phases	Free!	
Actuated Green, G (s)	130.0	39.4
Effective Green, g (s)	130.0	42.4
Actuated g/C Ratio	1.00	0.33
Clearance Time (s)		6.0
Vehicle Extension (s)		3.5
Lane Grp Cap (vph)	1516	294
v/s Ratio Prot		0.01
v/s Ratio Perm	0.13	
v/c Ratio	0.13	0.04
Uniform Delay, d1	0.0	29.9
Progression Factor	1.00	1.00
Incremental Delay, d2	0.2	0.1
Delay (s)	0.2	29.9
Level of Service	A	C
Approach Delay (s)		29.9
Approach LOS		C
<b>Intersection Summary</b>		

# HCM Signalized Intersection Capacity Analysis

1601: MD 410 & 62nd Pl.

6/11/2008



Movement	EBL	EBT	EBR	WBL2	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations	↖	↗		↖	↖	↗			↕			↖
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0	4.0			4.0			4.0
Lane Util. Factor	1.00	0.95		1.00	1.00	0.95			1.00			1.00
Frt	1.00	1.00		1.00	1.00	1.00			0.94			0.97
Flt Protected	0.95	1.00		0.95	0.95	1.00			0.97			0.96
Satd. Flow (prot)	1703	3404		1703	902	3399			1726			1757
Flt Permitted	0.95	1.00		0.95	0.95	1.00			0.97			0.96
Satd. Flow (perm)	1703	3404		1703	902	3399			1726			1757
Volume (vph)	30	1375	5	5	10	2210	30	65	0	45	55	0
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	32	1447	5	5	11	2326	32	68	0	47	58	0
RTOR Reduction (vph)	0	0	0	0	0	1	0	0	22	0	0	9
Lane Group Flow (vph)	32	1452	0	5	11	2357	0	0	93	0	0	65
Heavy Vehicles (%)	6%	6%	6%	6%	100%	6%	6%	1%	1%	1%	1%	1%
Turn Type	Prot			Prot	Split			Split			Split	
Protected Phases	1	2!		1	2!	2		3	3		4	4
Permitted Phases												
Actuated Green, G (s)	3.0	73.8		3.0	73.8	73.8			7.5			4.7
Effective Green, g (s)	4.0	75.8		4.0	75.8	75.8			8.5			5.7
Actuated g/C Ratio	0.04	0.69		0.04	0.69	0.69			0.08			0.05
Clearance Time (s)	5.0	6.0		5.0	6.0	6.0			5.0			5.0
Vehicle Extension (s)	3.0	6.0		3.0	6.0	6.0			3.0			3.0
Lane Grp Cap (vph)	62	2346		62	622	2342			133			91
v/s Ratio Prot	c0.02	0.43		0.00	0.01	c0.69			c0.05			c0.04
v/s Ratio Perm												
v/c Ratio	0.52	0.62		0.08	0.02	1.01			0.70			0.71
Uniform Delay, d1	52.0	9.3		51.2	5.4	17.1			49.5			51.3
Progression Factor	1.00	1.00		0.77	0.55	0.37			1.00			1.00
Incremental Delay, d2	7.1	1.2		0.3	0.0	14.3			14.8			22.2
Delay (s)	59.1	10.5		39.8	3.0	20.7			64.3			73.6
Level of Service	E	B		D	A	C			E			E
Approach Delay (s)		11.6				20.7			64.3			73.6
Approach LOS		B				C			E			E
<b>Intersection Summary</b>												
HCM Average Control Delay			19.5				HCM Level of Service		B			
HCM Volume to Capacity ratio			0.94									
Actuated Cycle Length (s)			110.0			Sum of lost time (s)		16.0				
Intersection Capacity Utilization			83.0%			ICU Level of Service		E				
Analysis Period (min)			15									
! Phase conflict between lane groups.												
c Critical Lane Group												



Movement	SBR2	NER
Lane Configurations		
Ideal Flow (vphpl)	1900	1900
Total Lost time (s)		4.0
Lane Util. Factor		1.00
Frt		0.86
Flt Protected		1.00
Satd. Flow (prot)		822
Flt Permitted		1.00
Satd. Flow (perm)		822
Volume (vph)	15	10
Peak-hour factor, PHF	0.95	0.95
Adj. Flow (vph)	16	11
RTOR Reduction (vph)	0	0
Lane Group Flow (vph)	0	11
Heavy Vehicles (%)	1%	100%
Turn Type		Over
Protected Phases		2!
Permitted Phases		
Actuated Green, G (s)		73.8
Effective Green, g (s)		75.8
Actuated g/C Ratio		0.69
Clearance Time (s)		6.0
Vehicle Extension (s)		6.0
Lane Grp Cap (vph)		566
v/s Ratio Prot		0.01
v/s Ratio Perm		
v/c Ratio		0.02
Uniform Delay, d1		5.4
Progression Factor		1.00
Incremental Delay, d2		0.1
Delay (s)		5.5
Level of Service		A
Approach Delay (s)		
Approach LOS		
Intersection Summary		

# HCM Signalized Intersection Capacity Analysis

1602: MD 410 & 64th Ave.

6/11/2008



Movement	EBL	EBT	EBR	WBL	WBT	WBR	SBL	SBR	SBR2	NEL	NER
Lane Configurations	↖	↑↑		↖	↑↑		↖		↖		↖
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0		4.0		4.0
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00		1.00		1.00
Frt	1.00	1.00		1.00	0.99		1.00		0.85		0.86
Flt Protected	0.95	1.00		0.95	1.00		0.95		1.00		1.00
Satd. Flow (prot)	1703	3406		902	3384		1787		1599		822
Flt Permitted	0.95	1.00		0.95	1.00		0.95		1.00		1.00
Satd. Flow (perm)	1703	3406		902	3384		1787		1599		822
Volume (vph)	30	1445	0	10	2150	95	100	0	95	0	10
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	32	1521	0	11	2263	100	105	0	100	0	11
RTOR Reduction (vph)	0	0	0	0	3	0	0	0	73	0	0
Lane Group Flow (vph)	32	1521	0	11	2360	0	105	0	27	0	11
Heavy Vehicles (%)	6%	6%	6%	100%	6%	6%	1%	1%	1%	1%	100%
Turn Type	Prot		Split			Prot		custom		custom	
Protected Phases	1	6!		2!	2		4				6!
Permitted Phases									4		
Actuated Green, G (s)	3.0	91.3		83.3	83.3		8.7		8.7		91.3
Effective Green, g (s)	4.0	92.3		84.3	84.3		9.7		9.7		92.3
Actuated g/C Ratio	0.04	0.84		0.77	0.77		0.09		0.09		0.84
Clearance Time (s)	5.0	5.0		5.0	5.0		5.0		5.0		5.0
Vehicle Extension (s)	3.0	6.0		6.0	6.0		3.0		3.0		6.0
Lane Grp Cap (vph)	62	2858		691	2593		158		141		690
v/s Ratio Prot	0.02	c0.45		0.01	c0.70		c0.06				0.01
v/s Ratio Perm									0.02		
v/c Ratio	0.52	0.53		0.02	0.91		0.66		0.19		0.02
Uniform Delay, d1	52.0	2.6		3.0	9.9		48.6		46.5		1.4
Progression Factor	0.83	0.45		0.53	0.55		1.00		1.00		1.00
Incremental Delay, d2	5.7	0.6		0.0	3.1		10.1		0.7		0.0
Delay (s)	48.9	1.7		1.6	8.5		58.6		47.2		1.5
Level of Service	D	A		A	A		E		D		A
Approach Delay (s)		2.7			8.5		53.1			1.5	
Approach LOS		A			A		D			A	

## Intersection Summary













HCM Average Control Delay	8.5	HCM Level of Service	A
HCM Volume to Capacity ratio	0.85		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	75.0%	ICU Level of Service	D
Analysis Period (min)	15		

! Phase conflict between lane groups.

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis  
 1603: MD 410 & BW Parkway S/B Ramps
























6/11/2008

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑↑	↑	↑	↑↑			↑		↑↑		↑
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0	4.0	4.0			4.0		4.0		4.0
Lane Util. Factor		0.91	1.00	1.00	0.95			1.00		0.97		1.00
Frt		1.00	0.85	1.00	1.00			1.00		1.00		0.85
Flt Protected		1.00	1.00	0.95	1.00			1.00		0.95		1.00
Satd. Flow (prot)		4893	1524	1703	3406			950		3303		1524
Flt Permitted		1.00	1.00	0.95	1.00			1.00		0.95		1.00
Satd. Flow (perm)		4893	1524	1703	3406			950		3303		1524
Volume (vph)	0	1350	195	320	1935	0	0	10	0	105	0	320
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	1421	205	337	2037	0	0	11	0	111	0	337
RTOR Reduction (vph)	0	0	119	0	0	0	0	0	0	0	0	13
Lane Group Flow (vph)	0	1421	86	337	2037	0	0	11	0	111	0	324
Heavy Vehicles (%)	6%	6%	6%	6%	6%	6%	6%	100%	6%	6%	6%	6%
Turn Type			Perm	Prot						Prot		custom
Protected Phases		6!		5	2!			6!		4		
Permitted Phases			6									4
Actuated Green, G (s)		45.1	45.1	24.3	74.4			45.1		25.6		25.6
Effective Green, g (s)		46.1	46.1	25.3	75.4			46.1		26.6		26.6
Actuated g/C Ratio		0.42	0.42	0.23	0.69			0.42		0.24		0.24
Clearance Time (s)		5.0	5.0	5.0	5.0			5.0		5.0		5.0
Vehicle Extension (s)		6.0	6.0	3.0	6.0			6.0		3.0		3.0
Lane Grp Cap (vph)		2051	639	392	2335			398		799		369
v/s Ratio Prot		0.29		0.20	c0.60			0.01		0.03		
v/s Ratio Perm			0.06									c0.21
v/c Ratio		0.69	0.13	0.86	0.87			0.03		0.14		0.88
Uniform Delay, d1		26.2	19.7	40.6	13.5			18.8		32.7		40.1
Progression Factor		0.73	0.39	1.43	1.21			1.00		1.00		1.00
Incremental Delay, d2		1.7	0.4	10.7	3.0			0.1		0.1		20.3
Delay (s)		20.7	8.1	68.7	19.4			18.9		32.8		60.5
Level of Service		C	A	E	B			B		C		E
Approach Delay (s)		19.1			26.4			18.9			53.6	
Approach LOS		B			C			B			D	
<b>Intersection Summary</b>												
HCM Average Control Delay			26.5			HCM Level of Service				C		
HCM Volume to Capacity ratio			0.87									
Actuated Cycle Length (s)			110.0			Sum of lost time (s)				8.0		
Intersection Capacity Utilization			81.0%			ICU Level of Service				D		
Analysis Period (min)			15									
! Phase conflict between lane groups.												
c Critical Lane Group												



HCM Signalized Intersection Capacity Analysis  
 1604: MD 410 & BW Parkway N/B Ramps

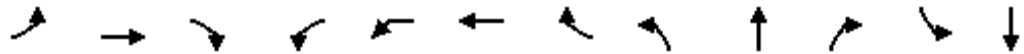
6/11/2008

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		 			  		 					
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0			4.0	4.0	4.0		4.0		4.0	
Lane Util. Factor	1.00	0.95			0.91	1.00	0.97		1.00		1.00	
Frt	1.00	1.00			1.00	0.85	1.00		0.85		1.00	
Flt Protected	0.95	1.00			1.00	1.00	0.95		1.00		1.00	
Satd. Flow (prot)	1703	3406			4893	1524	3303		1524		950	
Flt Permitted	0.95	1.00			1.00	1.00	0.95		1.00		1.00	
Satd. Flow (perm)	1703	3406			4893	1524	3303		1524		950	
Volume (vph)	315	1150	0	0	1875	315	370	0	70	0	10	0
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	332	1211	0	0	1974	332	389	0	74	0	11	0
RTOR Reduction (vph)	0	0	0	0	0	156	0	0	63	0	0	0
Lane Group Flow (vph)	332	1211	0	0	1974	176	389	0	11	0	11	0
Heavy Vehicles (%)	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%	100%	6%
Turn Type	Prot				Perm		Prot	custom				
Protected Phases	1	6!			2!		4				2!	
Permitted Phases						2			4			
Actuated Green, G (s)	25.0	84.5			54.5	54.5	15.5		15.5		54.5	
Effective Green, g (s)	26.0	85.5			55.5	55.5	16.5		16.5		55.5	
Actuated g/C Ratio	0.24	0.78			0.50	0.50	0.15		0.15		0.50	
Clearance Time (s)	5.0	5.0			5.0	5.0	5.0		5.0		5.0	
Vehicle Extension (s)	3.0	6.0			6.0	6.0	3.0		3.0		6.0	
Lane Grp Cap (vph)	403	2647			2469	769	495		229		479	
v/s Ratio Prot	c0.19	0.36			c0.40		c0.12				0.01	
v/s Ratio Perm						0.12			0.01			
v/c Ratio	0.82	0.46			0.80	0.23	0.79		0.05		0.02	
Uniform Delay, d1	39.8	4.2			22.6	15.3	45.0		40.0		13.7	
Progression Factor	1.66	0.67			0.77	0.63	1.00		1.00		1.00	
Incremental Delay, d2	9.5	0.4			1.5	0.4	8.0		0.1		0.1	
Delay (s)	75.5	3.3			18.9	9.9	53.1		40.1		13.7	
Level of Service	E	A			B	A	D		D		B	
Approach Delay (s)		18.8			17.6			51.0			13.7	
Approach LOS		B			B			D			B	
<b>Intersection Summary</b>												
HCM Average Control Delay			21.6	HCM Level of Service				C				
HCM Volume to Capacity ratio			0.80									
Actuated Cycle Length (s)			110.0	Sum of lost time (s)				12.0				
Intersection Capacity Utilization			84.5%	ICU Level of Service				E				
Analysis Period (min)			15									
! Phase conflict between lane groups.												
c Critical Lane Group												

# HCM Signalized Intersection Capacity Analysis

1605: MD 410 & 67th. Ave.

