



Chapter 2

Alternatives Considered

Chapter 2. Alternatives Considered

2.1. Alternatives Development Process

The MTA has examined a wide range of modes and alignments throughout the long history of this project. In 2003, when the east and west portions of the project were combined and the MTA held a series of public scoping meetings to reinstate the study, the mode choices were narrowed down to BRT and LRT. The MTA focused on determining the alignments that would best meet the purpose and need, while minimizing impacts and optimizing the service provided. As required by the FTA in an AA, the MTA worked to develop alternatives that all met the purpose and need but had real differences. Three alternatives were established for each mode at varying levels of investment to compare the benefits and costs.

The alternatives definition has been an iterative process that involved extensive coordination with local stakeholders, including local planning agencies, major employers, elected officials, community groups, property owners, and local residents. The MTA held regular meetings throughout the study with a project team that included local planners, state and county agencies, and elected officials to ensure that the Purple Line was consistent with local goals and that the MTA was informed of local issues.

The MTA conducted an extensive public outreach process. The MTA maintained a project website, mailed newsletters to a mailing list of over 60,000 households and businesses, and held large public open houses. The MTA met with community and civic associations over 280 times between 2003 and 2008 to discuss the project and solicit input from local stakeholders. Beyond this, the MTA developed a community engagement process called “Community Focus Groups.” The MTA organized eight of these

groups along the corridor to provide a forum for discussion with local residents on issues and concerns relative to their communities.

Community Focus Groups

In the fall of 2004, the MTA created a forum for discussion of the project from a local perspective. The goal was to have small, geographically organized meetings focused on local community issues relative to the Purple Line. In some communities along the corridor, the challenge was not getting people to come to community meetings, but getting a small enough number that would allow for a dialogue rather than presentations. A format was developed with the aid and support of the local jurisdictions. Comprised of representatives of local community and civic associations, these groups met regularly with project representatives to discuss in detail local project plans. The focus groups proved to be an effective way to work with local communities. The MTA gained valuable information at the meetings about community concerns and about the local area. This information ranged from such issues as the details of the traffic circulation of local school buses to double parking by delivery vans on narrow commercial streets. In some cases, alignments were dropped; in others they were modified based on input received at these meetings. This information allowed the MTA to better design the project and develop plans that addressed community concerns.

Community Focus Group Meeting



Chapter 1 described the history of the project and its planning up until the definition of the project at the public scoping in September 2003.

Scoping

Scoping for the Purple Line study was an important part of the initial alternatives definition. This process, held in September 2003, was described in Chapter 1. The scoping process began with public notification of four public meetings and also included scoping for the resource agencies.

A wide range of alternatives were identified and suggested during the scoping process. In considering these alternatives, the MTA assessed alternatives for reasonableness and relevance to the project’s purpose and need. Alternatives identified during the scoping process that did not support the purpose and need for the Purple Line were not considered “reasonable alternatives” as described in the FTA regulations implementing NEPA (23 CFR 771.123). Alternatives that did not pass the reasonableness standard were eliminated from further consideration in the AA/DEIS.

2.2. Modes

Two transit modes, heavy rail and monorail, were suggested during scoping and not carried forward for detailed study. In the previously completed *Capital Beltway/Purple Line Study – Findings and Recommendation Report (2003)*, heavy rail (Metrorail) and monorail were eliminated from consideration for the Purple Line corridor due to prohibitive costs and the availability of other viable alternatives.

A heavy rail alternative was eliminated from consideration for the Bethesda to Silver Spring segment in the 1996 Georgetown Branch Transitway/Trail MIS/DEIS due to excessive costs projections from the *East West Transitway Feasibility Study*. In July 2000, the MTA reexamined the comparative costs of several alignments between Bethesda and Silver Spring, including double track along the Georgetown Branch right-of-way and double track underground. This report projected the underground costs of approximately \$926M and the surface alignment \$292M because of the scale of the cost differential the MTA has not included Metro heavy rail in the study because it would require an underground alignment in this built up area.

The MTA has concluded that monorail technology does not offer appropriate solutions when compared to BRT and LRT. Comparing capital costs for recently constructed BRT and LRT systems around the country to a monorail system similar to the system developed in Las Vegas, Nevada, indicates that a monorail would not likely offer any cost savings. In addition, a monorail would not likely be able to meet the capacity needs associated with this corridor. Higher capacity monorail systems could be constructed, but because the larger vehicles must straddle a larger beam, heavier structures would



have to be built and, as a result, turning radii would need to be larger creating substantial visual and property impacts on adjacent communities.

Neither of these modes meets the goal of a cost-effective transit alternative that is rapid, reliable, and environmentally friendly; therefore, the MTA has eliminated monorail and heavy rail alternatives from consideration.

Two transit modes are being considered for the Build alternatives, BRT and LRT.

Low Floor BRT Vehicle



BRT is a mode of transportation that has characteristics in common with both conventional bus operations and LRT. BRT looks and feels much like a railcar but uses rubber wheeled vehicles. It can operate either on city streets or in a separate busway. BRT is generally faster than traditional local bus service. Like a rail system it has permanent stations, services, and amenities. Vehicles are typically fueled with low emission hybrid electric motors or Compressed Natural Gas. BRT vehicles typically are low floor, making them easier to board, and often have several doors for faster boarding.

Features generally associated with a BRT system include signal priority at intersections, queue jump lanes, and off board fare collection. One advantage of BRT service is that the buses are not restricted to a specially constructed guideway but can operate on regular streets to provide “one seat” feeder bus service.

Traffic signal priority is simply giving special treatment to transit vehicles at signalized intersections. The system can give an early green signal or hold a green signal that is already displaying as a transit vehicle approaches.

A queue jump lane is a short stretch of bus lane often combined with traffic signal priority. The idea is to enable buses to by-pass waiting queues of traffic and to cut out in front by getting an early green signal. A special bus-only signal may be required. The queue jump lane can also be a right-turn only lane, permitting straight-through movements for buses only.

Both of these techniques can be used to improve transit travel times and reliability.

BRT is new to Maryland, but not to many communities around the world. American cities such as Pittsburgh and Seattle have long benefited from BRT, which can provide the following:

- Lower capital cost
- Cost-effective alternatives
- High-quality service
- High-performance rapid transit service that can be quickly implemented
- Medium- to high-capacity service

LRT is an electric railway system that can operate single cars or short trains. LRT can operate in shared lanes, like traditional streetcars, or in a separate right-of-way. When light rail operates on existing streets in dedicated rights-of-way, signal priority can be used to ensure that the LRT vehicles are not delayed by traffic signals.

A growing number of cities in the United States have LRT systems, including Dallas, Portland, Denver, St. Louis, and San Diego. LRT systems can provide the following:

- Cost-effective alternatives
- High-quality service
- High-performance rapid transit services
- High-capacity service

LRT in Houston



For each mode, low, medium, and high investment alignment alternatives are being evaluated, representing increasing levels of capital investment. All of the Build alternatives extend the full length between the Bethesda Metro Station and the New Carrollton Metro Station. The intent is that these alternatives, while all serving the same markets and providing improvements in the quality of the transit service

through improved operating speeds and reliability, vary in the type of running way (shared, dedicated, or exclusive) and amounts of grade separation (tunnel or aerial structure).

Types of Running Way

Shared means that the transit vehicles operate on the street mixed in with regular traffic.

Dedicated means that the lanes are intended for the sole use of transit vehicles, but these lanes can be easily crossed by pedestrians and other vehicles or used by emergency vehicles. Dedicated lanes are often indicated by pavement markings, signage, or different pavement treatments.

Exclusive lanes are not accessible to other vehicles. They are usually physically separated from other traffic, either by being in a tunnel or on an aerial structure, or if in or alongside an existing roadway, by barriers of some kind.

This framework will enable evaluation of the incremental mobility benefits and changes in environmental and community effects relative to incremental capital costs.

Much of the Purple Line alignments would run along existing roadway rights-of-way. Medium and high investment alternatives would have some tunnel sections that would not necessarily follow roadway alignments. With the exception of the Low Investment BRT Alternative, all Build alternatives follow the former Georgetown Branch railroad right-of-way, (often referred to as the Master Plan alignment because of its adoption in the Georgetown Branch Master Plan in 1986); in combination with a one-mile segment along the CSX Metropolitan Branch

railroad right-of-way between Bethesda and Silver Spring.

2.3. Alignments

Several specific alignments initially suggested received substantial negative feedback from the public as well as city and county councils during the scoping process.

The segment of MD 410, extending east from Bethesda and continuing east of Silver Spring, was not carried forward due to several factors, including a very narrow right-of-way that would have extensive property impacts, grades that were very steep and on which it would be difficult for light rail transit to operate, opposing comments from a large segment of the public, and a City of Takoma Park resolution in October 2003 that recommended elimination of this alignment from further study. In addition, this alignment east of Silver Spring would not have served the Flower Avenue area, which Montgomery County has targeted for improved transit to support economic development and revitalization. The Flower Avenue area is a small commercial area, also known as Long Branch centered on the intersection of Flower Avenue and Piney Branch Road. The Arliss Street station is in this area and would provide improved access to the businesses for customers.

An underground alignment extending from Paint Branch Parkway and Good Luck Road to Riverdale Road along Brier Ditch was eliminated from further consideration due to concerns from the U.S. Army Corps of Engineers (USACE) about impacts to wetlands in the area.

Another alignment presented at the scoping meetings that received strong opposition from the surrounding community and the City of New Carrollton was an alignment that extended from Riverdale Road and continued behind the New Carrollton Mall and Shopping Center. This

alignment was not carried forward due to this opposition and the potential for greater community impacts than the other alignments under study.

The screening process was iterative throughout the study and included consideration of natural and social environmental impacts, preliminary cost estimates, and input from the public and agencies. As described earlier, the Purple Line study had an extensive public outreach program and met regularly with local community representatives and local jurisdictions. The alignments were refined extensively based on this input.

An example of this type of refinement was the modification of the original Silver Spring/Thayer Avenue design option. This alignment originally cut through the center of Montgomery County Public Parking Lot #3 on Fenton Street, which the County planned for redevelopment. The MTA coordinated with the County and the developer to modify the alignment so as not to preclude the proposed development.

A number of other alternatives were dropped from further consideration as part of the AA/DEIS process. The following is a brief discussion of why these alignment options have been dropped from further consideration.

The Metrorail (or Purple Line) Loop

The Metrorail Loop alignment was proposed by Montgomery County Executive Duncan in January 2003. This proposed Metrorail (heavy rail) alignment would have extended from the existing Medical Center Metrorail Station in Bethesda north via a tunnel under the Capital Beltway and along the north side of the Beltway, primarily on an aerial structure. It would then cross back over the Beltway, continuing south along the Metropolitan Branch CSX corridor either in a retained cut or in a tunnel to the Silver Spring Transit Center (SSTC). This alignment

would be a continuation of the Metrorail Red Line and, as such, it would have been heavy rail and would not have continued past the Silver Spring Transit Center in the same mode.

Both the MTA and M-NCPPC carried out assessments of this proposed alignment.

The MTA concluded that while the Metrorail Loop could improve operations and provide redundancy for the Metrorail Red Line; these advantages would not have applied to the Purple Line corridor as a whole. Implementation of the Metrorail Loop would not have addressed the issues of system connectivity, mobility, accessibility, and efficiency for the entire corridor that are part of the Purple Line Purpose and Need. Passengers traveling between the Metrorail Loop and destinations east of Silver Spring would have been required to transfer from the Metrorail Loop to BRT or LRT to complete their travel farther east. This alignment would not have provided continuous service for destinations between Bethesda and New Carrollton and would not have addressed the issues of an inadequate and slow-moving transportation network for east-west travel between Bethesda and New Carrollton. Further, substantial natural and human environmental impacts are associated with the Metrorail Loop option. This alignment would have required acquisition of right-of-way from Rock Creek Park along the Capital Beltway. This alternative would have also required property from approximately 25 residences along the CSX right-of-way. The Metrorail Loop would not have supported economic and community development west of Silver Spring because there would be no stations at the Chevy Chase and Lyttonsville communities. Moreover, this alignment would have been a less cost-effective solution to addressing the transportation problems and needs associated with the Purple Line corridor compared to a BRT or LRT alternative for the entire 16-mile corridor. The

Metrorail Loop Proposal Alignment Evaluation is included in the *Definition of Alternatives Report*.

In January 2003, M-NCPPC issued a report recommending that the Metrorail Loop not be carried forward for further study. While recognizing the benefits to the existing Metrorail system, M-NCPPC recommended that the proposal not be carried forward due to a number of considerations. These included: the high cost of the project (estimated at twice that of the Purple Line), lower cost-effectiveness, greater impacts to the natural environment, the inability to serve communities between Bethesda and Silver Spring, and impact to the outer Red Line stations (stations north of Medical Center and Silver Spring). The *M-NCPPC Purple Line Loop* memorandum is included in the *Definition of Alternatives Report*.

LRT on Jones Bridge Road

The availability of the Georgetown Branch right-of-way, owned by Montgomery County and designated for use as a transitway and trail, and the potential to build a transitway within a nearly exclusive operating environment with few grade crossings, provide the opportunity for a transit service unimpeded by traffic conflicts and therefore allowing for reliable service and faster travel times between Bethesda and Silver Spring. However, the capital cost of constructing a transitway and trail along this alignment is relatively high, so a lower cost BRT alternative using Jones Bridge Road is being considered between Bethesda and Rock Creek. This alternative consists of in-street running BRT along Jones Bridge Road and Jones Mill Road and along Woodmont Avenue west of Jones Bridge Road connecting to downtown Bethesda. For BRT this is indeed lower cost, since the buses would be operating on existing roadways; however, light rail service along Jones Bridge Road would require reconstruction of the street



for the installation of rails and catenary, and therefore would not offer the same savings over the Master Plan alignment. For this reason, Jones Bridge Road is not being considered for light rail.

BRT and LRT on Brookville Road

An alternative along Brookville Road had been proposed as a lower cost alternative, particularly for BRT, which could operate on the existing road. However the need to construct a transitway from Brookville Road along the CSX tracks would have negated the savings and resulted in additional property impacts. In addition, the Brookville Road alignment would have slower travel speeds and potential traffic conflicts with existing traffic for both BRT and LRT. The alignment also interfered with the layout of the maintenance and storage facility on Brookville Road.

16th Street to East West Highway to Colesville Road (BRT only)

In this low investment BRT option the buses left the CSX corridor at 16th Street and continued on 16th Street to East West Highway and then on to Colesville Road to Wayne Avenue. This option had very poor travel times because of high levels of traffic and several major intersections. The Spring Street to 2nd Avenue at-grade option provides much faster service with similar costs.

BRT and LRT from CSX at Spring Street to 2nd Avenue to Wayne Avenue

The LRT option required an aerial structure over Colesville Road because of steep grades on 2nd Avenue. This alignment had no direct connection with the Silver Spring Transit Center and would have required passengers to walk through or around the proposed private development to reach the Transit Center. This poor connectivity is contrary to the goals of the Purple Line. The structure would have had high costs, impacts to

the residences on 2nd Avenue, visual impacts to downtown Silver Spring, and traffic impacts to access into the Metro Plaza building. The BRT aerial crossing of Colesville Road along 2nd Avenue was also dropped due to high costs and impacts to adjacent properties.

Tunnel from Sligo Avenue and Piney Branch Road Directly to Takoma Langley Crossroads

This alignment followed Sligo Avenue to Piney Branch Road where it descended into a tunnel along the alignment of Park Valley Road and emerged near the intersection of University Boulevard and Anne Street. It would have been aligned to have a station near Columbia Union College and Washington Adventist Hospital in Takoma Park. This alignment was dropped because it did not support the Montgomery County Master Plans for economic redevelopment of the Flower Avenue station area. As noted earlier, the Flower Avenue area is a small commercial area, also known as Long Branch centered on the intersection of Flower Avenue and Piney Branch Road. The Arliss Street station is in this area and would provide improved access to the businesses for customers.

In addition, this alignment would be very costly compared to other alternatives. At the public meetings there was almost no public support for a station near the college and the hospital along this alignment option.

Sligo Avenue in East Silver Spring, both At Grade, and in Tunnel

The Purple Line alignment on Sligo Avenue at grade would have poor transit operations and major traffic impacts requiring either operation in shared lanes or one-way traffic. The traffic and parking impacts would have adversely impacted the 30 small businesses along this street. The narrow right-of-way would have necessitated substantial property impacts and easements. The

Wayne Avenue at grade option provided a similar low investment surface option that would operate far better and have fewer community impacts.

