



**MARYLAND DEPARTMENT OF TRANSPORTATION
AND THE MARYLAND TRANSIT ADMINISTRATION**

AND

PURPLE LINE TRANSIT PARTNERS LLC

**TECHNICAL PROVISIONS
PART 3, OPERATIONS AND MAINTENANCE**

EXECUTION VERSION

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Part 3 – Operations and Maintenance

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1 PROJECT MANAGEMENT AND COORDINATION

Concessionaire shall perform the O&M Work 24 hours per day, seven days a week in accordance with the Contract Documents. The Concessionaire shall maintain the Project in accordance with the O&M Standards. Concessionaire's O&M Work shall implement the approved Operating Plan, Maintenance Plans, Rail Fleet Management Plan, and Asset Management Plan.

Owner may inspect or perform an operating performance analysis, condition assessment, or audit at any time in its reasonable discretion. Concessionaire shall make all appropriate personnel and records available to Owner at any time during the Term within 48 hours notice of a written request.

D&C Work requirements specified in Part 2 of the Technical Provisions also apply to Renewal Work during the O&M Period. Public notification requirements as specified in Part 2A, Section 13 of the Technical Provisions shall also apply to O&M Work as required.

Concessionaire shall provide sufficient resources to operate and maintain the Purple Line System in accordance with the Operating Plan and to perform Maintenance Work for the Purple Line System and other elements as required by Part 1 of the Technical Provisions during the O&M Period.

Concessionaire shall coordinate with Owner to provide all Owner-designated personnel with access to the Purple Line System. Concessionaire shall provide all necessary training to allow Owner-designated personnel access to the Purple Line System in accordance with Concessionaire's established Standard Operating Procedures and Rule Book.

1.1 Operating Plan

The Operating Plan relates to the Purple Line System and is the highest-level description of the Concessionaire's approach to performing the Operations Work during the O&M Period. Concessionaire shall submit the Operating Plan for Review and Approval according to the following schedule:

- Preliminary – 90 days after Financial Close;
- Intermediate – no less than 18 months prior to scheduled start of Trial Running;
- Final – six months prior to the scheduled start of Trial Running with Owner's obligation to Approve in accordance with Section 5.1.4 of the Agreement. Concessionaire shall ensure that all comments, questions, and information required as part of Owner's Review and Approval are resolved no later than 90 days prior to the scheduled start of Trial Running; and
- 90 days prior to the beginning of each Fiscal Year during the O&M Period. If no changes are required to the prior Fiscal Year's Operating Plan for the upcoming Fiscal Year, Concessionaire shall submit a written acknowledgement of such recommendation for Review and Approval.

The Operating Plan shall address and be fully compliant with all provisions of the Contract Documents and shall include, at a minimum, the following:

- table of contents identifying all subordinate Operating Plan documents, plans, and procedures;

- summary of the changes made to the Operating Plan from the previously approved Operating Plan;
- description of the Concessionaire's approach to operating Revenue Service, including the delivery of Normal Service, Special Event Service operations (as described in Part 3, Section 3.14 of the Technical Provisions), and response to Service Interruptions;
- The description of operating Revenue Service during Normal Service shall provide:
 - eastbound and westbound terminal-to-terminal run times for Peak Periods and each Off-Peak Period;
 - round trip times, including terminal turnaround/recovery times for Peak Period and each Off-Peak Period;
 - directional operational string diagrams, showing speed profile (speed in miles per hour on vertical axis and distance on the horizontal axis), Station-to-Station run times and average speeds, dwell time at each Station, average schedule recovery time at each Station (as applicable), time points (if any), and Terminal Station recovery/turnaround time for Peak Period and each Off-Peak Period. All time components shall be consistent with the requirements of Part 3, Section 3.15.1 of the Technical Provisions;
 - description of the operating strategy to be used through the University of Maryland;
 - assumptions regarding delay at each traffic signal; civil and other speed limits for each section of the alignment, acceleration and deceleration rates, dwell times at each Station, time points, and any other factors affecting the Operating Plan;
 - a table or chart showing the traffic signal cycle phasing and timing and the TSPP or other signal treatment that is included in the terminal-to-terminal runs times for each signal traversed for peak and each Off-Peak Period;
 - Train consist size (number of LRVs per Train) during the Peak and Off-Peak Periods, number of Trains/LRVs required to provide Peak Period service, Peak Period spare ratio, and total fleet size;
 - factors that provide the vehicle seated and standing capacity (not to exceed AW2.00 loading) and the actual Operating Plan square foot per standee during the Peak Hour peak load line volume; and
 - description of the methodology and techniques used to develop the Operating Plan, including any analyses of viability of runs times used in the Operating Plan and cost estimate.
- description of Concessionaire's operations organization including the organization hierarchy and functional organization;
- description of the Concessionaire's approach to maintenance of the Purple Line System, so as to minimize impacts to Revenue Service, Normal Service and Special Events; and
- the requirements specified in Sections 1.1.1 through 1.1.4 of this Section 1.1.

1.1.1 Rule Book

Concessionaire shall include the Rule Book in loose-leaf form as an appendix to the Operating Plan and shall include information regarding procedures for all operations, including, at a minimum, Normal Service, Alternate Service, Service Interruptions, Incidents, and Emergencies.

The Rule Book shall include procedures for all operations, including Normal Service and Emergency operations, and shall be used by Concessionaire's personnel 24 hours a day, seven days a week. Concessionaire shall notify personnel of necessary changes to the Rule Book by immediate bulletins. The Rule Book shall be complete and include, at a minimum, the following:

- definitions and abbreviations;
- general rules;
- rules for operating Light Rail Vehicle (LRV) equipment;
- rules for operation of other rail-mounted equipment;
- rules for absolute restriction on use of telephone or text messaging while operating/driving;
- rules for operation of Trains and road vehicles which shall include required compliance with speed restrictions as they apply to MAS, posted street speed limits, or other special conditions;
- rules for operating Trains through passenger Stations where access is through grade crossings or other safety related considerations such as through the University of Maryland campus;
- rules for operation and control of signals and interlockings;
- rules for operation and control of electrical power systems;
- rules for passenger relations and customer service;
- rules for performing Work on Project ROW that affects operations;
- rules for performing Work on Project ROW that places personnel at risk from Trains, electrification, or any other hazard; and
- rules for implementing Safety Standards.

In addition, the Rule Book shall include Rules for the OCC and BOCC including the following topics:

- monitor and respond to all fire, security, status and equipment fault alarms;
- provide assistance to Users;
- make announcements via public address and VMS systems;
- monitor Station public areas using CCTV;
- respond to Emergencies and Incidents;
- contact appropriate Emergency personnel;
- monitor and control LRV, Train, and any other vehicle movements;
- contact supervision for abnormal conditions;

- coordinate and interface with other control centers including WMATA and MTA;
- rules regarding callout of Concessionaire's Key Personnel who will be coordinating with Owner and other various entities and agencies;
- rules regarding operating protocols for interactions with other entities, including Owner, Third Parties, Emergency Services, and any other Governmental Entity;
- rules regarding conditions that warrant OCC to be considered not operational or accessible to personnel and management, control, and monitoring of the Purple Line System transferred to the BOCC;
- rules regarding all forms and checklists and associated procedures for monitoring Train performance at OCC;
- rules regarding logs for Activity Noncompliance Occurrences, Activity Noncompliance Events, Operations Availability Noncompliance Events, and logs of Closures, all identified separately;
- rules for access to the Transitway, Fixed Equipment, Systems and Fixed Facilities to include permission granted only by the OCC or by access card if it is a specific restricted area;
- rules for handling personal injury or public safety concerns; and
- rules for external communications.

1.1.2 Standard Operating Procedures

Concessionaire shall include the SOP as an appendix to the Operating Plan.

The SOP shall describe the normal duties and actions of Concessionaire and the actions to be carried out in response to all foreseeable Emergency conditions addressed by the Rule Book. The SOP shall be complete and address, at a minimum, duties and actions associated with:

- LRVs;
- Stations;
- OCC and BOCC;
- communications;
- public relations;
- Alternate Service;
- Activity Noncompliance Occurrences, Activity Noncompliance Events and Operations Availability Noncompliance Events, all addressed separately;
- clearance to Platform to ensure at a minimum compliance with ADA;
- Work performed within the O&M Limits;
- Service Interruption;
- Emergencies and Emergency Response (including drills);
- Incidents;

- fare collection, including compliance with Comptroller of Maryland requirements for accounting and fiscal controls;
- Traction Power system;
- Train Control System;
- yards;
- shops and Equipment;
- non-revenue vehicles;
- Guideway and track; and
- environmental regulatory requirements.

The SOPs shall contain a contact list of all the various entities and agencies, including Owner personnel with whom Concessionaire's personnel, including transportation controllers, will or may need to coordinate. List may include each contact person, title/role, address, e-mail address, and telephone numbers.

1.1.3 Service Plan

Concessionaire shall include the Service Plan as an appendix to the Operating Plan. The Service Plan shall define all Revenue Service configurations to be operated by Concessionaire. Normal Service shall be consistent with the Service Level hours and Headways set out in Part 3, Exhibit 3.1 of the Technical Provisions. The Service Plan shall include complete daily, Saturday, Sunday, holiday, and Special Event timetables, including Train length, configuration, and capacity by trip. The timetable shall identify the departure time of every Train from every Station, and the arrival time of every Train at each Terminal Station. Timetables shall utilize the Ttot, Td, Ttb, Tvops, Tsc, and Tother times as developed in accordance with Part 3, Section 3.15 of the Technical Provisions. The dates for the Concessionaire's annual holiday service calendar shall follow the dates in WMATA's annual holiday service calendar as established by WMATA for the Metrorail network. The Service Plan should also describe the approach used to determine cycle times including any software used and assumptions made.

Owner may direct an update to the Service Plan up to three times a year. When Owner initiates a proposed change to Service Plan, Concessionaire shall, within 30 days of receipt of Owner's proposed change, determine and submit a Change to Service Plan Report for Review and Approval in accordance with Section 14.1.3 of the Agreement. Concessionaire may propose a Change to Service Plan Report for Owner's consideration at Owner's sole discretion.

Service Plan changes are subject to Owner's public outreach and public hearing requirements.

Concessionaire shall submit a Service Timetable for Review and Approval that is suitable for use and distribution to the public annually and for each change to the Service Plan.

As part of the updates of the Service Plan, Owner and Concessionaire shall jointly develop a schedule of Special Events for that year. Owner and Concessionaire shall update such schedule of Special Events as necessary during the year. The Service Plan shall also provide a description of the staff plan for the Special Event Service Staff Support.

For each Special Event planned for the upcoming year, the Special Event Revenue Service Plan shall identify the details of the Special Event Service to be provided for each Special Event. Concessionaire shall submit a revised Special Events Revenue Service Plan for Review and Approval within 30 days of each update of the schedule of Special Events.

Concessionaire shall provide additional service with the existing LRV fleet to meet additional demand generated by Special Events and in accordance with the approved Special Events Revenue Service Plan. The Special Events Revenue Service Plan shall define adjustments to Normal Service requirements regarding loading, Headways, trip times, and the allowance for short turning trains during Special Event Service.

Concessionaire shall prepare and submit for Review and Approval the Alternate Service Plan as part of the Service Plan. The Alternate Service Plan shall clearly identify how Planned and Unplanned Service Interruptions will be handled. The Alternate Service Plan shall include at a minimum all circumstances identified in Part 3, Section 3.2 of the Technical Provisions.

1.1.4 Operations Manuals

Concessionaire shall include the Operations Manuals as an appendix to the Operating Plan. The Operations Manuals shall meet the requirements set forth in the Technical Provisions and shall include all required information to allow Concessionaire's personnel to operate the Purple Line System in an efficient, effective, and safe manner. The Operations Manuals shall be updated as and when required to reflect changes to the Purple Line System's functionality in accordance with the Contract Documents.

The Operations Manuals shall include at a minimum the following subjects:

- system or equipment configuration;
- hardware and software functionality;
- equipment controls, status indications, and alarms;
- means for dealing with equipment failures;
- computer GUI displays and controls;
- meanings of GUI icons;
- navigation between GUI displays;
- data recording and playback; and
- log-on, log-off, and password procedures.

As a minimum, Concessionaire shall provide Operations Manuals for the following subjects:

- LRV operation for LRV operators;
- rail-mounted equipment operation for maintenance operators;
- shop equipment operation for maintenance personnel;
- control and monitoring system operation, including all associated field systems for OCC/BOCC controllers and maintenance personnel;
- radio system operation;
- emergency telephone operation;
- PA/VMS system operation for OCC controllers and for maintenance personnel;
- CCTV operation for OCC/BOCC controllers, maintenance, and Owner's security personnel;

- Fire Management Panel operation for OCC and Emergency Services personnel; and
- Fare System Equipment.

Concessionaire shall make Operations Manuals available to Owner's personnel in controlled hard copy. No more than eight additional copies shall be made available for outside entities upon Owner's request.

1.2 Rail Fleet Management Plan

Concessionaire shall submit a Rail Fleet Management Plan for Review and Approval no later than 90 days after Financial Close. The Rail Fleet Management Plan shall meet FTA requirements for the purpose of determining the type and quantity of LRVs required to meet Service Levels.

Concessionaire shall submit an updated Rail Fleet Management Plan for Review and Approval no later than six months prior to the scheduled beginning of Revenue Service, and then 90 days prior to the start of each Fiscal Year during the O&M Period, including any changes in the quantity because of recommended Service Levels. Each annual update of the Rail Fleet Management Plan shall show passenger projections and proposed quantities of LRVs for each of the next five years and describe the Rail Fleet Management Plan's compliance with the Asset Management Plan. During the O&M Period, passenger projections shall be extrapolated from actual historical daily passenger counts and consultation with Owner.

1.3 Maintenance Plans

All required plans and manuals described in this Part 3, Section 1.3 and Section 1.4 of the Technical Provisions shall support the Concessionaire's Asset Management Plan for the Project. Concessionaire shall prepare all Maintenance Plans in accordance with O&M Standards and that are consistent with FTA and industry guidelines. Collectively, such plans and manuals shall define the requirements for all Maintenance Work. Concessionaire may reassign individual activities to different plans from those described in the following sections to match with Concessionaire's maintenance organization and assignment of responsibilities so long as all Maintenance Work is performed by Concessionaire. Maintenance Plans shall include a listing of all maintenance service contracts and their scope.

Concessionaire's Maintenance Plans shall address Maintenance Work impacts on the Purple Line System including failures and Emergencies. Maintenance Plans shall include planned response procedures to Incidents; define contingent operating modes; and establish operational guidelines for returning safely to Normal Service.

Concessionaire shall submit Maintenance Plans for Review and Approval according to the following schedule:

- preliminary – no less than 12 months prior to the scheduled start of Trial Running;
- final – no less than six months prior to scheduled start of Trial Running; and
- update – no later than 90 days prior to beginning of each Fiscal Year after start of Revenue Service.

Each update of the Maintenance Plans shall include changes to maintenance conditions, requirements, coordination with Utility Owners and Third Parties, and any changes to the Contract Documents which impact the Maintenance Plans. Any changes from the then current Maintenance Plans shall be clearly identified.

The Maintenance Plans shall address and be fully compliant with all provisions of the Contract Documents and shall include, at a minimum, the following:

- description of Concessionaire's plan for all Maintenance Work during the O&M Period, including, at a minimum, inspections, routine testing, Routine Maintenance, Renewal Work and managing unplanned failures including repairs;
- description of Concessionaire's maintenance organization including the organization hierarchy and functional organization;
- maintenance manuals and procedures as set forth in Part 3, Section 1.5 of the Technical Provisions;
- Concessionaire's self-monitoring processes, including a list of the procedures to be used for all activities associated with Maintenance Work;
- specific information regarding which Fixed Equipment, Fixed Facilities, Systems, and LRVs on which Maintenance Work is expected to be performed and how such information shall be used in the annual update of the Asset Management Plan;
- description of Concessionaire's approach to obtaining all Governmental Approvals and Reviews and Approvals required for the Maintenance Work, including any revision, modification, amendment, supplement, renewal, or extension thereof;
- list with addresses and phone numbers for all maintenance facilities which will be used by Concessionaire, including any off-site storage or maintenance facilities; and
- Maintenance Work activities planned for next 12 months, on a monthly basis.

1.3.1 Infrastructure Maintenance Plan

Concessionaire shall prepare a detailed Infrastructure Maintenance Plan for Review and Approval. The Infrastructure Maintenance Plan shall include maintenance activities for all elements that the Concessionaire is required to maintain, including, at a minimum, alignment, trackwork, Structures, roadways and public roadways.

Such plan shall be based on all applicable Codes and Standards, FRA, AREMA, and similar equivalent organizations as well as manufacturers' recommended practices. Public roadway maintenance shall be performed in accordance with standard practices utilized by the Third Party owning the roadway, and shall take into account, but not be limited to, the area shown in the maintenance delineation drawings in Book 5 Engineering Data. Concessionaire may vary from manufacturers' recommended practices if Concessionaire deems it reasonable and prudent provided that Concessionaire provides a reasonable explanation for the deviation that relates the proposed alternate practice to the specific needs of the Project.