6/11/2008



Movement	EBL	EBT	EBR	WBL2	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations	↖	↗		↖	↖	↗		↖	↗			↖
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0	4.0		4.0	4.0			4.0
Lane Util. Factor	1.00	0.95		1.00	1.00	0.95		1.00	1.00			1.00
Frt	1.00	1.00		1.00	1.00	1.00		1.00	0.86			0.94
Flt Protected	0.95	1.00		0.95	0.95	1.00		0.95	1.00			0.98
Satd. Flow (prot)	1703	3399		1703	902	3404		1787	1618			1734
Flt Permitted	0.95	1.00		0.95	0.95	1.00		0.81	1.00			0.88
Satd. Flow (perm)	1703	3399		1703	902	3404		1515	1618			1561
Volume (vph)	5	1190	15	15	10	2000	5	175	5	65	15	5
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	5	1253	16	16	11	2105	5	184	5	68	16	5
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	57	0	0	13
Lane Group Flow (vph)	5	1269	0	16	11	2110	0	184	16	0	0	24
Heavy Vehicles (%)	6%	6%	6%	6%	100%	6%	6%	1%	1%	1%	1%	1%
Turn Type	Prot		Prot		Split		Perm			Perm		
Protected Phases	1	2!		1	2!	2			8			4
Permitted Phases								8				4
Actuated Green, G (s)	2.0	76.5		2.0	76.5	76.5		16.5	16.5			16.5
Effective Green, g (s)	3.0	77.5		3.0	77.5	77.5		17.5	17.5			17.5
Actuated g/C Ratio	0.03	0.70		0.03	0.70	0.70		0.16	0.16			0.16
Clearance Time (s)	5.0	5.0		5.0	5.0	5.0		5.0	5.0			5.0
Vehicle Extension (s)	3.0	6.0		3.0	6.0	6.0		3.0	3.0			3.0
Lane Grp Cap (vph)	46	2395		46	636	2398		241	257			248
v/s Ratio Prot	0.00	0.37		c0.01	0.01	c0.62			0.01			
v/s Ratio Perm								c0.12				0.02
v/c Ratio	0.11	0.53		0.35	0.02	0.88		0.76	0.06			0.09
Uniform Delay, d1	52.2	7.7		52.5	4.9	12.6		44.3	39.3			39.5
Progression Factor	0.77	0.23		0.90	0.45	0.38		1.00	1.00			1.00
Incremental Delay, d2	1.0	0.8		2.5	0.0	2.9		13.4	0.1			0.2
Delay (s)	40.9	2.5		49.7	2.2	7.7		57.6	39.4			39.7
Level of Service	D	A		D	A	A		E	D			D
Approach Delay (s)		2.6				8.0			52.4			39.7
Approach LOS		A				A			D			D

## Intersection Summary

HCM Average Control Delay	9.6	HCM Level of Service	A
HCM Volume to Capacity ratio	0.84		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	79.7%	ICU Level of Service	D
Analysis Period (min)	15		

! Phase conflict between lane groups.













c Critical Lane Group



Movement	SBR2	NER
Lane Configurations		
Ideal Flow (vphpl)	1900	1900
Total Lost time (s)		4.0
Lane Util. Factor		1.00
Frt		0.86
Flt Protected		1.00
Satd. Flow (prot)		822
Flt Permitted		1.00
Satd. Flow (perm)		822
Volume (vph)	15	10
Peak-hour factor, PHF	0.95	0.95
Adj. Flow (vph)	16	11
RTOR Reduction (vph)	0	0
Lane Group Flow (vph)	0	11
Heavy Vehicles (%)	1%	100%
Turn Type		Over
Protected Phases		2!
Permitted Phases		
Actuated Green, G (s)		76.5
Effective Green, g (s)		77.5
Actuated g/C Ratio		0.70
Clearance Time (s)		5.0
Vehicle Extension (s)		6.0
Lane Grp Cap (vph)		579
v/s Ratio Prot		0.01
v/s Ratio Perm		
v/c Ratio		0.02
Uniform Delay, d1		4.9
Progression Factor		1.00
Incremental Delay, d2		0.1
Delay (s)		4.9
Level of Service		A
Approach Delay (s)		
Approach LOS		
Intersection Summary		

HCM Signalized Intersection Capacity Analysis  
 1606: MD 410 & Veterans Pkwy

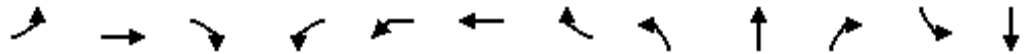
6/11/2008

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑		↵	↑↑		↵↵	↑	↵		↑	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0		4.0	4.0		4.0	4.0	4.0		4.0	
Lane Util. Factor		0.95		1.00	0.95		0.97	1.00	1.00		1.00	
Frt		0.91		1.00	1.00		1.00	1.00	0.85		1.00	
Flt Protected		1.00		0.95	1.00		0.95	1.00	1.00		1.00	
Satd. Flow (prot)		3113		1703	3406		3303	950	1524		950	
Flt Permitted		1.00		0.08	1.00		0.95	1.00	1.00		1.00	
Satd. Flow (perm)		3113		149	3406		3303	950	1524		950	
Volume (vph)	0	620	830	345	950	0	1115	10	315	0	10	0
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	653	874	363	1000	0	1174	11	332	0	11	0
RTOR Reduction (vph)	0	220	0	0	0	0	0	0	223	0	0	0
Lane Group Flow (vph)	0	1307	0	363	1000	0	1174	11	109	0	11	0
Heavy Vehicles (%)	6%	6%	6%	6%	6%	6%	6%	100%	6%	6%	100%	6%
Turn Type				pm+pt			Split		Perm			
Protected Phases		6		5	2		4!	4			4!	
Permitted Phases				2					4			
Actuated Green, G (s)		43.0		65.0	65.0		35.0	35.0	35.0		35.0	
Effective Green, g (s)		44.0		66.0	66.0		36.0	36.0	36.0		36.0	
Actuated g/C Ratio		0.40		0.60	0.60		0.33	0.33	0.33		0.33	
Clearance Time (s)		5.0		5.0	5.0		5.0	5.0	5.0		5.0	
Vehicle Extension (s)		6.0		3.0	6.0		3.0	3.0	3.0		3.0	
Lane Grp Cap (vph)		1245		344	2044		1081	311	499		311	
v/s Ratio Prot		0.42		c0.17	0.29		c0.36	0.01			0.01	
v/s Ratio Perm				c0.46					0.07			
v/c Ratio		1.05		1.06	0.49		1.09	0.04	0.22		0.04	
Uniform Delay, d1		33.0		42.6	12.5		37.0	25.2	26.8		25.2	
Progression Factor		0.37		1.00	1.00		1.00	1.00	1.00		1.00	
Incremental Delay, d2		38.6		63.8	0.8		53.8	0.0	0.2		0.0	
Delay (s)		50.7		106.4	13.3		90.8	25.2	27.0		25.2	
Level of Service		D		F	B		F	C	C		C	
Approach Delay (s)		50.7			38.1			76.4			25.2	
Approach LOS		D			D			E			C	
<b>Intersection Summary</b>												
HCM Average Control Delay			55.6			HCM Level of Service			E			
HCM Volume to Capacity ratio			1.04									
Actuated Cycle Length (s)			110.0			Sum of lost time (s)			8.0			
Intersection Capacity Utilization			111.4%			ICU Level of Service			H			
Analysis Period (min)			15									
! Phase conflict between lane groups.												
c Critical Lane Group												

# HCM Signalized Intersection Capacity Analysis

1601: MD 410 & 62nd Pl.

6/11/2008



Movement	EBL	EBT	EBR	WBL2	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations	↖	↗		↖	↖	↗			↕			↖
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0	4.0			4.0			4.0
Lane Util. Factor	1.00	0.95		1.00	1.00	0.95			1.00			1.00
Frt	1.00	0.99		1.00	1.00	1.00			0.97			0.96
Flt Protected	0.95	1.00		0.95	0.95	1.00			0.96			0.97
Satd. Flow (prot)	1752	3484		1752	902	3495			1760			1742
Flt Permitted	0.95	1.00		0.95	0.95	1.00			0.96			0.97
Satd. Flow (perm)	1752	3484		1752	902	3495			1760			1742
Volume (vph)	30	2280	95	25	10	2185	40	80	0	20	120	0
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	32	2400	100	26	11	2300	42	84	0	21	126	0
RTOR Reduction (vph)	0	0	0	0	0	1	0	0	9	0	0	15
Lane Group Flow (vph)	32	2500	0	26	11	2341	0	0	96	0	0	169
Heavy Vehicles (%)	3%	3%	3%	3%	100%	3%	3%	1%	1%	1%	1%	1%
Turn Type	Prot			Prot	Split			Split			Split	
Protected Phases	1	2!		1	2!	2		3	3		4	4
Permitted Phases												
Actuated Green, G (s)	4.0	71.0		4.0	71.0	71.0			5.0			9.0
Effective Green, g (s)	5.0	73.0		5.0	73.0	73.0			6.0			10.0
Actuated g/C Ratio	0.05	0.66		0.05	0.66	0.66			0.05			0.09
Clearance Time (s)	5.0	6.0		5.0	6.0	6.0			5.0			5.0
Vehicle Extension (s)	3.0	6.0		3.0	6.0	6.0			3.0			3.0
Lane Grp Cap (vph)	80	2312		80	599	2319			96			158
v/s Ratio Prot	c0.02	c0.72		0.01	0.01	0.67			c0.05			c0.10
v/s Ratio Perm												
v/c Ratio	0.40	1.08		0.33	0.02	1.01			1.01			1.07
Uniform Delay, d1	51.0	18.5		50.9	6.3	18.5			52.0			50.0
Progression Factor	1.00	1.00		1.11	0.79	0.44			1.00			1.00
Incremental Delay, d2	3.3	45.0		0.9	0.0	14.0			93.2			90.5
Delay (s)	54.3	63.5		57.3	5.0	22.2			145.2			140.5
Level of Service	D	E		E	A	C			F			F
Approach Delay (s)		63.4				22.5			145.2			140.5
Approach LOS		E				C			F			F

## Intersection Summary

HCM Average Control Delay	49.0	HCM Level of Service	D
HCM Volume to Capacity ratio	1.04		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	107.3%	ICU Level of Service	G
Analysis Period (min)	15		

! Phase conflict between lane groups.

c Critical Lane Group



Movement	SBR2	NER
Lane Configurations		
Ideal Flow (vphpl)	1900	1900
Total Lost time (s)		4.0
Lane Util. Factor		1.00
Frt		0.86
Flt Protected		1.00
Satd. Flow (prot)		1596
Flt Permitted		1.00
Satd. Flow (perm)		1596
Volume (vph)	55	10
Peak-hour factor, PHF	0.95	0.95
Adj. Flow (vph)	58	11
RTOR Reduction (vph)	0	0
Lane Group Flow (vph)	0	11
Heavy Vehicles (%)	1%	3%
Turn Type		Over
Protected Phases		2!
Permitted Phases		
Actuated Green, G (s)		71.0
Effective Green, g (s)		73.0
Actuated g/C Ratio		0.66
Clearance Time (s)		6.0
Vehicle Extension (s)		6.0
Lane Grp Cap (vph)		1059
v/s Ratio Prot		0.01
v/s Ratio Perm		
v/c Ratio		0.01
Uniform Delay, d1		6.3
Progression Factor		1.00
Incremental Delay, d2		0.0
Delay (s)		6.3
Level of Service		A
Approach Delay (s)		
Approach LOS		
Intersection Summary		

# HCM Signalized Intersection Capacity Analysis

1602: MD 410 & 64th Ave.

6/11/2008



Movement	EBL	EBT	EBR	WBL	WBT	WBR	SBL	SBR	SBR2	NEL	NER
Lane Configurations	↙	↑↑		↙	↑↑		↙		↗		↗
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0		4.0		4.0
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00		1.00		1.00
Frt	1.00	1.00		1.00	0.99		1.00		0.85		0.86
Flt Protected	0.95	1.00		0.95	1.00		0.95		1.00		1.00
Satd. Flow (prot)	1752	3505		902	3478		1787		1599		822
Flt Permitted	0.95	1.00		0.95	1.00		0.95		1.00		1.00
Satd. Flow (perm)	1752	3505		902	3478		1787		1599		822
Volume (vph)	100	2320	0	10	2170	115	80	0	80	0	10
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	105	2442	0	11	2284	121	84	0	84	0	11
RTOR Reduction (vph)	0	0	0	0	3	0	0	0	78	0	0
Lane Group Flow (vph)	105	2442	0	11	2402	0	84	0	6	0	11
Heavy Vehicles (%)	3%	3%	3%	100%	3%	3%	1%	1%	1%	1%	100%
Turn Type	Prot			Split			Prot		custom		custom
Protected Phases	1	6!		2!	2		4				6!
Permitted Phases									4		
Actuated Green, G (s)	8.0	93.0		80.0	80.0		7.0		7.0		93.0
Effective Green, g (s)	9.0	94.0		81.0	81.0		8.0		8.0		94.0
Actuated g/C Ratio	0.08	0.85		0.74	0.74		0.07		0.07		0.85
Clearance Time (s)	5.0	5.0		5.0	5.0		5.0		5.0		5.0
Vehicle Extension (s)	3.0	6.0		6.0	6.0		3.0		3.0		6.0
Lane Grp Cap (vph)	143	2995		664	2561		130		116		702
v/s Ratio Prot	0.06	c0.70		0.01	c0.69		c0.05				0.01
v/s Ratio Perm									0.00		
v/c Ratio	0.73	0.82		0.02	0.94		0.65		0.05		0.02
Uniform Delay, d1	49.3	3.8		3.9	12.4		49.6		47.5		1.2
Progression Factor	0.70	0.66		0.64	0.85		1.00		1.00		1.00
Incremental Delay, d2	1.8	0.2		0.0	4.3		10.5		0.2		0.0
Delay (s)	36.4	2.8		2.5	14.8		60.2		47.7		1.2
Level of Service	D	A		A	B		E		D		A
Approach Delay (s)		4.2			14.7		53.9			1.2	
Approach LOS		A			B		D			A	

## Intersection Summary

HCM Average Control Delay	10.7	HCM Level of Service	B
HCM Volume to Capacity ratio	0.89		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	94.2%	ICU Level of Service	F
Analysis Period (min)	15		

! Phase conflict between lane groups.