A tunnel option under Sligo Avenue was also dropped. This was a high-cost option and would have had required substantial property easements. Tunnel segments of shorter lengths and less cost could be used more effectively on the Wayne Avenue or Silver Spring/Thayer alignments.

All Alignments along Colesville Road from the Silver Spring Transit Center

Several alignments were presented at scoping that would follow Colesville Road from the Silver Spring Transit Center. One alignment followed Colesville Road north to University Boulevard in Four Corners and turned south at the signalized intersection at University Boulevard. Another alignment followed Colesville Road north to East Franklin Avenue and traveled east to Flower Avenue and then south to Piney Branch Road to University Boulevard. A third alignment followed Colesville Road to East Franklin Avenue and then to University Boulevard.

Colesville Road is six lanes wide with a reversible center lane. It is a heavily used major arterial. Surrounding land uses are generally single-family residential, except in the Silver Spring CBD. The extremely heavy traffic on Colesville Road and constrained right-of-way would make it very difficult to implement dedicated or exclusive lanes for transit. In the 1990s, the Montgomery County Department of Transportation conducted a feasibility study for a busway on US 29 (Colesville Road). After this study, both the Montgomery County Council and M-NCPPC recommended that US 29 not be considered for either a busway or LRT. Because this alignment extends north above the Purple

Line corridor and then comes south again before continuing east, it adds more than a mile of additional distance to the alignment. As a result, this alignment significantly lengthens the travel time and increases the operating cost, both of which are counterproductive to the project's goal of providing rapid transit service east-west in the corridor. For these reasons, this alignment was not being retained for detailed study.

Longer Tunnels under Wayne Avenue

Communities members concerned about the impacts of a tunnel portal on Wayne Avenue near Dale Drive requested that the MTA evaluate a longer tunnel. Two tunnels were considered, both descending into tunnel from Silver Spring Avenue west of Georgia Avenue. The first tunnel considered would have passed under Sligo Creek. However, because of the depth required to tunnel under the creek, and the rapidly rising topography east of the creek, this tunnel would not have been able to return to the surface until the alignment was on Piney Branch Road, at Barron Street. This would have been extremely expensive and would not have provided meaningful travel time benefits, therefore would have had substantial negative impacts to the cost-effectiveness of the project. The cost of underground stations is likewise very high, further escalating the cost of this option. For this reason this option was dropped. A second, shorter tunnel with a portal on Wayne Avenue between Sligo Creek and Mansfield Street was evaluated in an effort to find a more feasible option. This option, while less costly, would have had major adverse impacts to the residences on the south side of Wayne Avenue. These houses are above the grade of the roadway, with short steep driveways. The street widening required for a tunnel portal would have required property acquisitions from the front yards and driveways of these houses, and retaining walls in these yards. This option also required property from Sligo Creek Park. This tunnel did not

provide any travel time benefits, and added to the project cost. For both tunnel options the addition of stations was an issue. The high cost of underground stations weighed against their inclusion, but if stations were not included in these alignments the communities would not benefit from the project and ridership would be lower. It was determined that these tunnels did not provide sufficient benefit and had such a detrimental effect on the cost that further study was not justified.

University of Maryland Campus Alignment on Paint Branch Drive

This alignment followed University Boulevard northeast to Paint Branch Drive. At Paint Branch Drive it turned south, passing the University of Maryland's Comcast Sports Arena, and joined Campus Drive on the eastern edge of campus. While this alignment would have served the sports arena well and would have been heavily used during special events, it did not serve the central core of the University of Maryland campus. The campus is quite large and a central station location is more convenient for the greatest number of people.

Paint Branch Parkway to Kenilworth Avenue

This alignment continued east from River Road, just north of the College Park Metro Station on Paint Branch Parkway to Kenilworth Avenue. This alignment did not have good connectivity to the Metro Station and did not serve the University of Maryland's research park, M-Square, currently under construction along River Road. This research park will be a major ridership market.

In addition, Paint Branch Parkway is surrounded by wetlands and parklands. As a result, this alignment option would have had much greater environmental impacts and Section 4(f) issues than the River Road alignment option.

Section 4(f)

Since the mid-1960s, federal transportation policy has reflected an effort to preserve the beauty and integrity of publicly-owned public parks and recreation areas, waterfowl and wildlife refuges, and historic sites considered to have national, state, or local significance. The Department of Transportation Act of 1966 (DOT Act) included a special provision to carry out this effort: Section 4(f).

Section 4(f) of the DOT Act stipulated that the Federal Highway Administration (FHWA) and other DOT agencies cannot approve the use of land from a significant publicly-owned public park, recreation area, wildlife or waterfowl refuge, or any significant historic site unless the following conditions apply:

- There is no feasible and prudent alternative to the use of land.
- The action includes all possible planning to minimize harm to the property resulting from use.

Paint Branch Parkway to CSX Corridor to East West Highway

This alignment paralleled the CSX and WMATA alignments south from the College Park Metro Station and turned east on East West Highway. This alignment required the use of the CSX right-of-way. CSX has stringent separation requirements that would have added considerably to the project cost. It also did not serve the University's M-Square Research Park currently under construction along River Road.

River Road to Lafayette Road serving Riverdale MARC Station

The MTA evaluated several alignments, which paralleled the CSX tracks along Lafayette Road to the Riverdale Station of the Camden MARC line before turning left onto East West Highway. While these alignments provided connectivity to the Riverdale Station, and could have supported economic development at this location, the alignment was constrained by the existing residential development and narrow roadways. The engineering constraints added between four and eight minutes of travel time between College Park and Riverdale Park over the at grade and tunnel options.

River Road to 51st Avenue to East West Highway

This alignment followed River Road from the College Park Metro Station and proceeded on a new surface alignment south connecting to 51st Avenue to East West Highway. This alignment presented Section 4(f) issues with impacts to Anacostia River Park. 51st Street is a small residential street, and an alignment on it would have had major community impacts. These impacts are easily avoided by using other alignments; therefore this alignment was dropped from further consideration.

Tuckerman Street between Kenilworth Avenue and Veterans Parkway

This alignment began at the intersection of Kenilworth Avenue and River Road and proceeded east in a tunnel under Tuckerman Street with a narrow right-of-way under residences and commercial and county structures, and then crossed under East West Highway and emerged on Veterans Parkway. This alignment was dropped because of high costs and many required underground easements, and because it bypassed an important transit stop at Kenilworth Avenue and East West Highway.

Riverdale Road from Veterans Parkway to Annapolis Road

The Riverdale Road alignment was an option for BRT only because of the steep grades. The alignment had travel times approximately 40 percent longer than those for Veterans Parkway because of the cross streets and the narrower, tight curves of the roadway. Unlike Veterans Parkway, there were potential residential impacts. This option was strongly opposed by residents of the area and by the City of New Carrollton. Given the existence of a viable surface alternative on Veterans Parkway, this alignment was dropped.

Constrained Long Range Plan

The Federal Highway Administration (FHWA) and the Federal Transit Administration (FTA) mandate that each urbanized area with a base population of 50,000 or more must have an organized planning process that results in a transportation plan consistent with the planned development for the area. The Constrained Long Range Transportation Plan includes all regionally significant transportation projects and programs that are planned and funded in the region through the next 25 years.

Annapolis Road to Emerson Place

This alignment option began at Annapolis Road and Harkins Road, but left Harkins Road to pass to the west of the Internal Revenue Service building and parking structure, then continued on Emerson Place. This alignment was dropped because of its greater potential for community impacts and because it was not substantially different from the Harkins Road alignment, which has few impacts to local residents. This



alignment was opposed by the West Lanham Hills community.

2.4. Alternatives Retained for Detailed Study

The Purple Line study is evaluating a No Build alternative, a Transportation Management System Alternative, and six Build alternatives.

2.4.1. Alternative 1 – No Build Alternative

Federal regulations require that a No Build alternative be evaluated in an Environmental Impact Statement (EIS). For NEPA purposes, the No Build alternative is the baseline against which the other alternatives are compared for the extent of environmental and community impacts. The No Build alternative assumes that no new improvements would be made to the transportation system in the study corridor, other than those that are currently in local and regional transportation plans and that have identified funds for implementation by 2030. Thus it consists of the transit service levels, highway networks, traffic volumes, and forecasted demographics for the horizon year of 2030 that are assumed in the Constrained Long Range Plan (CLRP) of the local metropolitan planning organization (MWCOC, in this case).

The western segment of the Purple Line, the former Purple Line West, Bethesda to Silver Spring, is in the CLRP as a project; the eastern portion, Purple Line East, Silver Spring to New Carrollton, is in the CLRP as a study. However, the Purple Line is not assumed as part of the No Build travel demand model.

The following two projects in the CLRP are major projects in Maryland, but not in the Purple Line corridor:

- The Intercounty Connector is the major highway project in the area and is not expected to have a measurable impact on

travel within the Purple Line corridor as it serves different travel markets. Likewise, planned US 29 intersection changes are also not expected to have an impact on the Purple Line.

- The Corridor Cities Transitway (CCT) from Shady Grove to COMSAT is a committed study, but it is sufficiently far

Maryland Consolidated Transportation Program

The Maryland Department of Transportation’s (MDOT) Consolidated Transportation Program (CTP) is a compilation of all transportation projects currently funded for construction or development and engineering by Governor Martin O’Malley. These projects are funded utilizing the financial resources of the State’s Transportation Trust Fund. The Transportation Trust Fund is used to pay for State capital transportation projects throughout Maryland. It is fueled by revenues from State vehicle titling and registration fees, gas taxes, a portion of the corporate income tax and federal funds.

Each fall, at the direction of the Governor, the Transportation Secretary and senior members of the MDOT staff travel to every county in the State, and Baltimore City, to meet with elected officials and citizens. The purpose of these meetings is to brief members of the community and obtain their input on transportation enhancements planned for a specific county or region over the six-year period covered by the CTP. With this input, a final CTP is developed and submitted to the General Assembly each year for its approval.

from the Purple Line that there is not expected to be any synergy between the two. It should be noted that the CCT is not included in the future transportation network in the travel forecasting model.

Highway, transit, pedestrian, and bicycle projects and studies in the Purple Line corridor included in the Maryland Consolidated Transportation Program (FY 2007-2012) within the corridor are as follows:

- US 1 (Baltimore Avenue): Reconstruct US 1 between College Avenue and Sunnyside Avenue to improve traffic

operations, pedestrian circulation, and safety; it would also accommodate planned revitalization within College Park (project)

- New Hampshire Avenue/University Boulevard: Streetscape and safety improvements for MD 650 from Holton Lane to Merrimac Drive and MD 193 from 800 feet west of MD 650 to 800 feet east of MD 650 (project)
- Construction of the Silver Spring Green Trail, an 8-foot-wide bicycle/pedestrian trail on Wayne Avenue from the Silver

Silver Spring Transit Center



Spring CBD to Sligo Creek Parkway (project)

- Bethesda Bikeway and Pedestrian Facilities, streetscape improvements (project)
- College Park Trolley Trail, construct shared-use path (project)
- I-95/I-495, Capital Beltway, from American Legion Bridge to Woodrow Wilson Bridge (study)
- UM Connector, I-95/495 to University of Maryland (study)
- Widening of Kenilworth Avenue from four to six lanes north from River Road to Pontiac Street (project)

Other committed projects in the Purple Line corridor include the following:

- Construction of the Silver Spring Transit Center. This project provides a fully integrated Transit Center at the Silver Spring Metrorail Station. It includes construction of bus bays for Metrobus and Ride On, an intercity bus facility, a taxi queue area, a kiss-and-ride facility, and a MARC ticketing office. Provision is also made for the Purple Line and a hiker/biker trail.
- Construction of the Takoma/Langley Transit Center. The project is a joint effort between MTA and SHA. It will include pedestrian safety, roadway and intersection improvements, new sidewalks and crosswalks, and the provision of shelter for patrons awaiting buses. The Transit Center will be on the northwest corner of the University Boulevard and New Hampshire Avenue intersection in Langley Park. This Transit Center would be a station on the Purple Line.

- Design and construction of a new entrance to the Bethesda Metro Station mezzanine at the south end of the platform.

WMATA is currently pursuing additional joint development projects at the College Park and New Carrollton Metro Stations. These projects will be mixed-use developments that will take advantage of the Metro stations to provide improved mobility and accessibility. The market for transit at these stations is expected to grow.

The recent decision to close Walter Reed Army Hospital and move a large number of staff and services to the National Naval Medical Center under the Base Realignment and Closure (BRAC) will create a slightly larger market for transit at the Bethesda and National Institutes of Health (NIH) Metro Stations. The National Naval Medical Center anticipates an increase of approximately 2,200 to 2,500 employees of which an estimated 60 new riders would use the Purple Line.

Existing Transit Service

Existing transit operating east-west within the corridor consists of several overlapping or interconnecting routes, as shown in Figure 2-1. WMATA operates regional routes, those that are inter-jurisdictional, while each of the counties operates local routes. Table 2-1 lists the existing east-west transit services and their general characteristics.

2.4.2. Alternative 2 – TSM Alternative

As described by the FTA, transportation system management (TSM) alternatives are relatively low-cost approaches to addressing transportation needs in the corridor. The TSM alternative represents the best that can be done for mobility without constructing a new transit guideway. Generally, the TSM alternative emphasizes upgrades in transit service through operational

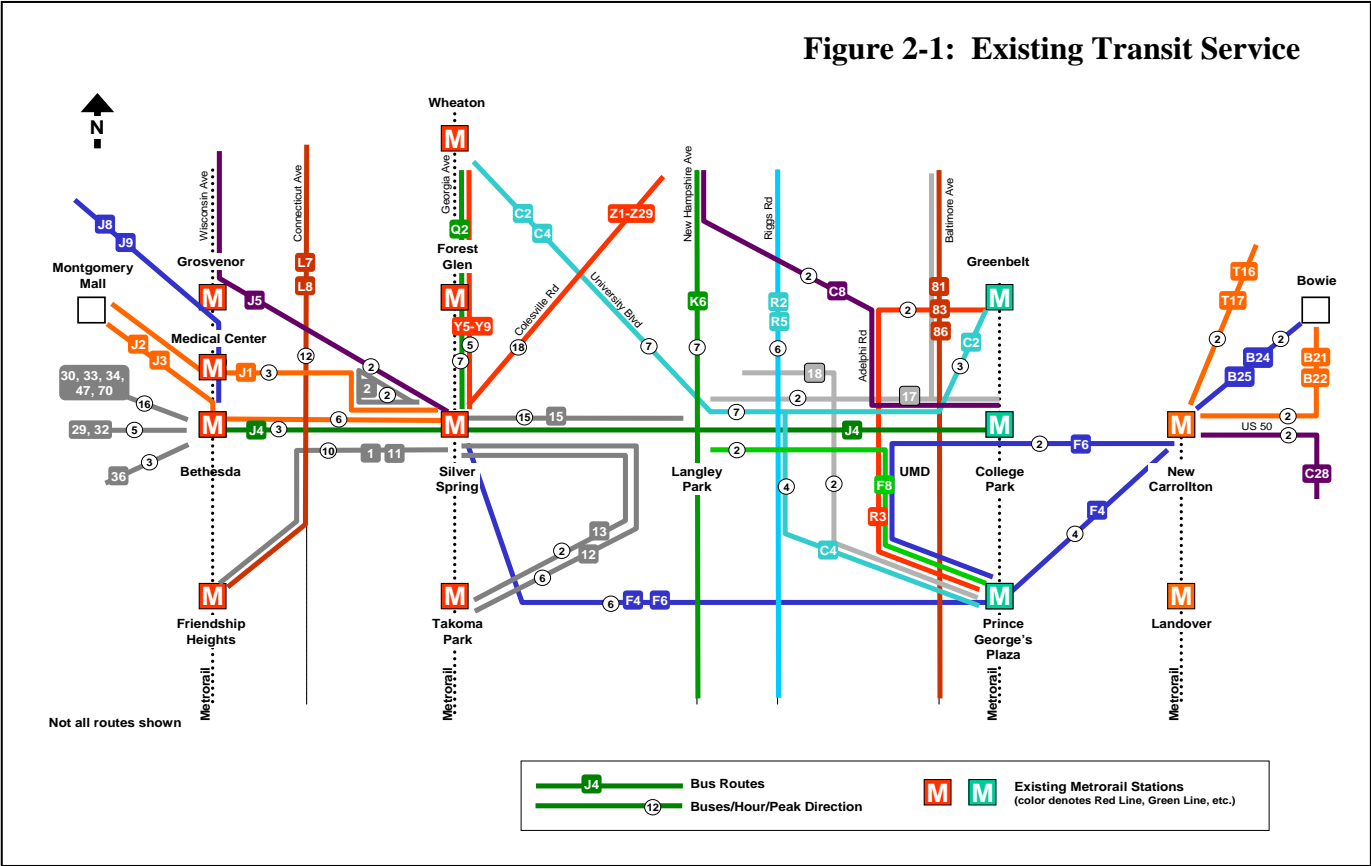


Table 2-1: Existing East-West Transit Service

Route	Terminal and Intermediate Points	Headways (minutes)					
		Early Morning	AM Peak	Midday	PM Peak	Evening	Weekend
J1, J2, J3	Montgomery Mall – Bethesda - Silver Spring	10	6	20	7	30	20
J4	Bethesda Metro – Silver Spring – College Park Metro	--	20	--	20	--	--
C2	Wheaton Metro – Greenbelt Metro	--	20	30	16	--	24
C4	Twinbrook Metro – Prince George’s Plaza Metro	10	15	30	16	30	24
F4	Silver Spring – New Carrollton	12	12	40	15	--	30
F6	Silver Spring – New Carrollton	--	20	40	30	--	--
Ride On 15	Silver Spring Metro – Langley Park	15	4	12	4	30	12
TheBus 17	Langley Park–UM–College Park Metro	45	45	45	45	--	--
UM Shuttle 111	UM – Silver Spring Metro	--	35	75	45	30	--
UM Shuttle 104	UM – College Park Metro	8	8	12	8	20	20



and small physical improvements, plus selected roadway upgrades through intersection improvements, minor widenings, and other focused traffic engineering actions. A TSM alternative normally includes such features as bus route restructuring, more frequent bus service, expanded use of articulated buses to reduce crowding for passengers, bus lanes, special bus ramps on freeways, expanded park-and-ride facilities, express and limited-stop service, signalization improvements, and improved transfer operations. While the scale of these improvements is generally modest, TSM alternatives may cost tens of millions of dollars while guideway alternatives range up to several hundreds of millions or billions of dollars.