The Infrastructure Maintenance Plan shall include the planned schedule for maintenance, inspection, repair, and testing and at a minimum the following:

- inspection cycles and procedures;
- routine maintenance cycles and procedures;
- test cycles and procedures;
- component and equipment malfunction, and failure reporting requirements;
- repair and corrective action requirements; and

- component and equipment Maintenance Work as applicable for the following:
 - trackwork associated activities including, at a minimum:
 - assessment of rail condition;
 - rail grinding and profiling;
 - rail replacement;
 - fastener replacement;
 - tie replacement;
 - switch point inspection and replacement;
 - guard rail replacement;
 - insulated joint replacement;
 - tamping and alignment adjustment of ballasted track;
 - assessment of grade crossings;
 - replacement of grade crossing panels, rail, and fasteners;
 - rail-to-ground resistance and stray current monitoring and control;
 - corrosion control monitoring, inspection and repair; and
 - re-railing a derailed Train.
 - Structure associated activities;
 - conduits and duct bank activities;
 - roadways, pedestrian paths, sidewalks, bike paths, and walkways activities;
 - safety training requirements;
 - environmental compliance requirements; and
 - hazardous conditions/events requirements and plan for mitigation.

1.3.2 Facilities Maintenance Plan

Concessionaire shall prepare and submit for Review and Approval a detailed Facilities Maintenance Plan. Such Maintenance Work shall be based on mandatory requirements of applicable Codes and Standards, AREMA, ADAAG, and similar equivalent organizations and manufacturers' recommended practices. Concessionaire may vary from manufacturers' recommended practices if Concessionaire deems it reasonable and prudent, provided that Concessionaire provides a reasonable explanation for the deviation that relates the proposed alternate practice to the specific needs of the Project. Facilities include, at a minimum, buildings, stations, parking lots, storage yard, pumping stations, ancillary support buildings, landscaping, and MEP.

The Facilities Maintenance Plan shall define facilities maintenance activities and include at a minimum the following:

- description of each facility;
- planned schedule for inspection and testing of each facility and facility elements;

- inspection and maintenance program for systems (e.g. HVAC, electrical, plumbing, safety);
- safety and training requirements;
- environmental compliance requirements; and
- hazardous conditions/events requirements and plan for mitigation.

Concessionaire shall maintain all facilities in accordance with the Facility Maintenance Plan. The Facility Maintenance Plan shall include policies for scheduling and prioritizing Maintenance Work, handling Emergency responses, and scheduling of custodial cleaning and landscape/grounds maintenance. At a minimum, the Facility Maintenance Plan shall address each of the following:

- energy management systems;
- fire detection, alarm, and suppression systems;
- access control and intrusion detection systems;
- plumbing systems;
- electrical systems;
- emergency generators;
- elevators;
- escalators;
- natural gas systems;
- heating, ventilating, and air conditioning systems;
- hot water heating systems;
- vehicle hoist/general lifting systems;
- plant air systems;
- fueling and other fluid dispensing and storage systems;
- waste oil systems and oil water separator systems;
- vehicle wash systems;
- fuel storage tanks;
- overhead doors;
- parking facilities; and
- landscaping and vegetation control.

1.3.3 Light Rail Vehicle Maintenance Plan

Concessionaire shall submit for Review and Approval a detailed LRV Maintenance Plan. LRV Maintenance Work shall be based on mandatory requirements of applicable Codes and Standards, AREMA, and similar equivalent organizations, and manufacturers' recommended practices. Concessionaire may vary from manufacturers' recommended practices if Concessionaire deems it reasonable and prudent, provided that Concessionaire provides a

reasonable explanation for the deviation that relates the proposed alternate practice to the specific needs of the Project.

The LRV Maintenance Plan shall define LRV maintenance activities and include at a minimum the following:

- planned schedule for inspection and testing of each LRV and LRV components;
- inspection and maintenance program for major LRV systems;
- programmed life cycle maintenance activities of components;
- listing of maintenance service contracts and scope;
- daily inspection program requirements and procedures;
- diagnostic, maintenance, and testing procedures;
- programmed life cycle inspection and maintenance procedures;
- running repair and corrective maintenance procedures;
- periodic checks and repairs to ensure that no more than minor signs of wear appear that do not detract from the appearance of the interiors;
- periodic checks and repairs to ensure that interior noise levels comply with the requirements set forth in Part 2, Section 12.4.11.1 of the Technical Provisions;
- heavy repair procedures;
- periodic overhaul(s) procedures;
- manuals, training and engineering bulletins;
- unit repair program;
- quality management program; and
- required tools, diagnostic, testing, and calibration equipment.

The LRV Maintenance Plan shall include a comprehensive inspection, maintenance, and repair program for all components that supports the Asset Management Plan. It shall incorporate specifications for these components and shall include at a minimum:

- inspection cycles and procedures;
- routine maintenance cycles and procedures;
- test cycles and procedures;
- component and equipment malfunction, and failure reporting requirements;
- repair and corrective action requirements;
- component and equipment overhaul and replacement; and
- false failure, failure, and malfunction reporting and corrective action requirements.

1.3.4 Systems Maintenance Plan

Concessionaire shall prepare a detailed Systems Maintenance Plan based on the Systems Maintenance Work for Review and Approval. Systems Maintenance Work shall be based on

mandatory requirements of applicable Codes and Standards, recommendations of FRA, AREMA, and similar equivalent organizations, and manufacturers' recommended practices. Concessionaire may vary from manufacturers' recommended practices if Concessionaire deems it reasonable and prudent, provided that Concessionaire provides a reasonable explanation for the deviation that relates the proposed alternate practice to the specific needs of the Project. Systems include, at a minimum, Train Control System, Traction Power, OCS, communications, control and monitoring, fire and security, fire protection, corrosion control, and the Fare System.

The Systems Maintenance Plan shall include a comprehensive inspection, maintenance, and repair program for all systems and their components that supports the Asset Management Plan. The Systems Maintenance Plan shall be consistent with Part 2 of the Technical Provisions and shall include at a minimum the following:

- test procedures;
- component and equipment malfunction, and failure reporting requirements;
- repair and corrective action requirements;
- component and equipment overhaul and replacement;
- false failure, failure, and malfunction reporting and corrective action requirements;
- planned schedule for inspection and testing of systems and systems components;
- programmed life cycle maintenance activities of components;
- listing of maintenance service contracts and scope;
- all OEM and supplier specifications and tolerance requirements;
- Train control inspections, testing, equipment repairs, and replacement, including grade crossing warning systems, AVL, and TWC;
- Traction Power inspections, testing, and equipment repairs and replacement;
- overhead contact system repairs and replacement;
- communications systems inspections, testing, and equipment repairs and replacement;
- CCTV systems inspections, testing, and equipment repairs and replacement;
- PAVMS systems shall be available 99.8% of the time when stations are open;
- control and monitoring systems inspections, testing, and equipment repairs and replacement;
- Fare System inspections, testing, and equipment repairs and replacement; and
- system access, alarms, and monitoring repairs and replacement.

Grade crossing warning systems shall be maintained in accordance with applicable sections of the Manual on Uniform Traffic Control Devices (published by the USDOT Federal Highway Administration and incorporated by reference under 23 CFR Part 655, Subpart F) or its successor.

1.3.5 Environmental Management Plan

Concessionaire shall prepare for Review and Approval a detailed Environmental Management Plan covering the O&M Work. The Environmental Management Plan shall at a minimum include the following:

- environmental regulatory requirements;
- emergency response requirements;
- Clean Air Act inspections requirements;
- spill prevention and countermeasure requirements;
- hazardous waste inspection requirements;
- industrial waste water discharge permit requirements;
- environmental training requirements;
- environmental incident response requirements; and
- solid waste management requirements.

1.4 Cleaning Plans

Concessionaire shall prepare cleaning plans in accordance with OSHA and MOSHA standards, the requirements in Part 3, Section 4 of the Technical Provisions, and manufacturers' recommendations or alternatives to manufacturers' standards if proposed by Concessionaire. Collectively, these plans shall define all cleaning requirements.

Ninety days prior to the scheduled start of Trial Running and for each Fiscal Year during the O&M Period, Concessionaire shall prepare and submit Cleaning Plans for Review and Approval.

Cleaning Plans shall be prepared for:

- Fixed Equipment and Fixed Facilities;
- LRVs; and
- Systems.

Cleaning Plans shall include a schedule for cleaning activities and an explanation of how the cleaning will be accomplished.

Cleaning Plans shall address all cleaning requirements including those identified in the Contract Documents and any additional requirements identified by the Concessionaire. Cleaning plans shall include snow and ice removal.

1.5 Maintenance Manuals

Concessionaire shall prepare and submit maintenance manuals for Information six months prior to the scheduled start of Trial Running. The maintenance manuals shall be used by Concessionaire's maintenance personnel and shall be updated as and when required to reflect changes and/or reconfigurations.

The maintenance manuals shall include, at a minimum, the following:

- list of required inspections;

- list of routine and planned maintenance procedures and recommended frequencies for all Project elements;
- list of the Project's equipment manufacturers/vendors, including their contact information (contact person, address, telephone numbers, website address, and e-mail address);
- diagnostic and repair procedures, and tolerance specifications;
- recommended spare parts inventory for all Project components and materials;
- systems manuals, OEM operations and maintenance manuals;
- complete manufacturer's make and model number of all Project lowest replaceable units for Maintenance and Renewal Work;
- specifications and tolerance limits for all Project lowest replaceable units;
- wiring diagrams, mechanical specifications, schematic drawings, logic block diagrams, and assembly and disassembly drawings clearly identifying the components;
- copies of all inspection forms and checklists;
- summary listing of all maintenance tasks with schedule categorized by discipline; and
- procedures for warranty management and administration.

Standard service manuals for commercially available equipment and products shall be used as part of the maintenance manuals only if equipment provided is standard off-the-shelf equipment without any custom features or functions. Custom equipment and systems shall have custom manuals which include detailed information addressing the custom features of equipment provided and shall include drawings. The non-applicable portions of standard manuals shall be neatly encircled and cross hatched to clearly indicate that these sections are not applicable.

Concessionaire shall make maintenance manuals available to all appropriate maintenance personnel in hard copy and electronic form.

1.6 Software and Firmware Manuals and Programs

Concessionaire shall submit Software and Firmware Manuals and Programs for Information six months prior to the scheduled start of Trial Running in accordance with Section 23.4 of the Agreement. The Software and Firmware Manuals and Programs shall be appendices to each applicable Maintenance Plan based on the Maintenance Work described in the plan. These Software and Firmware Manuals and Programs shall meet the maintenance requirements set forth in the Technical Provisions and shall include all required information to allow Concessionaire's personnel to configure, reload, and, where permitted by software licenses, modify software during operations. The Software and Firmware Manuals and Programs shall be used by Concessionaire's personnel and shall be updated as and when required to reflect software and configuration updates and changes.

The Software and Firmware Manuals and Programs shall be complete and include at a minimum the following:

- copies of all software and firmware licenses;
- electronic copies of the as-installed versions of all software and firmware modules that can be reloaded into the host hardware;
- description of the software or firmware functionality;

- instructions for reloading the software or firmware; and
- instructions for configuring the software or firmware.

Concessionaire shall make Software and Firmware Manuals and Programs available to appropriate personnel in paper and electronic form.

1.7 Personnel Management Policies and Procedures Manual

Concessionaire shall submit Personnel Management Policies and Procedures for Information no later than 12 months before the scheduled start of Trial Running. The Personnel Management Policies and Procedures shall describe methods, processes and procedures for how Concessionaire will manage personnel including training, conduct and appearance, personnel identification, and the certification process to assure personnel are qualified to perform the functions required in the O&M Work.

1.7.1 Training and Competency Testing

Concessionaire shall maintain the training programs and processes described in Part 2 of the Technical Provisions throughout the Term to ensure that all personnel members are trained to perform their assigned duties. Concessionaire shall provide all personnel with sufficient training and re-training, including formal written qualification examinations, to assure each person's capability to safely discharge their duties in accordance with all applicable job descriptions, SOPs, the Rule Book, and regulations.

Concessionaire shall require appropriate qualification testing for personnel.

For each personnel member, Concessionaire shall maintain records of training courses successfully passed.

Concessionaire shall only permit personnel to perform duties and functions for which they have been trained and have successfully completed competency testing.

Based on satisfactory performance at training courses and actual on-the-job performance, Concessionaire shall prepare and maintain a directory of staff who are qualified and authorized to operate LRVs, direct movement of LRVs or perform any other safety critical functions.

1.7.2 Personnel Conduct and Appearance

Concessionaire shall provide uniforms that present a professional appearance for all personnel members performing O&M Work on the Purple Line System who routinely interact with Users and others as determined by Concessionaire.

Concessionaire shall require personnel who are required to wear uniforms to report to work in clean and neat uniforms each day they are performing O&M Work.

Concessionaire shall ensure that all personnel engaged in O&M Work conduct themselves in such a manner that reflects favorably on the Project and on the Owner.

1.7.3 Personnel Identification

Concessionaire shall check and confirm the identities of all personnel as part of the employment process and issue a Project identity badge to each. Identity badges shall visually display the Project identity and the personnel member's photograph and job title.

While performing work in the Project ROW, project personnel shall display a clearly visible identification of their name and badge number in a location that can be easily read by another person.

1.8 Meetings

Concessionaire shall submit a schedule of regular meetings with Owner for Review and Comment during the O&M Period. Concessionaire shall submit a schedule of regular meetings according to the following schedule:

- preliminary – no less than 6 months prior to the scheduled start of Trial Running;
- update – no later than three months prior to beginning of each Fiscal Year.

Concessionaire shall provide Owner notice and agendas for scheduled meetings during the O&M Period and shall record and distribute meeting minutes to Owner and others in attendance. Meetings shall keep Owner apprised of Project activities and events, review Concessionaire performance, and discuss any proposed changes to O&M Work and any other subjects relevant to successful Project O&M Work. For any unscheduled meeting that occurs, Concessionaire shall develop and distribute meeting minutes to Owner and others in attendance for Review and Approval.

Concessionaire shall include participation in and attendance at periodic meetings of the National Capital Region Emergency Preparedness Council, which oversees and implements the Regional Emergency Coordination Plan and coordinates activities of the various Regional Emergency Support Function Working Groups.

1.9 Safety and Security Plan

Concessionaire shall submit the Safety and Security Plan for the O&M Period for Review and Approval a minimum of 12 months prior to the scheduled start of Trial Running. The Safety and Security Plan for O&M Work shall build on the Safety and Security Management Plan approved during the D&C Period. Concessionaire shall perform all O&M Work in a manner that ensures safety and security of the Users, personnel, the Owner, and Project elements in accordance with all applicable Laws. The Safety and Security Plan shall address Concessionaire's approach to meeting all the safety and security requirements associated with the O&M Work in Part 2A, Section 7 and Part 2A, Section 8 of the Technical Provisions. The Safety and Security Plan shall at a minimum:

- be in accordance with the MTA's System Safety Program Plan;
- include regular safety and security inspections to confirm that all safety and security certifiable items are functioning as originally intended. Any items found to be deficient shall be corrected in accordance with the Operating Plan and Maintenance Plans as applicable and the Safety and Security Certification updated for Review and Approval;
- include annual safety and security reviews of the Rule Book and the SOPs to determine if any changes are appropriate; and
- include random inspections of personnel performing their duties to confirm that they are following all safety and security requirements identified in the Operating Plan including the Rule Book and SOPs.

In the event of rectification of an Activity Noncompliance Occurrence, the Concessionaire shall continue to render any hazardous or unsafe condition safe for the duration of the rectification period, and failure to do so shall be considered an Activity Noncompliance Event.

1.10 Continuity of Operations Plan

Concessionaire shall submit a Continuity of Operations Plan for Review and Approval a minimum of 6 months before the start of Trial Running, every two years thereafter, and as needed based on guidance from the Maryland Emergency Management Agency.

Concessionaire's Continuity of Operations plan shall be in accordance with Maryland Executive Order 01.01.2013.06 (Maryland Emergency Preparedness Program), the Emergency Management Accreditation Program's Emergency Management Standard, the Owner's SSPP, and shall be coordinated with Owner's Continuity of Operations Plan.

1.11 Safety Training and OSHA Requirements

System safety, safety training, and OSHA requirements are described in Part 2A, Section 7 of the Technical Provisions and shall be met by Concessionaire during the O&M Period.

1.12 Safety and Security Certification Plan Updates

When System modifications are made during the O&M Period, safety and security plans, procedures, and training materials shall be reviewed and new documentation developed by Concessionaire. Concessionaire shall submit such plan updates for Review and Approval (including Safety and Security Certification by Owner) if and as necessary prior to start-up of the repaired or replaced equipment or System.

1.12.1 Major Asset Repair/Replacement

Concessionaire shall follow the Safety and Security Certification Plan requirements described in Part 2A, Section 7 of the Technical Provisions and the Safety and Security Certification process described in Part 2C, Section 2 of the Technical Provisions during Renewal Work.

1.12.2 Other O&M Work

All O&M Work shall be continuously reviewed by Concessionaire for its potential to affect the safety and security of Users, personnel, Equipment, and Revenue Service.

Concessionaire shall provide a system modification Review and Approval procedure that 1) ensures that O&M Work is subject to Safety and Security Certification; 2) does not introduce new hazards; and 3) ensures the original intent of the safety and security integrity of the Purple Line System is maintained. Concessionaire shall provide a Purple Line System modification review and approval procedure that includes at a minimum the following:

- description of system modification;
- identification of potential hazards or vulnerabilities;
- estimated level of safety risk based on Owner's Hazard Risk Assessment matrix in the SSPP; and
- description of existing or initial hazard mitigation plan commensurate with level of safety and/or security risk.

Concessionaire's hazard assessment reports shall be submitted to OSQARM for Review and Approval before commencement of the applicable O&M Work.

Within 30 days after completing any O&M Work that results in a significant change to the Project's design or construction, Concessionaire shall update the Record Documents to reflect such change.

1.13 Reports

Concessionaire shall prepare and submit reports to demonstrate that all aspects of Project performance relative to performance requirements have been satisfied. Reports shall comply with all reporting requirements of FTA.