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis  
 1603: MD 410 & BW Parkway S/B Ramps

6/11/2008



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑↑	↑	↑	↑↑			↑		↑↑		↑
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0	4.0	4.0			4.0		4.0		4.0
Lane Util. Factor		0.91	1.00	1.00	0.95			1.00		0.97		1.00
Frt		1.00	0.85	1.00	1.00			1.00		1.00		0.85
Flt Protected		1.00	1.00	0.95	1.00			1.00		0.95		1.00
Satd. Flow (prot)		5036	1568	1752	3505			950		3400		1568
Flt Permitted		1.00	1.00	0.95	1.00			1.00		0.95		1.00
Satd. Flow (perm)		5036	1568	1752	3505			950		3400		1568
Volume (vph)	0	2010	390	345	1895	0	0	10	0	225	0	395
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	2116	411	363	1995	0	0	11	0	237	0	416
RTOR Reduction (vph)	0	0	191	0	0	0	0	0	0	0	0	15
Lane Group Flow (vph)	0	2116	220	363	1995	0	0	11	0	237	0	401
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%	3%	100%	3%	3%	3%	3%
Turn Type			Perm	Prot						Prot		custom
Protected Phases		6!		5	2!			6!		4		
Permitted Phases			6									4
Actuated Green, G (s)		47.0	47.0	22.0	74.0			47.0		26.0		26.0
Effective Green, g (s)		48.0	48.0	23.0	75.0			48.0		27.0		27.0
Actuated g/C Ratio		0.44	0.44	0.21	0.68			0.44		0.25		0.25
Clearance Time (s)		5.0	5.0	5.0	5.0			5.0		5.0		5.0
Vehicle Extension (s)		6.0	6.0	3.0	6.0			6.0		3.0		3.0
Lane Grp Cap (vph)		2198	684	366	2390			415		835		385
v/s Ratio Prot		c0.42		c0.21	0.57			0.01		0.07		
v/s Ratio Perm			0.14									c0.26
v/c Ratio		0.96	0.32	0.99	0.83			0.03		0.28		1.04
Uniform Delay, d1		30.1	20.3	43.4	12.9			17.7		33.7		41.5
Progression Factor		0.97	1.52	1.06	1.64			1.00		1.00		1.00
Incremental Delay, d2		8.1	0.7	36.2	2.6			0.1		0.2		57.0
Delay (s)		37.2	31.6	82.3	23.8			17.8		33.8		98.5
Level of Service		D	C	F	C			B		C		F
Approach Delay (s)		36.3			32.8			17.8			75.0	
Approach LOS		D			C			B			E	

Intersection Summary

HCM Average Control Delay	39.3	HCM Level of Service	D
HCM Volume to Capacity ratio	0.99		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	88.8%	ICU Level of Service	E
Analysis Period (min)	15		

! Phase conflict between lane groups.

c Critical Lane Group



HCM Signalized Intersection Capacity Analysis  
 1604: MD 410 & BW Parkway N/B Ramps

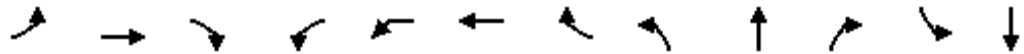
6/11/2008

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0			4.0	4.0	4.0		4.0		4.0	
Lane Util. Factor	1.00	0.95			0.91	1.00	0.97		1.00		1.00	
Frt	1.00	1.00			1.00	0.85	1.00		0.85		1.00	
Flt Protected	0.95	1.00			1.00	1.00	0.95		1.00		1.00	
Satd. Flow (prot)	1752	3505			5036	1568	3400		1568		950	
Flt Permitted	0.95	1.00			1.00	1.00	0.95		1.00		1.00	
Satd. Flow (perm)	1752	3505			5036	1568	3400		1568		950	
Volume (vph)	200	2045	0	0	1850	170	380	0	275	0	10	0
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	211	2153	0	0	1947	179	400	0	289	0	11	0
RTOR Reduction (vph)	0	0	0	0	0	85	0	0	12	0	0	0
Lane Group Flow (vph)	211	2153	0	0	1947	94	400	0	277	0	11	0
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	100%	3%
Turn Type	Prot				Perm		Prot	custom				
Protected Phases	1	6!			2!		4				2!	
Permitted Phases						2			4			
Actuated Green, G (s)	15.9	77.6			56.7	56.7	22.4		22.4		56.7	
Effective Green, g (s)	16.9	78.6			57.7	57.7	23.4		23.4		57.7	
Actuated g/C Ratio	0.15	0.71			0.52	0.52	0.21		0.21		0.52	
Clearance Time (s)	5.0	5.0			5.0	5.0	5.0		5.0		5.0	
Vehicle Extension (s)	3.0	6.0			6.0	6.0	3.0		3.0		6.0	
Lane Grp Cap (vph)	269	2504			2642	822	723		334		498	
v/s Ratio Prot	0.12	c0.61			0.39		0.12				0.01	
v/s Ratio Perm						0.06			c0.18			
v/c Ratio	0.78	0.86			0.74	0.11	0.55		0.83		0.02	
Uniform Delay, d1	44.8	11.6			20.3	13.2	38.6		41.4		12.6	
Progression Factor	1.51	0.70			0.59	0.59	1.00		1.00		1.00	
Incremental Delay, d2	5.0	1.9			1.1	0.2	0.9		15.6		0.1	
Delay (s)	72.5	10.1			13.1	7.9	39.6		57.0		12.7	
Level of Service	E	B			B	A	D		E		B	
Approach Delay (s)		15.7			12.6			46.9			12.7	
Approach LOS		B			B			D			B	
<b>Intersection Summary</b>												
HCM Average Control Delay			18.6		HCM Level of Service				B			
HCM Volume to Capacity ratio			0.85									
Actuated Cycle Length (s)			110.0		Sum of lost time (s)				8.0			
Intersection Capacity Utilization			84.0%		ICU Level of Service				E			
Analysis Period (min)			15									
! Phase conflict between lane groups.												
c Critical Lane Group												

# HCM Signalized Intersection Capacity Analysis

1605: MD 410 & 67th. Ave.

6/11/2008



Movement	EBL	EBT	EBR	WBL2	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations	↖	↗		↖	↖	↗		↖	↗			↖
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0	4.0		4.0	4.0			4.0
Lane Util. Factor	1.00	0.95		1.00	1.00	0.95		1.00	1.00			1.00
Frt	1.00	1.00		1.00	1.00	1.00		1.00	0.86			0.95
Flt Protected	0.95	1.00		0.95	0.95	1.00		0.95	1.00			0.98
Satd. Flow (prot)	1752	3499		1752	902	3498		1787	1609			1767
Flt Permitted	0.95	1.00		0.95	0.95	1.00		0.75	1.00			0.92
Satd. Flow (perm)	1752	3499		1752	902	3498		1407	1609			1646
Volume (vph)	5	2280	25	25	10	1840	25	175	5	125	5	5
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	5	2400	26	26	11	1937	26	184	5	132	5	5
RTOR Reduction (vph)	0	0	0	0	0	1	0	0	64	0	0	4
Lane Group Flow (vph)	5	2426	0	26	11	1962	0	184	73	0	0	11
Heavy Vehicles (%)	3%	3%	3%	3%	100%	3%	3%	1%	1%	1%	1%	1%
Turn Type	Prot		Prot		Split		Perm			Perm		
Protected Phases	1	2!		1	2!	2			8			4
Permitted Phases								8				4
Actuated Green, G (s)	3.0	75.8		3.0	75.8	75.8		16.2	16.2			16.2
Effective Green, g (s)	4.0	76.8		4.0	76.8	76.8		17.2	17.2			17.2
Actuated g/C Ratio	0.04	0.70		0.04	0.70	0.70		0.16	0.16			0.16
Clearance Time (s)	5.0	5.0		5.0	5.0	5.0		5.0	5.0			5.0
Vehicle Extension (s)	3.0	6.0		3.0	6.0	6.0		3.0	3.0			3.0
Lane Grp Cap (vph)	64	2443		64	630	2442		220	252			257
v/s Ratio Prot	0.00	c0.69		c0.01	0.01	0.56			0.05			
v/s Ratio Perm								c0.13				0.01
v/c Ratio	0.08	0.99		0.41	0.02	0.80		0.84	0.29			0.04
Uniform Delay, d1	51.2	16.3		51.8	5.1	11.4		45.0	41.0			39.4
Progression Factor	0.81	0.67		0.89	0.55	0.50		1.00	1.00			1.00
Incremental Delay, d2	0.3	11.4		2.9	0.0	2.0		23.2	0.6			0.1
Delay (s)	42.0	22.3		49.0	2.8	7.7		68.2	41.6			39.5
Level of Service	D	C		D	A	A		E	D			D
Approach Delay (s)		22.4				8.2			56.9			39.5
Approach LOS		C				A			E			D

## Intersection Summary

HCM Average Control Delay	18.8	HCM Level of Service	B
HCM Volume to Capacity ratio	0.94		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	102.7%	ICU Level of Service	G
Analysis Period (min)	15		

! Phase conflict between lane groups.

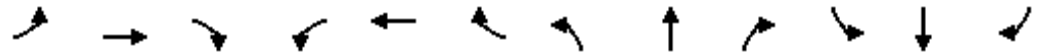
c Critical Lane Group



Movement	SBR2	NER
Lane Configurations		
Ideal Flow (vphpl)	1900	1900
Total Lost time (s)		4.0
Lane Util. Factor		1.00
Frt		0.86
Flt Protected		1.00
Satd. Flow (prot)		822
Flt Permitted		1.00
Satd. Flow (perm)		822
Volume (vph)	5	10
Peak-hour factor, PHF	0.95	0.95
Adj. Flow (vph)	5	11
RTOR Reduction (vph)	0	0
Lane Group Flow (vph)	0	11
Heavy Vehicles (%)	1%	100%
Turn Type		Over
Protected Phases		2!
Permitted Phases		
Actuated Green, G (s)		75.8
Effective Green, g (s)		76.8
Actuated g/C Ratio		0.70
Clearance Time (s)		5.0
Vehicle Extension (s)		6.0
Lane Grp Cap (vph)		574
v/s Ratio Prot		0.01
v/s Ratio Perm		
v/c Ratio		0.02
Uniform Delay, d1		5.1
Progression Factor		1.00
Incremental Delay, d2		0.1
Delay (s)		5.1
Level of Service		A
Approach Delay (s)		
Approach LOS		
Intersection Summary		

HCM Signalized Intersection Capacity Analysis  
 1606: MD 410 & Veterans Pkwy

6/11/2008



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑		↖	↑↑		↖↖	↑	↗		↑	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0		4.0	4.0		4.0	4.0	4.0		4.0	
Lane Util. Factor		0.95		1.00	0.95		0.97	1.00	1.00		1.00	
Frt		0.92		1.00	1.00		1.00	1.00	0.85		1.00	
Flt Protected		1.00		0.95	1.00		0.95	1.00	1.00		1.00	
Satd. Flow (prot)		3231		1752	3505		3400	950	1568		950	
Flt Permitted		1.00		0.06	1.00		0.95	1.00	1.00		1.00	
Satd. Flow (perm)		3231		112	3505		3400	950	1568		950	
Volume (vph)	0	1105	1200	295	895	0	845	10	290	0	10	0
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	1163	1263	311	942	0	889	11	305	0	11	0
RTOR Reduction (vph)	0	178	0	0	0	0	0	0	177	0	0	0
Lane Group Flow (vph)	0	2248	0	311	942	0	889	11	128	0	11	0
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%	3%	100%	3%	3%	100%	3%
Turn Type				pm+pt			Split		Perm			
Protected Phases		6		5	2		4!	4			4!	
Permitted Phases				2					4			
Actuated Green, G (s)		61.0		77.0	77.0		23.0	23.0	23.0		23.0	
Effective Green, g (s)		62.0		78.0	78.0		24.0	24.0	24.0		24.0	
Actuated g/C Ratio		0.56		0.71	0.71		0.22	0.22	0.22		0.22	
Clearance Time (s)		5.0		5.0	5.0		5.0	5.0	5.0		5.0	
Vehicle Extension (s)		6.0		3.0	6.0		3.0	3.0	3.0		3.0	
Lane Grp Cap (vph)		1821		258	2485		742	207	342		207	
v/s Ratio Prot		c0.70		c0.13	0.27		c0.26	0.01			0.01	
v/s Ratio Perm				0.72					0.08			
v/c Ratio		1.23		1.21	0.38		1.20	0.05	0.38		0.05	
Uniform Delay, d1		24.0		45.7	6.4		43.0	34.0	36.6		34.0	
Progression Factor		0.96		1.00	1.00		1.00	1.00	1.00		1.00	
Incremental Delay, d2		107.3		123.2	0.4		102.0	0.1	0.7		0.1	
Delay (s)		130.4		168.8	6.8		145.0	34.1	37.3		34.1	
Level of Service		F		F	A		F	C	D		C	
Approach Delay (s)		130.4			47.0			116.7			34.1	
Approach LOS		F			D			F			C	

Intersection Summary

HCM Average Control Delay	105.5	HCM Level of Service	F
HCM Volume to Capacity ratio	1.18		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	126.2%	ICU Level of Service	H
Analysis Period (min)	15		

! Phase conflict between lane groups.

c Critical Lane Group

# HCM Signalized Intersection Capacity Analysis

## 12: Piney Branch Rd. & Arliss

6/10/2008



Movement	EBL	EBT	EBR2	WBL	WBT	WBR	NBL	NBT	NBR	SBL2	SBL	SBT
Lane Configurations	↘	↑↑		↘	↑↑			↕		↘	↘	↗
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	2.0	2.0		2.0	2.0			2.0		2.0	2.0	2.0
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00		1.00	1.00	1.00
Frbp, ped/bikes	1.00	1.00		1.00	1.00			1.00		1.00	1.00	1.00
Flpb, ped/bikes	1.00	1.00		0.99	1.00			1.00		1.00	1.00	1.00
Frt	1.00	1.00		1.00	0.96			0.93		1.00	1.00	0.87
Flt Protected	0.95	1.00		0.95	1.00			0.99		0.95	0.95	1.00
Satd. Flow (prot)	1687	3370		1675	3230			1728		1687	902	1551
Flt Permitted	0.08	1.00		0.40	1.00			0.99		0.95	1.00	1.00
Satd. Flow (perm)	138	3370		705	3230			1728		1687	950	1551
Volume (vph)	15	550	5	10	1200	475	5	5	10	175	10	5
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	16	598	5	11	1304	516	5	5	11	190	11	5
RTOR Reduction (vph)	0	0	0	0	19	0	0	0	0	0	0	23
Lane Group Flow (vph)	16	603	0	11	1801	0	0	21	0	190	11	9
Confl. Peds. (#/hr)	4			5			17			10		
Heavy Vehicles (%)	7%	7%	7%	7%	7%	7%	1%	1%	1%	7%	100%	7%
Turn Type	Perm			Perm			Split			Split	Perm	
Protected Phases		6			2		3	3		4!		4
Permitted Phases	6			2								4
Actuated Green, G (s)	108.1	108.1		108.1	108.1			5.0		21.9	21.9	21.9
Effective Green, g (s)	111.1	111.1		111.1	111.1			8.0		24.9	24.9	24.9
Actuated g/C Ratio	0.74	0.74		0.74	0.74			0.05		0.17	0.17	0.17
Clearance Time (s)	5.0	5.0		5.0	5.0			5.0		5.0	5.0	5.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	102	2496		522	2392			92		280	158	257
v/s Ratio Prot		0.18			c0.56			c0.01		c0.11		0.01
v/s Ratio Perm	0.12			0.02								0.01
v/c Ratio	0.16	0.24		0.02	0.75			0.23		0.68	0.07	0.04
Uniform Delay, d1	5.7	6.1		5.1	11.4			68.0		58.8	52.8	52.5
Progression Factor	0.82	0.78		0.98	0.66			1.00		1.00	1.00	1.00
Incremental Delay, d2	3.2	0.2		0.1	1.6			1.3		6.4	0.2	0.1
Delay (s)	7.9	5.0		5.1	9.1			69.3		65.2	53.0	52.5
Level of Service	A	A		A	A			E		E	D	D
Approach Delay (s)		5.1			9.0			69.3				62.9
Approach LOS		A			A			E				E

### Intersection Summary

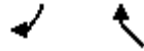
HCM Average Control Delay	13.4	HCM Level of Service	B
HCM Volume to Capacity ratio	0.70		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	6.0
Intersection Capacity Utilization	78.1%	ICU Level of Service	D
Analysis Period (min)	15		

! Phase conflict between lane groups.