TSM alternatives are important components of transit studies because they provide a baseline against which all major investment alternatives are evaluated for the FTA’s New Starts program. The most cost-effective TSM alternative generally serves as the baseline against which the selected Build alternative is compared during the New Starts rating and evaluation process. This process begins when the MTA applies for permission to initiate preliminary engineering and continues through final design.

The TSM service would provide faster one-seat rides between major activity centers, including Medical Center Metro Station, Bethesda Metro Station, Silver Spring Metro Station, Takoma Park, Langley Park, University of Maryland, College Park Metro Station and New Carrollton Metro Station. This route would also serve transfers to bus routes operating on radial streets, including those on Wisconsin Avenue, Connecticut Avenue, Colesville Road, Georgia Avenue, New Hampshire Avenue, Riggs Road, US 1, and Annapolis Road. It would serve the long-haul trips now carried by WMATA J2/J3, Ride On 15, and to WMATA C2/C4; and is estimated would serve nearly 80 percent of the

passengers now boarding those existing routes along this corridor.

The TSM alternative would include improved bus service in the Purple Line corridor and a new through-route from Bethesda to New Carrollton replacing the existing J4 route and overlaying service on portions of the F4/F6 routes between College Park and New Carrollton. A combination of limited stop, and selected intersection and signal improvement strategies would be the core of service improvements. Sixty-foot articulated buses would be used.

The TSM service would operate as single route between Bethesda and New Carrollton generally following the routing of the Purple Line Build alternatives to provide comparable coverage for the intended markets, see Table 2-3. From Bethesda, the TSM route would operate along East West Highway (Montgomery Avenue eastbound between Woodmont and East West Highway) and Colesville Road to the Silver Spring Transit Center, then follow Wayne Avenue, Flower Avenue, and Piney Branch Road to University Boulevard. From there, the TSM route would operate along University Boulevard until the University of Maryland campus, following Campus Drive through campus and continuing on Paint Branch Parkway to the College Park Metro Station. After serving the station, the TSM route would continue on River Road, Kenilworth Avenue, East West Highway, Riverdale Road, Veterans Parkway, and Harkins Road to the west side of the New Carrollton Metro Station. Westbound the TSM route would follow Harkins Road to Annapolis Road back to Veterans Parkway and continue in the reverse order of the eastbound route described above.

As a limited-stop service, TSM bus stops would be located, west to east, at the Bethesda Metro Station, Connecticut Avenue, Grubb Road, Silver Spring Transit Center, Fenton Street, Dale Drive, Manchester Place, Arliss Street, Gilbert Street,

Takoma/Langley Transit Center at New Hampshire Ave, Riggs Road, Adelphi Road, University of Maryland campus on Campus Drive, US 1, College Park Metro Station, River Road, Riverdale Park, Riverdale Road, Annapolis Road, and New Carrollton Metro Station. Each stop would be enhanced with upgraded amenities including new and enlarged shelters, concrete pads meeting ADA requirements, bus and local information, and Next Bus information. The concept is to provide a branded, easily identifiable set of bus routes and bus stops for the enhanced service and to improve those selected bus stops to best serve the passengers using the service. A map with proposed TSM stop locations is shown in Figure 2-2.

TSM Service Plan

The TSM service is envisioned to be six-minute peak and ten-minute off-peak throughout the corridor (Table 2-2). With six-minute headways and 15 percent vehicle spares, 68 vehicles would be required to operate the TSM service.

Hours of Operation and Headways

Because of the importance of the serving trips that interface with the Metrorail services intersecting the Purple Line corridor, the TSM span of service would match the Metrorail span of service. The Metrorail system opens at 5 AM on weekdays and 7 AM on weekends. It operates until midnight Sunday through Thursday and until 3 AM on Fridays and Saturdays. The fare structure for the TSM service would be the same

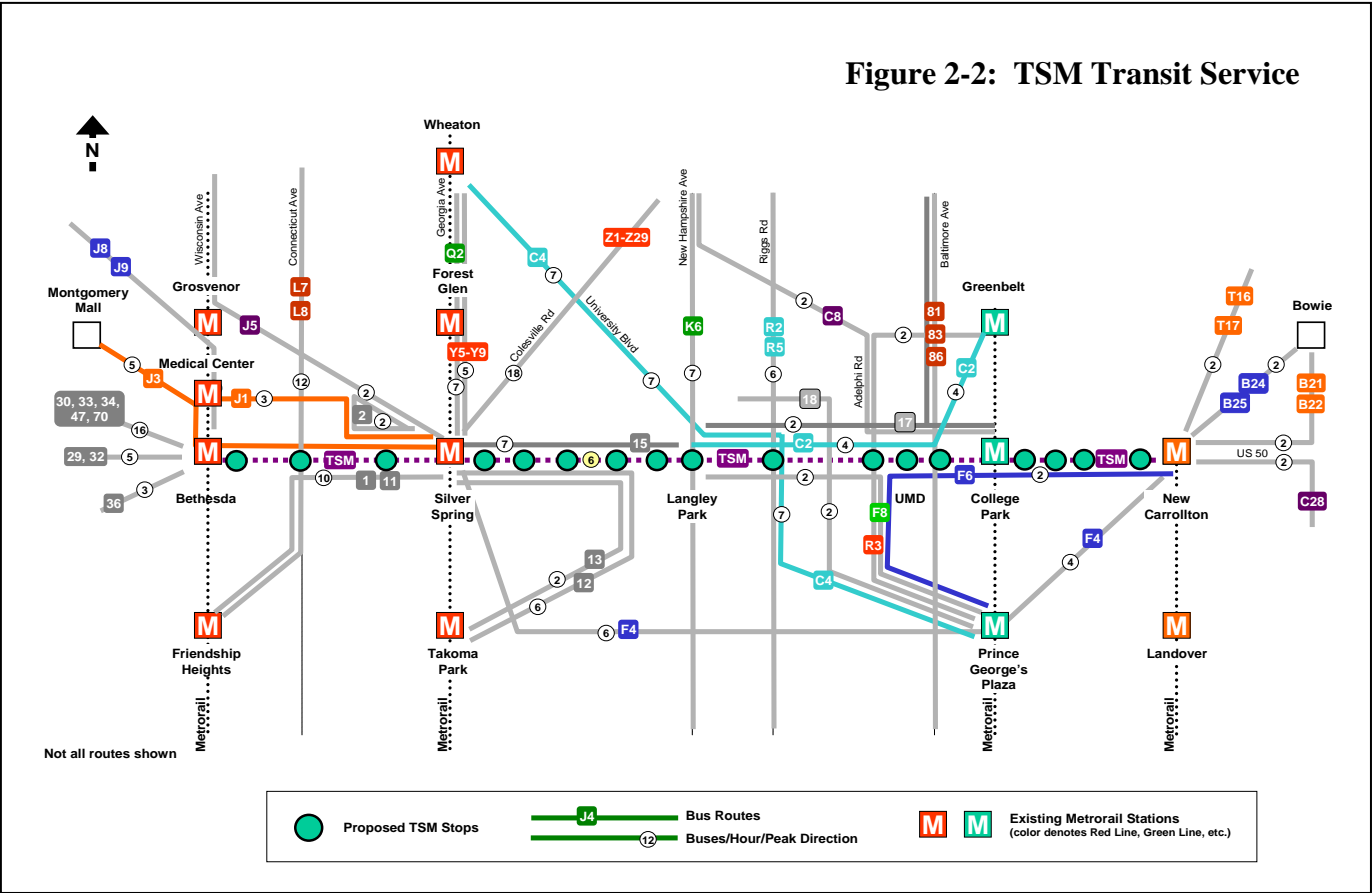


Table 2-2: TSM Bus Headways

Route	Terminal and Intermediate Points	Headways (minutes)					
		Early Morning	AM Peak	Midday	PM Peak	Evening	Weekend
TSM	Bethesda – New Carrollton	10	6	10	6	10	10
J1	Medical Center – Silver Spring	--	20	--	20	--	--
J3	Eliminate; replace with Ride On 15 service	--	--	--	--	--	--
C2	<i>Terminate at Langley Park</i> Langley Park – Greenbelt	30	15	20	15	30	30
C4	Twinbrook Metro – Prince George’s Plaza Metro	10	8	15	8	20	20
F4	Silver Spring – New Carrollton	12	10	30	10		30
F6	<i>Terminate at Prince George’s Plaza</i> Prince George’s Plaza – New Carrollton	--	15	30	15	--	--
Ride On 15	Bethesda – Langley Park (<i>extend to Bethesda</i>)	15	15	15	15	30	15
TheBus 17	Langley Park–UM–College Park Metro	45	45	45	45	--	--

as under the No Build alternative, recognizing that fares would increase over time. SmartCard, or some other means of electronic fare collection, may enable an integrated fare structure and convenient transfer with other transit services in the corridors.

Transit Travel Times

End-to-end, the TSM route is 16 miles long, requiring about 108 minutes of running time with an average round trip speed of 9 miles per hour. Today, the bus routes along the alignment, J4, F4, and F6, operate in very difficult circumstances with a wide range of times in each direction and between the AM and PM. Anecdotal reports from WMATA indicate that the J4 route may require 50 percent more time than scheduled on certain runs to complete its trip. These conditions complicate schedule preparation and operations planning. It is assumed TSM measures would somewhat mitigate these conditions; however, 2030 projected traffic volumes and traffic congestion levels will be far greater than they are today.

There is only limited opportunity for improving transit service travel times and reliability using signal preference strategies along the Purple Line corridor. The major radial roadways that cross the corridor, such as Rockville Pike, Connecticut Avenue, Georgia Avenue, New Hampshire Avenue, Kenilworth Avenue, and US 1, are the major sources of delay at intersections. These roadways carry very heavy traffic flows into and out of the District of Columbia and other major activity centers. There is very little opportunity to introduce signal preferences at these intersections without causing major exacerbation of traffic conditions. Queue jump lanes, however, do provide a travel time advantage enabling transit vehicles to get to the intersection and limit the delay to one or two traffic signal cycles.

Transit service to the Bethesda Naval Hospital/National Institutes of Health area would be provided from Silver Spring and points east through the enhanced J1 service with queue jump lanes and operational or service modifications. The Metrorail Red Line Medical Center Station

would continue to provide connectivity to the entire rail-bus network.

2.4.3. Build Alternatives

The following section describes various alignments at low, medium, and high levels of investment. Several design options (e.g., tunnel segments, aerial, and at-grade alternative horizontal alignments) would serve the same market.

All alternatives would extend the full length between the Bethesda Metro Station in the western portion of the corridor and the New Carrollton Metro Station in the east, with variations in alignment location, type of running way (shared, dedicated, or exclusive), and amount of grade separation. The decision whether to construct dedicated lanes depends on the ability of the service to operate reasonably well without dedication, and on the cost, in dollars or impacts.

Each alternative is identified by the level of investment. A matrix summarizing the BRT alternatives is presented in Table 2-3 and a matrix summarizing the LRT Alternatives is presented in Table 2-4.

While six end-to-end alternatives have been defined and evaluated for the project, the Locally Preferred Alternative could be composed of an assortment of segments from alternatives at different levels of investment.

All alternatives would include incorporation of signal priority and/or queue jump lanes at major intersections where feasible, if the analysis demonstrates that such priority provides significant time savings or reliability.

It should be noted that all alignments that would use the Georgetown Branch right-of-way (the Master Plan alignment) include construction of a parallel multi-use trail within the Georgetown Branch right-of-way.

Hiker Biker Trail

All the alignments except the Low Investment BRT would include construction of a permanent trail facility alongside the transitway between Bethesda and the Silver Spring Transit Center. This trail would be built following Montgomery County standards for trail design; a 10-foot-wide paved trail with 2-foot shoulders. Between 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. Access to the trail would be provided at various points along the way, as would crossings over the transitway. The MTA has set a goal of maintaining a landscaped buffer of approximately 10 feet between the trail and the transitway and, wherever possible, the trail would be built at a slightly higher elevation than the transitway. A barrier, either a fence or a wall, would separate the trail and transitway. All alignments, including the Low Investment BRT, include construction of the trail from Jones Mill Road to the Silver Spring Transit Center. The trail would cross the CSX right-of-way on a new pedestrian bridge east of the existing Talbot Avenue bridge. After crossing the CSX right-of-way the trail would continue on the north side to the Silver Spring Transit Center.



Table 2-3: Summary of BRT Alternatives

	Bethesda / Chevy Chase			Silver Spring			
TSM Alternative	The TSM goes from the Bethesda Metro Station (north entrance)out to Woodmont Avenue to Montgomery Lane to East West Highway.		The TSM would operate in mixed traffic, with signal priority treatments implemented where possible to increase schedule adherence. Westbound buses could use existing right-turn lanes to bypass queuing at Jones Mill Road and 16 th Street.	At Colesville Road, the TSM would turn left and then right onto Wayne Avenue and right onto Ramsey Street to access the Silver Spring Transit Center. The TSM would operate in mixed traffic with signal priority, where possible.		The buses would exit the SSTC along Ramsey Street, and follow Wayne Avenue in shared lanes to Flower Street. Buses turn right onto Flower Street, operating in shared lanes until Piney Branch Road. Signal priority would be provided, where possible.	
BRT							
Alternative 3: Low Investment BRT	The transitway goes from the Bethesda Metro Station (north entrance) up Woodmont Avenue to Jones Bridge Road.	On Jones Bridge Road the buses are in shared lanes with queue jump lanes at key intersections.	At Jones Mill Road the transitway joins the Georgetown Branch right-of-way. A permanent trail will be constructed along the south side of the transitway. There will be two new bridges over Rock Creek, one for the transitway, one for the trail.	At the CSX corridor the transitway stays on the south side of the CSX corridor, while the trail crosses CSX on a new bridge near Talbot Street Bridge. The transitway crosses 16 th and Spring Streets at grade.	Transitway crosses CSX at Spring Street and continues on Second Avenue. Buses enter Silver Spring Transit Center from Ramsey Street.	The buses continue up Wayne Avenue in shared lanes, to Flower Avenue, then Arliss Street.	
Alternative 4: Medium Investment BRT	The transitway begins with a one-way counter clockwise loop on Pearl St, East West Highway, Old Georgetown Road, with a stop at the Bethesda Metro Station (north entrance) Edgemoor Lane, Woodmont Avenue on to Georgetown Branch right-of-way alignment. Under the Air Rights Building, there is a direct elevator connection to the Bethesda Metro Station (south entrance). The trail is on the north side of transitway from Pearl Street east.		The transitway follows the Georgetown Branch right-of-way. There will be two bridges over Connecticut Avenue, one for the transitway, and one for the trail, as well as two new bridges over Rock Creek. The transitway and trail go under Jones Mill Road. Just west of Jones Mill Road the trail crosses to the south side of the transitway.	At the CSX corridor the transitway stays on the south side of CSX corridor, while the trail crosses CSX on a new bridge near Talbot Street Bridge. The transitway crosses 16 th and Spring Streets at grade.	East of Falklands Apartments the transitway crosses over CSX tracks, to arrive at the Silver Spring Transit Center.	The buses leave the CSX right-of way on Bonifant Street at grade in dedicated lanes.	Wayne Avenue in shared lanes with added left turn lanes, to Flower Avenue, then Arliss Street.
Alternative 5: High Investment BRT	The transitway begins with a one-way counter clockwise loop on Pearl St, East West Highway, Old Georgetown Road, with a stop at the Bethesda Metro Station (north entrance) Edgemoor Lane, and Woodmont Avenue on to Georgetown Branch right-of-way. Under the Air Rights Building, there is a direct elevator connection to the Bethesda Metro Station (south entrance). The trail is on the north side of transitway from Pearl Street east.		The transitway follows the Georgetown Branch right-of-way. There will be two bridges over Connecticut Avenue, one for the transitway, and one for the trail, as well as two new bridges over Rock Creek. The transitway and trail go under Jones Mill Road. Just west of Jones Mill Road the trail crosses to the south side of the transitway.	At the CSX corridor the transitway stays on the south side of CSX corridor, while the trail crosses CSX on a new bridge near Talbot Street Bridge. The transitway crosses 16 th and Spring Streets below the grade of those streets.	East of Falklands Apartments the transitway crosses over CSX tracks, to arrive at the Silver Spring Transit Center.	Tunnel from Silver Spring Transit Center to Wayne Avenue at Cedar Street	Wayne Avenue at grade in dedicated lanes, with a tunnel under Plymouth to Arliss Street.
				(Design option) The transitway crosses to the north side of the CSX corridor in a tunnel and continues along the north side.	(Design option) Aerial crossing of CSX west of Falklands Apartments with an aerial structure along Metro Plaza.	(Design option) Silver Spring/ Thayer Avenue tunnel that emerges on Thayer Avenue behind East Silver Spring Elementary School.	