1.13.1 Database Reporting Requirements

Concessionaire shall develop and provide access to Owner, on a real-time basis, a database including, at a minimum, the following:

- operations and dispatch statistics, including, at a minimum, all items necessary to support MOPF calculations, scheduled and actual passenger service hours and miles (revenue and total), and passenger counts by boardings and alightings, and Station by Station;
- LRV statistics, including, at a minimum, LRV availability for service, LRV component failure by type, and listing of out-of-service LRVs by vehicle number and condition;
- summary of maintenance activities during each day, including inspections, repairs, and replacement of Purple Line System components;
- summary of trackwork and operational systems' performance statistics related to delays in service, including, at a minimum, cause, duration, expected and or actual time resumption of service is expected or actually resumed, and schedule of upcoming Work and outages which will impact service delivery;
- operator event log data, including all operator actions and details for systems events, Incidents, misconduct by passengers, Emergencies and actions taken, and details of Concessionaire's response, including, at a minimum, response time data, response records, and reportable personnel injury/accidents;
- Activity Noncompliance Occurrence and Noncompliance Event log;
- Concessionaire's Incident Response logs including a time-based report of all actions and activities performed by Concessionaire.

Concessionaire shall provide Owner with the classroom training, training plan and training materials necessary to access, navigate and utilize all information, data and documents placed in this database.

1.13.2 Operations and Maintenance Daily Report

Concessionaire shall submit the Operations and Maintenance Daily Report format for Review and Approval no later than 90 days before the scheduled start of Trial Running. The submission shall contain the format and outline of the operations and maintenance daily report. The outline shall include, at a minimum, the following:

- listing of Revenue Service Hours;
- listing of Revenue Vehicles Miles;
- summary of system events and Incidents during the past 24 hours;
- summary of passenger services statistics, including, at a minimum, passenger accidents and injury, sickness, fare evasions, and comments/complaints/investigations under review by cause;

- summary of equipment or system failures that impact any of the required operating performance requirements;
- listing of Activity Noncompliance Occurrences; and
- listing of Noncompliance Events; and
- listing of daily events that the Concessionaire considers Non-Concessionaire Caused Disruptions including the time of the occurrence, the duration of the Non-Concessionaire Caused Disruption and whether any previously reported Non-Concessionaire Caused Disruptions is continuing.

The Operations and Maintenance Daily Report shall be electronic in format.

Concessionaire shall provide electronic access to the Operations and Maintenance Daily Report for Information on a daily basis, no later than 9:00 AM Eastern Time on the following day beginning at Trial Running.

1.13.3 Monthly Performance Monitoring Report

Concessionaire shall submit the Monthly Performance Monitoring Report Format for Review and Approval no later than 90 days before the scheduled start of Trial Running. The submission shall contain the format and outline of the Monthly Performance Monitoring Report. The outline shall include, at a minimum, the following:

- statement of all adjustments to the Operations and Maintenance Daily Reports from preceding month (if any);
- summary of monthly Activity Noncompliance Occurrences, Activity Noncompliance Events and Operations Availability Noncompliance Events, all listed separately;
- summary of reportable personnel injury/accidents;
- summary of personnel disciplinary actions;
- summary of system statistics not included in the Operations and Maintenance Daily Reports, including person-hours expended during the month by function and by FTA National Transit Database type and category, operating expenses by FTA National Transit Database category, LRV inspection and maintenance hours, and out-of-stock materials and parts;
- FTA data consistent with the requirements of 49 CFR Part 630 and shall include, at a minimum:
 - FTA 002 – Service LRT Car Summary;
 - FTA 005 – Supplemental Information;
 - FTA 301 – Operating Expense Summary;
 - FTA 321 – Operators’ Wages;
 - FTA 331 – Fringe Benefits;
 - FTA 402 – Revenue LRT Car Maintenance Performance and Energy Consumption Schedule;
 - FTA 403 – Transit Way Mileage Schedule;
 - FTA 404 – Transit System Employee Count;

- FTA 405 – Transit System Safety;
- FTA 406 – Transit System Service;
- FTA 408 – Revenue LRT Car Inventory;
- details on all instances of Activity Noncompliance Occurrences, Activity Noncompliance Events and Operations Availability Noncompliance Events, all listed separately, describing at a minimum: the corresponding name and ID number, the commencement time, duration, entity who identified the event first, details regarding response to and rectification of any Activity Noncompliance Occurrences, including steps taken and time it took to respond and rectify, applicable Response Time, Rectification Time and/or Application (Maximum Exposure) Time, status of events as of the end of month, and Noncompliance Points if any associated with each event;
- Planned Maintenance for upcoming month;
- summary of Maintenance Work performed and completed during previous month including the results of such Maintenance Work;
- confirmation that Concessionaire performed all O&M Work;
- summary of Planned Maintenance that was not completed for the month, including reasons for incompleteness and a summary of deferred days for each deferred item;
- summary of all Nonconforming Work including actions taken to comply with Section 7.14 of the Agreement;
- summary of Noncompliance Points accrued by Concessionaire for the following:
 - most recent Payment Period;
 - most recent three Payment Periods;
 - most recent six Payment Periods;
 - most recent twelve Payment Periods.
- summary of Closures for the past month, including details describing location and duration, as well as the reason for each Closure;
- summary of Approved Planned Service Interruptions and reduced OTP Factors , as described in Sections 6 through 10 of Appendix D, Exhibit 4D of the Agreement;
- summary of status of the Project for the month;
- listing of each event that the Concessionaire considers Non-Concessionaire Caused Disruptions together with the NCD Notice required under Section 15.2.5.2 of the Agreement for Review and Approval by Owner;
- detailed results of all inspections, assessments, and testing activities, including related procedures and forms; and
- certification that Concessionaire performed all O&M Work in accordance with the Contract Documents.

The Monthly Performance Monitoring Report shall be electronic in format.

Concessionaire shall submit the Monthly Performance Monitoring Report for Review and Approval on a monthly basis no later than the 10th day of the following month beginning at Trial

Running. After Revenue Service Availability, the Monthly Performance Monitoring Report shall be used by Owner in its Review and Approval of Concessionaire's Requests for Availability Payments in accordance with Section 13.2.3 of the Agreement.

1.13.4 Quarterly Performance Monitoring Reports

Concessionaire shall submit the Quarterly Performance Monitoring Report Format for Review and Approval no later than 90 days before the scheduled start of Trial Running. The Quarterly Performance Monitoring Report shall summarize all activities associated with O&M Work for the quarter, actual Train service and maintenance performed for the quarter, and certification that Concessionaire performed all O&M Work in compliance with the Contract Documents. The outline shall include, at a minimum, the following:

- summary of all Monthly Performance Monitoring Reports from the preceding quarter;
- Asset Management Plan compliance and delivery from the preceding quarter;
- statement of all adjustments to Monthly Performance Monitoring Reports from the preceding quarter (if any); and
- summary of information requested by Owner (corrected if necessary), by month during preceding quarter (if any).

The Quarterly Performance Monitoring Report shall be electronic in format.

Concessionaire shall submit the Quarterly Performance Monitoring Report for Information on a quarterly basis no later than the 15th day of the month following the end of the quarter. Reporting shall commence with Trial Running, continuing through the O&M Period.

1.13.5 Annual Performance Monitoring Reports

Concessionaire shall submit the Annual Performance Monitoring Report Format for Review and Approval no later than 90 days before the scheduled start of Trial Running. The Annual Performance Monitoring Report shall summarize all of the activities associated with O&M Work for the year, actual Train Service, and certification that Concessionaire performed all O&M Work in compliance with the Contract Documents. The outline shall include, at a minimum, the following:

- summary of all Performance Monitoring Reports from the preceding year;
- statement of all adjustments to Performance Monitoring Reports from the preceding year (if any);
- results and recommendations of the most recently completed independent third-party inspections and Owner asset condition assessments; and
- summary of information requested by Owner (corrected if necessary), by month during preceding year (if any).

The Annual Performance Monitoring Report shall be electronic in format.

Concessionaire shall submit the Annual Performance Monitoring Report for Information on an annual basis no later than the 30th day of the month following the end of the Fiscal Year. Reporting shall commence with Trial Running, continuing through the O&M Period. At Revenue Service Availability, the Annual Performance Monitoring Report shall be used by Owner in its Review and Approval of Concessionaire's Requests for Availability Payments in accordance with Section 13.2.3 of the Agreement.

1.13.6 NOT USED

1.13.7 Exception and Emergency Notification and Incident Reports

Concessionaire shall provide verbal and immediate written notification to Owner of any Incident or Emergency which results in an injury or near-miss to a User, general public, or Concessionaire's personnel, or results in damage to infrastructure. Written notification may be transmitted by electronic means to Owner's designated personnel.

Concessionaire shall provide verbal and written notification to Owner of any hazardous condition affecting Users, personnel or assets on the Project and the proposed immediate actions that Concessionaire will take to mitigate the potential impacts of the hazardous condition. Written notification may be transmitted by electronic means to Owner's designated personnel.

Concessionaire shall provide verbal and written notification to Owner in the event of delay in Train Service in excess of 15 minutes, including the reason for the delay and a projected timeframe for resumption of scheduled service. Written notification may be transmitted by electronic means to Owner's designated personnel.

A written exception and Emergency notification and Incident report is required after any event which results in:

- a reportable injury to a User, personnel, or the general public;
- near misses with the potential for injury;
- unusual occurrences which may impact safety;
- a delay to Train Service in excess of 15 minutes; or
- physical damage to the Purple Line System.

All such reporting shall be in accordance with the requirements of:

- Owner and Owner's SSO;
- Maryland Rail Safety Oversight Agency;
- National Transportation Safety Board;
- Occupational Safety and Health Administration; and
- Federal Transit Administration.

This report shall include, at a minimum, an individual analysis of the site or sites affected by the incident with the following information:

- date, time, and location of the event;
- identification of injured persons to the extent allowed in accordance with Law;
- list of damaged assets with a damage assessment;
- cause and description of any injury and/or damage;
- description of the event and system impacts;
- description of site conditions supported by photo documentation and digital file;
- service impact; and

- any other information required by the entity to which reporting is required.

Concessionaire shall submit exception and emergency notification and incident reports according to the following schedule:

- as required by the regulatory entity to which reporting is required; and
- written report to Owner no later than 24 hours after verbal notification.

1.13.8 Regulatory Reports

Concessionaire shall comply with all regulatory reporting requirements in place at the time of submittal to any Governmental Entity and shall provide to Owner sufficient regulatory reporting information for Owner to obtain State or Federal operating subsidies and to meet prevailing FTA National Transit Database reporting requirements. This information may be consolidated within monthly, quarterly, and annual Performance Monitoring Report so long as the information is in a form and format that can be submitted directly to FTA and other Governmental Entities as required.

1.14 Operations and Maintenance Quality

1.14.1 Operations and Maintenance Personnel

The Quality Program Manager is a Key Personnel and shall meet the requirements of Part 2A, Section 2.3 of the Technical Provisions during the O&M Period. The Quality Program Manager shall also be known as the Project Operations and Maintenance Quality Manager (PQM) during the O&M Period.

Concessionaire's quality staff during O&M Work shall consist of experienced Quality Program personnel in sufficient numbers to adequately perform the duties required by the Quality Management Plan (QMP). Concessionaire's Quality personnel shall report directly to the PQM.

1.14.2 Operations and Maintenance Quality Management Plan

Concessionaire shall submit an Operations and Maintenance Quality Management Plan (OMQMP) for Review and Approval according to the following schedule:

- no later than 12 months before the scheduled start of Trial Running;
- before implementation of any revisions to the OMQMP; and
- 90 days prior to the beginning of each Fiscal Year during the O&M Period.

The OMQMP shall address all quality related Work activities to be performed during the O&M Period and shall detail Concessionaire's approach to quality management, quality assurance, and quality control. Concessionaire shall implement and maintain an effective Quality Program to manage, control, document, and ensure Work complies with requirements of the Contract Documents. The OMQMP shall contain, at a minimum, the 15 elements identified in *The FTA Quality Management System Guidelines*.

The approved OMQMP shall be implemented across Concessionaire's organization, to include Contractors and Suppliers used during O&M Work.

The OMQMP shall consist of plans and procedures necessary to ensure adequate assurance and control of quality for O&M Work, including materials, reports, plans, equipment, testing, coordination, workmanship, fabrication, operations, and maintenance for both on-Site and off-Site Work by Concessionaire as well as Contractors, Suppliers, laboratories, and consultants.

The OMQMP shall also include a training plan to ensure suitable proficiency is achieved and sustained by personnel performing quality-related activities. Training records shall include re-training documentation and performance by each personnel.

Implementation of the OMQMP shall be subject to audit performed by Owner. Concessionaire's Authorized Representative, Project Manager, and PQM shall sign the OMQMP.

Concessionaire shall notify Owner, in writing, of any proposed change to the OMQMP. All proposed changes are subject to Review and Approval. Concessionaire shall review the OMQMP on at least an annual frequency to ensure the program's continued adequacy to meet the requirements of the Contract Documents, and shall incorporate changes to overcome the deficiencies or provide enhancements to the program.

Owner may require changes to the approved OMQMP as O&M Work progresses to obtain the quality performance required by the Contract Documents. Revisions to the OMQMP shall be submitted by Concessionaire for Review and Approval.

1.14.3 Operations and Maintenance Quality Audits

Concessionaire shall develop a comprehensive program of scheduled and unscheduled audits to verify by examination and evaluation of objective evidence that applicable elements of the quality program are suitable and have been developed, documented, and effectively implemented in accordance with the Contract Documents. Audits shall be performed on O&M Work and Activity Noncompliance Occurrence and Noncompliance Events, documentation and reporting, and implementation of all plans required in Part 3 of the Technical Provisions.

Audit results shall be documented and reviewed by Concessionaire's personnel having responsibility in the area being audited. Follow-up audits, including re-audit of deficient areas, shall be conducted to assure that effective corrective action has been taken.

Format and content of Concessionaire's audit checklists, audit finding reports, and audit schedule shall be approved by Owner.

Owner may participate in Concessionaire's quality audits.

Concessionaire shall make available all quality records in the event Owner, FTA, or other Governmental Entities elect to conduct an audit of Concessionaire's quality practices and adherence to OMQMP.

1.15 Requirements for Preparations for Operations and Maintenance

This Section includes those items which are preparatory to the start of system testing, Safety and Security Certification, and commissioning, and continue during the O&M Period. See Part 2C of the Technical Provisions for other requirements.

Concessionaire shall submit the Preparation for Operations Maintenance Report for Review and Comment no later than six months prior to start of Integration Testing. The report shall contain the information described in the following Sections.

1.15.1 Non-Revenue Vehicles

Concessionaire shall maintain an inventory of all non-revenue vehicles which will be used for O&M Work. Such inventory shall include specialized vehicles required for the recovery of disabled LRVs, road vehicles required for the transportation of maintenance personnel and materials, and mobile and portable equipment required to support all maintenance activities shall be identified.

Non-revenue vehicles shall be procured based on Concessionaire's procurement schedule to support Integration Testing, Safety Certification, and Trial Running as well as the Concessionaire's responsibilities during the O&M Period.

1.15.2 Office Furniture and Equipment

Office furniture and equipment shall be procured based on Concessionaire's procurement schedule to support Concessionaire's personnel during the O&M Period beginning at Integration Testing.

Concessionaire shall provide furniture and equipment for five Owner personnel located at the same facility as the Project Manager. Furniture and equipment may include desks, chairs, tables, bookshelves, side-chairs, file cabinets, storage cabinets, whiteboards, computers, printers, scanners, telephones and internet access. Concessionaire and Owner shall meet and agree on the location of the five Owner personnel co-located with the Project Manager and specific furniture and equipment required no less than 12 months prior to Integration Testing.

1.15.3 Spare Parts, Test Equipment, and Consumables

Concessionaire shall maintain an inventory of spare parts and associated list of items and quantities to be held in stock (maximum quantities, minimum quantities to initiate re-ordering, and estimated delivery lead time) to support Maintenance Work, including overhaul. The proposed types and quantities of spare parts shall support the required levels of reliability for each system and facility in the Project as identified in Concessionaire's reliability analyses and assignments. Concessionaire shall also identify quantities of spare parts to be held on site during testing and commissioning to ensure that there are no schedule impacts due to a lack of replacements when parts fail during Integration Testing and Trial Running.

Concessionaire shall maintain an appropriate level of spare parts, test equipment, and consumables during the O&M Period. Concessionaire shall be responsible for the procurement, storage, and any analyses and testing of such items.

1.15.4 Maintenance Equipment

Concessionaire shall procure all maintenance equipment in accordance with the procurement schedule.

1.16 Public Information and Communications

Concessionaire shall support Owner community outreach and education during the O&M Period. Concessionaire shall produce and distribute communications materials in English and Spanish, and that meet ADA requirements. Communications materials to be used on Owner's website shall also meet these requirements. Concessionaire shall not use Owner logos, images, and brands on any communications without Review and Approval. Owner will develop and maintain the project website.