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis  
 12: Piney Branch Rd. & Arliss

6/10/2008



Movement	SBR	NWR
Lane Configurations		
Ideal Flow (vphpl)	1900	1900
Total Lost time (s)		2.0
Lane Util. Factor		1.00
Frbp, ped/bikes		1.00
Flpb, ped/bikes		1.00
Frt		0.86
Flt Protected		1.00
Satd. Flow (prot)		822
Flt Permitted		1.00
Satd. Flow (perm)		822
Volume (vph)	25	10
Peak-hour factor, PHF	0.92	0.92
Adj. Flow (vph)	27	11
RTOR Reduction (vph)	0	0
Lane Group Flow (vph)	0	11
Confl. Peds. (#/hr)		
Heavy Vehicles (%)	7%	100%
Turn Type	custom	
Protected Phases	4!	
Permitted Phases		
Actuated Green, G (s)	21.9	
Effective Green, g (s)	24.9	
Actuated g/C Ratio	0.17	
Clearance Time (s)	5.0	
Vehicle Extension (s)	3.0	
Lane Grp Cap (vph)	136	
v/s Ratio Prot	0.01	
v/s Ratio Perm		
v/c Ratio	0.08	
Uniform Delay, d1	52.9	
Progression Factor	1.00	
Incremental Delay, d2	0.3	
Delay (s)	53.1	
Level of Service	D	
Approach Delay (s)		
Approach LOS		
<b>Intersection Summary</b>		

# HCM Signalized Intersection Capacity Analysis

## 13: Piney Branch Rd. & Barron St

6/10/2008



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR2	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	2.0	2.0			2.0			2.0	2.0		2.0	
Lane Util. Factor	1.00	0.95			0.95			1.00	1.00		1.00	
Frt	1.00	0.98			1.00			1.00	0.85		0.97	
Flt Protected	0.95	1.00			1.00			0.95	1.00		0.96	
Satd. Flow (prot)	902	3323			3365			1795	1599		1754	
Flt Permitted	0.95	1.00			0.88			0.74	1.00		0.72	
Satd. Flow (perm)	902	3323			2958			1391	1599		1309	
Volume (vph)	10	675	75	50	1450	10	225	10	75	15	0	5
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	11	734	82	54	1576	11	245	11	82	16	0	5
RTOR Reduction (vph)	0	4	0	0	0	0	0	0	63	0	4	0
Lane Group Flow (vph)	11	812	0	0	1641	0	0	256	19	0	17	0
Heavy Vehicles (%)	100%	7%	7%	7%	7%	7%	1%	1%	1%	1%	1%	1%
Turn Type	Prot			Perm		Perm		Perm	Perm	Perm		
Protected Phases	6!	2			6!			8				4
Permitted Phases				6		8		8		4		
Actuated Green, G (s)	107.8	107.8			107.8			31.2	31.2		31.2	
Effective Green, g (s)	111.8	111.8			111.8			34.2	34.2		34.2	
Actuated g/C Ratio	0.75	0.75			0.75			0.23	0.23		0.23	
Clearance Time (s)	6.0	6.0			6.0			5.0	5.0		5.0	
Vehicle Extension (s)	3.0	3.0			3.0			3.0	3.0		3.0	
Lane Grp Cap (vph)	672	2477			2205			317	365		298	
v/s Ratio Prot	0.01	0.24										
v/s Ratio Perm					c0.55			c0.18	0.01		0.01	
v/c Ratio	0.02	0.33			0.74			0.81	0.05		0.06	
Uniform Delay, d1	4.9	6.4			10.9			54.8	45.2		45.3	
Progression Factor	0.60	0.78			1.00			1.00	1.00		1.00	
Incremental Delay, d2	0.0	0.3			2.3			14.0	0.1		0.1	
Delay (s)	3.0	5.3			13.3			68.7	45.3		45.4	
Level of Service	A	A			B			E	D		D	
Approach Delay (s)		5.3			13.3			63.1			45.4	
Approach LOS		A			B			E			D	

### Intersection Summary

HCM Average Control Delay	17.1	HCM Level of Service	B
HCM Volume to Capacity ratio	0.75		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	4.0
Intersection Capacity Utilization	92.5%	ICU Level of Service	F
Analysis Period (min)	15		

! Phase conflict between lane groups.

c Critical Lane Group



Movement	SWR
Lane Configurations	↗
Ideal Flow (vphpl)	1900
Total Lost time (s)	2.0
Lane Util. Factor	1.00
Frt	0.86
Flt Protected	1.00
Satd. Flow (prot)	822
Flt Permitted	1.00
Satd. Flow (perm)	822
Volume (vph)	10
Peak-hour factor, PHF	0.92
Adj. Flow (vph)	11
RTOR Reduction (vph)	0
Lane Group Flow (vph)	11
Heavy Vehicles (%)	100%
Turn Type	Over
Protected Phases	6!
Permitted Phases	
Actuated Green, G (s)	107.8
Effective Green, g (s)	111.8
Actuated g/C Ratio	0.75
Clearance Time (s)	6.0
Vehicle Extension (s)	3.0
Lane Grp Cap (vph)	613
v/s Ratio Prot	0.01
v/s Ratio Perm	
v/c Ratio	0.02
Uniform Delay, d1	4.9
Progression Factor	1.00
Incremental Delay, d2	0.1
Delay (s)	5.0
Level of Service	A
Approach Delay (s)	
Approach LOS	
Intersection Summary	



# HCM Signalized Intersection Capacity Analysis

## 12: Piney Branch Rd. & Arliss

6/10/2008



Movement	EBL	EBT	EBR2	WBL	WBT	WBR	NBL	NBT	NBR	SBL2	SBL	SBT
Lane Configurations	↖	↑↑		↖	↑↑			↕		↖	↖	↖
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	2.0	2.0		2.0	2.0			2.0		2.0	2.0	2.0
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00		1.00	1.00	1.00
Frbp, ped/bikes	1.00	1.00		1.00	1.00			1.00		1.00	1.00	1.00
Flpb, ped/bikes	1.00	1.00		1.00	1.00			1.00		1.00	1.00	1.00
Frt	1.00	1.00		1.00	0.97			0.90		1.00	1.00	0.90
Flt Protected	0.95	1.00		0.95	1.00			0.99		0.95	0.95	1.00
Satd. Flow (prot)	1715	3432		1719	3330			1684		1719	902	1629
Flt Permitted	0.16	1.00		0.12	1.00			0.99		0.95	0.95	1.00
Satd. Flow (perm)	285	3432		214	3330			1684		1719	902	1629
Volume (vph)	50	1200	15	25	850	225	5	5	25	425	10	25
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor (vph)	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Adj. Flow (vph)	54	1304	16	27	924	245	5	5	27	462	11	27
RTOR Reduction (vph)	0	1	0	0	21	0	0	0	0	0	0	39
Lane Group Flow (vph)	54	1319	0	27	1148	0	0	37	0	462	11	42
Confl. Peds. (#/hr)	10			12			24			40		
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%	1%	1%	1%	5%	100%	5%
Turn Type	Perm			Perm			Split			Split		Split
Protected Phases		6			2		3	3		4!	4	4
Permitted Phases	6			2								
Actuated Green, G (s)	42.6	42.6		42.6	42.6			3.4		19.0	19.0	19.0
Effective Green, g (s)	45.6	45.6		45.6	45.6			6.4		22.0	22.0	22.0
Actuated g/C Ratio	0.57	0.57		0.57	0.57			0.08		0.28	0.28	0.28
Clearance Time (s)	5.0	5.0		5.0	5.0			5.0		5.0	5.0	5.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	162	1956		122	1898			135		473	248	448
v/s Ratio Prot		c0.38			0.34			c0.02		c0.27	0.01	0.03
v/s Ratio Perm	0.19			0.13								
v/c Ratio	0.33	0.67		0.22	0.61			0.27		0.98	0.04	0.09
Uniform Delay, d1	9.1	12.0		8.5	11.3			34.6		28.7	21.3	21.6
Progression Factor	0.63	0.58		1.00	1.00			1.00		1.00	1.00	1.00
Incremental Delay, d2	4.6	1.6		4.1	1.4			1.1		35.0	0.1	0.1
Delay (s)	10.3	8.5		12.6	12.7			35.7		63.8	21.4	21.7
Level of Service	B	A		B	B			D		E	C	C
Approach Delay (s)		8.6			12.7			35.7				56.8
Approach LOS		A			B			D				E

### Intersection Summary

HCM Average Control Delay	18.9	HCM Level of Service	B
HCM Volume to Capacity ratio	0.72		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	6.0
Intersection Capacity Utilization	85.1%	ICU Level of Service	E
Analysis Period (min)	15		

! Phase conflict between lane groups.

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis  
 12: Piney Branch Rd. & Arliss

6/10/2008



Movement	SBR	NWR
<b>Lane Configurations</b>		
Ideal Flow (vphpl)	1900	1900
Total Lost time (s)		2.0
Lane Util. Factor		1.00
Frbp, ped/bikes		1.00
Flpb, ped/bikes		1.00
Frt		0.86
Flt Protected		1.00
Satd. Flow (prot)		822
Flt Permitted		1.00
Satd. Flow (perm)		822
Volume (vph)	50	10
Peak-hour factor, PHF	0.92	0.92
Growth Factor (vph)	100%	100%
Adj. Flow (vph)	54	11
RTOR Reduction (vph)	0	0
Lane Group Flow (vph)	0	11
Confl. Peds. (#/hr)		
Heavy Vehicles (%)	5%	100%
Turn Type		Over
Protected Phases		4!
Permitted Phases		
Actuated Green, G (s)		19.0
Effective Green, g (s)		22.0
Actuated g/C Ratio		0.28
Clearance Time (s)		5.0
Vehicle Extension (s)		3.0
Lane Grp Cap (vph)		226
v/s Ratio Prot		0.01
v/s Ratio Perm		
v/c Ratio		0.05
Uniform Delay, d1		21.3
Progression Factor		1.00
Incremental Delay, d2		0.1
Delay (s)		21.4
Level of Service		C
Approach Delay (s)		
Approach LOS		
<b>Intersection Summary</b>		

# HCM Signalized Intersection Capacity Analysis

## 13: Piney Branch Rd. & Barron St

6/10/2008



Movement	EBL	EBT	EBR	WBT	WBR	NBL	NBT	NBR2	SBL	SBT	SBR	SWR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	2.0	2.0		2.0			2.0	2.0		2.0		2.0
Lane Util. Factor	1.00	0.95		0.95			1.00	1.00		1.00		1.00
Frt	1.00	0.98		1.00			1.00	0.85		0.98		0.86
Flt Protected	0.95	1.00		1.00			0.95	1.00		0.96		1.00
Satd. Flow (prot)	902	3378		3426			1794	1599		1782		822
Flt Permitted	0.95	1.00		1.00			0.74	1.00		0.78		1.00
Satd. Flow (perm)	902	3378		3426			1388	1599		1436		822
Volume (vph)	10	1500	200	1075	25	175	5	100	25	5	5	10
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor (vph)	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Adj. Flow (vph)	11	1630	217	1168	27	190	5	109	27	5	5	11
RTOR Reduction (vph)	0	9	0	0	0	0	0	28	0	4	0	0
Lane Group Flow (vph)	11	1838	0	1195	0	0	195	81	0	33	0	11
Heavy Vehicles (%)	100%	5%	5%	5%	5%	1%	1%	1%	1%	1%	1%	100%
Turn Type	Prot			Perm			Perm		Perm		Over	
Protected Phases	6!	2		6!			8	8		4		6!
Permitted Phases						8		8	4			
Actuated Green, G (s)	61.8	61.8		61.8			17.2	17.2		17.2		61.8
Effective Green, g (s)	65.8	65.8		65.8			20.2	20.2		20.2		65.8
Actuated g/C Ratio	0.73	0.73		0.73			0.22	0.22		0.22		0.73
Clearance Time (s)	6.0	6.0		6.0			5.0	5.0		5.0		6.0
Vehicle Extension (s)	3.0	3.0		3.0			3.0	3.0		3.0		3.0
Lane Grp Cap (vph)	659	2470		2505			312	359		322		601
v/s Ratio Prot	0.01	c0.54		0.35								0.01
v/s Ratio Perm							c0.14	0.05		0.02		
v/c Ratio	0.02	0.74		0.48			0.62	0.23		0.10		0.02
Uniform Delay, d1	3.3	7.1		5.0			31.5	28.5		27.7		3.3
Progression Factor	1.00	1.00		1.00			1.00	1.00		1.00		1.00
Incremental Delay, d2	0.0	2.1		0.7			3.9	0.3		0.1		0.1
Delay (s)	3.3	9.2		5.6			35.4	28.8		27.8		3.4
Level of Service	A	A		A			D	C		C		A
Approach Delay (s)		9.2		5.6			33.0			27.8		
Approach LOS		A		A			C			C		

### Intersection Summary

HCM Average Control Delay	10.3	HCM Level of Service	B
HCM Volume to Capacity ratio	0.71		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	4.0
Intersection Capacity Utilization	78.1%	ICU Level of Service	D
Analysis Period (min)	15		



