Table 2-3: Summary of BRT Alternatives (continued)

University Boulevard		UM / College Park		Riverdale Park			New Carrollton			
The TSM service turns left on Piney Branch Road and then right on University Boulevard, both in shared lanes. Signal priority would be provided, where possible. Eastbound and westbound buses could use the existing right-turn lanes / shoulder (where available) to bypass queuing.		The buses pass through the University of Maryland campus on Campus Drive and cross US 1 at Paint Branch Parkway. Signal priority would be provided where possible. Westbound buses could utilize the existing right-turn lane at Paint Branch Parkway and US 1 to bypass queuing.		The TSM service follows Paint Branch Parkway and River Road in shared lanes. The buses turn right on Kenilworth Avenue in shared lanes. The buses then turn left onto East West Highway into shared lanes. Buses could utilize existing right turn lanes at MD 410 / MD 295 ramp terminals to bypass queuing. Signal priority would be provided where possible.			TSM service continues onto Veterans Parkway in shared lanes. Westbound buses could use the existing right turn along Veterans Parkway at Riverdale Road to bypass queuing.	TSM service turns left on to Annapolis Road into shared lanes.	The TSM services reach the New Carrollton Station via Harkins Road in shared lanes to arrive at the New Carrollton Metro Station.	TSM Alternative
										BRT
The transitway turns left on Piney Branch Road and then right on University Boulevard, both in shared lanes.		The buses pass through the University of Maryland campus on Campus Drive and cross US 1 at Paint Branch Parkway.		The transitway follows Paint Branch Parkway and River Road in shared lanes. The buses enter the College Park Metro Station at the bus loop continuing on River Road in shared lanes.	The buses turn right on Kenilworth Avenue, southbound buses in a dedicated lane, northbound in shared lanes.	The buses turn left at East West Highway into shared lanes.	They continue on Veterans Parkway in shared lanes.	Turning left on Annapolis Road, the buses are in a dedicated lane westbound, and shared lanes eastbound.	The buses turn on to Harkins Road in shared lanes to arrive at the New Carrollton Metro Station.	Alternative 3: Low Investment BRT
The transitway turns left on Piney Branch Road and continues in dedicated lanes.	The buses turn right on University Boulevard, in dedicated lanes. All intersections are crossed at grade	The buses pass through the University of Maryland campus in dedicated lanes on Campus Drive.	At Regents Drive (the "M") the buses travel at grade in a new exclusive transitway through the parking lots adjacent to the Armory. At East Campus, the alignment crosses US 1 at grade on Rossborough Lane.	The transitway follows Paint Branch Parkway in shared lanes and enters the College Park Metro Station at the bus loop continuing on River Road in shared lanes.	The buses turn right on Kenilworth Avenue, both directions in dedicated lanes on the west side on the roadway.	The buses turn left at East West Highway in dedicated lanes.	Veterans Parkway in shared lanes. The crossing of Annapolis Road is at grade.	The buses turn left on to Ellin Road into dedicated lanes to arrive at the New Carrollton Metro Station.		Alternative 4: Medium Investment BRT
		(Design Option) Campus Drive to Preinkert Drive where the alignment turns south east and continues on new alignment between LeFrak Hall and the South Campus Dining Hall. The alignment continues east on Chapel Drive then on a new alignment to Rossborough Lane where it crosses US 1 at grade.								
The transitway turns left on Piney Branch Road and continues in dedicated lanes.	The buses turn right on University Boulevard in dedicated lanes, with bridges over key intersections, and an underpass at Adelphi Road.	The buses go through the University of Maryland campus in a tunnel under Campus Drive, emerging just past the "M" at Regents Drive	At Regents Drive (the "M") the buses travel at grade in a new exclusive transitway through the parking lots adjacent to the Armory. At East Campus, the alignment crosses US 1 at grade on Rossborough Lane.	The transitway follows Paint Branch Parkway in dedicated lanes until the CSX underpass. It turns right at the College Park Metro parking garage passing through the new station development and along the south side of River Road, in dedicated lanes.	The buses enter a tunnel from River Road to East West Highway at Kenilworth Road.	The buses follow East West Highway at grade in dedicated lanes.	On Veterans Parkway the transitway is in dedicated lanes with an underpass at Annapolis Road.	The buses turn left on to Ellin Road into dedicated lanes to arrive at the New Carrollton Metro Station.		Alternative 5: High Investment BRT



Table 2-4: Summary of LRT Alternatives

	Bethesda / Chevy Chase		Silver Spring				University Boulevard	
LRT								
Alternative 6: Low Investment LRT	The alignment follows the Georgetown Branch right-of-way. The alignment starts under the Air Rights Building with a direct elevator connection to the Bethesda Metro Station (south entrance). The trail does not go under the Air Rights Building, but off the alignment through Elm Street Park. The trail is on north side of the transitway from Pearl Street east.	The transitway follows the Georgetown Branch right-of-way. The LRT and the trail cross Connecticut Avenue at grade. There would be two new bridges over Rock Creek, one for the transitway, and one for the trail. The transitway and trail go under Jones Mill Road. Just west of Jones Mill Road the trail crosses to the south side of the transitway.	At the CSX corridor the transitway stays on south side of CSX corridor, while the trail crosses CSX on a new bridge near Talbot Street Bridge. The transitway crosses 16th and Spring Streets at grade.	East of Falklands Apartments the transitway crosses over CSX tracks, to arrive at the Silver Spring Transit Center.	The LRT leaves the CSX right-of way on Bonifant Street at grade in dedicated lanes.	It travels on Wayne Avenue in shared lanes, entering a tunnel after Manchester Place and continuing under Plymouth to emerge on Arliss Street.	The transitway turns left on Piney Branch Road and continues in dedicated lanes.	The LRT turns right on University Boulevard, in dedicated lanes. All intersections are crossed at grade, except there is an underpass at Adelphi Road.
Alternative 7: Medium Investment LRT	The alignment follows the Georgetown Branch right-of-way. The alignment starts under the Air Rights Building with a direct elevator connection to the Bethesda Metro Station (south entrance). The trail does not go under the Air Rights Building, but off the alignment through Elm Street Park. The trail is on north side of the transitway from Pearl Street east.	The transitway follows the Georgetown Branch right-of-way. There will be two bridges over Connecticut Avenue, one for the transitway, and one for the trail, as well as two new bridges over Rock Creek. The transitway and trail go under Jones Mill Road. Just west of Jones Mill Road the trail crosses to the south side of the transitway.	At the CSX corridor the transitway stays on south side of CSX corridor, while the trail crosses CSX on a new bridge near Talbot Street Bridge. The transitway crosses 16th and Spring Streets below the grade of those streets.	East of Falklands Apartments the transitway crosses over CSX tracks, to arrive at the Silver Spring Transit Center.	The LRT leaves the CSX right-of way on Bonifant Street at grade in dedicated lanes.	Wayne Avenue in shared lanes with added left turn lanes, entering a tunnel after Manchester Place and continuing under Plymouth to emerge on Arliss Street.	The transitway turns left on Piney Branch Road and continues in dedicated lanes.	The LRT turns right on University Boulevard, in dedicated lanes. All intersections are crossed at grade except there is an underpass at Adelphi Road.
Alternative 8: High Investment LRT	This alignment starts under the Air Rights Building with a direct elevator connection to the Bethesda Metro Station (south entrance). Under the Air Rights Building the trail is in the tunnel, elevated above eastbound tracks. The trail is on the north side of the tracks between Pearl Street and just west of Jones Mill Road.	The transitway follows the Georgetown Branch right-of-way. There will be two bridges over Connecticut Avenue, one for the transitway, and one for the trail, as well as two new bridges over Rock Creek,. The transitway and trail go under Jones Mill Road. Just west of Jones Mill Road the trail crosses to the south side of the transitway.	At the CSX corridor the transitway stays on south side of CSX corridor, while the trail crosses CSX on a new bridge near Talbot Street Bridge. The transitway crosses 16th and Spring Streets below the grade of those streets.	East of Falklands Apartments the LRT crosses over CSX tracks, to arrive at the Silver Spring Transit Center.	Tunnel from SSTC to Wayne Avenue at Cedar Street	Wayne Avenue at grade in dedicated lanes, with a tunnel under Plymouth to Arliss Street.	The transitway turns left on Piney Branch Road and continues in dedicated lanes.	The trains turn right on University Boulevard in dedicated lanes, with bridges over key intersections, and an underpass at Adelphi Road.
			(Design option) The transitway crosses to the north side of the CSX corridor in a tunnel and continues along the north side.	(Design option) Aerial crossing of CSX west of Falklands Apartments with an aerial structure along Metro Plaza.	(Design option) Silver Spring/ Thayer Avenue tunnel that emerges on Thayer Avenue behind East Silver Spring Elementary School, but with an aerial structure on a portion of Piney Branch Road.			

Table 2-4: Summary of LRT Alternatives (Continued)

UM / College Park			Riverdale Park			New Carrollton			
									LRT
The trains pass through the University of Maryland campus in dedicated lanes on Campus Drive.	At Regents Drive (the "M") the LRT travels at grade in a new exclusive transitway through the parking lots adjacent to the Armory. At East Campus, the alignment crosses US 1 at grade on Rossborough Lane.	The LRT uses Paint Branch Parkway in shared lanes.	LRT turns right at the College Park Metro parking garage passing through the new station development and along the south side of River Road, in dedicated lanes.	The LRT turns right at Kenilworth Avenue into dedicated lanes (both directions).	The LRT follows East West Highway at grade in dedicated lanes with shared left turn lanes. Shared under BW Parkway.	On Veterans Parkway the transitway is in dedicated lanes.	Turning left on Annapolis Road, the LRT is in dedicated lanes on the south/east side of the roadway.	Turning right on Harkins Road, the LRT is in dedicated lanes on the south side of the roadway to arrive at the New Carrollton.	Alternative 6: Low Investment LRT
The trains pass through the University of Maryland campus in dedicated lanes on Campus Drive.	At Regents Drive (the "M") the LRT travels at grade in a new exclusive transitway through the parking lots adjacent to the Armory. At East Campus, the alignment crosses US 1 at grade on Rossborough Lane.	The LRT uses Paint Branch Parkway in shared lanes.	LRT turns right at the College Park Metro parking garage passing through the new station development and along the south side of River Road, in dedicated lanes.	The LRT turns right at Kenilworth Avenue into dedicated lanes (both directions).	The LRT follows East West Highway at grade in dedicated lanes with shared left turn lanes. Shared under BW Parkway	On Veterans Parkway in dedicated lanes. The crossing of Annapolis Road is at grade.	The LRT turns left on to Ellin Road into dedicated lanes on the southeast side of the roadway to arrive at the New Carrollton Metro Station.		Alternative 7: Medium Investment LRT
(Design Option) Campus Drive to Preinkert Drive where the LRT turns south east and continues on a new alignment between LeFrak Hall and South Campus Dining Hall. The LRT continues east on Chapel Drive then on a new alignment to Rossborough Lane and it crosses US 1 at grade.									
The trains go through the University of Maryland campus in a tunnel under Campus Drive, emerging just past the "M" at Regents Drive.	At Regents Drive (the "M") the LRT travels at grade in a new exclusive transitway through the parking lots adjacent to the Armory. At East Campus, the alignment crosses US 1 at grade on Rossborough Lane.	The LRT uses Paint Branch Parkway in dedicated lanes until the CSX/ Metro underpass at College Park.	LRT turns right at the College Park Metro parking garage passing through the new station development and along the south side of River Road, in dedicated lanes.	The transitway enters a tunnel from River Road to East West Highway at Kenilworth Road.	The LRT follows East West Highway at grade in dedicated lanes in the median.	On Veterans Parkway the transitway is in dedicated lanes with an underpass at Annapolis Road.	The LRT turns left on to Ellin Road into dedicated lanes on the southeast side of the roadway to arrive at the New Carrollton Metro Station.		Alternative 8: High Investment LRT



2.4.4. Alternative 3 – Low Investment BRT

Low Investment BRT 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. 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 be 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 16th Street at grade, where a station would be located. The transitway would continue parallel to the CSX tracks to Spring Street, at which point 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 2nd Avenue where it would turn east. BRT 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 BRT would turn right to enter the Silver Spring Transit Center at the second level.

The BRT would leave the Silver Spring Transit Center 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 south to Arliss Street, where it would turn left 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 shared lanes, and through the main gate to US 1.