Concessionaire shall submit the O&M Period Communications and Public Outreach Plan for Review and Approval no less than 18 months before beginning Trial Running. An updated plan shall be submitted for Review and Approval 90 days prior to the beginning of each Fiscal Year during the O&M Period. The plan shall address Concessionaire's role in support of Owner with:

- light rail safety education concerning pedestrian and motor vehicle crossings within the Project ROW. This program shall include education of residents, businesses, school children, teachers, and administrators, bus drivers, local Emergency Services personnel,

Utility Owner personnel and Third Parties. Special attention and emphasis shall be made prior to commencement of Integration Testing and Trial Running to notify the public;

- a public education program that shall include safety education, information on how the public will use the Project, fare policy and operations, system hours of service, emergency response features and systems;
- marketing, including plans for opening the system for Revenue Service;
- communications with elected officials;
- media relations role regarding Maintenance Work, Renewal Work, Emergencies, Incidents, and opening ceremonies coordination;
- customer service inquiries, complaints, and response;
- Project website;
- social media;
- division of responsibilities for selecting and conducting meetings at public venues, such as local festivals and community meetings;
- notify public of Alternate Service, Service Interruption, and Revenue Service; and
- broadcast verbal announcements provided by Owner at Stations and on Trains.

In accordance with Section 1.1.3, Service Plan changes are subject to Owner's public outreach and public hearing requirements. Concessionaire shall support Owner's efforts.

Concessionaire shall submit Communications Materials for Review and Approval at least seven days prior to dissemination. Where such communication is in response to an Incident or Emergency where the seven-day period is not available, Concessionaire shall coordinate with Owner to enable Owner to Review and Approve the communication in the time available.

1.17 Summary of Submittals

Item	Section	Submittal	Action
1	1.1	Operating Plan	Review and Approval
2	1.1.3	Service Timetable	Review and Approval
3	1.1.3	Alternate Service Plan	Review and Approval
4	1.2	Rail Fleet Management Plan	Review and Approval
5	1.3	Maintenance Plans	Review and Approval
6	1.4	Cleaning Plans	Review and Approval
7	1.5	Maintenance Manuals	Information
8	1.6	Software and Firmware Manuals and Programs	Information
9	1.7	Personnel Management Policies and Procedures Manual	Information
10	1.8	Schedule of Regular Meetings	Review and Comment
11	1.9	Safety and Security Plan	Review and Approval
12	1.10	Continuity of Operations Plan	Review and Approval
13	1.13.2	Operations and Maintenance Daily Report Format	Review and Approval
14	1.13.2	Operations and Maintenance Daily Report	Information
15	1.13.3	Monthly Performance Monitoring Report Format	Review and Approval
16	1.13.3	Monthly Performance Monitoring Report	Review and Approval
17	1.13.4	Quarterly Performance Monitoring Report Format	Review and Approval
18	1.13.4	Quarterly Performance Monitoring Report	Information
19	1.13.5	Annual Performance Monitoring Report Format	Review and Approval
20	1.13.5	Annual Performance Monitoring Report	Information
21	1.13.7	Exception and Emergency Notification and Incident Report	Information
22	1.14	Operations and Maintenance Quality Management Plan	Review and Approval
23	1.15	Preparations for Operations and Maintenance Report	Review and Comment
24	1.16	O&M Period Communications and Public Outreach Plan	Review and Approval
25	1.16	Communications Material	Review and Approval

2 ACTIVITY NONCOMPLIANCE OCCURENCES

Concessionaire shall perform the O&M Work on the Project including any Project elements that are installed by Concessionaire outside the Project ROW beginning on Revenue Service Availability until the end of the Term, in accordance with the requirements of the Contract Documents.

The Project shall be monitored, operated, and maintained 24 hours per day, seven days per week in accordance with the Contract Documents. Concessionaire shall comply with the most recent versions of the Specifications, Standards, Manuals, and Guidelines, including, at a minimum, those provided in Book 3 Codes and Standards and all other Contract Documents.

The Owner may perform a condition assessment review at any time at its sole discretion. The Owner may periodically perform independent assessments and quality assurance reviews by inspecting repairs and other maintenance activities recently completed by Concessionaire as well as observing operations. In addition, Owner may perform field reviews of completed Work for quality and completeness. All records of the O&M Work performed by Concessionaire shall be made available to Owner for review at any time during the O&M Period upon at least 48 hours notice.

2.1 Activity Noncompliance Occurrences and Activity Noncompliance Events

Noncompliance Points and associated Deductions will be assessed for Activity Noncompliance Events in accordance with the Contract Documents and in particular Section 16 and Exhibit 4D of the Agreement.

Such Activity Noncompliance Events will be assessed as described below:

- failure to timely respond (if applicable) to an Activity Noncompliance Occurrence within the Response Time will result in an Activity Noncompliance Event being assessed;
- failure to timely rectify an Activity Noncompliance Occurrence within the Rectification Time will result in an Activity Noncompliance Event being assessed; and
- continuing failure to timely rectify an Activity Noncompliance Occurrence following the expiration of a Rectification Time or Application (Maximum Exposure) Time (as applicable) within any further Application (Maximum Exposure) Time will result in an Activity Noncompliance Event being assessed.

Response Time and Rectification Time begin simultaneously at the time any member of Concessionaire's personnel becomes aware of the Activity Noncompliance Occurrence and run concurrently; not sequentially. Concessionaire's personnel will be deemed to be aware of an Activity Noncompliance Occurrence upon the earliest to occur of the following: (a) when the Activity Noncompliance Occurrence is reported in the real-time database, (b) when the Activity Noncompliance Occurrence is received on the reporting hot line, or (c) when the Activity Noncompliance Occurrence is received in the Activity Noncompliance Occurrence and Noncompliance Event log. The Application (Maximum Exposure) Time begins at the end of the Rectification Time or previous Application (Maximum Exposure) Time (as applicable). Examples are provided below.

Example 1: With a Response Time of 1D, Rectification Time of 1M, and an Application (Maximum Exposure) Time of 1 SNC per W:

- Failure to respond in one day would result in an Activity Noncompliance Event;

- Failure to rectify within one month would result in an additional Activity Noncompliance Event; and
- Continued failure to rectify would result in one additional Activity Noncompliance Event each successive week until the Activity Noncompliance Occurrence is rectified.

Example #2: With a Response Time of W, Rectification Time of M, and an Application (Maximum Exposure) Time of 1 SNC per W:

- Failure to respond in one week would result in an Activity Noncompliance Event;
- Failure to rectify within one month would result in an additional Activity Noncompliance Event; and
- Continued failure to rectify would result in one additional Activity Noncompliance Event each successive week until the Activity Noncompliance Occurrence is rectified.

Example #3: With a Response Time of N/A, Rectification Time of ND, and an Application (Maximum Exposure) Time of 1 SNC per Station per D:

- Failure to respond in one day would not result in an Activity Noncompliance Event because the obligation to respond is N/A;
- Failure to rectify within the next day would result in an Activity Noncompliance Event for each noncompliant Station; and
- Continued failure to rectify would result in one additional Activity Noncompliance Event for each noncompliant Station each successive day until the Activity Noncompliance Occurrence is rectified.

Example #4: With a Response Time of I, Rectification Time of ND, and an Application (Maximum Exposure) Time of 1 QNC per O per D:

- Failure to respond immediately (within 5 minutes or as soon as practicable) would result in an Activity Noncompliance Event;
- Failure to rectify by the next day would result in an additional Activity Noncompliance Event for each occurrence; and
- Continued failure to rectify would result in one additional Activity Noncompliance Event for each successive day for each occurrence until the Activity Noncompliance Occurrence is rectified.

Example #5: With a Response Time of N/A, Rectification Time of I, and an Application (Maximum Exposure) Time of 1 QNC per O per D:

- Failure to respond would not result in an Activity Noncompliance Event because the obligation to respond is N/A;
- Failure to rectify immediately (within 5 minutes or as soon as practicable) would result in an Activity Noncompliance Event for each occurrence; and
- Continued failure to rectify would result in one additional Activity Noncompliance Event for each successive day for each occurrence until the Activity Noncompliance Occurrence is rectified.

Example #6: With a Response Time of X, Rectification Time of I, and an Application (Maximum Exposure) Time of 1 QNC per O per D:

- An Activity Noncompliance Event is automatically assessed at the same time as the Activity Noncompliance Occurrence regardless of whether the Concessionaire responds to that Activity Noncompliance Occurrence; and
- Failure to rectify immediately (within 5 minutes or as soon as practicable) would result in an additional Activity Noncompliance Event; and
- Continued failure to rectify would result in one additional Activity Noncompliance Event for each successive day for each occurrence until the Activity Noncompliance Occurrence is rectified.

Any event that could trigger multiple Activity Noncompliance Occurrences will only be assessed against the single such Activity Noncompliance Occurrence that is most specific to the event. The Activity Noncompliance Occurrence Table includes a summary of the Activity Noncompliance Occurrences only. Refer to the referenced section of the Contract Documents for a complete description of the Activity Noncompliance Occurrence.

Noncompliance Points and Deductions for Activity Noncompliance Occurrences associated with compliance with an Approved plan (e.g. Item #26 – Concessionaire shall comply with the Operating Plan) will only be assessed up to two Activity Noncompliance Events for that plan on any given Day, irrespective of the number of individual Activity Noncompliance Occurrences greater than two with different requirements of that Approved plan that may occur on that day. Also, a noncompliance that actually occurred with an Approved plan will continue to be assessed each Day until all Activity Noncompliance Occurrences with all the requirements of the Approved plan have been corrected.

If Concessionaire fails to respond and rectify an Activity Noncompliance Occurrence, Noncompliance Points and Deductions associated with applicable Activity Noncompliance Events will accumulate simultaneously for both the failure to Respond and the failure to Rectify the same Activity Noncompliance Occurrence.

Sections 2.2 through 2.7 of the Technical Provisions shall comprise the Activity Noncompliance Occurrence Table.

Activity Noncompliance Occurrence Key	
Activity Noncompliance EventType (NC Type)	SNC = Service Activity Noncompliance Event QNC = Quality Activity Noncompliance Event
Activity Noncompliance Event Category (Category)	Major Medium Minor
Time (Recording Frequency, Response Time, Rectification Time, Application)	N/A = not applicable, no obligation to respond or rectify (as applicable) O, PO = occurrence, per occurrence R = randomly or per random event (interval between random event not to exceed 12 months) X = an Activity Noncompliance Event is automatically assessed at the same time as the Activity Noncompliance Occurrence I = immediately (within 5 minutes or as soon as practical) H = hourly or hour or number of hours C = continuous D = daily or day or number of days ND = by start of service next day W = weekly or week M = monthly or month Q = quarterly or quarter Y = yearly or year

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2.2 Activity Noncompliance Occurrence Table, Management Plans, Manuals, Policies, Procedures, and Reports

ID #	Reference	Activity Noncompliance Occurrence	NC Type	Category	Recording Frequency	Response Time	Rectification Time	Application (Maximum Exposure) Time
1	1.1	Concessionaire shall submit the Operating Plan.	QNC	Medium	Y	N/A	W	1 QNC per W
2	1.1.3	Concessionaire shall comply with Alternate Service Plan for Planned Service Interruptions.	SNC	Major	O	I	0.5H	1 SNC per O per 4H
3	1.1.3	Concessionaire shall comply with Alternate Service Plan for Unplanned Service Interruptions.	SNC	Medium	O	0.5H	2H	1 SNC per O per 2H
4	1.2	Concessionaire shall submit the Rail Fleet Management Plan.	QNC	Medium	Y	N/A	W	1 QNC per W
5	1.3	Concessionaire shall submit the Maintenance Plans.	QNC	Medium	Y	N/A	W	1 QNC per W
6	1.4	Concessionaire shall submit the Cleaning Plans	QNC	Medium	Y	N/A	W	1 QNC per plan per W
7	1.7.1	Concessionaire shall require appropriate testing and maintain records of the training program.	QNC	Medium	M	N/A	W	1 QNC per W
8	1.7.1	Concessionaire shall allow only qualified and trained personnel to perform Work.	QNC	Major	C	X	1H	1 QNC per O
9	1.7.2	Project personnel conduct and appearance shall be in accordance with the Personnel Management Policies and Procedures.	SNC	Minor	C	N/A	I	1 SNC per O
10	1.7.3	Project personnel shall be suitably identified while in the Project ROW.	SNC	Minor	C	N/A	2H	1 SNC per O
11	1.9	Concessionaire shall submit the Safety and Security Plan.	SNC	Medium	Y	N/A	W	1 SNC per W

ID #	Reference	Activity Noncompliance Occurrence	NC Type	Category	Recording Frequency	Response Time	Rectification Time	Application (Maximum Exposure) Time
12	1.9	Concessionaire shall comply with the Safety and Security Plan.	SNC	Major	C	X	D	1 SNC per W
13	1.9, 3	Concessionaire shall implement corrective action(s) to resolve hazardous conditions.	SNC	Major	O	2H	D, unless a longer period is approved by Owner	1 SNC per O per D
14	1.13.1	Concessionaire shall provide O&M Period database access in real-time.	QNC	Minor	C	N/A	D	1 QNC per O per D
15	1.13.2	Concessionaire shall provide access to the current Operations and Maintenance Daily Report.	QNC	Minor	D	N/A	ND	1 QNC per O per D
16	1.13.3	Concessionaire shall submit the Monthly Performance Monitoring Report.	QNC	Medium	M	N/A	W	1 QNC per W
17	1.13.4	Concessionaire shall submit the Quarterly Performance Monitoring Report.	QNC	Minor	Q	N/A	W	1 QNC per W
18	1.13.5	Concessionaire shall submit the Annual Performance Monitoring Report.	QNC	Medium	Y	N/A	W	1 QNC per W
19	1.13.7	Concessionaire shall provide verbal and written notification of Incidents and Emergencies.	SNC	Medium	O	N/A	I	1 SNC per O per H
20	1.13.7	Concessionaire shall provide verbal and written notification of delay in service in excess of 15 minutes.	SNC	Medium	O	N/A	I	1 SNC per O per H
21	1.13.7	Concessionaire shall provide verbal and written notification of hazardous conditions.	QNC	Medium	O	N/A	I	1 QNC per O per H
22	1.13.7	Concessionaire shall submit written exception and emergency notification and incident report.	QNC	Medium	O	N/A	D	1 QNC per O per D

ID #	Reference	Activity Noncompliance Occurrence	NC Type	Category	Recording Frequency	Response Time	Rectification Time	Application (Maximum Exposure) Time
23	1.13.8	Concessionaire shall provide required regulatory reports.	QNC	Major	O	N/A	W	1 QNC per O per W
24	1.14	Concessionaire shall submit the OMQMP.	QNC	Medium	Y	N/A	W	1 QNC per W
25	1.14	Concessionaire shall perform scheduled and unscheduled quality audits and make available all quality records.	QNC	Medium	O	N/A	W	1 QNC per O per W

2.3 Activity Noncompliance Occurrence Table, Operations

ID #	Reference	Activity Noncompliance Occurrence	NC Type	Category	Recording Frequency	Response Time	Rectification Time	Application (Maximum Exposure) Time
26	3	Concessionaire shall comply with the Operating Plan, other than on-time performance which is addressed elsewhere. This criterion only reflects compliance with Operating Plan requirements that are not captured in other Activity Noncompliance Occurrences, and are not captured in MOPF calculations.	SNC	Medium	C	D	D	1 SNC per O per D
27	4.1	Concessionaire shall perform all Work in accordance with the approved Environmental Management Plan.	QNC	Medium	M	D	M	1 QNC per O per M
28	3.2.3, 3.10.1	Concessionaire shall recover Users stranded on Trains or stranded in elevators.	SNC	Major	O	0.5 H	1.5 H or as soon as practicable	1 SNC per O per H
29	3.9.2	The functionality of the BOCC shall be fully tested on a monthly basis.	SNC	Medium	M	N/A	2D	1 SNC per O per D

ID #	Reference	Activity Noncompliance Occurrence	NC Type	Category	Recording Frequency	Response Time	Rectification Time	Application (Maximum Exposure) Time
30	3.10	All Stations shall be open to Users so as to allow boarding and alighting of Trains according to the Operating Plan.	SNC	Major	O	N/A	I	1 SNC per Station per 4H
31	3.10	Concessionaire shall provide a mobility shuttle when ADA access to and from a Platform is not available.	SNC	Medium	O	N/A	I	1 SNC per O per H
32	3.13.2	Concessionaire shall monitor the Fare System and ensure the fare system is fully functional, including sufficient tickets and receipts for Users at each TVM.	SNC	Medium	C	N/A	I	1 SNC per O
33	3.16.1, 5.3.1.	Concessionaire shall maintain interior temperature of each LRV within the acceptable range while operating Revenue Service	SNC	Minor	C	I	0.5H	1 SNC per D per LRV

2.4 Activity Noncompliance Occurrence Table, Cleaning

ID #	Reference	Activity Noncompliance Occurrence	NC Type	Category	Recording Frequency	Response Time	Rectification Time	Application (Maximum Exposure) Time
34	4.1	Concessionaire shall implement and abide by each Cleaning Plan.	QNC	Minor	D	N/A	D	1 QNC per O per D
35	4.1.2	Concessionaire shall prevent snow and ice buildup at Stations and facilities in accordance with the Approved Cleaning Plans.	QNC	Medium	O	H	2H	1 SNC per Station or facility per 4H