! Phase conflict between lane groups.

c Critical Lane Group

# HCM Signalized Intersection Capacity Analysis

## 5: Cedar Ave & Wayne Ave.

6/10/2008

												
Movement	NBL	NBT	NBR	SBL	SBT	SBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		2.0		2.0		2.0	2.0	2.0			2.0	
Lane Util. Factor		1.00		1.00		1.00	1.00	1.00			0.95	
Frbp, ped/bikes		0.99		1.00		0.91	1.00	1.00			0.99	
Flpb, ped/bikes		0.99		0.99		1.00	1.00	1.00			1.00	
Frt		0.97		1.00		0.85	1.00	1.00			0.97	
Flt Protected		0.99		0.95		1.00	0.95	1.00			1.00	
Satd. Flow (prot)		1674		1675		1378	1687	1776			3214	
Flt Permitted		0.99		0.35		1.00	0.12	1.00			1.00	
Satd. Flow (perm)		1674		618		1378	209	1776			3214	
Volume (vph)	25	125	50	125	0	100	75	400	0	0	1025	300
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	27	136	54	136	0	109	82	435	0	0	1114	326
RTOR Reduction (vph)	0	11	0	0	0	87	0	0	0	0	0	0
Lane Group Flow (vph)	0	206	0	136	0	22	82	435	0	0	1440	0
Confl. Peds. (#/hr)	36		5	5		36	12		6	6		12
Turn Type	Perm		custom		custom		pm+pt					
Protected Phases		8					5	2			6	
Permitted Phases	8		4			4	2					
Actuated Green, G (s)		21.5		21.5		21.5	88.5	88.5			76.4	
Effective Green, g (s)		24.5		24.5		24.5	91.5	91.5			79.4	
Actuated g/C Ratio		0.20		0.20		0.20	0.76	0.76			0.66	
Clearance Time (s)		5.0		5.0		5.0	5.0	5.0			5.0	
Vehicle Extension (s)		0.2		0.2		0.2	3.0	0.2			3.0	
Lane Grp Cap (vph)		342		126		281	284	1354			2127	
v/s Ratio Prot							0.02	c0.24			c0.45	
v/s Ratio Perm		0.12		c0.22		0.02	0.20					
v/c Ratio		0.60		1.08		0.08	0.29	0.32			0.68	
Uniform Delay, d1		43.3		47.8		38.6	8.4	4.5			12.4	
Progression Factor		1.00		1.00		1.00	2.79	2.86			0.96	
Incremental Delay, d2		2.0		103.0		0.0	0.5	0.6			0.2	
Delay (s)		45.4		150.8		38.7	23.9	13.4			12.1	
Level of Service		D		F		D	C	B			B	
Approach Delay (s)		45.4			100.9			15.0			12.1	
Approach LOS		D			F			B			B	
<b>Intersection Summary</b>												
HCM Average Control Delay			24.7				HCM Level of Service				C	
HCM Volume to Capacity ratio			0.72									
Actuated Cycle Length (s)			120.0				Sum of lost time (s)				6.0	
Intersection Capacity Utilization			78.7%				ICU Level of Service				D	
Analysis Period (min)			15									
c Critical Lane Group												

# HCM Signalized Intersection Capacity Analysis

## 6: Wayne Ave. & Dale Dr

6/10/2008



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗		↖	↗		↖	↗		↖	↗	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frbp, ped/bikes	1.00	0.99		1.00	0.98		1.00	0.99		1.00	0.97	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.99		1.00	0.99		1.00	0.98		1.00	0.94	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1687	1741		1687	1723		1687	1721		1687	1615	
Flt Permitted	0.95	1.00		0.95	1.00		0.16	1.00		0.16	1.00	
Satd. Flow (perm)	1687	1741		1687	1723		284	1721		277	1615	
Volume (vph)	75	325	25	100	1075	100	50	350	50	100	275	175
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	82	353	27	109	1168	109	54	380	54	109	299	190
RTOR Reduction (vph)	0	2	0	0	0	0	0	4	0	0	19	0
Lane Group Flow (vph)	82	378	0	109	1277	0	54	430	0	109	470	0
Confl. Peds. (#/hr)	52		30	30		52	41		25	25		41
Turn Type	Prot			Prot			pm+pt			pm+pt		
Protected Phases	1	6		5	2		3	8		7	4	
Permitted Phases							8			4		
Actuated Green, G (s)	3.0	64.0		11.0	72.0		24.4	22.0		25.6	22.6	
Effective Green, g (s)	6.0	67.0		14.0	75.0		30.4	25.0		31.6	25.6	
Actuated g/C Ratio	0.05	0.56		0.12	0.62		0.25	0.21		0.26	0.21	
Clearance Time (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	84	972		197	1077		135	359		143	345	
v/s Ratio Prot	c0.05	0.22		0.06	c0.74		0.02	0.25		c0.04	c0.29	
v/s Ratio Perm							0.08			0.16		
v/c Ratio	0.98	0.39		0.55	1.19		0.40	1.20		0.76	1.36	
Uniform Delay, d1	56.9	14.9		50.0	22.5		37.2	47.5		57.9	47.2	
Progression Factor	1.20	0.42		0.80	0.54		1.00	1.00		1.00	1.00	
Incremental Delay, d2	86.7	1.1		0.3	84.5		1.9	113.0		21.0	180.9	
Delay (s)	155.2	7.5		40.1	96.6		39.1	160.5		78.9	228.1	
Level of Service	F	A		D	F		D	F		E	F	
Approach Delay (s)		33.7			92.2			147.0			200.9	
Approach LOS		C			F			F			F	

### Intersection Summary

HCM Average Control Delay	114.2	HCM Level of Service	F
HCM Volume to Capacity ratio	1.18		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	110.3%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

# HCM Signalized Intersection Capacity Analysis

## 7: Wayne Ave. & Mansfield

6/10/2008



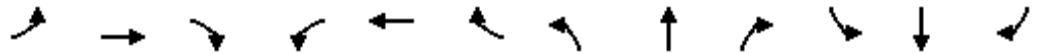
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↻		↻	↻			↻				
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		2.0		2.0	2.0			2.0				
Lane Util. Factor		1.00		1.00	1.00			1.00				
Frbp, ped/bikes		1.00		1.00	1.00			1.00				
Flpb, ped/bikes		1.00		0.99	1.00			1.00				
Frt		1.00		1.00	1.00			0.93				
Flt Protected		1.00		0.95	1.00			0.98				
Satd. Flow (prot)		1772		1674	1776			1615				
Flt Permitted		1.00		0.46	1.00			0.98				
Satd. Flow (perm)		1772		814	1776			1615				
Volume (vph)	0	400	5	10	1325	0	5	0	5	0	0	0
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	435	5	11	1440	0	5	0	5	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	4	0	0	0	0
Lane Group Flow (vph)	0	440	0	11	1440	0	0	6	0	0	0	0
Conf. Peds. (#/hr)	1		22	22			11			5		
Turn Type				Perm				Split				
Protected Phases		2			6			4	4			
Permitted Phases				6								
Actuated Green, G (s)		85.0		85.0	85.0			24.0				
Effective Green, g (s)		89.0		89.0	89.0			27.0				
Actuated g/C Ratio		0.74		0.74	0.74			0.22				
Clearance Time (s)		6.0		6.0	6.0			5.0				
Vehicle Extension (s)		0.2		3.0	3.0			0.2				
Lane Grp Cap (vph)		1314		604	1317			363				
v/s Ratio Prot		0.25			c0.81			c0.00				
v/s Ratio Perm				0.01								
v/c Ratio		0.33		0.02	1.09			0.02				
Uniform Delay, d1		5.3		4.1	15.5			36.2				
Progression Factor		0.94		0.47	0.31			1.00				
Incremental Delay, d2		0.6		0.0	43.4			0.0				
Delay (s)		5.6		1.9	48.2			36.2				
Level of Service		A		A	D			D				
Approach Delay (s)		5.6			47.9			36.2			0.0	
Approach LOS		A			D			D			A	
<b>Intersection Summary</b>												
HCM Average Control Delay			38.0			HCM Level of Service			D			
HCM Volume to Capacity ratio			0.84									
Actuated Cycle Length (s)			120.0			Sum of lost time (s)			4.0			
Intersection Capacity Utilization			79.7%			ICU Level of Service			D			
Analysis Period (min)			15									

c Critical Lane Group

# HCM Signalized Intersection Capacity Analysis

## 8: Wayne Ave. & Sligo Creek Pkwy

6/10/2008



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	2.0	2.0		2.0	2.0		2.0	2.0			2.0	2.0
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00			1.00	1.00
Frbp, ped/bikes	1.00	0.99		1.00	1.00		1.00	1.00			1.00	1.00
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00			1.00	1.00
Frt	1.00	0.98		1.00	0.99		1.00	0.99			1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00			0.99	1.00
Satd. Flow (prot)	1687	1722		1687	1757		1687	1758			1763	1509
Flt Permitted	0.95	1.00		0.95	1.00		0.17	1.00			0.59	1.00
Satd. Flow (perm)	1687	1722		1687	1757		308	1758			1055	1509
Volume (vph)	50	275	50	20	975	50	175	350	20	50	350	175
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	54	299	54	22	1060	54	190	380	22	54	380	190
RTOR Reduction (vph)	0	6	0	0	1	0	0	2	0	0	0	0
Lane Group Flow (vph)	54	348	0	22	1113	0	190	400	0	0	434	190
Confl. Peds. (#/hr)	14		8	8		14	2		11	11		2
Turn Type	Prot		Prot		pm+pt		Perm		Prot			
Protected Phases	5	2	1	6	7	4	8	8				
Permitted Phases					4		8					
Actuated Green, G (s)	2.4	62.0	2.4	62.0	40.6	40.6	32.6	32.6				
Effective Green, g (s)	5.4	65.0	5.4	65.0	43.6	43.6	35.6	35.6				
Actuated g/C Ratio	0.05	0.54	0.05	0.54	0.36	0.36	0.30	0.30				
Clearance Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0				
Vehicle Extension (s)	3.0	0.2	3.0	0.2	3.0	3.0	0.2	0.2				
Lane Grp Cap (vph)	76	933	76	952	181	639	313	448				
v/s Ratio Prot	c0.03	0.20	0.01	c0.63	c0.05	0.23						0.13
v/s Ratio Perm					0.33		c0.41					
v/c Ratio	0.71	0.37	0.29	1.17	1.05	0.63	1.39	0.42				
Uniform Delay, d1	56.5	15.8	55.4	27.5	49.4	31.5	42.2	34.0				
Progression Factor	0.86	1.26	0.97	0.92	1.00	1.00	1.00	1.00				
Incremental Delay, d2	25.8	1.1	1.9	86.2	80.6	1.9	192.6	0.2				
Delay (s)	74.3	21.0	55.5	111.4	130.0	33.4	234.8	34.2				
Level of Service	E	C	E	F	F	C	F	C				
Approach Delay (s)		28.1		110.3		64.4		173.7				
Approach LOS		C		F		E		F				

### Intersection Summary



















HCM Average Control Delay	102.7	HCM Level of Service	F
HCM Volume to Capacity ratio	1.17		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	6.0
Intersection Capacity Utilization	105.3%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group

# HCM Signalized Intersection Capacity Analysis

## 5: Cedar Ave & Wayne Ave.

6/10/2008

												
Movement	NBL	NBT	NBR	SBL	SBT	SBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		2.0		2.0		2.0	2.0	2.0			2.0	
Lane Util. Factor		1.00		1.00		1.00	1.00	1.00			0.95	
Frbp, ped/bikes		0.99		1.00		1.00	1.00	1.00			1.00	
Flpb, ped/bikes		1.00		1.00		1.00	1.00	1.00			1.00	
Frt		0.96		1.00		0.85	1.00	1.00			0.97	
Flt Protected		0.99		0.95		1.00	0.95	1.00			1.00	
Satd. Flow (prot)		1711		1719		1538	1719	1810			3316	
Flt Permitted		0.99		0.37		1.00	0.14	1.00			1.00	
Satd. Flow (perm)		1711		676		1538	256	1810			3316	
Volume (vph)	75	225	125	250	0	200	250	750	0	0	675	175
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	82	245	136	272	0	217	272	815	0	0	734	190
RTOR Reduction (vph)	0	14	0	0	0	128	0	0	0	0	0	0
Lane Group Flow (vph)	0	449	0	272	0	89	272	815	0	0	924	0
Conf. Peds. (#/hr)			5	5			1					1
Turn Type	Perm		custom		custom	pm+pt						
Protected Phases		8				5	2				6	
Permitted Phases	8		4		4	2						
Actuated Green, G (s)		46.2		46.2		46.2	63.8	63.8			44.5	
Effective Green, g (s)		49.2		49.2		49.2	66.8	66.8			47.5	
Actuated g/C Ratio		0.41		0.41		0.41	0.56	0.56			0.40	
Clearance Time (s)		5.0		5.0		5.0	5.0	5.0			5.0	
Vehicle Extension (s)		3.0		3.0		3.0	3.0	0.2			0.2	
Lane Grp Cap (vph)		702		277		631	353	1008			1313	
v/s Ratio Prot							0.11	c0.45			0.28	
v/s Ratio Perm		0.26		c0.40		0.06	0.32					
v/c Ratio		0.64		0.98		0.14	0.77	0.81			0.70	
Uniform Delay, d1		28.3		35.0		22.2	21.4	21.4			30.4	
Progression Factor		1.00		1.00		1.00	0.67	0.65			0.63	
Incremental Delay, d2		2.0		48.8		0.1	6.3	4.4			1.3	
Delay (s)		30.3		83.8		22.3	20.5	18.4			20.3	
Level of Service		C		F		C	C	B			C	
Approach Delay (s)		30.3			56.5			18.9			20.3	
Approach LOS		C			E			B			C	
<b>Intersection Summary</b>												
HCM Average Control Delay			27.3		HCM Level of Service						C	
HCM Volume to Capacity ratio			0.87									
Actuated Cycle Length (s)			120.0		Sum of lost time (s)					4.0		
Intersection Capacity Utilization			89.1%		ICU Level of Service					E		
Analysis Period (min)			15									
c	Critical Lane Group											