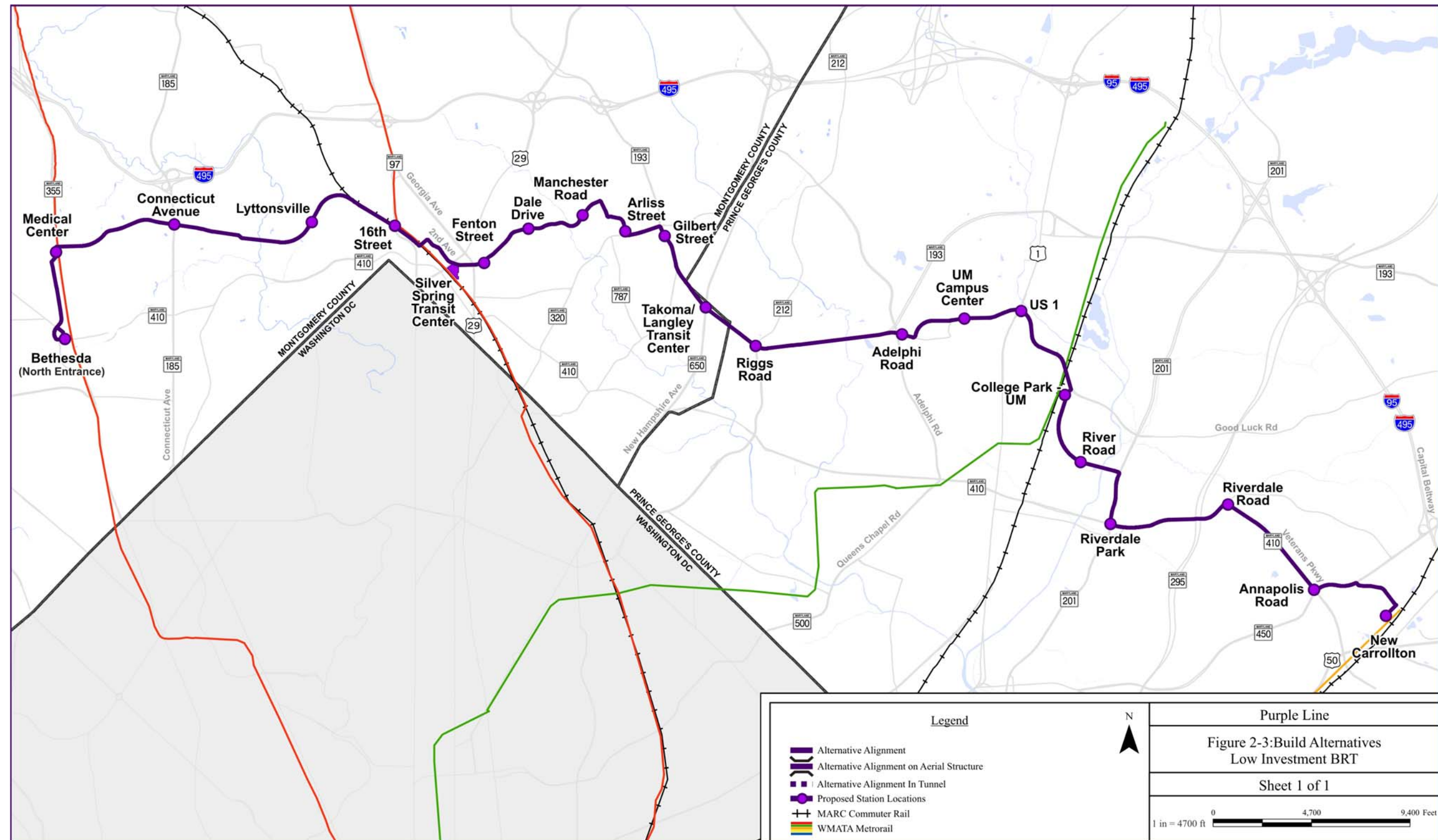
Low Investment BRT would operate on Paint Branch Parkway to the College Park Metro Station in shared lanes. The buses would enter the College Park Metro station bus loop from River Road. The alignment would then follow River Road to Kenilworth Avenue in shared lanes. Along Kenilworth Avenue the southbound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

The alignment would turn east from Kenilworth Avenue on MD 410 and continue in shared lanes on Veterans Parkway. This alignment would then turn left on Annapolis Road and then right on Harkins Road to the New Carrollton Metro Station. Westbound on Annapolis Road the BRT would operate dedicated lanes, but eastbound it would operate in shared lanes.

University Boulevard with BRT in Shared Lanes



Figure 2-3: Alternative 3 - Low Investment BRT





2.4.5. *Alternative 4 – Medium Investment BRT*

The Medium Investment BRT 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 BRT stops twice at the Bethesda Metro station, once at the existing bus loop on Edgemoor Lane and again 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 Silver Spring Transit Center.

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 be 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.

Like Low Investment BRT, this alternative would follow the CSX corridor on the south side of the right-of-way, but it would cross 16th Street

and Spring Street at the grade of the streets, resulting in a new signalized intersections.

After crossing Spring Street, the 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 Silver Spring Transit Center parallel to, but at a higher level than, the existing tracks.

After the Silver Spring Transit Center, Medium Investment BRT would leave the CSX right-of-way and follow Bonifant Street at grade, crossing Georgia Avenue at grade, 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 and continue on 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, behind the Visitors Center to Rossborough Lane.

Crossing US 1 at grade, this alternative 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. The buses would enter the College Park Metro Station bus loop from River Road. On Kenilworth Avenue both lanes would be dedicated.

Turning left on East West Highway, Medium Investment BRT would be in dedicated lanes. As

Wayne Avenue at Cedar Street



with Low Investment BRT, this alternative would travel in shared lanes on Veterans Parkway to Ellin Road, where it would turn left into dedicated lanes to the New Carrollton Metro Station.

Medium Investment BRT Variations Serving Medical Center

The Town of Chevy Chase has raised concerns regarding the transit service provided by the Purple Line alternatives to the National Institutes of Health and the National Naval Medical Center (NNMC). With the exception of Low Investment BRT, all the alternatives provide improved bus service between Silver Spring and NNMC as well as the option to transfer to the Metro Red Line at Bethesda to reach NNMC. Low Investment BRT provides more direct service to NNMC, but less direct service to downtown

Bethesda by traveling along Jones Bridge Road to the Medical Center area and then along Woodmont Avenue to Bethesda.

Because Low Investment BRT does not have the travel time benefits afforded by Medium Investment BRT west of Jones Mill Road, the Town of Chevy Chase proposed a variation of Medium Investment BRT which uses Jones Bridge Road west of Jones Mill Road, instead of using the county-owned Master Plan alignment that goes directly to

Bethesda. This variation would include an additional stop at St. Elmo Street on Woodmont Avenue. (See Figure 2-5).

Another variation that would directly serve the Medical Center area would extend the service of Medium Investment BRT from the north entrance of the Bethesda Metro Station, up Woodmont to the NNMC, also including a station at St. Elmo Street. (see Figure 2-6).

Both variations provide the benefits of Medium Investment BRT east of Jones Mill Road and provide a one-seat ride to the Bethesda and NNMC. Ridership and cost summaries of these variations will be presented in Chapter 6.

Figure 2-4: Alternative 4 - Medium Investment BRT

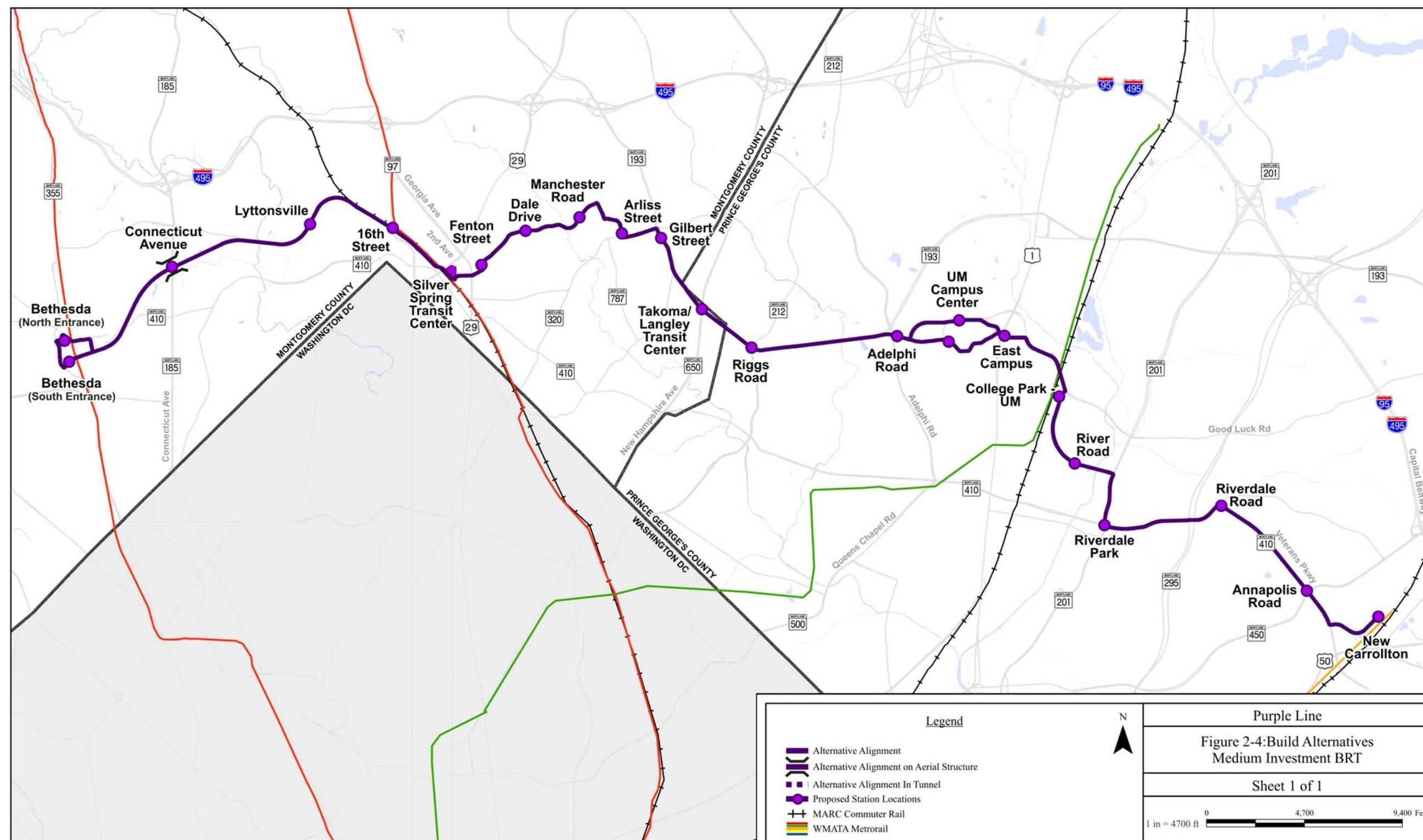


Figure 2-5: Medium Investment BRT using Jones Bridge Road

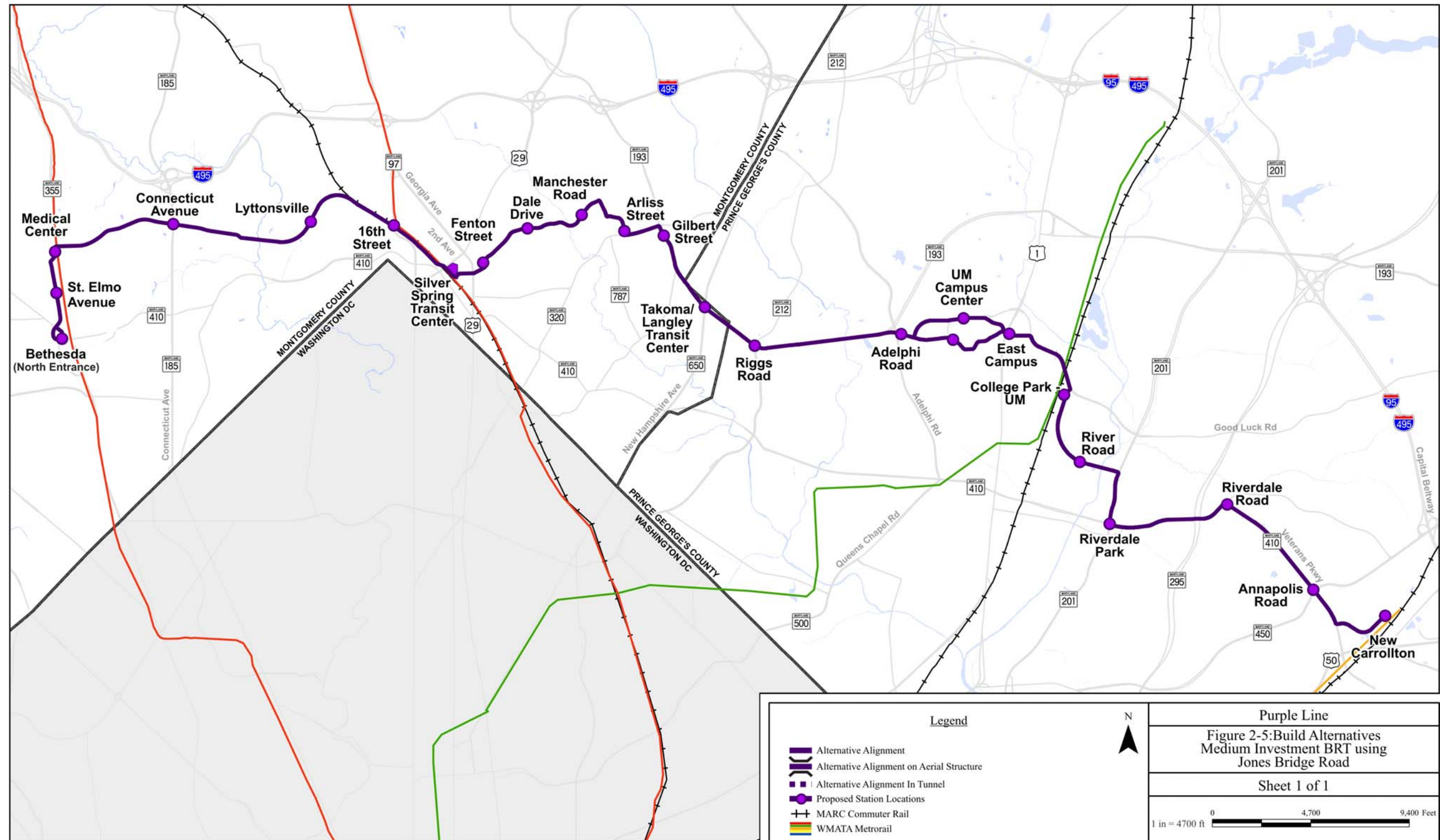
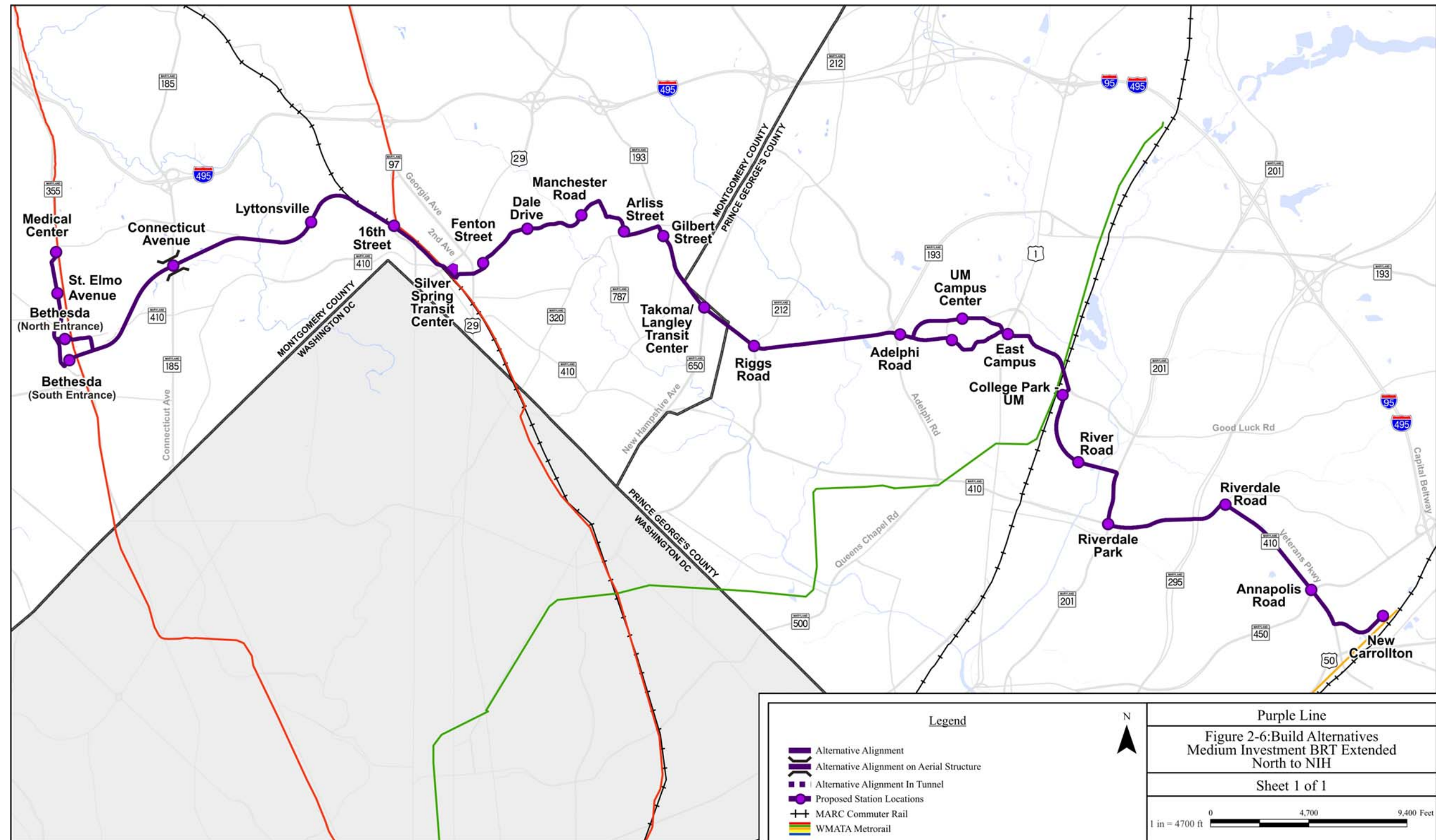


Figure 2-6: Medium Investment BRT extended north to NIH





2.4.6. Alternative 5 – High Investment BRT

High Investment BRT is intended to provide the most rapid travel time of the BRT alternatives. 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 Metro Station, both at the existing Bethesda bus terminal 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 on 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.