ID #	Reference	Activity Noncompliance Occurrence	NC Type	Category	Recording Frequency	Response Time	Rectification Time	Application (Maximum Exposure) Time
36	4.1.2	Concessionaire shall remove snow at Stations and facilities before accumulation reaches 1 inch, or within 4 hours of end of snow event for accumulation less than 1 inch. Concessionaire shall remove snow in accordance with the Approved Cleaning Plans when responding to severe weather conditions.	QNC	Medium	O	N/A	2H	1 SNC per Station or facility per 4H
37	4.1.2	Concessionaire shall remove snow and ice on public roadways in accordance with the standard practices utilized by the Third Party owning the roadway.	SNC	Medium	O	N/A	2H	1 SNC per 1 mile per 4H
38	4.1.4	Concessionaire shall remove graffiti from Fixed Facilities and Fixed Equipment within 48 hours.	QNC	Medium	O	N/A	D	1 QNC per location per D
39	4.2.1	Concessionaire shall ensure that each LRV's exterior is clean before entering Revenue Service.	QNC	Medium	O	N/A	D	1 QNC per LRV per D
40	4.2.2	Concessionaire shall clean each LRV interior before it enters Revenue Service.	SNC	Minor	O	N/A	I	1 SNC per LRV per D
41	4.2.2	Concessionaire shall clean each Train interior at Terminal Stations.	SNC	Minor	O	N/A	I	1 SNC per LRV per Terminal Station arrival
42	4.2.3	Concessionaire shall perform more detailed LRV cleaning no less than at changes in seasons (4 times annually).	QNC	Medium	Q	N/A	W	1 QNC per LRV per W
43	4.3.1, 4.3.2	Concessionaire shall perform daily cleaning at each Station (including elevators and escalators) and equipment room sites.	QNC	Medium	D	N/A	I	1 SNC per Station per D

ID #	Reference	Activity Noncompliance Occurrence	NC Type	Category	Recording Frequency	Response Time	Rectification Time	Application (Maximum Exposure) Time
44	4.3.1	Concessionaire shall perform cleaning of Station canopies not accessible from the ground no less than once every six months.	QNC	Minor	6M	N/A	M	1 QNC per location per W

2.5 Activity Noncompliance Occurrence Table, Maintenance

ID #	Reference	Activity Noncompliance Occurrence	NC Type	Category	Recording Frequency	Response Time	Rectification Time	Application (Maximum Exposure) Time
45	5	Concessionaire shall implement and abide by the Infrastructure Maintenance Plan.	SNC	Medium	C	D	2D	1 SNC per D
46	5	Concessionaire shall implement and abide by the Facilities Maintenance Plan.	SNC	Medium	C	D	2D	1 SNC per D
47	5	Concessionaire shall implement and abide by the LRV Maintenance Plan.	SNC	Medium	C	D	2D	1 SNC per D
48	5	Concessionaire shall implement and abide by the Systems Maintenance Plan.	SNC	Medium	C	D	2D	1 SNC per D

2.5.1 Activity Noncompliance Occurrence Table, Infrastructure

ID #	Reference	Activity Noncompliance Occurrence	NC Type	Category	Recording Frequency	Response Time	Rectification Time	Application (Maximum Exposure) Time
49	5.1.1	Concessionaire shall maintain drainage ditches, gutters, pipes, bridges, culverts, and TPSS. Concessionaire shall maintain the Paint Branch Pumping station.	QNC	Medium	C	W	M	1 QNC per O per W

ID #	Reference	Activity Noncompliance Occurrence	NC Type	Category	Recording Frequency	Response Time	Rectification Time	Application (Maximum Exposure) Time
50	5.1.2	Concessionaire shall inspect all bridges, aerial structures, and tunnels.	QNC	Major	O	N/A	M	1 QNC per O per W
51	5.1.3	Concessionaire shall comply with noise, ride quality and vibration requirements.	SNC	Medium	C	W	M	1 SNC per location per W
52	5.1.3	Concessionaire shall perform tests to confirm compliance with noise, ride quality and vibration requirements.	QNC	Medium	O	N/A	W	1 QNC per O per location per W
53	5.1.4	Concessionaire shall maintain internal and public roadways in accordance with roadway maintenance requirements.	QNC	Medium	C	W	M	1 QNC per O per location per W

2.5.2 Activity Noncompliance Occurrence Table, Facilities

2.5.2.1 Activity Noncompliance Occurrence Table, Station and Station Facilities

ID #	Reference	Activity Noncompliance Occurrence	NC Type	Category	Recording Frequency	Response Time	Rectification Time	Application (Maximum Exposure) Time
54	5.2.1	Station lighting shall be fully functional and working.	SNC	Minor	C	N/A	2D	1 SNC per Station per D
55	5.2.1	Damage or other failures of Station canopies, windscreens, platforms, or furnishing shall be repaired.	QNC	Medium	O	D	2D, or as soon as practicable if repairs require materials to be ordered	1 QNC per location per D

ID #	Reference	Activity Noncompliance Occurrence	NC Type	Category	Recording Frequency	Response Time	Rectification Time	Application (Maximum Exposure) Time
55a	5.2.1	Damage of Station canopies, windscreens, platforms, or furnishing due to vandalism shall be repaired.	QNC	Medium	O	D	D, or as soon as practicable if repairs require materials to be ordered	1 QNC per location per D
56	5.2.1	Unauthorized items (except items of a suspicious nature) placed in the Fixed Facilities shall be removed.	QNC	Minor	O	N/A	2D	1 QNC per location per D
57	5.2.1.1	Escalators shall be available no less than 93% of the time, measured as an annual average at each Station.	SNC	Major	Y	N/A	I	1 SNC for each 2% reduction below 94.99% availability per Station
58	5.2.1.1	Elevators shall be available no less than 98% of the time measured as an annual average for the Purple Line System. Each Station where an elevator is provided and maintained by Concessionaire must provide no less than 90% availability	SNC	Major	Y	N/A	I	1 SNC for each 2% reduction below 99.99% availability 1 SNC for each 2% reduction under 89.99% at each Station
59	5.2.1.1	Concessionaire shall not perform preventative maintenance on elevators or escalators during Peak Periods, unless authorized by Owner.	SNC	Medium	O	N/A	I	1 SNC per unit per D

2.5.2.2 Activity Noncompliance Occurrence Table, Landscaping

ID #	Reference	Activity Noncompliance Occurrence	NC Type	Category	Recording Frequency	Response Time	Rectification Time	Application (Maximum Exposure) Time
60	5.2.2	Turf shall be mowed and perimeters maintained.	QNC	Minor	W	W	W, within growing season	1 QNC per Station or area between Stations per W

ID #	Reference	Activity Noncompliance Occurrence	NC Type	Category	Recording Frequency	Response Time	Rectification Time	Application (Maximum Exposure) Time
61		Not Used						

2.5.3 Activity Noncompliance Occurrence Table, LRVs

ID #	Reference	Activity Noncompliance Occurrence	NC Type	Category	Recording Frequency	Response Time	Rectification Time	Application (Maximum Exposure) Time
62	5.3.1	Concessionaire shall perform daily inspections of each LRV before it enters Revenue Service.	QNC	Major	D	X	I	1 QNC per LRV per D

2.5.4 Activity Noncompliance Occurrence Table, Systems

ID #	Reference	Activity Noncompliance Occurrence	NC Type	Category	Recording Frequency	Response Time	Rectification Time	Application (Maximum Exposure) Time
63	5.4.1, 5.4.2	Grade crossing and traffic signal gates shall not unnecessarily impede traffic flow.	SNC	Medium	O	H	6H	1 SNC per O per 6H
64	5.4.2	Train Control System and equipment inspections and tests shall be performed quarterly or as required and defects corrected.	QNC	Major	O	N/A	D	1 QNC per O per D

2.5.4.1 Activity Noncompliance Occurrence Table, Fire Detection and Alarm Systems

ID #	Reference	Activity Noncompliance Occurrence	NC Type	Category	Recording Frequency	Response Time	Rectification Time	Application (Maximum Exposure) Time
65	5.4.7	Fire and security systems shall be available.	SNC	Major	O	I	6H	1 SNC per O per 6H
66	5.4.7.1	Concessionaire shall inspect, test and maintain fire detection and alarm systems.	QNC	Major	O	X	W	1 QNC per location per D

2.5.4.2 Activity Noncompliance Occurrence Table, Security Systems

ID #	Reference	Activity Noncompliance Occurrence	NC Type	Category	Recording Frequency	Response Time	Rectification Time	Application (Maximum Exposure) Time
67	5.4.7.2	Concessionaire shall inspect, test and maintain access control systems.	QNC	Major	M	X	W	1 QNC per location per D
68	5.4.7.2	Concessionaire shall maintain access controlled doors, gates, hatches, and windows.	QNC	Medium	O	4H	W	1 QNC per O per D
69	5.4.7.2	Concessionaire shall maintain all CCTV systems, and shall adjust CCTV system configuration as necessary	QNC	Medium	C	I	ND	1 QNC per O per D

2.5.4.3 Activity Noncompliance Occurrence Table, Fire Protection System

ID #	Reference	Activity Noncompliance Occurrence	NC Type	Category	Recording Frequency	Response Time	Rectification Time	Application (Maximum Exposure) Time
70	5.4	Concessionaire shall inspect, test and maintain fire protection systems.	QNC	Major	O	X	W	1 QNC per location per D

2.5.4.4 Activity Noncompliance Occurrence Table, Stray Current /Corrosion Control Systems

ID #	Reference	Activity Noncompliance Occurrence	NC Type	Category	Recording Frequency	Response Time	Rectification Time	Application (Maximum Exposure) Time
71	5.4.9	Concessionaire shall conduct stray current surveys during the O&M Period.	QNC	Medium	2Y	N/A	M	1 QNC per location per M
72	5.4.9	Stray current test value fluctuations shall be less than 20 mV.	QNC	Medium	O	M	6M	1 QNC per location per M

2.5.4.5 Activity Noncompliance Occurrence Table, Fare Collection System

ID #	Reference	Activity Noncompliance Occurrence	NC Type	Category	Recording Frequency	Response Time	Rectification Time	Application (Maximum Exposure) Time
73	5.4.10	Concessionaire shall maintain all fare and fare support systems.	QNC	Medium	M	I	2D	1 QNC per location per D
74	5.4.10	At least one TVM and at least two Validators shall be fully operational at each station at all times when the station is open to Users.	SNC	Medium	C	2H	D	1 SNC per Station per D

2.5.4.6 Activity Noncompliance Occurrence Table, EMI

ID #	Reference	Activity Noncompliance Occurrence	NC Type	Category	Recording Frequency	Response Time	Rectification Time	Application (Maximum Exposure) Time
75	5.4.11	Concessionaire shall comply with EMI requirements at University of Maryland campus between stationing 598+00 and 658+00..	SNC	Major	C	M	M	1 SNC per O per W
76	5.4.11	Concessionaire shall perform tests to confirm compliance with EMI requirements.	QNC	Medium	O	N/A	W	1 QNC per O per location per W

2.6 Activity Noncompliance Occurrence Table, Asset Management

ID #	Reference	Activity Noncompliance Occurrence	NC Type	Category	Recording Frequency	Response Time	Rectification Time	Application (Maximum Exposure) Time
77	6.1.1	Concessionaire shall submit the Asset Management Plan.	QNC	Medium	Y	N/A	M	1 QNC per W

2.7 Activity Noncompliance Occurrence Table, Handback

ID #	Reference	Activity Noncompliance Occurrence	NC Type	Category	Recording Frequency	Response Time	Rectification Time	Application (Maximum Exposure) Time
78	7.2, 7.2.1, 7.2.2	Concessionaire shall submit the Handback Renewal Work Plan.	QNC	Medium	Y	N/A	M	1 QNC per W
79	7.2.4	Concessionaire shall develop and implement a Training and Transition Plan.	QNC	Medium	M	N/A	W	1 QNC per W
80	7.2.2	Concessionaire shall submit the Handback Renewal Plan status reports including descriptions of remedial Work and results of such Work.	QNC	Medium	O	N/A	M	1 QNC per O per W
81	7.3	Concessionaire shall submit the replacement parts inventory and transfer all listed replacement parts to Owner.	QNC	Medium	O	N/A	M	1 QNC per W
82	7.4	Concessionaire shall submit an operations and maintenance equipment inventory, and turn over all maintenance equipment to Owner.	QNC	Medium	O	N/A	M	1 QNC per W
83	7.4	Concessionaire shall transfer all Project electronic and hard copy documents and files to Owner.	QNC	Medium	O	N/A	M	1 QNC Per W

3 OPERATIONS

Concessionaire shall fully implement provisions of the approved Operating Plan with an emphasis on the safety of Users, general public and personnel, and the safekeeping of all Project assets. Whenever Concessionaire becomes aware of any hazardous condition within the Transitway, Concessionaire shall take immediate action to prevent injury or damage as a consequence of the hazardous condition and shall implement permanent corrective action as soon as possible. Concessionaire shall not place Trains in the tail tracks west of the Bethesda platform, except as necessary to deal with failure or other abnormal service conditions, in which case, that disabled Train shall be moved to a proper location prior to service the following day.

3.1 Normal Service

Normal Service is defined using Headways, service periods and service link load capacity.

At all times, Normal Service Trains shall:

- depart their scheduled Originating Station and shall arrive at their ending Terminal Station; and
- provide service link load capacity; and
- operate at Headways as scheduled in the approved Operating Plan and in accordance with requirements specified in Exhibit 3.1.

For all measurement of time for Headways, departures, and arrivals, the Master Clock Time System in accordance with Part 2B, Section 16 of the Technical Provisions shall be used.

During periods when the required Headway is less than or equal to 10 minutes, Normal Service Trains shall:

- not depart Originating Stations early (i.e. not more than 0 seconds before scheduled departure);
- depart Originating Stations and Intermediate Transfer Stations at Silver Spring Transit Center and College Park Metro not less than the greater of 3 minutes or 0.5 times the Headway after the previous Train or more than the greater of 9 minutes or 1.5 times the Headway after the previous departing Train (measured to the nearest second); and
- not depart any Station less than two minutes after the previous departing Train (measured to the nearest second).

During periods when the required Headway is greater than 10 minutes, Normal Service Trains shall:

- not depart Originating Stations early (i.e., not more than 0 seconds before scheduled departure);
- not depart Intermediate Transfer Stations at Silver Spring Transit Center or College Park Metro more than 30 seconds early (i.e. not more than 30 seconds before scheduled departure); and
- not arrive at their ending Terminal Station late (i.e. arrive within five minutes of scheduled arrival time measured to the nearest second)

If insufficient LRVs are available to provide scheduled Train lengths (e.g. only a one car Train is available although a two-car Train is required to provide service link load capacity), the Concessionaire shall provide Short Train service.

3.2 Alternate Service

3.2.1 Conditions for Alternate Service

In the event of a Non-Concessionaire Caused Disruption, Relief Event, or Force Majeure Event, Concessionaire shall provide Normal Service to Stations outside the area immediately affect by the disruption or event to the extent possible without compromising safety. Concessionaire shall provide Alternate Service in response to Planned Service Interruptions and Unplanned Service Interruptions to the extent that Normal Service cannot be maintained. Concessionaire shall inform passengers of any service disruptions via the PA/VMS systems and train announcements within 7 minutes of being notified of any service disruptions (including the reason for delay and a projected timeframe for resumption of scheduled service), and shall provide updates no less than every 5 minutes until Normal Service is restored.

For any Service Interruption, Concessionaire shall make every effort to restore Normal Service as quickly as possible without compromising safety. Once the cause of the Service Interruption has been removed or resolved, Concessionaire shall resume Normal Service in both directions throughout the System as soon as possible and in any event within 60 minutes.

3.2.2 Planned Service Interruptions

When Planned Service Interruptions occur at the request of the Concessionaire, Alternate Service shall include Alternate Train Service and Alternate Bus Service as most appropriate for the specific conditions of each Service Interruption. The form of Alternate Service used for a Planned Service Interruption requested by the Concessionaire shall minimize negative impacts to Users.

When Planned Service Interruptions occur at the request of the Owner, Alternate Service shall include Alternate Train Service only.

At least 60 days prior to a Planned Service Interruption requested by the Concessionaire, Concessionaire shall submit a Workblock Request Package for Review and Approval. Concessionaire shall submit a Workblock Request Package for Review and Approval within 10 calendar days of an Owner request for a Planned Service Interruption. A Workblock Request Package shall be consistent with the Operating Plan, Alternate Service Plan and Maintenance Plan in effect at the time of the Work and shall identify, at a minimum:

- the specific details of the approach to Alternate Service;
- the specific limits of the Planned Service Interruption;
- all the elements of the Project that will be affected by the Planned Service Interruption;
- what measures will be implemented by the Concessionaire to minimize the Planned Service Interruption and negative impacts to Users; and
- how long the Planned Service Interruption will last (start time and end time).

Planned Service Interruptions may not occur during Peak Periods, on the Fourth of July, or on days with Special Events.

In preparation for a Planned Service Interruption, Concessionaire may be required to:

- coordinate with Owner to notify media regarding the Service Interruption; and
- notify Users at Stations of expected impacts.

During a Planned Service Interruption, Concessionaire shall:

- notify Users on Trains and at Stations of expected impacts;
- maintain Normal Train Service, including normal Headways, on both sides of the Service Interruption area to the extent possible;
- minimize negative impacts and delays for the maximum number of Users; and
- take all necessary actions to eliminate the Service Interruption as quickly as possible.

3.2.3 Unplanned Service Interruptions

When an Unplanned Service Interruption occurs as a result of Non-Concessionaire Caused Disruption, Relief Event or Force Majeure Event, Alternate Service shall include Alternate Train Service only and shall minimize negative impacts and delays for the maximum number of Users.

When an Unplanned Service Interruption occurs that is not the result of Non-Concessionaire Caused Disruption, Relief Event or Force Majeure Event, Alternate Service shall include Alternate Train Service and Alternate Bus Service as most appropriate for the specific conditions of each Service Interruption.