# HCM Signalized Intersection Capacity Analysis

## 6: Wayne Ave. & Dale Dr

6/10/2008



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗		↖	↗		↖	↗		↖	↗	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frbp, ped/bikes	1.00	1.00		1.00	1.00		1.00	0.99		1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.98		1.00	0.97		1.00	0.95		1.00	0.98	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1719	1768		1719	1752		1719	1708		1719	1764	
Flt Permitted	0.95	1.00		0.95	1.00		0.18	1.00		0.18	1.00	
Satd. Flow (perm)	1719	1768		1719	1752		332	1708		332	1764	
Volume (vph)	200	825	150	125	650	175	75	350	150	200	425	75
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	217	897	163	136	707	190	82	380	163	217	462	82
RTOR Reduction (vph)	0	6	0	0	0	0	0	13	0	0	5	0
Lane Group Flow (vph)	217	1054	0	136	897	0	82	530	0	217	539	0
Conf. Peds. (#/hr)							2		6	6		2
Turn Type	Prot		Prot		pm+pt		pm+pt					
Protected Phases	1	6	5	2	3	8	7	4				
Permitted Phases					8				4			
Actuated Green, G (s)	11.0	64.2	5.0	58.2	24.0	24.0	28.6	28.6				
Effective Green, g (s)	14.0	67.2	8.0	61.2	27.0	27.0	31.6	31.6				
Actuated g/C Ratio	0.12	0.56	0.07	0.51	0.22	0.22	0.26	0.26				
Clearance Time (s)	5.0	5.0	5.0	5.0	4.0	5.0	5.0	5.0				
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0				
Lane Grp Cap (vph)	201	990	115	894	135	384	201	465				
v/s Ratio Prot	c0.13	c0.60	0.08	c0.51	0.03	c0.31	0.09	c0.31				
v/s Ratio Perm					0.11				0.20			
v/c Ratio	1.08	1.06	1.18	1.00	0.61	1.38	1.08	1.16				
Uniform Delay, d1	53.0	26.4	56.0	29.4	39.8	46.5	52.7	44.2				
Progression Factor	0.90	1.22	0.72	0.43	1.00	1.00	1.00	1.00				
Incremental Delay, d2	73.5	42.3	131.9	27.5	7.5	186.5	86.3	93.1				
Delay (s)	121.3	74.5	172.2	40.1	47.3	233.0	139.0	137.3				
Level of Service	F	E	F	D	D	F	F	F				
Approach Delay (s)		82.5		57.5		208.6		137.8				
Approach LOS		F		E		F		F				

### Intersection Summary

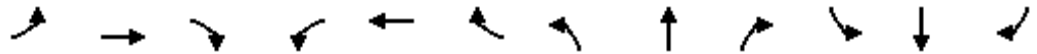
HCM Average Control Delay	108.2	HCM Level of Service	F
HCM Volume to Capacity ratio	1.13		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	4.0
Intersection Capacity Utilization	111.6%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

# HCM Signalized Intersection Capacity Analysis

## 7: Wayne Ave. & Mansfield

6/10/2008



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕		↕	↕			↕				
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		2.0		2.0	2.0			2.0				
Lane Util. Factor		1.00		1.00	1.00			1.00				
Frbp, ped/bikes		1.00		1.00	1.00			0.99				
Flpb, ped/bikes		1.00		1.00	1.00			1.00				
Frt		1.00		1.00	1.00			0.93				
Flt Protected		1.00		0.95	1.00			0.98				
Satd. Flow (prot)		1804		1719	1810			1630				
Flt Permitted		1.00		0.04	1.00			0.98				
Satd. Flow (perm)		1804		81	1810			1630				
Volume (vph)	0	1250	25	15	850	0	5	0	5	0	0	0
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	1359	27	16	924	0	5	0	5	0	0	0
RTOR Reduction (vph)	0	1	0	0	0	0	0	4	0	0	0	0
Lane Group Flow (vph)	0	1385	0	16	924	0	0	6	0	0	0	0
Conf. Peds. (#/hr)			2	2					5			
Turn Type				Perm				Perm				
Protected Phases		6			2			4				
Permitted Phases				2				4				
Actuated Green, G (s)		85.0		85.0	85.0			24.0				
Effective Green, g (s)		89.0		89.0	89.0			27.0				
Actuated g/C Ratio		0.74		0.74	0.74			0.22				
Clearance Time (s)		6.0		6.0	6.0			5.0				
Vehicle Extension (s)		0.2		0.2	0.2			3.0				
Lane Grp Cap (vph)		1338		60	1342			367				
v/s Ratio Prot		c0.77			0.51							
v/s Ratio Perm				0.20				0.00				
v/c Ratio		1.04		0.27	0.69			0.02				
Uniform Delay, d1		15.5		5.0	8.2			36.2				
Progression Factor		0.81		0.32	0.48			1.00				
Incremental Delay, d2		18.9		6.2	1.7			0.0				
Delay (s)		31.6		7.8	5.6			36.2				
Level of Service		C		A	A			D				
Approach Delay (s)		31.6			5.7			36.2			0.0	
Approach LOS		C			A			D			A	

### Intersection Summary

HCM Average Control Delay	21.2	HCM Level of Service	C
HCM Volume to Capacity ratio	0.79		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	4.0
Intersection Capacity Utilization	94.0%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

# HCM Signalized Intersection Capacity Analysis

## 8: Wayne Ave. & Sligo Creek Pkwy

6/10/2008



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗		↖	↗		↖	↗			↖	↗
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	2.0	2.0		2.0	2.0		2.0	2.0			2.0	2.0
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00			1.00	1.00
Frbp, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00			1.00	1.00
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00			1.00	1.00
Frt	1.00	0.98		1.00	0.99		1.00	0.99			1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00			0.99	1.00
Satd. Flow (prot)	1719	1769		1719	1798		1719	1790			1788	1538
Flt Permitted	0.95	1.00		0.95	1.00		0.20	1.00			0.59	1.00
Satd. Flow (perm)	1719	1769		1719	1798		357	1790			1064	1538
Volume (vph)	300	850	150	25	575	25	100	325	25	100	350	175
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	326	924	163	27	625	27	109	353	27	109	380	190
RTOR Reduction (vph)	0	5	0	0	1	0	0	2	0	0	0	0
Lane Group Flow (vph)	326	1082	0	27	651	0	109	378	0	0	489	190
Confl. Peds. (#/hr)	11			10			10			7		
Turn Type	Prot			Prot			pm+pt			Perm		Prot
Protected Phases	5	2		1	6		7	4			8	8
Permitted Phases							4			8		
Actuated Green, G (s)	18.0	54.6		2.4	39.0		48.0	48.0			40.0	40.0
Effective Green, g (s)	21.0	57.6		5.4	42.0		51.0	51.0			43.0	43.0
Actuated g/C Ratio	0.18	0.48		0.05	0.35		0.42	0.42			0.36	0.36
Clearance Time (s)	5.0	5.0		5.0	5.0		5.0	5.0			5.0	5.0
Vehicle Extension (s)	3.0	0.2		3.0	0.2		3.0	3.0			3.0	3.0
Lane Grp Cap (vph)	301	849		77	629		220	761			381	551
v/s Ratio Prot	0.19	c0.61		0.02	c0.36		0.02	c0.21				0.12
v/s Ratio Perm							0.19				c0.46	
v/c Ratio	1.08	1.27		0.35	1.03		0.50	0.50			1.28	0.34
Uniform Delay, d1	49.5	31.2		55.6	39.0		43.6	25.1			38.5	28.2
Progression Factor	0.84	0.75		1.15	0.89		1.00	1.00			1.00	1.00
Incremental Delay, d2	50.7	125.6		2.0	39.5		1.8	0.5			146.2	0.4
Delay (s)	92.4	149.0		66.1	74.3		45.3	25.7			184.7	28.6
Level of Service	F	F		E	E		D	C			F	C
Approach Delay (s)		136.0			74.0			30.0			141.0	
Approach LOS		F			E			C			F	

### Intersection Summary

HCM Average Control Delay	108.2	HCM Level of Service	F
HCM Volume to Capacity ratio	1.20		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	6.0
Intersection Capacity Utilization	113.1%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group













HCM Signalized Intersection Capacity Analysis  
801: Campus Drive & Adelphi Rd.

Purple Line (UMD)  
7/30/2008

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations		↑↑	↑	↖	↑	↗	↖	↑↑↑	↗	↖↗	↑↑		
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		
Lane Util. Factor		0.95	1.00	1.00	1.00	1.00	1.00	0.91	1.00	0.97	0.95		
Frbp, ped/bikes		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		
Flpb, ped/bikes		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		
Frt		1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00		
Flt Protected		1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		
Satd. Flow (prot)		3539	1583	1770	1863	1583	1770	5085	1583	3433	3539		
Flt Permitted		1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		
Satd. Flow (perm)		3539	1583	1770	1863	1583	1770	5085	1583	3433	3539		
Volume (vph)	0	192	207	95	233	65	208	888	331	357	1225	0	
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	
Adj. Flow (vph)	0	213	230	106	259	72	231	987	368	397	1361	0	
RTOR Reduction (vph)	0	0	169	0	0	44	0	0	275	0	0	0	
Lane Group Flow (vph)	0	213	61	106	259	28	231	987	93	397	1361	0	
Confl. Peds. (#/hr)	49			3			2						
Turn Type			Perm	Split		Perm	Prot		Perm	Prot			
Protected Phases		2		6	6		3	8		1 7	1 4		
Permitted Phases			2			6			8				
Actuated Green, G (s)		62.6	62.6	30.0	30.0	30.0	30.0	60.0	60.0	72.4	103.4		
Effective Green, g (s)		65.6	65.6	33.0	33.0	33.0	32.0	63.0	63.0	74.4	105.4		
Actuated g/C Ratio		0.26	0.26	0.13	0.13	0.13	0.13	0.25	0.25	0.30	0.43		
Clearance Time (s)		6.0	6.0	6.0	6.0	6.0	5.0	6.0	6.0				
Vehicle Extension (s)		4.0	4.0	3.0	3.0	3.0	3.0	3.5	3.5				
Lane Grp Cap (vph)		936	419	236	248	211	228	1292	402	1030	1504		
v/s Ratio Prot		c0.06		0.06	c0.14		c0.13	0.19		0.12	c0.38		
v/s Ratio Perm			0.04			0.02			0.06				
v/c Ratio		0.23	0.15	0.45	1.04	0.13	1.01	0.76	0.23	0.39	0.90		
Uniform Delay, d1		71.4	69.8	99.1	107.5	94.9	108.0	85.6	73.3	68.7	66.6		
Progression Factor		0.56	0.66	1.00	1.00	1.00	1.00	1.00	1.00	0.40	0.36		
Incremental Delay, d2		0.1	0.1	1.4	69.2	0.3	63.0	2.8	0.4	0.2	6.3		
Delay (s)		40.3	46.2	100.5	176.7	95.1	171.0	88.4	73.7	27.7	30.0		
Level of Service		D	D	F	F	F	F	F	E	C	C		
Approach Delay (s)		43.3			144.8			97.0			29.5		
Approach LOS		D			F			F			C		
Intersection Summary													
HCM Average Control Delay			68.2		HCM Level of Service					E			
HCM Volume to Capacity ratio			0.75										
Actuated Cycle Length (s)			248.0		Sum of lost time (s)					12.0			
Intersection Capacity Utilization			84.8%		ICU Level of Service					E			
Analysis Period (min)			15										
c Critical Lane Group													

HCM Unsignalized Intersection Capacity Analysis  
810: Campus Drive & Regents Drive

Purple Line (UMD)  
7/30/2008

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Right Turn Channelized			Yes			Yes			Yes			Yes
Volume (veh/h)	9	54	19	52	86	277	4	77	39	93	76	11
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	10	59	21	57	93	301	4	84	42	101	83	12
Approach Volume (veh/h)		68			150			88			184	
Crossing Volume (veh/h)		240			98			170			154	
High Capacity (veh/h)		1147			1283			1213			1227	
High v/c (veh/h)		0.06			0.12			0.07			0.15	
Low Capacity (veh/h)		946			1069			1005			1018	
Low v/c (veh/h)		0.07			0.14			0.09			0.18	
Intersection Summary												
Maximum v/c High			0.15									
Maximum v/c Low			0.18									
Intersection Capacity Utilization			67.2%			ICU Level of Service						C












HCM Signalized Intersection Capacity Analysis  
812: Campus Drive & US 1

Purple Line (UMD)  
11/5/2007

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Util. Factor	0.95	0.95	1.00	0.91	0.91	0.88	0.97	0.95	1.00	0.97	0.95	1.00
Frnt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	1.00
Flt Protected	0.95	1.00	1.00	0.95	0.98	1.00	0.95	1.00	1.00	0.95	1.00	0.85
Satd. Flow (prot)	1681	1770	1583	1610	3327	2787	3433	3539	1583	3433	3539	1583
Flt Permitted	0.95	1.00	1.00	0.95	0.98	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1681	1770	1583	1610	3327	2787	3433	3539	1583	3433	3539	1583
Volume (vph)	58	142	72	677	492	490	169	779	148	507	1718	496
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	64	158	80	752	547	544	188	866	164	563	1909	551
RTOR Reduction (vph)	0	0	71	0	0	174	0	0	94	0	0	134
Lane Group Flow (vph)	64	158	9	418	881	370	188	866	70	563	1909	417
Turn Type	Split		Perm	Split		pt+ov	Prot		Perm	Prot		Perm
Protected Phases	4	4		3	3	3.5	1	6		5	2	
Permitted Phases			4						6			2
Actuated Green, G (s)	14.9	14.9	14.9	30.5	30.5	55.6	13.6	57.5	57.5	25.1	69.0	69.0
Effective Green, g (s)	17.4	17.4	17.4	33.0	33.0	60.1	15.6	60.5	60.5	27.1	72.0	72.0
Actuated g/C Ratio	0.12	0.12	0.12	0.22	0.22	0.40	0.10	0.40	0.40	0.18	0.48	0.48
Clearance Time (s)	5.5	5.5	5.5	5.5	5.5		5.0	6.0	6.0	5.0	6.0	6.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	5.0	5.0	3.0	5.0	5.0
Lane Grp Cap (vph)	195	205	184	354	732	1117	357	1427	638	620	1699	760
v/s Ratio Prot	0.04	c0.09		0.26	c0.26	0.13	0.05	0.24		c0.16	c0.54	
v/s Ratio Perm			0.01						0.04			0.26
v/c Ratio	0.33	0.77	0.05	1.18	1.20	0.33	0.53	0.61	0.11	0.91	1.12	0.55
Uniform Delay, d1	60.9	64.4	59.0	58.5	58.5	31.1	63.7	35.4	27.9	60.2	39.0	27.5
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.13	0.94	1.56	1.16	0.77	0.50
Incremental Delay, d2	1.0	16.3	0.1	106.7	104.4	0.2	1.3	1.7	0.3	2.1	56.5	0.3
Delay (s)	61.9	80.6	59.1	165.2	162.9	31.2	73.3	35.1	43.9	71.7	86.4	14.0
Level of Service	E	F	E	F	F	C	E	D	D	E	F	B
Approach Delay (s)		71.0			124.5			42.1			70.5	
Approach LOS		E			F			D			E	
Intersection Summary												
HCM Average Control Delay	80.7			HCM Level of Service						F		
HCM Volume to Capacity ratio	1.08											
Actuated Cycle Length (s)	150.0			Sum of lost time (s)						12.0		
Intersection Capacity Utilization	95.3%			ICU Level of Service						F		
Analysis Period (min)	15											
c Critical Lane Group												





