The High Investment BRT alignment 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, and like Medium Investment BRT, it would cross 16th Street and Spring Street below the grade of the streets, at approximately the same grade as the CSX tracks. The station at 16th Street would have elevators and escalators to provide access from 16th Street.

The crossing of the CSX right-of-way would be the same as for Medium Investment BRT. The alignment would rise above the level of the existing development south of the CSX right-of-way. East of the Falklands Chase apartments,

Low Investment LRT would cross over the CSX tracks on an aerial structure to enter the Silver Spring Transit Center parallel to, but at a higher level than, the existing tracks.

From the Silver Spring Transit Center, 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 as Medium Investment BRT 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. This alternative would turn right to enter the College Park Metro station on a new guideway immediately after the Metro Station parking garage on Paint Branch Parkway. The station would be provided in the new development, close to the Metro station entrance.

The alternative would return to River Road and continue in dedicated lanes. The alignment would be dedicated on these roadways, except under the CSX bridge on Paint Branch Parkway.

From River Road, where the BRT is in dedicated lanes, to 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 alternative would cross under Annapolis Road before continuing on Ellin Road to the New Carrollton Metro Station.

University Boulevard with Dedicated Bus Lanes

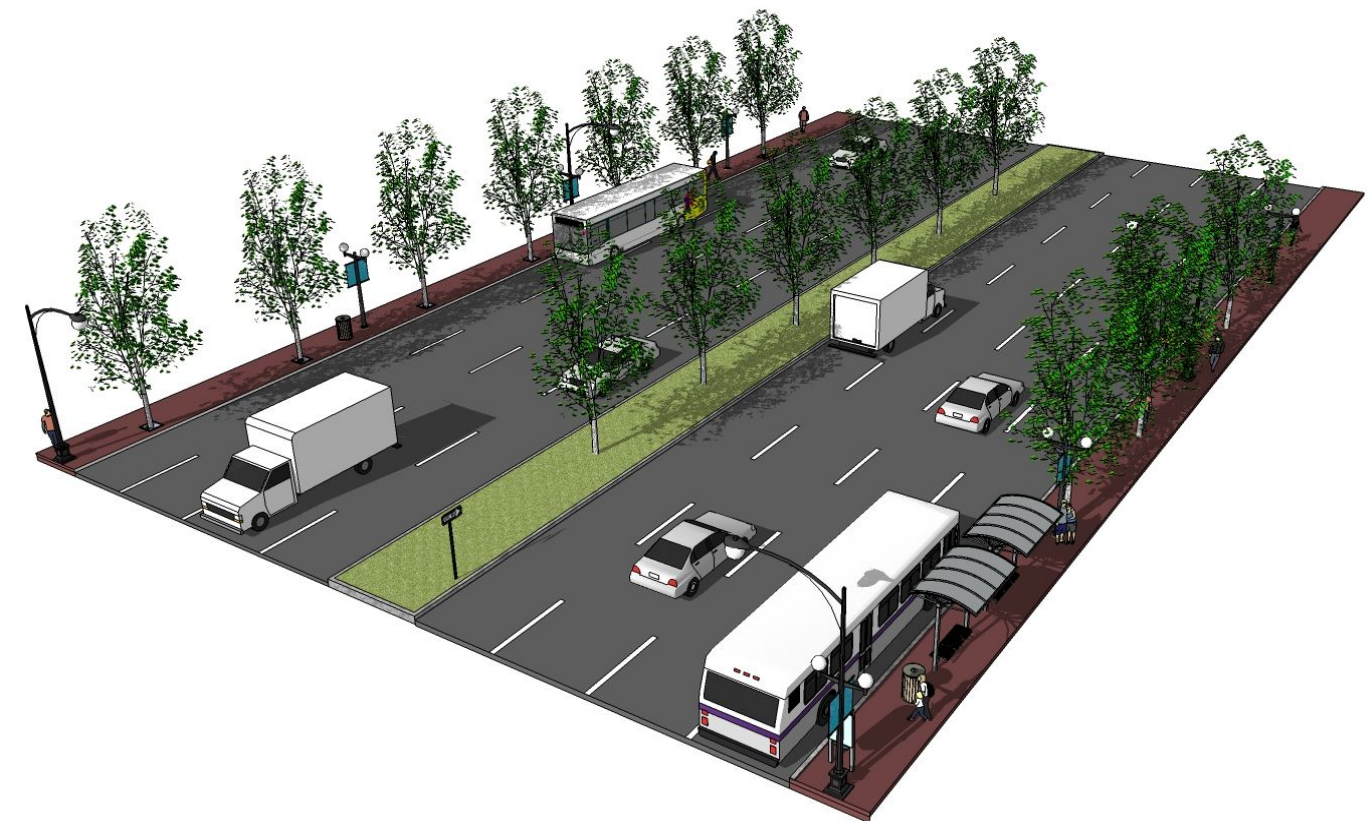
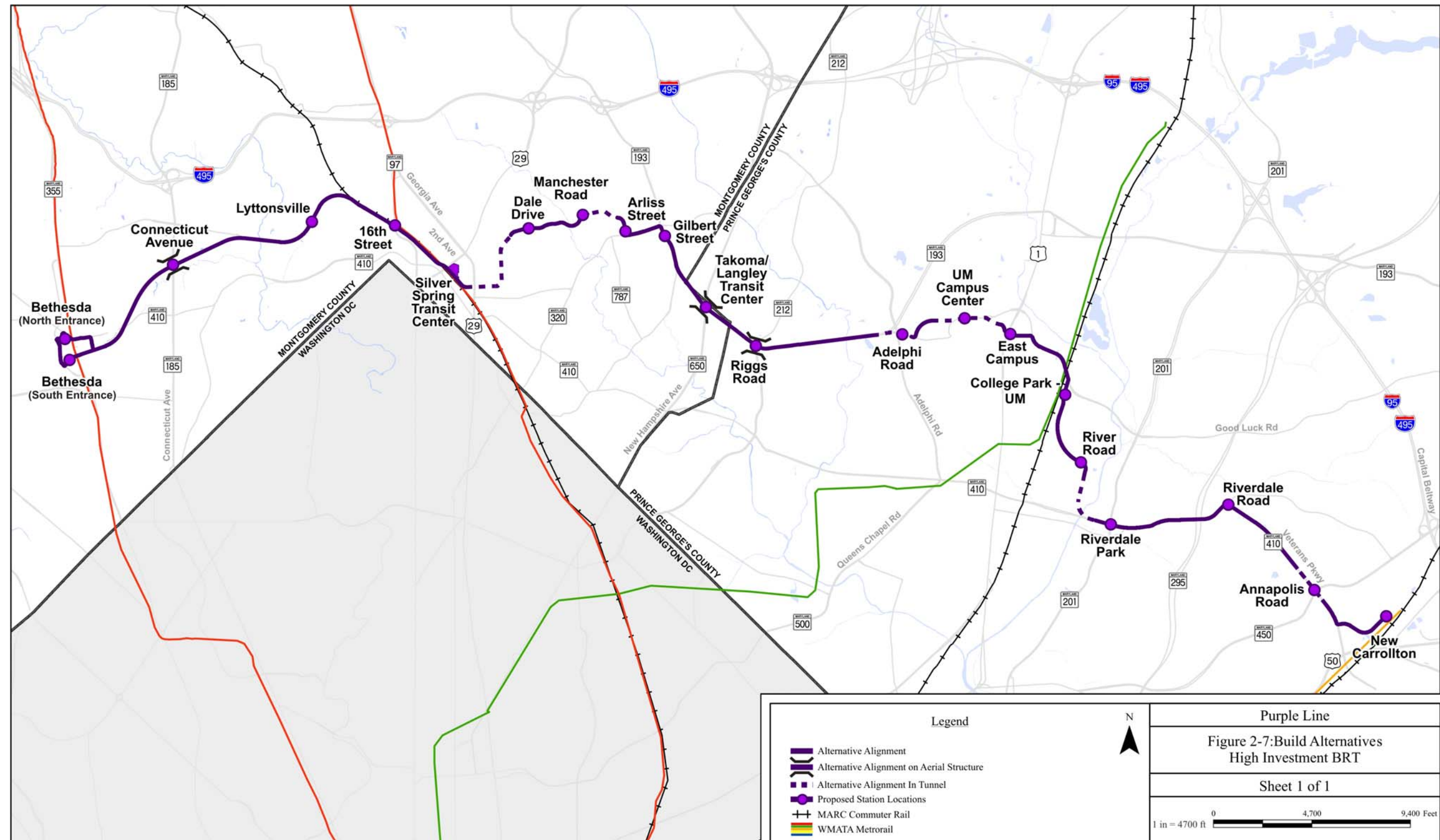


Figure 2-7: Alternative 5 - High Investment BRT





2.4.7. Alternative 6 – Low Investment LRT

Low Investment LRT 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 Metro 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, rising above the level of the existing development south of the CSX right-of-way. East of the Falklands Chase apartments, Low Investment LRT would cross over the CSX tracks on an aerial structure to enter the Silver Spring Transit Center parallel to,

but at a higher level than, the existing tracks.

Low Investment LRT would be the same as Medium Investment BRT from the Silver Spring Transit Center 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 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.

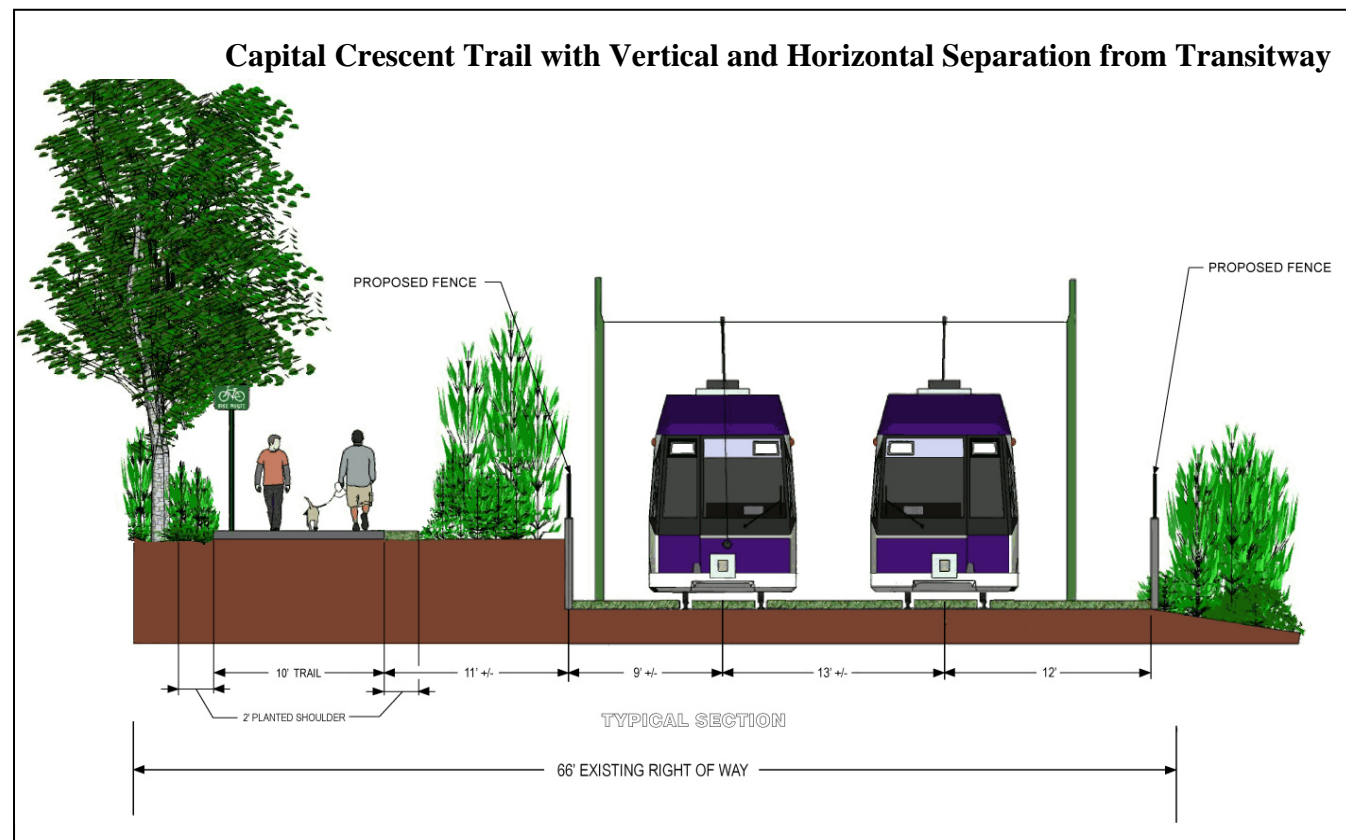
At Adelphi Road, the alignment would enter the University of Maryland campus on Campus Drive. The alternative would follow the same alignment to the College Park Metro Station as described for Medium Investment BRT. It would continue through the University of Maryland campus in dedicated lanes on Campus Drive and then continue at grade in a new exclusive transitway through the parking lots adjacent to the Armory, behind the Visitors Center to Rossborough Lane.

Crossing US 1 at grade, Low Investment LRT would pass

through the East Campus development on Rossborough Lane to Paint Branch Parkway. The alignment would continue on Paint Branch Parkway in shared lanes. The LRT would enter the College Park Metro Station next to the existing parking garage.

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 the south side of the 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 would be in dedicated lanes.

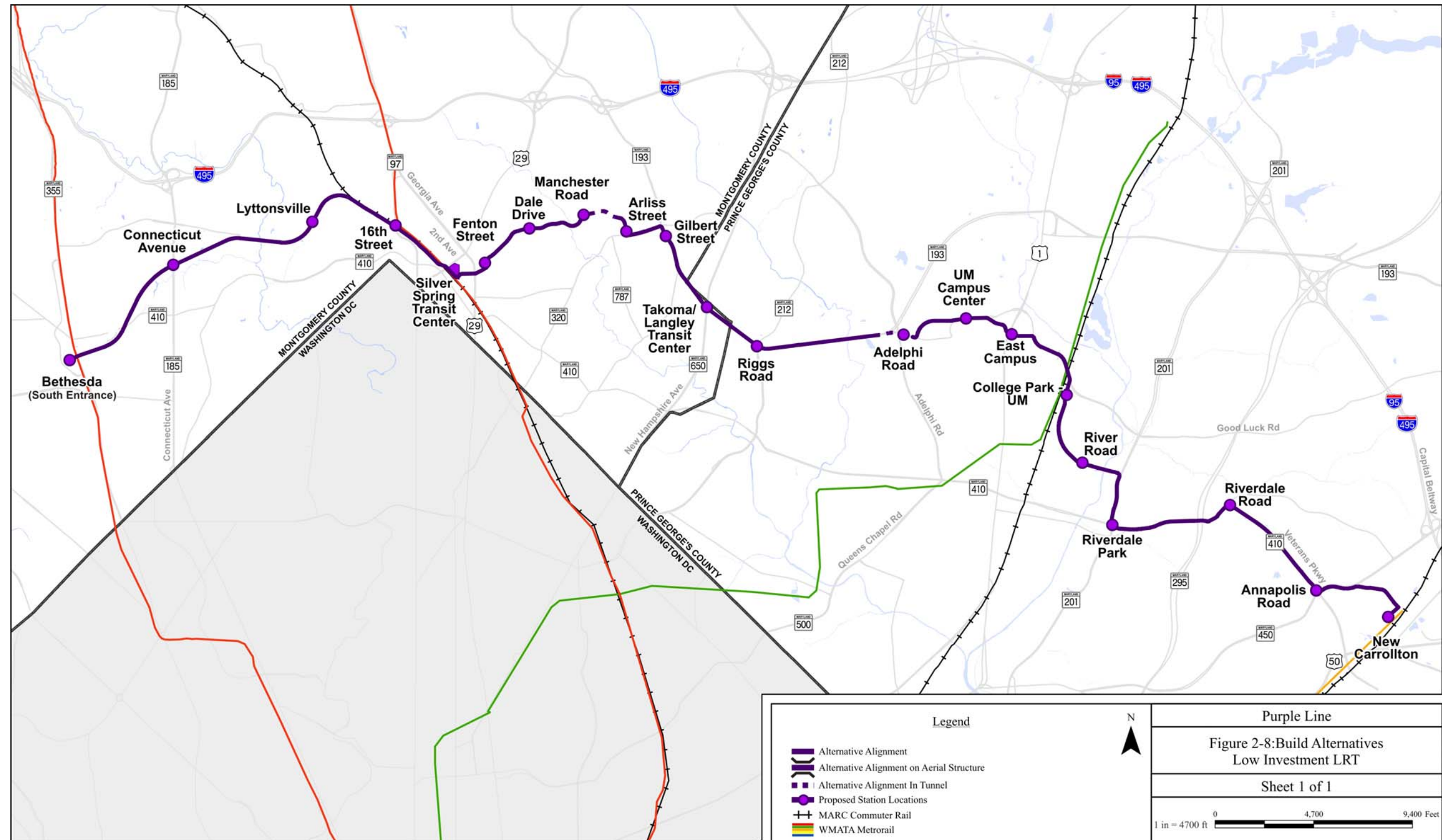
As with Low Investment BRT, this alignment would turn left on Annapolis Road from Veterans Parkway and then right on Harkins Road to the New Carrollton Metro Station. The segments on Annapolis Road and Harkins Lane would be dedicated.