When an Unplanned Service Interruption occurs, Concessionaire shall:

- identify the nature of Service Interruption, assess the need for Alternate Service and select the type of Alternate Service to be implemented;
- notify Owner of the nature of the Service Interruption and Planned Alternate Service to be implemented;
- notify Users on Trains and at Stations of expected schedule impacts;
- dispatch Personnel as necessary to the site of the interruption no more than 15 minutes after detection;
- initiate actions to recover Users stranded on Trains no more than 30 minutes after the time when the Train became stranded, and deliver them to an adjacent Station no more than 90 minutes after the time when the Train became stranded;
- coordinate with Owner to notify media regarding the Service Interruption and restoration of Normal Service;
- maintain normal Headways on both sides of the interruption area to the extent possible;
- minimize delays for the maximum number of Users; and
- take all necessary actions to eliminate the cause of the Service Interruption and restore Normal Service as quickly as possible.

3.2.4 Frequency

Alternate Service shall provide the same frequency of service as Normal Service, shall serve all Stations, and shall provide sufficient capacity to meet passenger demand.

Once the cause of the Service Interruption has been rectified, Concessionaire shall resume Normal Service in both directions within 60 minutes.

3.3 Train Service

Train Service is defined as providing LRVs for the Users to travel from one point on the line to another.

3.3.1 Mainline Revenue Service/Operating Hours and Headways

Concessionaire shall provide mainline Revenue Service as specified in Exhibit 3.1 for Headways specified by Service Levels 1, 2, or 3 as directed by Owner. Revenue Service shall be provided seven days per week including holidays. For the avoidance of doubt, Project shall be designed and constructed to operate at Service Level 3 except as provided in Part 1, Section 4 and Part 2B, Sections 7.3.5 and 7.3.6 of the Technical Provisions.

Trains shall be sized so that, during each period of the day, the capacity of each Train is not less than the maximum link load (passengers per hour) specified in Exhibit 3.1 at the specified AW loading divided by the number of Trains per hour. Trains that have less capacity shall be classified as Short Trains. For the avoidance of doubt, if more than one LRV per Train is needed on some Trains in order to meet the maximum link load requirement, then all Trains during that period of the day shall have the same number of LRVs per Train in order to have no trips classified as Short Trains.

Exhibit 3.1 shows different levels of service that shall be used during different times during the O&M Period. For illustrative purposes, if Service Level 2 is in effect, AM Peak service shall operate with a Headway of 5 to 6 minutes, shall provide a passenger carrying capacity of 3,000 passengers per hour in each direction with AW2.00 loading. Assuming 6 minute Headways, each Train shall provide the required minimum capacity of 300 passengers per Train (i.e., 3,000 passenger per hour / 10 Trains per hour = 300 passengers per Train.)

At the start of service each day, Train service shall start from multiple locations along the Purple Line System. Each Station on the Purple Line System shall be served by a Train, in each direction, within one Headway after the Early Period Start time set out in Exhibit 3.1. Service shall then continue at the Headway specified in Exhibit 3.1

Transitions between periods with different Headways shall be implemented as follows:

- For transitions from periods with less frequent service to periods with more frequent service, the more frequent service shall be fully implemented in the eastbound and westbound directions for all Stations by the period start time set out in Exhibit 3.1; the transition must occur entirely within the previous period; and
- For transitions from periods with more frequent service to periods with less frequent service, the less frequent service shall not start prior to the period start time set out in Exhibit 3.1; no part of the transition shall occur within the previous period.

The last eastbound Train at the end of the day shall depart Bethesda no earlier than the time shown in Exhibit 3.1 (i.e. 00:00), and shall travel to the Terminal Station at New Carrollton. The last westbound Train at the end of the day shall depart New Carrollton no earlier than the time specified in Exhibit 3.1 (i.e. 00:00), and shall travel to the Terminal Station at Bethesda.

Exhibit 3.1 – Service Level Hours and Headways

Period	Period Start	Period To End	Maximum Service Level Headways (minutes)*			Loading
			1	2	3	
Monday – Friday						
Early	05:00	06:45	15	15	15	
AM Peak	06:45	08:15	7.5	6	5	
Midday	08:15	16:15	10	10	10	
PM Peak	16:15	18:15	7.5	6	5	
Evening	18:15	20:45	10	10	10	
Late	20:45	00:00	15	15	15	
Monday – Friday Maximum Link Loads (passengers per hour)						
Peak			2,300	3,000	3,500	AW2.00
Midday/Eve			630	750	880	AW1.90
Early/Late			430	500	600	AW1.90
Saturday						
Early	07:00	09:15	15	15	15	
Midday	09:15	14:45	10	10	10	
Afternoon	14:45	18:45	10	10	10	
Late	18:45	00:00	15	15	15	
Saturday Maximum Link Loads (passengers per hour)						
Midday			780	930	1100	AW1.90
Afternoon			800	960	1120	AW1.90
Early/Late			430	500	600	AW1.90
Sunday - Holidays						
Early	07:00	09:45	15	15	15	
Midday	09:45	14:45	10	10	10	
Afternoon	14:45	18:45	10	10	10	
Late	18:45	00:00	15	15	15	
Sunday – Holidays Maximum Link Loads (passengers per hour)						
Midday			250	300	350	AW1.90
Afternoon			260	300	360	AW1.90
Early/Late			140	160	200	AW1.90

* Note that at all times of day and on all days, the minimum Headway shall be 5 minutes.

3.3.2 Sustained Excessive Peak Period Loads

If the Concessionaire can demonstrate that Peak Passenger Loads in excess of Monday-Friday Maximum Link Loads (passengers per hour as shown in Part 3, Exhibit 3.1 of the Technical Provisions for the Service Level in effect at the time) result in Operations Availability Noncompliance Events in Appendix D, Exhibit 4D of the Agreement and demonstrate that it would not have received the Operations Availability Noncompliance Events except for the excessive Peak Passenger Loads, then the Concessionaire shall follow the requirements of Section 8.2.5 of the Agreement. The demonstration of Peak Passenger Load shall be based on a monitoring and measurement of the Peak Passenger Load at the peak link load location during the peak hour for each direction of travel during a Monday to Friday period and where the average of such measured loads exceeds the Monday-Friday Maximum Link Loads (passengers per hour as shown in Part 3, Exhibit 3.1 of the Technical Provisions for the Service Level in effect at the time) over a consecutive three month period or more.

3.4 LRV capacity and Assigned Weight definitions

The following formulas shall be used in the determination of LRV passenger capacity and for calculation of the Assigned Weight (AW) for each passenger loading:

- $AW0.00 = \text{Weight of LRV empty}$
- $AW1.00 = (AW0.00 + \text{seated passengers only})$
- $AW1.90 = (AW1.00 + 2.99 \text{ Sq. ft. / standee passenger})$
- $AW2.00 = (AW1.00 + 2.70 \text{ Sq. ft. / standee passenger})$
- $AW3.00 = (AW1.00 + 1.80 \text{ Sq. ft. / standee passenger})$
- $AW4.00 = (AW1.00 + 1.35 \text{ Sq. ft. / standee passenger})$

3.5 Service Characteristics

Concessionaire shall operate Trains in accordance with the Operating Plan.

Concessionaire shall operate Trains at MAS unless performance of the LRV is degraded and or track conditions are unsafe for these speeds, in which case Trains shall be operated at restricted speed under instructions from field supervisors or OCC controllers. Concessionaire shall take all actions necessary to correct degradation and unsafe track conditions so that MAS may be restored.

All Trains shall stop at all Stations with a dwell time sufficient for all passengers to safely board or alight as desired.

3.6 Service Changes

Concessionaire, if directed by Owner, shall make Minor Services Changes to the Train Service specified in Part 3, Section 3.3 of the Technical Provisions. Timetables for Minor Service Changes shall be adjusted not more than three times per year. In order to be considered Minor Service Changes, Minor Service Changes cannot require Concessionaire to purchase additional LRVs, require service to start earlier or end later each day, or require shorter maximum Peak Period headways than the Service Level in effect.

Concessionaire, if directed by Owner, shall implement Major Service Changes. Major Service Changes result in the use of a different Service Level (e.g. change from Service Level 1 to Service Level 3). It is understood that Major Service Changes may require additional LRVs.

Any such change shall be made in accordance with Section 14.1 of the Agreement. Such change may include direction to Concessionaire whether to utilize all LRVs currently in service, decommission LRVs, or re-commission previously decommissioned LRVs.

When decommissioning LRVs the Owner will either remove the decommissioned LRVs from the Site or direct Concessionaire to provide secure storage and maintenance of the LRVs on Site.

When directed by Owner, Concessionaire shall re-commission LRVs by performing all necessary refurbishment, maintenance, testing and safety certification, or other procedures as required to place the LRVs into service.

3.7 Mainline Non-Revenue Operations

Non-revenue operations (movements) consist of LRV and or rail-mounted maintenance equipment movements which are not intended to carry passengers and may occur at any time in accordance with the Operating Plan or Maintenance Plan. Non-revenue movements shall not cause delay to Revenue Service.

Non-revenue trips for service initiation or termination shall be identified and included in the Operating Plan. The point at which Revenue Service is initiated shall be identified for each non-revenue trip.

3.8 Yards and Shops

Concessionaire shall implement procedures for LRV movements within and between yards, shops, and the mainline. The movement of LRVs and rail-mounted maintenance equipment shall not interfere with Revenue Service. Movements within the yard shall not cause delays to Trains arriving or departing the mainline.

3.9 Control Centers

Control centers are those locations where Project operations shall be monitored and supervised 24 hours per day, 365 days per year.

3.9.1 Operations Control Center (OCC)

The OCC shall be staffed in accordance with Concessionaire's Concept of Operation and Operating Plan. OCC personnel shall perform all OCC functions identified in the Contract Documents, the Rulebook, Concessionaire's Concept of Operation and Concessionaire's Operating Plan including, at a minimum:

- monitor and respond to all fire, security, status and equipment fault alarms;
- provide assistance to Users;
- make announcements via public address and VMS systems;
- monitor Station public areas using CCTV;
- respond to Emergencies and Incidents;
- contact appropriate Emergency personnel;
- monitor and control Train movements on mainline;
- implement, monitor and control Service Interruptions and Alternate Service;
- log Activity Noncompliance Occurrences, Activity Noncompliance Events, Operations Availability Noncompliance Events, , all logged separately;

- contact supervision for abnormal conditions which require adjustment to Normal Service; and
- coordinate and interface with other control centers such as WMATA and MTA.

3.9.2 Back-Up Operations Control Center (BOCC)

The BOCC shall be prepared to take control from OCC in event of OCC unavailability and meet the requirements stated in Section 3.9.1 above. Concessionaire shall test all BOCC system and equipment functionality at monthly intervals to verify that it is in fit condition for use if required.

3.9.3 Security Center

The Security Center will be operated by Owner. Concessionaire shall coordinate with the Security Center on all issues regarding safety and security within the public areas of the Project. Any design, construction, maintenance and operations of the Security Center by Concessionaire shall be a Change Order in accordance with Section 14.1 of the Agreement.

3.10 Stations and Station Facilities

All Stations shall be open to Users one Headway before the first scheduled Train is to arrive based on the Operating Plan. All Stations shall remain open to Users until the last User departs the Station after arrival of last Train at each Station. Concessionaire shall ensure that no persons remain in the Station before securing Station.

If ADA access to and from a Platform is not available, Concessionaire shall provide a mobility shuttle between that Station and an adjacent Station.

3.10.1 Elevators and Escalators

Escalators and elevators shall be operational during all times Stations are open to Users. Concessionaire shall initiate actions to recover Users stranded in elevators no more than 30 minutes after the time when the elevator became stranded, and release those Users from the stranded elevator no more than 90 minutes after the time when the elevator became stranded.

3.10.2 Mechanical, Electrical and Plumbing (MEP)

MEP systems shall be operational at all times (24 hours per day, 365 days per year).

3.11 Communications

Communications systems, including, at a minimum, PAVMS, SETs, and WETs shall be operational at all times (24 hours per day, 365 days per year), and all AVL shall be available at all times that Stations are open. PAVMS systems shall be available at least 99.8% of the time that Stations are open.

3.11.1 Inquiries and Complaints

Inquiries and complaints from Owner or Owner authorized entities shall be responded to immediately if possible, but no more than 24 hours after the inquiry or complaint are received.

Inquiries from other than Owner or Owner authorized entities shall be referred to the Owner immediately, or if not possible shall be transmitted to Owner within 4 hours.

3.11.2 Reporting Hot Line

Concessionaire shall establish a system to provide for identification and notification of issues relating to the operations and maintenance of the Project via telephone messages, texts, and emails from personnel and Owner. The system shall operate from the commencement of Trial

Running to the end of the Term. The system may be either manned or an automated non-manned system.

The reporting hot line system shall record the date and time the message was received. Response and rectification times included in Part 3, Section 2 of the Technical Provisions, if applicable, shall commence from the time the telephone message, text, or email is received.

Messages received shall be recorded in the Project database and be available to the Owner and, as appropriate, included in the Operations and Maintenance Daily Report. The Concessionaire shall provide a monthly summary of such messages including: each notification received, receipt time and date, issue, and response and/or rectification time as applicable as an attachment to the Monthly Performance Monitoring Report.

3.11.3 Radio System Use

Concessionaire shall utilize the radio system in full compliance with all federal, state and local statutory requirements, including, at a minimum, §47USC 337(f)(1)(a).

3.12 Fire and Security

Fire and Security systems, including, at a minimum, the Fire Management System (FMS), Access Control System (ACS), and Closed Circuit Television (CCTV) System shall be operational at all times (24 hours per day, 365 days per year).

3.12.1 Fire Alarm Monitoring and Emergency Response

Fire and smoke detection and alarm systems shall be monitored for alarms and faults. Alarms shall be responded to immediately including calls for assistance to Owner's personnel and Emergency personnel.

3.12.2 Other Emergency Response

Concessionaire shall monitor Project for emergencies utilizing the CCTV system and shall initiate calls for assistance from Owner's personnel, Emergency Services personnel, Utility Owners, and other parties with authority to respond to the emergency.

3.12.3 Security Monitoring

Concessionaire shall monitor the access control system for intrusion alarms and any other abnormal conditions. Alarms shall be responded to immediately with calls for assistance to law enforcement and Owner's personnel.

Concessionaire shall immediately notify Owner and Emergency Services personnel when made aware of:

- inappropriate or unauthorized activity on the Purple Line System; and
- an Emergency or Incident at Stations requiring law enforcement assistance.

Concessionaire shall cooperate with Emergency Services personnel on any associated follow-up activities.

Concessionaire may provide additional security services in accordance with Section 8.10.3 of the Agreement.

3.12.3.1 Policing

Owner will provide general law enforcement services for public spaces including police presence on Trains in accordance with Section 8.10.1 of the Agreement.

3.12.3.2 Transitway

Concessionaire's personnel shall document, and report any and all conditions observed throughout the Transitway that may represent a threat to Users or personnel or Project assets including, at a minimum:

- unauthorized public access to areas of the Transitway; and
- Emergency conditions requiring Emergency Services personnel.

3.13 Fare System

Concessionaire shall provide equipment and systems to support operation of Fare System. Concessionaire shall collect cash, stock TVMs with paper ticket and receipt media, count and account for cash fare transactions, make deposits with designated financial institutions, and provide Owner with certified statements of revenue collected, and certified statements of the revenue which was reported to the central server as being collected.

Concessionaire shall ensure that TVMs shall not run out of paper ticket or receipt media and TVM cash collection bins shall not be completely filled.

Concessionaire shall procure and stock TVM's with up to two million paper tickets per year for the Purple Line System.

3.13.1 Fare Media Inspection

Fare inspection and enforcement will be performed by Owner.

3.13.2 Fare System Monitoring

Fare system monitoring shall be performed by Concessionaire for intrusion or tampering with TVMs or Validators and incidents reported to law enforcement.

3.14 Special Event Service

During the provision of Special Event Service, the Normal Service requirements apply except as adjustments are approved by the Owner in the approved Special Events Revenue Service Plan.

For purposes of developing the initial Special Events Revenue Service Plan, the information in the following table shall be a guide. Owner may require Special Events Service in addition to the specific examples listed in this table:

Event Type	Service Provision
<u>Major Events</u>	
A. Football games at the University of Maryland - typically Saturdays afternoons/evenings or Thursday evenings	<p>Provide additional service between Silver Spring Transit Center and College Park Metro Station beginning 3 hours before the start of a University of Maryland football game and ending 90 minutes following the end of the game. Between the Silver Spring Transit Center and College Park Metro stations, provide Peak Period Service for the three hours before the start of the game, ten minute headways during the game until 30 minutes prior to the estimated end time, and Peak Period Service for the remainder of the Special Event Service until 90 minutes following the end of the game. Normal headways shall be provided on all other segments of the Purple Line System.</p> <p>Special Event Service Support Staff are assumed to be provided at the Silver Spring Transit Center Station, College Park Metro Station, and the three stations on the UM campus.</p>
B. Major Events in Washington DC prompting Metrorail Special Event Services (e.g. Independence Day Fireworks, Inauguration)	Provide Peak Period service along the entire Purple Line System for the three hours prior to the event, Normal Service during the event (assume three hour event duration), and Peak Period service from the end of the event until 90 minutes after event.
<u>Medium Events</u>	
A. Other large events at University of Maryland (e.g. commencement)	Provide Peak Period service between College Park Metro Station and Silver Spring Transit Station for the one hour prior to the event, Normal Service during the event, and Peak Period service for the one hour following event.
B. Events in Corridor, such as major festivals, at a location along corridor or along corridor near one or more stations	Provide Peak Period service along the entire Purple Line System beginning one hour before the event start, during (assume three hour event duration), and until one hour following event.

The initial Special Events Revenue Service Plan shall include provisions for Special Event Service Support Staff to be assigned to facilitate ticket vending, passenger information, station crowd management, and Train loading and unloading at specific Project Stations as identified above for Major Event A.