HCM Signalized Intersection Capacity Analysis  
 200: E. Campus Main Ent & US 1

Purple Line (UMD)  
 11/5/2007

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0		4.0	4.0
Lane Util. Factor	1.00	1.00	0.95		1.00	0.95
Frt	1.00	0.85	0.99		1.00	1.00
Flt Protected	0.95	1.00	1.00		0.95	1.00
Satd. Flow (prot)	1770	1583	3513		1770	3539
Flt Permitted	0.95	1.00	1.00		0.95	1.00
Satd. Flow (perm)	1770	1583	3513		1770	3539
Volume (vph)	76	72	1307	68	116	2480
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	83	78	1421	74	126	2696
RTOR Reduction (vph)	0	71	2	0	0	0
Lane Group Flow (vph)	83	7	1493	0	126	2696
Turn Type		Perm			Prot	
Protected Phases	8		2		1	6
Permitted Phases		8				
Actuated Green, G (s)	12.0	12.0	106.5		15.0	126.5
Effective Green, g (s)	13.5	13.5	108.5		16.0	128.5
Actuated g/C Ratio	0.09	0.09	0.72		0.11	0.86
Clearance Time (s)	5.5	5.5	6.0		5.0	6.0
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	159	142	2541		189	3032
v/s Ratio Prot	c0.05		0.42		0.07	c0.76
v/s Ratio Perm		0.00				
v/c Ratio	0.52	0.05	0.59		0.67	0.89
Uniform Delay, d1	65.2	62.4	10.0		64.4	6.5
Progression Factor	1.00	1.00	1.46		0.83	2.45
Incremental Delay, d2	3.1	0.1	0.9		0.8	0.4
Delay (s)	68.2	62.5	15.5		54.3	16.3
Level of Service	E	E	B		D	B
Approach Delay (s)	65.5		15.5			18.0
Approach LOS	E		B			B
<b>Intersection Summary</b>						
HCM Average Control Delay			18.8		HCM Level of Service	B
HCM Volume to Capacity ratio			0.85			
Actuated Cycle Length (s)			150.0		Sum of lost time (s)	8.0
Intersection Capacity Utilization			79.4%		ICU Level of Service	D
Analysis Period (min)			15			
c Critical Lane Group						

HCM Signalized Intersection Capacity Analysis  
 212: Rossborough Rd. & US 1

Purple Line (UMD)  
 7/30/2008

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0			3.0	3.0	3.0	3.0		3.0	3.0	
Lane Util. Factor	1.00	1.00			1.00	1.00	1.00	0.95		1.00	0.95	
Frt	1.00	0.93			1.00	0.85	1.00	1.00		1.00	0.98	
Flt Protected	0.95	1.00			0.96	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1723			1783	1583	1770	3531		1770	3474	
Flt Permitted	0.73	1.00			0.76	1.00	0.06	1.00		0.22	1.00	
Satd. Flow (perm)	1352	1723			1410	1583	120	3531		412	3474	
Volume (vph)	16	2	2	32	4	293	8	990	16	157	1680	236
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	18	2	2	36	4	326	9	1100	18	174	1867	262
RTOR Reduction (vph)	0	2	0	0	0	292	0	0	0	0	3	0
Lane Group Flow (vph)	18	2	0	0	40	34	9	1118	0	174	2126	0
Turn Type	Perm			Perm		Perm	pm+pt			pm+pt		
Protected Phases		4			8		1	6		5	2	
Permitted Phases	4			8		8	6			2		
Actuated Green, G (s)	11.1	11.1			11.1	11.1	116.8	114.5		127.4	120.6	
Effective Green, g (s)	13.6	13.6			13.6	13.6	121.3	117.5		130.4	123.6	
Actuated g/C Ratio	0.09	0.09			0.09	0.09	0.81	0.78		0.87	0.82	
Clearance Time (s)	5.5	5.5			5.5	5.5	4.5	6.0		4.5	6.0	
Vehicle Extension (s)	3.0	3.0			3.0	3.0	3.0	5.0		3.0	5.0	
Lane Grp Cap (vph)	123	156			128	144	139	2766		448	2863	
v/s Ratio Prot		0.00					0.00	0.32		c0.03	c0.61	
v/s Ratio Perm	0.01				c0.03	0.02	0.05			0.31		
v/c Ratio	0.15	0.01			0.31	0.24	0.06	0.40		0.39	0.74	
Uniform Delay, d1	62.9	62.1			63.8	63.4	6.9	5.2		2.7	6.0	
Progression Factor	1.00	1.00			1.00	1.00	0.95	0.52		1.26	1.73	
Incremental Delay, d2	0.6	0.0			1.4	0.9	0.2	0.4		0.3	0.8	
Delay (s)	63.4	62.1			65.2	64.2	6.8	3.1		3.7	11.2	
Level of Service	E	E			E	E	A	A		A	B	
Approach Delay (s)		63.2			64.3			3.1			10.6	
Approach LOS		E			E			A			B	
Intersection Summary												
HCM Average Control Delay			13.9				HCM Level of Service			B		
HCM Volume to Capacity ratio			0.69									
Actuated Cycle Length (s)			150.0				Sum of lost time (s)			9.0		
Intersection Capacity Utilization			76.8%				ICU Level of Service			D		
Analysis Period (min)			15									
c Critical Lane Group												



HCM Signalized Intersection Capacity Analysis  
 813: Paint Branch Pkwy & Fire Academy

Purple Line (UMD)  
 11/5/2007

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	2.0	2.0		2.0	2.0			2.0			2.0	
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00			1.00	
Flt Protected	1.00	0.97		1.00	0.99			0.98			0.92	
Satd. Flow (prot)	1770	3442		1770	3504			1762			1695	
Flt Permitted	0.13	1.00		0.43	1.00			0.87			0.95	
Satd. Flow (perm)	236	3442		794	3504			1580			1629	
Volume (vph)	220	421	94	50	1245	88	25	6	6	13	6	25
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	220	421	94	50	1245	88	25	6	6	13	6	25
RTOR Reduction (vph)	0	24	0	0	6	0	0	4	0	0	16	0
Lane Group Flow (vph)	220	491	0	50	1327	0	0	33	0	0	28	0
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2				6	
Actuated Green, G (s)	45.0	45.0		45.0	45.0			25.0			25.0	
Effective Green, g (s)	48.0	48.0		48.0	48.0			28.0			28.0	
Actuated g/C Ratio	0.60	0.60		0.60	0.60			0.35			0.35	
Clearance Time (s)	5.0	5.0		5.0	5.0			5.0			5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0			3.0	
Lane Grp Cap (vph)	142	2065		476	2102			553			570	
v/s Ratio Prot		0.14			0.38							
v/s Ratio Perm	c0.93			0.06				c0.02			0.02	
v/c Ratio	1.55	0.24		0.11	0.63			0.06			0.05	
Uniform Delay, d1	16.0	7.5		6.8	10.3			17.3			17.2	
Progression Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Incremental Delay, d2	278.9	0.1		0.1	0.6			0.2			0.2	
Delay (s)	294.9	7.5		6.9	10.9			17.5			17.4	
Level of Service	F	A		A	B			B			B	
Approach Delay (s)		93.5			10.8			17.5			17.4	
Approach LOS		F			B			B			B	
Intersection Summary												
HCM Average Control Delay			38.7			HCM Level of Service				D		
HCM Volume to Capacity ratio			0.99									
Actuated Cycle Length (s)			80.0			Sum of lost time (s)				4.0		
Intersection Capacity Utilization		63.7%				ICU Level of Service				B		
Analysis Period (min)			15									
c Critical Lane Group												







HCM Signalized Intersection Capacity Analysis  
 814: Paint Branch Pkwy & Metro Parking Garage

Purple Line (UMD)  
 7/30/2008

	→	↘	↙	←	↖	↗
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑	↗	↘	↑↑	↘	↗
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0			4.0		
Lane Util. Factor	0.95			0.95		
Frt	1.00			1.00		
Flt Protected	1.00			1.00		
Satd. Flow (prot)	3539			3539		
Flt Permitted	1.00			1.00		
Satd. Flow (perm)	3539			3539		
Volume (vph)	440	0	0	1383	0	0
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	478	0	0	1503	0	0
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	478	0	0	1503	0	0
Turn Type		Perm	pm+pt			pm+ov
Protected Phases	2		1	6	8	1
Permitted Phases		2	6			8
Actuated Green, G (s)	40.9			40.9		
Effective Green, g (s)	40.9			40.9		
Actuated g/C Ratio	0.52			0.52		
Clearance Time (s)	4.0			4.0		
Vehicle Extension (s)	3.0			3.0		
Lane Grp Cap (vph)	1828			1828		
v/s Ratio Prot	0.14			c0.42		
v/s Ratio Perm						
v/c Ratio	0.26			0.82		
Uniform Delay, d1	10.7			16.1		
Progression Factor	1.00			1.00		
Incremental Delay, d2	0.3			3.1		
Delay (s)	11.1			19.2		
Level of Service	B			B		
Approach Delay (s)	11.1			19.2	0.0	
Approach LOS	B			B	A	
<b>Intersection Summary</b>						
HCM Average Control Delay		17.2		HCM Level of Service		B
HCM Volume to Capacity ratio		0.82				
Actuated Cycle Length (s)		79.2		Sum of lost time (s)		38.3
Intersection Capacity Utilization		41.6%		ICU Level of Service		A
Analysis Period (min)		15				
c Critical Lane Group						













HCM Signalized Intersection Capacity Analysis  
 815: Paint Branch Pkwy & River Road

Purple Line (UMD)  
 11/5/2007

						
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑	↑	↑↑	↑↑	↑↑	↑
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	2.0	2.0	2.0	2.0	2.0	2.0
Lane Util. Factor	0.95	1.00	0.97	0.95	0.97	1.00
Frbp, ped/bikes	1.00	0.97	1.00	1.00	1.00	0.98
Flpb, ped/bikes	1.00	1.00	0.99	1.00	1.00	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (prot)	3539	1532	3398	3539	3419	1552
Flt Permitted	1.00	1.00	0.49	1.00	0.95	1.00
Satd. Flow (perm)	3539	1532	1755	3539	3419	1552
Volume (vph)	261	215	199	1242	87	269
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	261	215	199	1242	87	269
RTOR Reduction (vph)	0	148	0	0	0	146
Lane Group Flow (vph)	261	67	199	1242	87	123
Confl. Peds. (#/hr)		25	25		5	10
Turn Type		Perm	pm+pt			custom
Protected Phases	4		3	8		
Permitted Phases		4	8		2	2
Actuated Green, G (s)	18.9	18.9	32.1	32.1	30.3	30.3
Effective Green, g (s)	22.9	22.9	36.1	36.1	33.8	33.8
Actuated g/C Ratio	0.31	0.31	0.49	0.49	0.46	0.46
Clearance Time (s)	6.0	6.0	5.5	6.0	5.5	5.5
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	1097	475	1106	1729	1564	710
v/s Ratio Prot	0.07		0.03	c0.35		
v/s Ratio Perm		0.04	0.06		0.03	c0.08
v/c Ratio	0.24	0.14	0.18	0.72	0.06	0.17
Uniform Delay, d1	19.0	18.4	10.4	14.9	11.2	11.8
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.1	0.1	0.1	1.5	0.1	0.5
Delay (s)	19.1	18.5	10.5	16.3	11.2	12.3
Level of Service	B	B	B	B	B	B
Approach Delay (s)	18.9			15.5	12.1	
Approach LOS	B			B	B	
<b>Intersection Summary</b>						
HCM Average Control Delay		15.7			HCM Level of Service	B
HCM Volume to Capacity ratio		0.45				
Actuated Cycle Length (s)		73.9			Sum of lost time (s)	4.0
Intersection Capacity Utilization		63.5%			ICU Level of Service	B
Analysis Period (min)		15				
c Critical Lane Group						













HCM Signalized Intersection Capacity Analysis  
801: Campus Drive & Adelphi Rd.