University of Maryland Campus from Campus Drive



Figure 2-8: Alternative 6 – Low Investment LRT





2.4.8. *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 16th and Spring Streets. The alignment would be the same as Medium and High Investment BRT and Low Investment LRT, from Spring Street through the Silver Spring Transit Center.

From the Silver Spring Transit Center, 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.

This alternative would cross Sligo Creek Parkway and entering a tunnel from Wayne Avenue to pass under Plymouth Street. As with Low Investment LRT the alignment emerges from the tunnel on Arliss Street.

The Medium Investment LRT would then follow Piney Branch Road and University Boulevard at grade in dedicated lanes. 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 alternative would follow the same alignment to the College Park Metro Station as described for Medium Investment BRT and Low Investment LRT. The alignment would continue

University of Maryland, Campus Drive at Hornbake Library



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, behind the Visitors Center to Rossborough Lane.

Crossing US 1 at grade, Medium Investment LRT would pass through the East Campus development on Rossborough Lane to Paint Branch Parkway. The alignment would continue on Paint Branch Parkway in shared lanes. The LRT would enter the College Park Metro Station next to the existing parking garage.

From the College Park Metro Station to the terminus at the New Carrollton Metro Station, Medium Investment LRT would be in dedicated lanes on River Road on the south side of the 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 would be in dedicated lanes.

The alignment would be the same as Low Investment LRT until Paint Branch Parkway, where it would be in dedicated lanes, except under the CSX/metro tracks at the College Park Metro Station, except for Paint Branch Parkway where it would be in dedicated lanes. After entering the College Park Metro Station, the LRT continues on River Road in dedicated lanes on the south side of the road. On Kenilworth Avenue, East West Highway, and Veterans Parkway the LRT operates in dedicated lanes. At the intersection of Veterans Parkway and Annapolis Road the LRT continues across Annapolis at grade, turning left at Ellin Road still in dedicated lanes to arrive at the New Carrollton Metro Station.

River Road with Dedicated Lanes on the South

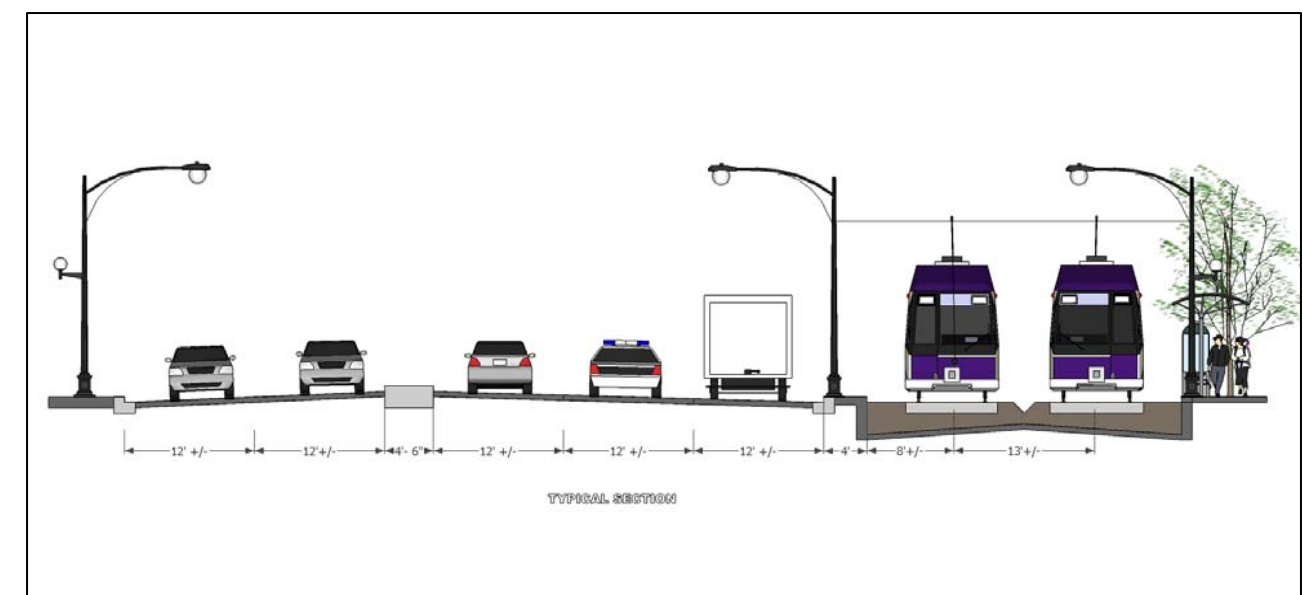
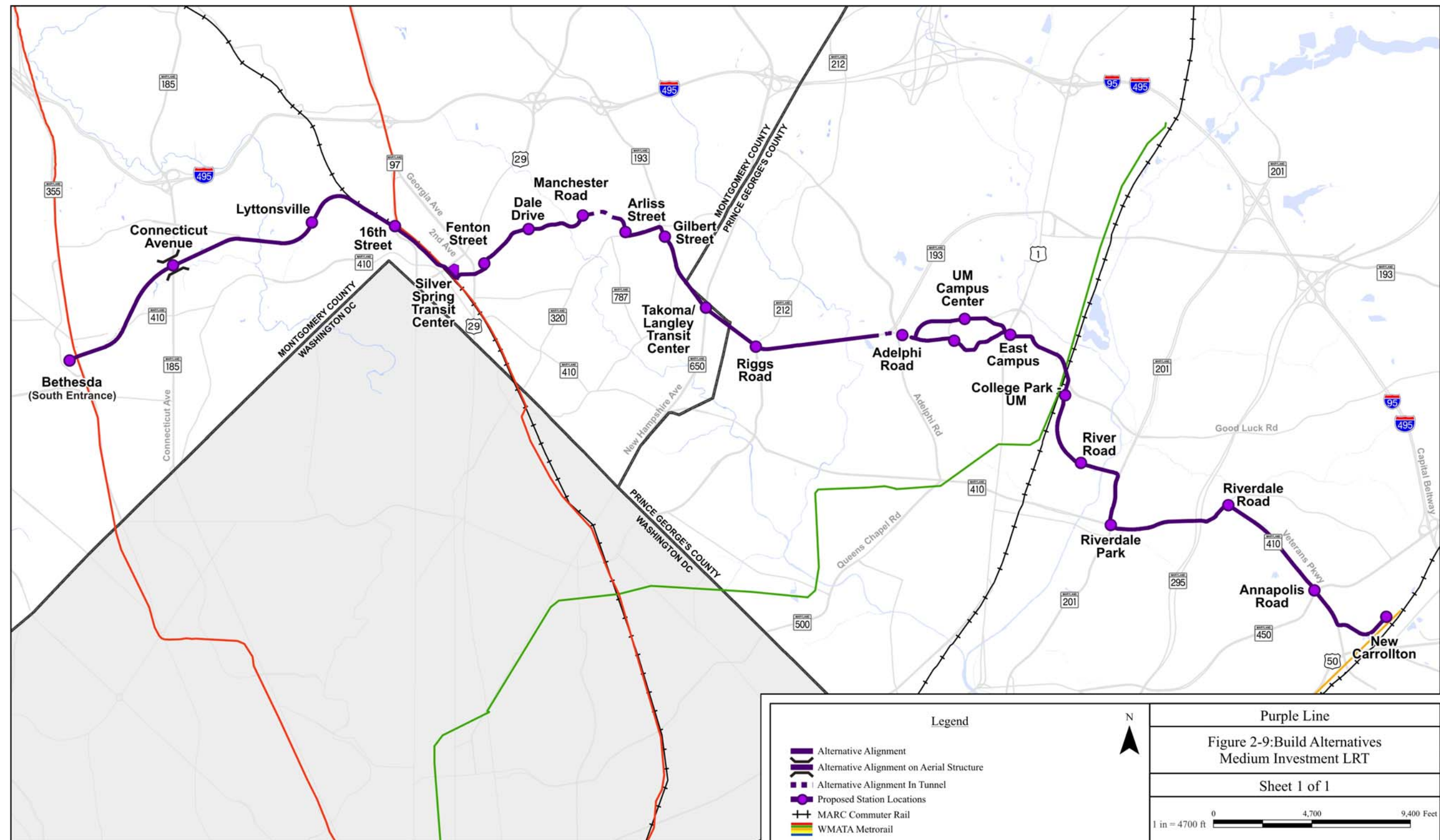


Figure 2-9: Alternative 7 – Medium Investment LRT





2.4.9. Alternative 8 – High Investment LRT

High Investment LRT is intended to provide the most rapid travel time of the LRT alternatives. 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. 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. High Investment LRT would begin under the Air Rights Building on 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.

The High Investment LRT Alternative would be the same as Medium Investment LRT until it reaches the CSX corridor. As with the other alternatives, this alternative would follow the CSX corridor on the south side of the right-of-way, and like Medium Investment LRT, it would cross 16th Street and Spring Street below the grade of the streets, at approximately the same grade as the CSX tracks. The station at 16th Street would have elevators and escalators to provide access from 16th Street.

The crossing of the CSX right-of-way would be the same as for Medium Investment LRT. From the Silver Spring Transit Center, High

Investment LRT 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 LRT would be the same as Medium Investment LRT 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 LRT until Paint Branch Parkway, crossing US 1 at grade, it would pass through the East Campus development on Rossborough Lane to Paint Branch Parkway.

The alignment would continue east on Paint Branch Parkway in

Wayne Avenue near Sligo Creek Parkway



shared lanes to the College Park Metro Station. The LRT would enter the College Park Metro Station next to the existing parking garage.

The alternative would then follow River Road in dedicated lanes on the south side of the road. From River Road near Haig Drive, the alternative 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 LRT would turn right down Veterans Parkway in dedicated lanes. Unlike Medium Investment LRT, this alternative would cross under Annapolis Road before continuing on Ellin Road to the New Carrollton Metro Station.

LRT Passing through Columbia County Club on the Georgetown Branch Right-of-Way







2.4.10. Design Options

The following design options are variations in the alignments that could be used in some of the alternatives.

North Side of CSX Design Option

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 16th 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 Silver Spring Transit Center parallel to, but at a higher level than, the existing tracks.

South Side of CSX with a Crossing West of the Falklands Chase Apartments Design Option

This option would operate on the south side of the CSX, as described either at or below grade at 16th 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 Silver Spring Transit Center parallel to, but at a higher level than, the existing tracks.

Silver Spring/Thayer Avenue Tunnel Design Option

This design option would begin at the Silver Spring Transit Center 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 west of Nolte Avenue and then follow Thayer Avenue across Dale Drive to Piney Branch Road. A station would be located on Thayer Avenue adjacent to the tunnel portal. 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.

University of Maryland Campus via Preinkert/Chapel Drive Design Option

The Preinkert/Chapel Drive alignment is being evaluated as a design option for both BRT and LRT through the campus of the 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 Campus Dining 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 continue east through the East Campus development.

Purple Line between LeFrak Hall and South Campus Dining Hall



2.4.11. Stations and Station Facilities

Table 2-5 provides the station locations, the markets served, and the connecting transit service at each station.

Stations would include shelters, lighting, ticket vending machines, and possibly landscaping and benches, where appropriate. Intelligent Transportation Systems would be used to provide real-time information on transit services at the stations. The station platforms would be approximately 200 feet long and ten feet wide. The stations would usually be incorporated into the existing sidewalks, except where large ridership necessitates a wider platform. Where stations are in the median of a roadway they would likely be 12 to 15 feet wide to provide a greater sense of comfort for transit passengers. Although the actual design of the stations is not part of this stage of the project, the station design would make it readily identifiable as serving the Purple Line.

No new park-and-ride facilities would be constructed as part of the Purple Line. Parking

garages exist near the Bethesda and Silver Spring Metro Stations, and at the College Park and New Carrollton Metro Stations.

Additional kiss-and-ride facilities would be considered at the following stations: Connecticut Avenue at the Georgetown Branch right-of-way and Lyttonsville. Silver Spring Transit Center, College Park, and New Carrollton 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.

2.4.12. Ongoing Planning

This document presents a record of the planning for the Purple Line up to the current time; however, interaction with local communities, agencies, and other stakeholders continues; and continued studies may refine aspects of the alternatives, including possible additional design options. Two segments of the corridor under active study are the University of Maryland and the area east of downtown Silver Spring.

The segment of the corridor between the Silver Spring Transit Center and the Arliss station is an area that has been the focus of ongoing community interaction and the development and evaluation design options. At the request of local residents the MTA evaluated a number of design options including extended the tunnel included in the High Investment alternatives. An underground station at Dale Drive is also under study for the extended tunnel options. Along with engineering feasibility, constructability, cost, and mobility benefits, the issues associated with traffic, parks, community facilities, and local access are being considered. Coordination with stakeholders will continue throughout the planning process and could modify aspects of the alternative considered during the selection of the Locally Preferred Alternative.

Table 2-5: Proposed Stations, Markets, and Connecting Transit Services

Stations/Stops	Location	Markets Served	Connecting Transit Services
Bethesda Metro Station		Central business and residential district, and transfers	Metrorail Red Line; WMATA: J2, J3, J7, J9; Ride On: 29, 30, 32, 33, 34, 36, 42, 47, 70, 92
NIH/Medical Center (Low Investment BRT only)	Wisconsin Avenue and Jones Bridge Road	NIH, NNMC, and residential and transfers	Metrorail Red Line; WMATA: J2, J3, J7, J9; Ride On: 30, 33, 42, 46, 70,
Connecticut Avenue (Low Investment BRT only)	Jones Bridge Road	Residential	WMATA: L7, L8
Connecticut Avenue (all alternatives except Low Investment BRT)	Georgetown Branch ROW	Local business and residential	WMATA: L7, L8
Lyttonsville Place	Georgetown Branch ROW	Local business and residential	Ride On: 2,
16 th Street	CSX ROW	Local business and residential, and transfers	WMATA: J5, Q2, Y5, Y7, Y8, Y9; Ride On: 3, 4, 5, 127
Silver Spring Transit Center		Central business and residential district, entertainment, and transfers	Metrorail Red Line; MARC Brunswick Line; UM Shuttle 111; WMATA: F4, F6, J1, J2, J3, J5, Q2, S2, S4, Y5, Y7, Y8, Y9, Z2, Z6, Z8, Z9, Z11, Z13, Z29, 70, 71, 79; Ride On: 1, 2, 3, 4, 5, 8, 9, 11, 12, 13, 14, 16, 17, 18, 19, 20, 22, 28, 127
Fenton Street (all alternatives except High Investment BRT and LRT)	Wayne Avenue	Central business and residential district, and transfers	WMATA: F4, F6; UM Shuttle 111; Ride On: 12, 16, 17, 19, 20, 28
Dale Drive	Wayne Avenue	Local residential	Ride On: 3, 12, 19; UM Shuttle 111
Manchester Road	Wayne Avenue	Local residential	Ride On: 12, 13, 19
Thayer Avenue	Thayer Avenue west of Nolte Avenue	Local residential	Ride On: 20
Arliss Street	Piney Branch Road	Local business and residential	Ride On: 14, 16, 20, 24
Gilbert Street	University Boulevard	Local business, and residential, and transfers	WMATA: C2, C4
Takoma/Langley Transit Center	University Boulevard and New Hampshire Avenue	Local business and residential, and transfers	WMATA: C2, C4, F8, K6; UM Shuttle 111; Ride On: 16, 17, 18; TheBus: 17, 18
Riggs Road	University Boulevard	Local business and residential,	WMATA: C2, C4, F8, R5, R1, R2; TheBus: 17, 18
Adelphi Road	Campus Drive at UMUC	Residential, UMUC, and transfers	WMATA: C2, C8, F6, F8, R3; TheBus: 17
UM Campus Center		UM	WMATA: C2, C8, F6; UM Shuttles; TheBus: 17,
East Campus	US 1	Commercial, hotel, residential, UM, and transfers	WMATA: C2, C8, F6, 81, 83, 86; TheBus: 17
College Park Metro Station		M-Square Research Park, residential, future mixed-use development, and transfers	Metrorail Green Line; MARC Camden Line; WMATA: C2, C8, F6, R12, 83, 86; TheBus: 14, 17 CAR: G, H
River Road	River Tech Court	M-Square Research Park and residential	WMATA : F6, R12; TheBus: 14
Riverdale Park	Kenilworth Avenue and MD 410	Local business and residential and transfers	WMATA: F4, R12, 84, 85; TheBus: 14
Riverdale Road	Veterans Parkway	Local business and residential	WMATA: F4, 84, 85; TheBus: 14
Annapolis Road	Veterans Parkway	Local business	WMATA: F13, T18,
New Carrollton Metro Station		Business and residential, including IRS, CSC; future mixed-use development, and transfers	Metrorail Orange Line, MARC Penn Line, Amtrak; WMATA: B21, B22, B24, B25, B27, B29, B31, C28, F4, F6, F12, F13, F14, R12, T16, T17, T18, 84,85, 88; TheBus: 15, 16, 21, 21X

Notes: A) Bus operators – Metrobus = WMATA, Ride On = Montgomery County, TheBus = Prince George's County, CAR = Connect a Ride B) WMATA J1 discontinued under Low Investment BRT Alternative C) WMATA J4 and Ride On 15 replaced by all Purple Line alternatives



2.5. Service Concept

The diverse land uses and economic base in the Purple Line corridor include residential, commercial, industrial, institutional, and governmental sectors. This generates a wide variety of trip types and purposes that reflect the equally wide range of demographics of the region.