When the Owner requests that the Concessionaire provide Special Event Service, up to 3 times per year the Owner may require Concessionaire to start Revenue Service at a time earlier than the Early Period start time identified in Exhibit 3.1 and/or continue Revenue Service until a time later than the Late Period end time identified in Exhibit 3.1. The Owner must provide

Concessionaire with at least 60 days advance notice prior to the Special Event where the Revenue Services start time and/or end time will be modified.

3.15 Total Trip Run Time

Concessionaire's commitments regarding Total Trip Run Time set forth in Attachment 3 to Exhibit 2 of the Agreement are subject to adjustment as described in Section 8.3 of the Agreement based on measured differences between Bid Combined Tsc values associated with Table AA-5 of Attachment 3 to Exhibit 2 of the Agreement and Actual Combined Tsc values. Concessionaire shall establish the actual Total Trip Run Time and Actual Combined Tsc for each of the service periods identified in Exhibit 3-1 and by season. The seasons are:

- winter – the calendar days beginning with December 15 through May 14;
- summer – the calendar days beginning with May 15 through September 1; and
- autumn – the calendar days beginning with September 2 through December 14.

The actual Total Trip Run Times determined under Part 2C, Section 4.6.4 of the Technical Provisions and this Part 3, Section 3.15 of the Technical Provisions shall be used in development of the Concessionaire's Operating Plan and timetable as commitments until updated with revised Actual Tsc values. Concessionaire shall ensure that the Purple Line System meets the commitments in the Operating Plan regarding Total Trip Run Times throughout the Term. In addition to the required pre-Revenue Service Demonstration test, the Concessionaire has the option to perform the run time analysis on the three seasons during the first year after Revenue Service Availability (if the Concessionaire elects to perform the analysis, it must test all three seasons).

For the avoidance of doubt, Owner's risk is limited to the difference between the Bid Combined Tsc and the Actual Combined Tsc. The Concessionaire is responsible for all other run time components and risks (including "Tvops", "Td", "Ttb", and "Tother" as defined in Part 3, Section 3.15.1 of the Technical Provisions). The Total Trip Run Time testing will be performed for Service Level 1; however, the Concessionaire's components of the Total Trip Run Time, Actual Tsc, Bid Combined Tsc, and Actual Combined Tsc values are applicable to all three Service Levels.

The Concessionaire's risk is based on the sum of its run time components (in both the eastbound and westbound directions) rather than each individual component (e.g., the Concessionaire may reallocate time within its components during operations).

3.15.1 Total Trip Run Time Components

Total Trip Run Time in each direction shall be comprised of the components in paragraphs b through f below. All time associated with a Total Trip Run Time must be included in one of the listed time components in paragraphs b through f below so that when added together they shall equal the Total Trip Run Time;

- a. Total Trip Run Time (Ttot). The amount of time in minutes it takes a Train to depart an Originating Terminal Station at one end of the line and travel to the ending Terminal Station at the other end of the line so that the Train may commence travel in the direction opposite to that which it arrived from. Note that the Total Trip Run Time is the minimum time it takes to complete a trip including all components in paragraphs b through f below, which may be different from the scheduled time between trips. For example, a Train may spend additional time at a Terminal Station awaiting its scheduled departure time. Additional schedule adjustment time is not a part of Total Trip Run Time

- b. Traffic Signals and Traffic Congestion (“Tsc”). The time calculated in accordance with Part 3, Section 3.15.2.4 of the Technical Provisions based on measurements under Part 3, Section 3.15.2.2 and 3.15.2.3 of the Technical Provisions;
- c. Vehicle and Operations Performance (“Tvops”). Vehicle performance includes, at a minimum: acceleration; deceleration; adhesion; maximum vehicle speed; maximum speeds on level track and on grades, and all other items related to the vehicle mechanical performance. Operations performance includes, at a minimum, all aspects of operator behaviors such as reaction and response times it takes for a trained Train operator to respond to a stimulus to accelerate or decelerate such as:
 - o clearance of obstructions from the track;
 - o closing doors after the last passenger has safely boarded the Train;
 - o receipt of clearances and directions from the operations control center if and as necessary including decision making time by the operations control center;
 - o adherence to SOP and other components of the Operating Plan; and
 - o any and all other operations actions or inactions that affect Total Trip Run Time.
- d. Dwell Time (“Td”). Dwell time is the time between a Train stopping at each Station (wheels stop) until the time the Train starts to depart each Station (wheel start) during a Total Trip, as it relates to the time associated with the unloading and loading of passengers, for all Stations along the line except at Terminal Stations;
- e. Turn Back Time (“Ttb”). Turn back time means the time it takes for a Train to turn at a Terminal Station so that the Train may commence in the direction opposite to that which it arrived from, and includes, at a minimum, all tests, unloading and loading of passengers, cleaning, movements of the Train, and movement of the Train operator(s) so that the Train is ready to commence Revenue Service; and
- f. Other (“Tother”). All other time not included in Tvops, Tsc, Td and Ttb, including, at a minimum, recovery time at Terminal Stations, time points, and/or recovery time at intermediate time points along the System determined by Concessionaire.

The determination of the Total Trip Run Time components under Part 2C, Section 4.9 of the Technical Provisions shall serve as the baseline Total Trip Run Time for Revenue Service Demonstration and the initial five years of the O&M Period.

3.15.2 Total Trip Run Time Measurement

Total Trip Run Time measurement will occur at specified times during the Term in accordance with Section 8.3 of the Agreement. The measurement shall include demonstrations, special tests, and analysis to validate the System’s Total Trip Run Time components specified in Part 3, Section 3.15.1 of the Technical Provisions. The measurement process specified in this Part 3, Section 3.15.2 of the Technical Provisions shall also be used to establish the baseline Total Trip Run Time prior to Revenue Service Demonstration in Part 2C, Section 4.9 of the Technical Provisions.

No later than 12 months before the scheduled start of Trial Running, Concessionaire and Owner shall meet from time to time to prepare a Measurement Process Plan for purposes of the Total Trip Run Time measurements described in this Part 3, Section 3.15 of the Technical Provisions. The plan shall include the Operations Run Time Commitment included in Attachment 3 to Exhibit 2 of the Agreement and the tests and measurements, if any, for each Total Trip Run

Time component. The plan shall include the specific test and measurement procedures for the items specified in Part 3, Sections 3.15.2.1 through Section 3.15.2.6 of the Technical Provisions. The plan shall specify how information and data from Concessionaire's systems and the Owner will be provided and the analyses that will be conducted of such information and data.

If Owner and Concessionaire do not complete and agree upon in writing such plan no later than 90 days before the scheduled start of Trial Running, Owner shall prepare such plan in accordance with Good Industry Practice and Concessionaire and Owner shall execute the plan. After consultation with Concessionaire at least 90 days before any Total Trip Run Time measurement, the Measurement Process Plan may be updated jointly by both parties in accordance with Good Industry Practice.

3.15.2.1 Measurement Plan Implementation Requirements

The methodology to be used by Concessionaire and Owner shall be as follows:

- a. Step 1 shall measure Tvops and shall calculate mean (average) Tvops values in each direction as set forth in Part 3, Section 3.15.2.2 of the Technical Provisions.
- b. Step 2 shall measure Ttot, Td, Ttb, and Tother for each Trip as set forth in Part 3, Section 3.15.2.3 of the Technical Provisions.
- c. Step 3 shall calculate Tsc for each Trip as set forth in Part 3, Section 3.15.2.4 of the Technical Provisions.
- d. Step 4 shall determine Actual Tsc in each direction for each service period as set forth in Part 3, Section 3.15.2.5 of the Technical Provisions.
- e. Step 5 shall determine Ttot as set forth in Part 3, Section 3.15.2.6 of the Technical Provisions.

The following requirements shall apply to the calculation of Total Trip Run Time:

- a. Measurement shall occur during a period of no more than 30 days.
- b. Measurement shall occur during each service period.
- c. Measurement shall occur in the eastbound direction on the eastbound track and in the westbound direction on the westbound track.
- d. Measurement shall not occur on a holiday or Special Event days.
- e. Measurement shall take into account all weather and traffic conditions that occur during testing. If a Non-Concessionaire-Caused Disruption, Relief Event or Force Majeure Event occurs, such individual trip may be discarded from the measurement as agreed to by the parties.
- f. Time shall be measured using a sample of individual trips. For Tvops, no less than 10 sample trips in each direction shall be used. For all other components of Total Trip Run Time, no less than 20 samples in each direction in each service period shall be taken, and a greater number of observations (up to 40) may be performed. The Concessionaire shall identify in advance the number of observations to be used for each of the service periods identified in Exhibit 3.1. The number of observations can be revised if mutually agreed to between the Owner and Concessionaire.
- g. Total Trip Run Time measurement shall occur wholly within a season.

- h. Trips for measurement during a specific service period shall be distributed across the time span of that service period, as well as generally distributed across a representative range of different days of the week that are part of that weekday or weekend service period.
- i. For Total Trip Run Time measurements that occur during the pre-Revenue Service Demonstration in accordance with Part 2C, Section 4.9 of the Technical Provisions, each Train shall be loaded so that it is operating at an AW2.00 loading. For any measurement that occurs in the O&M Period, other than that for Tvops, randomly selected revenue service Trains shall be used (i.e., those trains will use actual passenger loads).
- j. Tvops will always be tested with AW2.0 loading during non-revenue service hours. The Owner will support the Concessionaire with requests for local law enforcement on the street closures needed for this test; however, the Concessionaire will be responsible for all associated costs.
- k. Each Train and test shall have no less than one Owner's representative on board who will be located in a position that allows the representative to observe and document all actions by the operator, document other observations, and record other information from the Train's systems.
- l. The Concessionaire's Quality Program Manager or quality staff shall be on board each Train during each test and located in a position that allows the Concessionaire's staff to document all actions by the operator, document other observations, and record other information from the Train's systems.

Notwithstanding item g above, if Concessionaire believes that the actual differences among seasons materially deviate from those stated in Part 3, Section 3.15.2.3(e) of the Technical Provisions, Concessionaire may propose to measure actual Ttot and Actual Tsc in each season in lieu of making the seasonal adjustments described in Part 3, Section 3.15.2.3e of the Technical Provisions.

All information specified in the Measurement Process Plan for each trip shall be provided to both Concessionaire and Owner. The Owner's representative and any Quality staff on board each Train shall validate each trip to determine if it is a valid trip. If the Owner's representative and any Quality staff document actions during a given trip that are not in compliance with the Contract Documents (such as exceeding the allowable speed or non-conformance with the current approved Operating Plan), the given Trip shall be discarded from the test.

The Concessionaire shall provide a written description of the information gathered and the test methods as well as the outcome of each such test. Concessionaire shall provide such calculation, description, and information to Owner for Review and Approval within 30 days of the conclusion of the test.

3.15.2.2 Measurement of Vehicle and Operations Performance (Tvops) – Step 1

The objective of Step 1 is to perform individual test runs in each direction and measure Tvops to establish a Tvops value. In addition to the requirements of Part 3, Section 13.5.2.1 of the Technical Provisions, the measurement of Vehicle and Operations Performance shall include the following items:

- a. The speeds to be used for Tvops are the maximum permissible operating speeds as described in Part 2B, Section 13 of the Technical Provisions.

- b. Travel time shall be measured by the Owner's representative and the Train's systems between each Station pair in each direction by individual trip. Concessionaire shall make arrangements so that trains shall run through all intersections without stopping or slowing down for traffic signals or traffic congestion including vehicles and pedestrians.
- c. For each Station pair, time shall be measured from the departure Station wheel start to the arrival Station wheel stop. Trains shall decelerate, stop, and accelerate at each Station in each direction during each test.
- d. Concessionaire shall use all validated travel times for each Station to Station pair to establish a Terminal Station to Terminal Station Tvops.
- e. Individual Tvops trips shall be analyzed and the mean (average) for Tvops in each direction shall be calculated from the summation of each validated trip conducted in accordance with the requirements of this Part 3, Section 3.15.2.2 of the Technical Provisions.

Concessionaire shall calculate the Tvops from the information gathered during the test. Concessionaire shall provide a written description of the information gathered and the test methods as well as the outcome of each such test. The sum of travel times for each Station to Station segment shall be added together to establish a Terminal Station to Terminal Station run time. Concessionaire shall provide such calculation, description, and information to Owner for Review and Approval within 30 days of the conclusion of the test.

3.15.2.3 Measurement of Ttot, Td, Ttb, and Tother – Step 2

The objective of Step 2 is to perform test runs in each direction to measure Ttot, and to measure Td, Ttb, and Tother (within each same Trip). In addition to the requirements in Part 3, Section 3.15.2.1 of the Technical Provisions, the measurement of Total Trip Time and certain of its components shall include the following items:

- a. For each test Trip measuring Ttot in accordance with this Part 3, Section 3.15.2.3 of the Technical Provisions, Concessionaire shall operate the Trains in accordance with the approved Operating Plan and so that all Td, Ttb and Tother measurements shall be isolated in the measurement of Total Trip Run Time.
- b. Ttot shall be measured in the eastbound and westbound directions in each service period specified in Exhibit 3.1.
- c. For each test Trip measuring Ttot in accordance with this Part 3, Section 3.15.2.3 of the Technical Provisions, Concessionaire shall operate Trains so that all recovery, time point, and active management time is isolated with time point locations identified in advance by the operator to the Owner's representative and Concessionaire's Quality staff.
- d. For each test Trip measuring Ttot, if the Owner's representative or Concessionaire's quality staff determine that the operator is consistently running hot (e.g., accelerating faster than the Contract Documents provide for) or is consistently slow (e.g., waiting before starting Trains, accelerating slower than in the Part 3, Section 3.15.2.2 of the Technical Provisions Tvops test runs, or operating at speeds below the allowable speeds), Owner and/or Concessionaire's quality staff shall document such determinations as part of the test Trip. Such test Trip shall be discarded for the calculation of Ttot, Td, Ttb, and Tother.

- e. Unless deviations from the below values are justified based on seasonal testing, in which case the actual seasonal adjustments should be used, the Ttot for each individual trip shall be further adjusted for the season in which the Ttot measurement did not occur as follows:
- The winter season shall be equal to the summer season value for that service period and weekday or weekend plus two minutes.
 - The winter season shall be equal to the autumn season value for that service period and weekday or weekend plus one minute.
 - The summer season shall be equal to the winter season value for that service period and weekday or weekend minus two minutes.
 - The summer season shall be equal to the autumn season value for the service period and weekday or weekend minus one minute.
 - The autumn season shall be equal to the summer season value for that service period and weekday or weekend plus one minute.
 - The autumn season shall be equal to the winter season value for that service period and weekday or weekend minus one minute.

If the Concessionaire elects to measure the Ttot for each season during the first year of the O&M Period, at the request of either party the Owner and Concessionaire will have a discussion about the seasonal variations if it becomes apparent that there is a significant difference between the seasonal adjustments identified above and the seasonal differences observed during actual operations.

3.15.2.4 Measurement of Traffic Signal and Traffic Congestion Run Time – Step 3

The objective of Step 3 is to determine the Tsc value for each Trip in each direction through the following calculation:

$$Tsc = Ttot - \text{Actual Tvops} - Td - Ttb - \text{Tother}$$

Such calculation shall be performed for each Trip as documented and used for Step 2 in Part 3, Section 3.15.2.3 of the Technical Provisions.

3.15.2.5 Determine Actual Tsc Value for Each Direction of Each Service Period – Step 4

The objective of Step 4 is to determine the Actual Tsc value for each direction of each service period of Exhibit 3.1. Such value shall be based upon the mean (average) of the individual Tsc values calculated in Step 3. Each service period will have six Actual Tsc values (one in each direction for all three seasons), and three Actual Combined Tsc values (one for each season). The Actual Combined Tsc for each service period is the eastbound Actual Tsc value plus the westbound Actual Tsc value.

3.15.2.6 Determine Ttot Value for Each Direction of Each Service Period – Step 5

The objective of Step 5 is to determine the Ttot value for each direction of each service period of Exhibit 3.1 using the following calculation:

$$Ttot = \text{Actual Tsc} + \text{Tvops} + Td + Ttb + \text{Tother}$$

Where the Actual Tsc value shall be the Actual Tsc value calculated in Step 4, and the Tvops, Td, the Ttb, and the Tother values shall be the values provided in the Concessionaire's proposal, Tables AA-1 through AA-4.

3.15.3 Total Trip Run Time Report

Concessionaire shall prepare and submit a Total Trip Run Time Report for Review and Approval no later than 30 days after completion of all time measurements that include each service period in Exhibit 3.1 in each direction. The Owner's representative and Concessionaire's Quality Program Manager shall review each Total Trip Run Time Report and either notify Concessionaire regarding changes required to the report (in which case Concessionaire shall revise and resubmit the report) or provide a written statement that it accurately includes the findings and documentation of their observations, to be appended to the Report.

The Total Trip Run Time Report shall include at a minimum the following:

- a. Procedures and results for all measurements and calculations in accordance with this Part 3, Section 3.15 of the Technical Provisions.
- b. Measurement results that includes the dates and times when measurements were performed, the specific trains used for each trip as well as the operator and OCC staff for each trip.
- c. Any specific equipment used (including calibration date if appropriate) in the measurement and calculation processes in Part 3, Section 3.15.2.1 through Section 3.15.2.5 of the Technical Provisions.