Purple Line (UMD)  
7/30/2008

													
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations		↑↑	↑	↘	↑	↗	↘	↑↑↑	↗	↘↘	↑↑		
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		
Lane Util. Factor		0.95	1.00	1.00	1.00	1.00	1.00	0.91	1.00	0.97	0.95		
Frbp, ped/bikes		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		
Flpb, ped/bikes		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		
Frt		1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00		
Flt Protected		1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		
Satd. Flow (prot)		3539	1583	1770	1863	1583	1770	5085	1583	3433	3539		
Flt Permitted		1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		
Satd. Flow (perm)		3539	1583	1770	1863	1583	1770	5085	1583	3433	3539		
Volume (vph)	0	185	210	185	214	393	222	1304	180	228	917	0	
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	
Adj. Flow (vph)	0	206	233	206	238	437	247	1449	200	253	1019	0	
RTOR Reduction (vph)	0	0	173	0	0	293	0	0	115	0	0	0	
Lane Group Flow (vph)	0	206	60	206	238	144	247	1449	85	253	1019	0	
Confl. Peds. (#/hr)	17			20			9			3			
Turn Type			Perm	Split		Perm	Prot		Perm	Prot			
Protected Phases		2		6	6		3	8		17	14		
Permitted Phases			2			6			8				
Actuated Green, G (s)		60.0	60.0	30.0	30.0	30.0	25.0	60.0	60.0	73.7	109.7		
Effective Green, g (s)		63.0	63.0	33.0	33.0	33.0	27.0	63.0	63.0	75.7	111.7		
Actuated g/C Ratio		0.26	0.26	0.13	0.13	0.13	0.11	0.26	0.26	0.31	0.45		
Clearance Time (s)		6.0	6.0	6.0	6.0	6.0	5.0	6.0	6.0				
Vehicle Extension (s)		4.0	4.0	3.0	3.0	3.0	3.0	3.5	3.5				
Lane Grp Cap (vph)		904	404	237	249	212	194	1299	404	1053	1602		
v/s Ratio Prot		c0.06		0.12	c0.13		c0.14	c0.28		0.07	c0.29		
v/s Ratio Perm			0.04			0.09			0.05				
v/c Ratio		0.23	0.15	0.87	0.96	0.68	1.27	1.12	0.21	0.24	0.64		
Uniform Delay, d1		72.6	71.1	104.7	106.1	101.8	109.8	91.8	72.3	64.0	51.9		
Progression Factor		0.81	1.19	1.00	1.00	1.00	1.00	1.00	1.00	0.53	0.42		
Incremental Delay, d2		0.0	0.0	26.9	44.5	8.7	156.8	63.0	0.3	0.1	0.7		
Delay (s)		58.9	84.8	131.6	150.6	110.5	266.7	154.9	72.6	34.2	22.5		
Level of Service		E	F	F	F	F	F	F	E	C	C		
Approach Delay (s)		72.6			126.3			160.7			24.8		
Approach LOS		E			F			F			C		
Intersection Summary													
HCM Average Control Delay			106.8		HCM Level of Service					F			
HCM Volume to Capacity ratio			0.71										
Actuated Cycle Length (s)			246.7		Sum of lost time (s)					9.0			
Intersection Capacity Utilization			81.3%		ICU Level of Service					D			
Analysis Period (min)			15										
c Critical Lane Group													

HCM Unsignalized Intersection Capacity Analysis  
 810: Campus Drive & Regents Drive

Purple Line (UMD)  
 7/30/2008

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Right Turn Channelized			Yes			Yes			Yes			Yes
Volume (veh/h)	3	44	3	135	40	203	12	178	52	394	25	10
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	3	48	3	147	43	221	13	193	57	428	27	11
Approach Volume (veh/h)		51			190			207			455	
Crossing Volume (veh/h)		602			210			479			203	
High Capacity (veh/h)		860			1175			949			1181	
High v/c (veh/h)		0.06			0.16			0.22			0.39	
Low Capacity (veh/h)		689			971			768			976	
Low v/c (veh/h)		0.07			0.20			0.27			0.47	
Intersection Summary												
Maximum v/c High			0.39									
Maximum v/c Low			0.47									
Intersection Capacity Utilization			82.3%			ICU Level of Service					E	












HCM Signalized Intersection Capacity Analysis  
812: Campus Drive & US 1

Purple Line (UMD)  
11/5/2007

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Util. Factor	0.95	0.95	1.00	0.91	0.91	0.88	0.97	0.95	1.00	0.97	0.95	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	0.98	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1681	1770	1583	1610	3325	2787	3433	3539	1583	3433	3539	1583
Flt Permitted	0.95	1.00	1.00	0.95	0.98	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1681	1770	1583	1610	3325	2787	3433	3539	1583	3433	3539	1583
Volume (vph)	254	312	142	334	232	851	162	1466	507	470	1280	287
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	282	347	158	371	258	946	180	1629	563	522	1422	319
RTOR Reduction (vph)	0	0	121	0	0	133	0	0	174	0	0	94
Lane Group Flow (vph)	282	347	37	203	426	813	180	1629	389	522	1422	225
Turn Type	Split		Perm	Split		pt+ov	Prot		Perm	Prot		Perm
Protected Phases	4	4		3	3	3 5	1	6		5	2	
Permitted Phases			4						6			2
Actuated Green, G (s)	32.3	32.3	32.3	13.5	13.5	36.7	12.8	59.0	59.0	23.2	69.4	69.4
Effective Green, g (s)	34.8	34.8	34.8	16.0	16.0	41.2	14.8	62.0	62.0	25.2	72.4	72.4
Actuated g/C Ratio	0.23	0.23	0.23	0.11	0.11	0.27	0.10	0.41	0.41	0.17	0.48	0.48
Clearance Time (s)	5.5	5.5	5.5	5.5	5.5		5.0	6.0	6.0	5.0	6.0	6.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	5.0	5.0	3.0	5.0	5.0
Lane Grp Cap (vph)	390	411	367	172	355	765	339	1463	654	577	1708	764
v/s Ratio Prot	0.17	c0.20		0.13	c0.13	c0.29	0.05	c0.46		0.15	0.40	
v/s Ratio Perm			0.02									
v/c Ratio	0.72	0.84	0.10	1.18	1.20	1.06	0.53	1.11	0.25	0.90	0.83	0.14
Uniform Delay, d1	53.2	55.0	45.3	67.0	67.0	54.4	64.3	44.0	34.2	61.2	33.6	23.4
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.93	1.02	1.23	1.35	0.82	0.95
Incremental Delay, d2	6.5	14.6	0.1	125.4	114.0	50.3	0.1	52.1	0.4	2.1	0.5	0.1
Delay (s)	59.7	69.6	45.4	192.4	181.0	104.7	59.8	96.9	42.4	84.6	28.1	22.4
Level of Service	E	E	D	F	F	F	F	E	F	D	F	C
Approach Delay (s)		61.2			136.7							
Approach LOS		E			F							
Intersection Summary												
HCM Average Control Delay	78.2			HCM Level of Service						E		
HCM Volume to Capacity ratio	1.05											
Actuated Cycle Length (s)	150.0			Sum of lost time (s)						12.0		
Intersection Capacity Utilization	96.7%			ICU Level of Service						F		
Analysis Period (min)	15											
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis  
 200: E. Campus Main Ent & US 1

Purple Line (UMD)  
 11/5/2007

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0		4.0	4.0
Lane Util. Factor	1.00	1.00	0.95		1.00	0.95
Fr <sub>t</sub>	1.00	0.85	0.99		1.00	1.00
Flt Protected	0.95	1.00	1.00		0.95	1.00
Satd. Flow (prot)	1770	1583	3511		1770	3539
Flt Permitted	0.95	1.00	1.00		0.95	1.00
Satd. Flow (perm)	1770	1583	3511		1770	3539
Volume (vph)	117	133	2552	141	113	1769
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	127	145	2774	153	123	1923
RTOR Reduction (vph)	0	72	3	0	0	0
Lane Group Flow (vph)	127	73	2924	0	123	1923
Turn Type		Perm			Prot	
Protected Phases	8		2		1	6
Permitted Phases		8				
Actuated Green, G (s)	14.3	14.3	109.5		9.7	124.7
Effective Green, g (s)	15.8	15.8	111.5		10.7	126.2
Actuated g/C Ratio	0.11	0.11	0.74		0.07	0.84
Clearance Time (s)	5.5	5.5	6.0		5.0	5.5
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	186	167	2610		126	2977
v/s Ratio Prot	c0.07		c0.83		c0.07	0.54
v/s Ratio Perm		0.05				
v/c Ratio	0.68	0.44	1.12		0.98	0.65
Uniform Delay, d <sub>1</sub>	64.7	62.9	19.3		69.5	4.1
Progression Factor	1.00	1.00	1.63		0.86	2.94
Incremental Delay, d <sub>2</sub>	9.9	1.8	54.8		52.2	0.6
Delay (s)	74.6	64.8	86.2		112.3	12.8
Level of Service	E	E	F		F	B
Approach Delay (s)	69.4		86.2			18.8
Approach LOS	E		F			B
<b>Intersection Summary</b>						
HCM Average Control Delay		59.0		HCM Level of Service		E
HCM Volume to Capacity ratio		1.06		Sum of lost time (s)		12.0
Actuated Cycle Length (s)		150.0		ICU Level of Service		F
Intersection Capacity Utilization		97.8%				
Analysis Period (min)		15				
c Critical Lane Group						

HCM Signalized Intersection Capacity Analysis  
 212: Rossborough Rd. & US 1

Purple Line (UMD)  
 7/30/2008

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0			3.0	3.0	3.0	3.0		3.0	3.0	
Lane Util. Factor	1.00	1.00			1.00	1.00	1.00	0.95		1.00	0.95	
Frt	1.00	0.88			1.00	0.85	1.00	0.99		1.00	1.00	
Flt Protected	0.95	1.00			0.96	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1641			1792	1583	1770	3520		1770	3534	
Flt Permitted	0.52	1.00			0.75	1.00	0.09	1.00		0.04	1.00	
Satd. Flow (perm)	960	1641			1398	1583	169	3520		83	3534	
Volume (vph)	67	5	21	118	31	669	45	1800	68	131	1424	14
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	74	6	23	131	34	743	50	2000	76	146	1582	16
RTOR Reduction (vph)	0	17	0	0	0	213	0	2	0	0	0	0
Lane Group Flow (vph)	74	12	0	0	165	530	50	2074	0	146	1598	0
Turn Type	Perm			Perm		Perm	pm+pt			pm+pt		
Protected Phases		4			8		1	6		5	2	
Permitted Phases	4			8		8	6			2		
Actuated Green, G (s)	36.5	36.5			36.5	36.5	89.2	83.9		102.0	92.2	
Effective Green, g (s)	39.0	39.0			39.0	39.0	93.7	86.9		105.0	95.2	
Actuated g/C Ratio	0.26	0.26			0.26	0.26	0.62	0.58		0.70	0.63	
Clearance Time (s)	5.5	5.5			5.5	5.5	4.5	6.0		4.5	6.0	
Vehicle Extension (s)	3.0	3.0			3.0	3.0	3.0	5.0		3.0	5.0	
Lane Grp Cap (vph)	250	427			363	412	178	2039		228	2243	
v/s Ratio Prot		0.01					0.01	c0.59		c0.06	0.45	
v/s Ratio Perm	0.08				0.12	c0.33	0.16			0.38		
v/c Ratio	0.30	0.03			0.45	1.29	0.28	1.02		0.64	0.71	
Uniform Delay, d1	44.5	41.4			46.6	55.5	16.3	31.5		47.5	18.3	
Progression Factor	1.00	1.00			1.00	1.00	1.56	0.41		1.23	1.11	
Incremental Delay, d2	0.7	0.0			0.9	146.1	0.6	21.0		4.6	1.5	
Delay (s)	45.2	41.4			47.5	201.6	26.0	33.9		63.1	21.7	
Level of Service	D	D			D	F	C	C		E	C	
Approach Delay (s)		44.1			173.6			33.7			25.1	
Approach LOS		D			F			C			C	
Intersection Summary												
HCM Average Control Delay			56.9				HCM Level of Service			E		
HCM Volume to Capacity ratio			1.05									
Actuated Cycle Length (s)			150.0				Sum of lost time (s)			9.0		
Intersection Capacity Utilization			110.0%				ICU Level of Service			H		
Analysis Period (min)			15									
c Critical Lane Group												





HCM Signalized Intersection Capacity Analysis  
 814: Paint Branch Pkwy & Metro Parking Garage

Purple Line (UMD)  
 7/30/2008

	→	↘	↙	←	↖	↗
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑	↑	↘	↑↑	↘	↑
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0			4.0		
Lane Util. Factor	0.95			0.95		
Frt	1.00			1.00		
Flt Protected	1.00			1.00		
Satd. Flow (prot)	3539			3539		
Flt Permitted	1.00			1.00		
Satd. Flow (perm)	3539			3539		
Volume (vph)	1282	0	0	849	0	0
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	1393	0	0	923	0	0
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	1393	0	0	923	0	0
Turn Type		Perm	pm+pt			pm+ov
Protected Phases	2		1	6	8	1
Permitted Phases		2	6			8
Actuated Green, G (s)	120.0			120.0		
Effective Green, g (s)	120.0			120.0		
Actuated g/C Ratio	1.00			1.00		
Clearance Time (s)	4.0			4.0		
Vehicle Extension (s)	3.0			3.0		
Lane Grp Cap (vph)	3539			3539		
v/s Ratio Prot	c0.39			0.26		
v/s Ratio Perm						
v/c Ratio	0.39			0.26		
Uniform Delay, d1	0.0			0.0		
Progression Factor	1.00			1.00		
Incremental Delay, d2	0.3			0.2		
Delay (s)	0.3			0.2		
Level of Service	A			A		
Approach Delay (s)	0.3			0.2	0.0	
Approach LOS	A			A	A	

Intersection Summary

HCM Average Control Delay	0.3	HCM Level of Service	A
HCM Volume to Capacity ratio	0.39		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	0.0
Intersection Capacity Utilization	38.8%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

# HCM Signalized Intersection Capacity Analysis

## 815: Paint Branch Pkwy & River Road

Purple Line (UMD)  
11/5/2007

	→	↘	↙	←	↖	↗
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑	↑	↑↑	↑↑	↑↑	↑
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	2.0	2.0	2.0	2.0	2.0	2.0
Lane Util. Factor	0.95	1.00	0.97	0.95	0.97	1.00
Frbp, ped/bikes	1.00	0.98	1.00	1.00	1.00	0.98
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (prot)	3539	1548	3432	3539	3430	1548
Flt Permitted	1.00	1.00	0.13	1.00	0.95	1.00
Satd. Flow (perm)	3539	1548	458	3539	3430	1548
Volume (vph)	989	304	50	568	186	277
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	989	304	50	568	186	277
RTOR Reduction (vph)	0	181	0	0	0	157
Lane Group Flow (vph)	989	123	50	568	186	120
Confl. Peds. (#/hr)		12	12		1	12
Turn Type		Perm	pm+pt		custom	
Protected Phases	4		3	8		
Permitted Phases		4	8		2	2
Actuated Green, G (s)	28.3	28.3	37.1	37.1	31.1	31.1
Effective Green, g (s)	32.3	32.3	41.1	41.1	34.6	34.6
Actuated g/C Ratio	0.41	0.41	0.52	0.52	0.43	0.43
Clearance Time (s)	6.0	6.0	5.5	6.0	5.5	5.5
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	1434	627	490	1825	1489	672
v/s Ratio Prot	c0.28		0.01	c0.16		
v/s Ratio Perm		0.08	0.04		0.05	c0.08
v/c Ratio	0.69	0.20	0.10	0.31	0.12	0.18
Uniform Delay, d1	19.6	15.3	11.9	11.1	13.5	13.8
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	1.4	0.2	0.1	0.1	0.2	0.6
Delay (s)	21.0	15.5	12.0	11.2	13.7	14.4
Level of Service	C	B	B	B	B	B
Approach Delay (s)	19.7			11.3	14.1	
Approach LOS	B			B	B	
<b>Intersection Summary</b>						
HCM Average Control Delay		16.4		HCM Level of Service		B
HCM Volume to Capacity ratio		0.41		Sum of lost time (s)		6.0
Actuated Cycle Length (s)		79.7		ICU Level of Service		B
Intersection Capacity Utilization		56.5%				
Analysis Period (min)		15				
c Critical Lane Group						