Currently, there is bus service throughout the corridor, with several of the highest ridership bus routes in the region. The Purple Line would enhance and expand the existing service by providing a higher speed, higher capacity, and more reliable trunkline service.

The MTA has identified eight alternatives for detailed study. The alternatives are No Build, a TSM alternative, and six Build alternatives. The two modes, LRT and BRT, provide flexibility since they can be used both in exclusive rights-of-way and on roadways in shared lanes. The heavily built-up nature of the corridor may require that the transit vehicles travel, at least in part, in shared lanes on existing roadways. These transit technologies allow the consideration of a range of alignment configurations examining the trade off between travel time and speed, costs, and impacts, as well as providing the east-west transit service and connectivity that is one of the project goals.

Purple Line service planning includes not only 2030 plans for the corridor alternatives but also plans for the background local bus network operated in the region. Service plans discussed in detail below for the TSM alternative and each of the six Build alternatives endeavor to create a route network as interconnected as possible. Redundant and overlapping service has been proposed for elimination, while other routes have been restructured to provide increased connectivity with the corridor service to provide

more convenient, user-focused service for passengers.

All of the Build alternatives serve the same markets (i.e., alignments and stations are quite similar). All alternatives serve downtown Bethesda directly with the trunkline service; however, only Low Investment BRT directly serves the National Institutes of Health and the National Naval Medical Center area. All others, including the No Build and TSM alternatives, serve this market with improved bus service, connecting Silver Spring as well as Metrorail service to Bethesda.

Minor variations may occur in station locations due to actual alignment. For example, the Connecticut Avenue Station could have one of three locations depending on the alternative: at Jones Bridge Road for Low Investment BRT; at the Georgetown Branch right-of-way alignment for Low Investment LRT, and Medium and High Investment BRT and LRT; and at East West Highway for the TSM. The actual locations of the stations would be determined in later design and engineering phases of the project. The principal difference among alternatives is in their use of shared and dedicated lanes and at-grade, tunnel, and elevated running ways.

2.6. Service Characteristics

The low investment alternatives for both BRT and LRT would use as much existing roadway as possible and would, for the most part, operate in shared lanes. The high investment alternatives would operate in exclusive or dedicated lanes in a number of areas. Light rail transit is constrained by how steep a grade on which it can operate safely, and for this reason some portions of the LRT alignment would be in a tunnel or on elevated structures even for the low investment alternative. However, in general, the tunnel or elevated segments have been included to improve travel speeds or reduce community

impacts. The medium investment alternatives would be somewhere between the high and low investment alternatives, with investments made where the benefits returned would be greatest.

The differences among alternatives in their use of shared and dedicated lanes and at-grade, tunnel, and elevated running ways would have little effect on market coverage because the station locations of the different alternatives are identical in most cases. Differences in levels of ridership would be due to travel time savings provided by the exclusive running ways of the higher investment alternatives.

For the purpose of the alternatives analysis, which is to identify the differences among different levels of investment, a number of the service-related characteristics have been held constant across all the alternatives. These characteristics include the following:

- Headways
- Fares
- Hours of service

2.6.1. Headways

The headways for the TSM and all Build alternatives would be six minutes each direction during peak hours and ten minutes off peak.

2.6.2. Fares

Metrorail Fares

Regular Metrorail fares (2007) ranging from \$1.65 to \$4.50 are in effect on weekdays from opening to 9:30 AM, 3-7 PM, and 2 AM to closing. Reduced fares ranging from \$1.35 to \$2.35 are in effect at all other times. These fares are based on distance traveled.

SmarTrip cards and other multi-trip passes may be purchased at Metrorail stations, Metro sales offices, retail outlets, or Commuter Stores.

Metrobus Fares

The Metrobus fares are summarized in Table 2-6.

Table 2-6: Metrobus Fares (2007)

Regular Fare - cash	\$1.35
Regular Fare - SmarTrip	\$1.25
Express Bus Fare	\$3.10
Transfers	Free
Metrorail-to-Metro bus transfers	Free

TheBus Fares

TheBus uses a single, flat fare for all trips on its services. Adult fares are as shown in Table 2-7.

Table 2-7: TheBus Fares (2007)

Regular Fare	\$0.75
Metrobus and Ride On-to-Transfer	Free
Metrorail-to-TheBus transfer	\$0.25
TheBus-to-Metrobus and Ride On Transfer	\$0.50

Ride On Fares

Ride On uses a single, flat fare for all trips. Fares for these services are shown in Table 2-8. SmarTrip cards may be used on Ride On.

Table 2-8: Ride On Fares (2007)

Regular Fare or Token	\$1.25
Local Bus Transfer (Valid for 2 hours, any direction)	Free
Metrorail-to-Ride On Bus Transfer	\$.35

Ride On accepts Metrobus and other local bus transfers at any stop on any route until its expiration time. Metrobus accepts Ride On and other local bus transfers at any stop in their system.



Purple Line Fare Assumptions

TSM

TSM fare is assumed to be a flat fare following the regular Metrobus fares described above. Cash fares and multi-trip passes will be accepted by operators upon boarding the vehicle. All fare passes would be made available at Metrorail stations. SmarTrip cards and other multi-trip passes may also be purchased at Metro sales offices, retail outlets, or Commuter Stores.

BRT and LRT

It is assumed that BRT and LRT fares would be a flat fare following the regular Metrobus fares described above. To expedite boarding and alighting, a proof-of-purchase payment method is assumed with tickets purchased from ticket vending machines at stations. Passengers would board through multiple doors to speed loading. Roving, on-board fare inspectors would be required to reduce the incidence of fare evasion, as is typical of most proof-of-purchase operations in the United States. SmarTrip cards and other multi-trip passes may also be purchased at Metro sales offices, retail outlets, or Commuter Stores.

Fares for Purple Line service, as described above, will initially replicate existing Metrobus fare structure and policies. Purple Line transfers

to Metrobus and Metrorail will initially be free. Transfers to other local services will be equal to existing bus-to-bus transfer policies. Fare structure and policy will be re-examined as the Purple Line advances toward implementation when the operator of the Purple Line is determined and agreements among local transit service providers have been reached.

2.6.3. Hours of Service

Purple Line service would operate at approximately the same hours as Metrorail. Service would begin at terminal stations at 5 AM weekdays and 7 AM on Saturday and Sunday and would operate through midnight Sunday through Thursday and until 3 AM on Friday and Saturday. All times are approximate and might vary slightly. Because service start time would be scheduled for terminal stations, first trains would leave many stations later than system opening times and last trains would leave earlier than closing times.

2.6.4. Feeder Bus Service

An extensive and comprehensive bus network is currently in place along the Purple Line corridor, operated by WMATA and the two counties. While many of these routes have a role in serving purely local travel markets, a very large number of them feed the Metro stations at Bethesda,

Silver Spring, College Park, and New Carrollton. Thus they are a ready-made feeder bus network for the Purple Line, which would serve those Metro stations. The number of routes performing this feeder function is considerable, 14 routes at Bethesda, 28 routes at Silver Spring, 10 routes at College Park and 24 routes at New Carrollton. In addition, nine bus routes plus the UM Shuttle currently serve the area of the intersection of University Boulevard and New Hampshire Avenue. This intersection is the site of the future Takoma/Langley Transit Center, a planned and programmed facility that will serve existing bus routes, as well as the Purple Line, and will provide enhanced amenities to transit patrons. Construction of the Transit Center is expected to be completed in 2009.

If the Purple Line were built some feeder bus route revisions would be made to better serve the Purple Line stations. Given the extensive existing bus network, these changes would be relatively minor in scope. Because all six Build alternatives serve the same markets and have stations that are, for the most part, in the same locations, feeder bus service would be the same for all Build alternatives.

2.6.5. Operating Characteristics

Table 2-9 summarizes the operating characteristics of the TSM alternative and the Build alternatives. The TSM and BRT vehicle fleets could be a combination of articulated or standard buses. In Table 2-9 the vehicle requirements for these alternatives would be the equivalent standard bus vehicles, as this represents the worse case for various operational, facility sizing, costing, and environmental assessment purposes. LRT trains are assumed to be consists up to three 60-foot cars, although two 90-foot cars could be used instead. Like the bus vehicles, basing the light rail vehicle requirements on the 60-foot car represents the worse case for various operational, facility

sizing, costing, and environmental assessment purposes.

2.6.6. Ancillary Facilities

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 (including spares) would require approximately 20 acres. A BRT facility for the Purple Line would generally require facilities of similar size. The Purple Line would also require storage for non-revenue vehicles and equipment such as maintenance, supervisory, and security vehicles.

Activities at the maintenance and storage facility would include:

- Vehicle storage area (tracks for LRT)
- Inspection and cleaning
- Running way repairs
- Vehicle maintenance and repair
- Operations
- Security
- Parking
- Materials and 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

Table 2-9: Operating Characteristics of Alternatives

Alternative	End-to-End Travel Time, Peak Period (minutes)	End-to-End Average Speed (mph)	Peak Vehicle Requirement (including spares)
TSM	108	9	68
Low Investment BRT	96	10	60
Medium Investment BRT	73	13	49
High Investment BRT	59	16	42
Low Investment LRT	62	15	44
Medium Investment LRT	59	16	44
High Investment LRT	50	19	44



the majority of the services and the other function as an auxiliary site.

Existing Bus Maintenance Facilities

BRT requires a garage facility; however, this need could possibly be met by sharing an existing bus garage.

The following text documents the current capacity, future capacity, and expansion plans at each of the identified bus facilities. Currently, WMATA, Montgomery County, and Prince George's County provide bus service within the corridor. These three agencies operate and maintain the Metrobus, Ride On, and TheBus, respectively. The sections below summarize which agencies have bus maintenance facilities in or around the corridor, the location of each facility, and current and future capacity issues.

WMATA

WMATA has two bus maintenance facilities located near the corridor that service Metrobus – the Landover Bus Garage at 3433 Pennsy Drive, Landover, and the Montgomery Bus Garage at 5400 Marinelli Road, Rockville. These maintenance facilities are located on either end of the corridor. Characteristics of these two facilities are described below.

The Landover bus facility is 2 miles northeast of the New Carrollton Station. The facility is approximately 58,800 square feet in size and can accommodate up to 250 buses. According to 2006 numbers, the facility currently maintains and stores 167 buses, although WMATA reports the facility is fully utilized. The majority of buses stored at this facility are diesel-propelled coaches, 40 feet and under in length. The Montgomery bus facility is located in Rockville approximately 5 miles north of the Bethesda Station. The facility is approximately 65,000 square feet in size and can accommodate up to 250 buses. According to 2006 numbers, the

facility currently maintains and stores 163 buses and like the Landover Bus Garage, is reported as being fully utilized. The majority of buses stored at this facility are diesel-propelled coaches, 60 feet and under in length.

Montgomery County – Ride On

Montgomery County has one bus maintenance facility in Lyttonsville to service its Ride On vehicles. This facility is adjacent to the Georgetown Branch right-of-way on Brookville Road and currently maintains 140 buses with projections of reaching 150 buses in the very near future. This facility occupies 50 to 60 acres and has a cross discipline of uses, including highway services, a fueling facility, and salt domes. This facility maintains a variety of 40-foot low-floor buses, including a small percent of 40-foot hybrid buses, 35-foot and 30-foot buses. The bus facility has a bus wash but does not have pull-through bus maintenance bays, which would make maintenance on a 60-foot articulated bus difficult.

Montgomery County does plan to build a new bus maintenance facility in 2012-2013 in Clarksburg. However, Clarksburg is over 20 miles from Bethesda, which is too far to serve the Purple Line.

Prince George's County – TheBus

Prince George's County does not have a bus maintenance facility close to the corridor. The closest maintenance facility is in Forestville, south of Largo, ten miles south of New Carrollton. This facility currently maintains and stores approximately 90 buses, which is about half of its designed capacity. The maintenance facility is not expected to reach capacity until at least 2012.

Maintenance and Storage Facilities

A site for a maintenance and storage facility has been identified on Brookville Road in the Lyttonsville area in Montgomery County where the County's Ride On buses and school buses are currently serviced. The Purple Line would require the use of some additional adjacent property. This site could serve either BRT or LRT.

In Prince George's County, a site has been identified on the south side of Veterans Parkway near the West Lanham Shopping Center. This site, the Glenridge maintenance facility, is owned by M-NCPPC and currently being used as a maintenance facility for park vehicles.

These two sites provide sufficient capacity for either BRT or LRT operations; and are well located near either end of the alignment.

Several other sites were evaluated. These sites are:

- **River Tech Court** – This site, off River Road was considered for a maintenance and storage facility. Initially suggested to the MTA by the University of Maryland, the University later announced its intention to sell the property to developers, making it no longer available to the MTA.
- **North Veterans Parkway** – This site, located on the north side of Veterans Parkway, is heavily wooded with over 23 acres of forest. The site includes approximately 380 linear feet of streams and 21 acres of highly erodible soils. Because the site includes steep grades it would require extensive grading. This site has substantial environmental impacts and because of the required grading and retaining walls, a high cost. For this reason it was dropped from further consideration.

- **MTA New Carrollton Property** – This site is property owned by the MTA on the east side of the New Carrollton Metro Station. This site includes over two acres of wetlands and 1500 linear feet of streams. In addition it is not particularly conveniently located because it would require the Purple Line to pass under or around the New Carrollton Metro Station. While there is support for extending the Purple Line farther east, and the present project is being planning not to preclude such a future extension, this site would have major costs due to its location east of the New Carrollton Station and tracks. Because of this and because of the substantial water resource impacts, this site was dropped from further consideration.
- **Haig Court** – located on River Road at Haig Court. This site would have only required minimal grading but it includes over 7 acres of forest. It is also very close to the residential neighborhood of Riverdale Park, which is a historic district. This site was dropped from further consideration because of concern about impacts to the community.

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 they can be visually shielded, either by fencing, landscaping, or walls, or they can be incorporated into existing buildings. The number and location of these substations will be determined during the



preliminary engineering phase of project development.

The LRT would be powered by an overhead electrical system. This system would include

overhead wires used to power the vehicles, poles to support the wires and the traction power substations described above. The overhead wire technology selected by the MTA would be a trolley wire. Trolley wire is a single wire system

suspended by poles 17 to 22 feet about the street over each track. The poles would be located either between the two tracks, or on either side of the roadway, depending on the configuration of the alternative at that particular location. The

poles are typically located every 100 to 120 feet. Where curves are sharp, the poles and support wires would need to be more closely spaced.