If the Total Trip Time Report identifies any differences between Bid Combined Tsc and Actual Combined Tsc, the Parties shall proceed as described in Section 8.3 of the Agreement. A determination of whether there has been a change between Bid Combined Tsc and Actual Combined Tsc will be based on differences between Bid Combined Tsc and Actual Combined Tsc for each service period for the given season. Any difference between Bid Combined Tsc and Actual Combined Tsc that is less than ± 1.00 minutes will be treated as no change. For example, if Table AA-5 identified the Tsc value for the winter season as 12.4 minutes in the eastbound direction and 14.5 minutes in the westbound direction for the AM Peak, for contractual purposes there would not be a change in the AM Peak Period Tsc if the eastbound Actual Tsc were 14.0 minutes and the westbound Actual Tsc were 13.5 minutes because the 27.5 minutes Actual Combined Tsc is less than 1.00 minutes greater than the 26.9 minutes Bid Combined Tsc.

3.16 Passenger Comfort

3.16.1 Interior Temperature of LRVs

While operating LRVs in Revenue Service the Concessionaire shall ensure that all HVAC equipment shall be fully functional and shall operate the equipment to provide passenger comfort in both heating and cooling modes, meeting the performance requirements specified in the Contract Documents, at a minimum, in accordance with Part 2B, Section 12.4.14.

The Concessionaire shall maintain LRV interior conditions within the comfort zone of the acceptable indoor operative temperature range, including ensuring that the maximum allowable variations in temperature in LRV passenger areas shall be as follows:

- less than 4°F variation at any height from 6 inches to 48 inches above the floor; and
- the average LRV temperature shall be within 4°F of the comfort zone requirements within 2 minutes following a 30 second opening of all LRV passenger doors on one side.

3.17 Summary of Submittals

Item	Section	Submittal	Action
1	3.2.2	Workblock Request Package	Review and Approval
2	3.15.2	Measurement Process Plan	Review and Approval
3	3.15.3	Total Trip Run Time Report	Review and Approval

4 CLEANING

4.1 General

Concessionaire shall clean the Project including Fixed Facilities, Fixed Equipment, and LRVs in accordance with the Cleaning Plan. Concessionaire shall satisfy all requirements of OSHA and MOSHA while maintaining an attractive environment for Users and suitable working conditions for personnel. Concessionaire shall perform all cleaning activities in accordance with the approved Environmental Management Plan.

4.1.1 Biohazards and Pandemics

Concessionaire shall implement plans and procedures to remediate biohazards occurring throughout the transit system, including LRVs. Operations and maintenance procedures and employee training for biohazard remediation shall comply with 29CFR Part 1910.1030, Blood borne Pathogens. Biohazards are as defined in OSHA 29CFR Part 1910.1030. In addition to biohazard cleanup, Concessionaire shall implement plans and procedures to address potential pandemics in accordance with US Government guidelines for mass transit systems: *Pandemic Influenza—Preparedness, Response, and Recovery—Guide for Critical Infrastructure and Key Resources, Annex: Mass Transit Subsector Pandemic Guideline*; and *OSHA guidance: Guidance for Preparing Workplaces for an Influenza Pandemic*.

4.1.2 Ice and Snow Removal

Ice buildup shall be prevented from Station Platforms, walkways, access to shop building, and outside maintenance access points.

Snow accumulation shall be removed from Station Platforms, walkways, and Project parking lots before the accumulation is more than 1 inch, or within 4 hours of end of snow event for accumulation less than 1 inch. Concessionaire shall implement and abide by the approved cleaning plan when responding to severe weather conditions.

Tracks shall be kept clear of snow to maintain Revenue Service.

Concessionaire shall prevent ice buildup and snow accumulation from the public roadways specified in Part 1, Section 7 of the Technical Provisions and the Third Party Agreement Requirements in accordance with the standard practices utilized by the Third Party owning the roadway.

4.1.3 Trash and Litter Disposal

Concessionaire shall dispose in an approved facility all trash, litter and waste materials from all Project facilities.

4.1.4 Graffiti Removal

Concessionaire shall remove graffiti from all Fixed Facilities and Fixed Equipment and as specified in Third Party Agreement Requirements within 48 hours of detection or notification when possible including, at a minimum:

- Stations, windscreens, pathways, sidewalks, walkways, furniture, signage, displays, equipment cabinets and Fare System Equipment;
- elevators and escalators;
- walls and fences;
- Structures;

- buildings;
- equipment houses and cases; and
- signing.

Extensions of time shall be subject to Owner approval.

Concessionaire shall remove graffiti from the inside or outside of LRVs before that LRV enters Revenue Service.

Concessionaire shall remove graffiti from the outside of maintenance vehicles before that vehicle is used in a publicly visible location.

4.2 Light Rail Vehicles (LRVs)

4.2.1 Exterior Cleaning

LRV exteriors shall be clean before entering Revenue Service. A LRV exterior is clean if a trackside inspection of a vehicle entering Revenue Service reveals:

- no discoloration of car body due to surface dirt, grime, marks, stains, or other matter;
- no visible presence of carbon dust from pantograph on the car body;
- no visible presence of mud, grease, road salt, or other foreign matter on the car body; and
- no accumulation of dirt, soap film, water marks, or other foreign matter on exterior glass.

4.2.2 Daily Interior Cleaning

LRV interiors shall be clean before entering Revenue Service. Cleaning shall include removing trash and litter, cleaning the floor and windows, and wiping down the seats and all other interior surfaces.

Upon each arrival at a Terminal Station, trash and litter shall be removed and any solid or liquid residue from passengers, including sickness, shall be cleaned from interior surfaces.

4.2.3 Seasonal Cleaning

At changes in the seasons of the year (four times a year) all LRVs shall undergo more detailed cleaning to remove buildup of tar, grease, and other foreign materials from the car body, trucks, access panels, and other exposed equipment on the LRV underbody. The flooring, interior panels, seating, and signage shall be cleaned to remove build-up of dirt, chewing gum, stains, and residue of any kind from the interior of the LRV.

4.3 Stations and Station Facilities

4.3.1 Station Platforms, Canopies, Pathways, Furniture

All Station Platforms, walkways, facilities, and trackbed adjacent to Station Platforms shall be cleaned of trash, litter and human solid and liquid residues daily. Trash receptacles shall be cleaned so that trash and litter is not overflowing and shall be emptied as required and in no case less than once per calendar day.

Fallen leaves shall be removed weekly or more often should they cause slippery conditions on Platforms and walkways.

Station furniture, shelters, wind screens, and other vertical surfaces accessible from the ground shall be cleaned weekly. Station canopy areas not accessible from the ground shall be washed no less than twice each year, at least 120 days apart.

4.3.2 Elevators and Escalators

Elevators shall be cleaned daily of trash, litter, chewing gum, and other contaminants. Glass surfaces shall be free from dirt both inside and outside of the elevator cab.

Escalator combing and side panels shall be kept clear of trash, litter, chewing gum and self-adhesive stickers daily. Escalator side panels shall be cleaned no less than weekly with disinfectant.

4.4 Equipment Room Sites

All equipment room sites including, at a minimum, TPSSs, CIHs, communications equipment rooms and equipment cases shall be cleaned of trash, litter and human solid and liquid residues daily.

Fallen leaves shall be removed weekly.

4.5 Shop Buildings

Shop building entrances, offices, rooms, work spaces, and shop areas shall be clear of trash, litter, and debris. Office floors shall be washed weekly. Restrooms, shower rooms, and locker rooms shall be cleaned with a disinfectant cleaner daily. Wet mopped floors shall be cleaned with disinfectant with additional scrubbing if necessary.

Repair area floors shall be kept clean of grease, dirt, and debris from maintenance activities and washed regularly.

Shipping materials shall be removed and disposed of from the buildings and grounds.

4.6 Equipment Rooms

Equipment rooms shall be clear of trash, litter, and accumulated dirt, dust, and residue from equipment maintenance and repairs. Equipment cabinets shall be wiped down during routine maintenance activities but not to exceed monthly intervals.

Floors shall be vacuumed during routine maintenance activities but not to exceed monthly intervals.

4.7 Alignment

Trash and litter shall be collected within the O&M Limits. Track switch areas shall be cleared of trash, litter, and debris during required maintenance inspections.

5 MAINTENANCE

Concessionaire shall maintain the Purple Line System and other Project elements within the O&M Limits in accordance with the Contract Documents. Concessionaire shall provide at a minimum all performance and functionality as provided at the start of Revenue Service throughout the Term. Concessionaire shall perform Maintenance Work in accordance with the Contract Documents and Concessionaire's approved Maintenance Plans, Asset Management Plan, and Third Party Agreement Requirements. Concessionaire shall not place Trains in the overrun tracks west of the Bethesda platform, except as necessary to deal with failure or other abnormal service conditions, in which case, that disabled Train shall be moved to a proper location prior to service the following day.

Maintenance of the public roadways identified in Part 1, Section 7 of the Technical Provisions, and on the maintenance delineation drawings in Book 5 Engineering Data during the O&M Period shall include the requirements of Part 3 Sections 5.1.1 through 5.1.4, 5.2.2, and 5.2.4 of the Technical Provisions.

Concessionaire shall implement a network based maintenance record-keeping system which shall provide for recording maintenance activities, as well as scheduling future maintenance on all Project elements, components, and systems. Such record-keeping system shall be integrated with or a part of the database in Part 3, Section 1.13.1 of the Technical Provisions. The system shall record part and system failures and provide information on cause of failure. The system shall include a listing and inventory of all parts. The system shall build on information developed during D&C Work, including Trial Running, and shall be used throughout the Term.

Concessionaire shall implement a database system integrated with or part of the database in Part 3, Section 1.13.1 of the Technical Provisions to track all inspection findings, repairs recommended, and repairs made for all Project infrastructure, facilities, LRVs, and operational systems. The database system shall be available to Owner at all times and include the date of inspection, year built, GPS coordinates, and Structure number (if applicable).

Concessionaire shall develop and implement a program which addresses maintenance of Project infrastructure, LRVs, Fixed Facilities, Fixed Equipment, and systems facilities to assure there is no backlog of Maintenance Work.

5.1 Infrastructure

Infrastructure includes certain Project assets, including, at a minimum, alignment, drainage and drainage structures, bridges, retaining walls, track, utilities, tunnels, roadways, public roadways and roadway lighting.

5.1.1 Alignment

Concessionaire shall inspect the Project weekly and shall correct any observed deficiencies.

Concessionaire shall keep the Project within the O&M Limits clear of trash, litter, discarded track materials, discarded appliances, vegetation debris, and fallen trees. Drainage structures and ditches shall be kept free of obstructions which impede drainage flow. Upstream areas of bridges, culvert, and pipes at streams, creeks and rivers, shall be kept clear of debris, including trees and branches which will obstruct flow during storms with heavy rain fall.

Drainage ditches, gutters, and pipes which carry rain water shall be free of materials which impede drainage and water flow. Concessionaire shall perform all maintenance of the Paint

Branch Pumping station. When embankment erosion occurs, it shall be restored to the Project constructed cross section.

Vegetation in the track area shall be controlled so that grass, weeds, and tree saplings are not present in the gauge or within 15 feet of the track centerline on field side of the Guideway area.

Fencing shall be continuous without evidence of intrusion, in a state of repair adequate to ensure security. Fence posts shall be vertical, and fencing shall be free of debris and vegetation (except where vegetation was required by the design).

Concessionaire shall perform inspection and maintenance of Storm Water Facilities (SWF) in compliance with Maryland Department of Environment (MDE) guidelines and regulations. Concessionaire shall comply with Owner's MS4 stormwater permit. In addition to ongoing maintenance inspections, Concessionaire shall perform operational inspections for each SWF within one year of completion of its construction and at a minimum interval of three years following initial inspection. When any inspection reveals deficiencies which deviate from MDE requirements and approved plans, Concessionaire shall perform remediation to correct the deficiencies. Concessionaire shall record and maintain records of inspections and remedial action taken. Concessionaire shall determine which remedial actions require plan approval by MDE (or designee) prior to implementation by Concessionaire. Concessionaire shall provide to Owner inspection reports and records of remedial action taken for each deficiency during the O&M Period.

5.1.2 Structures

Concessionaire shall inspect all bridges, aerial Structures, parking Structures, and tunnels on a maximum 24-month cycle and all retaining walls, noise walls, substations, buildings, culverts, small Structures, catenary poles, and associated foundations on a maximum 48-month cycle in accordance with Owner's Inspection Manuals, 23 CFR Part 650, Subpart C – National Bridge Inspection Standards and FHWA Highway and Rail Transit Tunnel Inspection Manual. Underwater inspections for bridges and aerial Structures shall be conducted on a maximum 48-month cycle. The first inspection of the Structure shall be within one month of Structure completion and before the Structure is put into service.

Concessionaire shall perform follow-on inspections for all Structures. Concessionaire shall monitor and document any changes in the condition of Structures from one cycle to the next. Inspection reports shall be developed to include the following at a minimum:

- executive summary;
- load ratings (as applicable);
- repair recommendations and prioritizations;
- field forms; and
- summary of findings.

In addition to standard Owner inspection field form data required, field forms shall include the date of inspection, year built, and GPS coordinates (latitude and longitude) with at least 5 foot accuracy to the center of the respective Structure.

Concessionaire shall, during each inspection cycle, perform an elevation survey for all girders and piers carrying transit loading. The elevation survey report chart shall show survey base year and the five most recent survey cycle results, and the current year survey results. A separate

chart shall be provided outlining locations where elevation difference between the current and previous cycles exceeds ½ inch.

Structures inspection reports shall be clear, concise, and technically accurate, and follow standard Owner reporting format. All fracture critical elements shall be clearly identified in report write-ups and in field forms/drawings. On drawings, a notation “FCM” shall signify the element indicating it is fracture critical and immediate Maintenance Work may be required. All reports shall include an executive summary section at the beginning outlining only major or significant defects found during the inspection.

Concessionaire shall submit Structures inspection reports for Review and Comment within 20 days of the completion of the inspection. Structures inspection reports shall meet the following submittal format requirements:

- three bound copies; and
- two CDs containing all electronic files and drawings:
 - individual Structure inspection report files shall be in Microsoft Word;
 - inspection photos in digital format;
 - defect drawings in MicroStation; and
 - bookmarked PDF file of the complete report for each Structure.

Concessionaire shall perform Maintenance Work as recommended in the Structures inspection report or Renewal Work as recommended in the inspection reports and as directed by Owner.

Concessionaire shall obtain all permits required for such Work and inspect the Work required in the Structures inspection report that is over, adjacent to, and/or near CSX, Amtrak, WMATA, Prince George’s County, Montgomery County, and SHA facilities, as well as obtain required MOT permits.

In the event Concessionaire finds any deficiency that is an unsafe condition to the public, personnel, or Trains, Concessionaire shall notify Owner immediately. Concessionaire shall accompany Owner on a site visit to evaluate the condition and make recommendations for future action and any temporary protection to the public, personnel or Trains. If required, Concessionaire shall perform engineering analyses and/or further investigations to determine necessary corrective action and shall take all corrective action.

5.1.3 Track

Concessionaire shall inspect track and track system to meet FRA track inspection standards. Track shall be maintained to Class IV FRA Track Safety Standards. Track shall be maintained to provide a smooth ride for passengers and maintained in a state of good repair throughout the O&M Period. In addition to other requirements of the Contract Documents, the following shall apply:

- Concessionaire shall prepare and submit for Review and Comment a Track Maintenance Manual 18 months before Trial Running describing maintenance procedures which must be adhered to for each type of track installation. Concessionaire shall incorporate this Track Maintenance Manual into the Infrastructure Maintenance Plan required in Part 3, Section 1.3.1 of the Technical Provisions. The Track Maintenance Manual shall be developed in coordination with the LRV supplier so as to address rail/wheel interface, and achieve safety and optimal ride quality;

- Track shall be maintained in such condition as to assure compliance with the most restrictive fugitive noise level limits as required in
 - the Record of Decision;
 - Part 1, Section 8.1 of the Technical Provisions; and
 - Part 2 of the Technical Provisions.
- Further, Concessionaire shall:
 - repeat the Trial Running noise measurements test at intervals of six months throughout the Term and submit the test results for Review and Comment;
 - for any locations failing to meet the noise requirements of the Contract Documents, Concessionaire shall remediate the issue and perform a successful retest within four weeks of the original test unless a longer period is approved by Owner; and
 - if Concessionaire or Owner receives any complaints of excessive noise, Concessionaire shall conduct a repeat of the Trial Running noise test in the limits covered by the complaint within one week and submit the test results for Review and Comment. If the tests identify noise levels in excess of the permissible levels, the rectification requirements described above for the routine testing shall apply.
- RMS acceleration values measured by the LRVs along both tracks of the entire mainline alignment shall be reviewed weekly by Concessionaire and shall not exceed the 4 hour reduced comfort level (vertical) and the 2.5-hour reduced comfort level (horizontal) boundaries as specified in ISO 2631, figures 2a (vertical) and 3a (horizontal) as may be updated from time to time;
- ride quality at car-floor level shall be measured by an on-board accelerometer. The following actions are required after measurement of lateral and vertical accelerations which exceed stated values:

Acceleration	Action Required
Less than 0.25g lateral Less than 0.40g vertical	No action required
0.25g to 0.39g lateral 0.40g to 0.55g vertical	Field verify and correct deviation from standard.
0.40g to 0.49g lateral 0.56g to 0.59g vertical	Reduce Train speed by one track class, field verify and correct deviations for standard.
0.50g and greater lateral 0.60g and greater vertical	Reduce speed by two track classes, field verify and correct deviations from standard.

- track gauge widening due to rail wear shall not exceed ½ inch with a maximum of 1/2 inch wear on a single rail; and

- a regular program of rail grinding shall be implemented to control rail corrugations and other rail defects to control noise and enhance ride quality.

5.1.4 Pavement

All roadways (including public roadways) and paved lots set forth in Part 1, Section 7 of the Technical Provisions shall be the maintenance responsibility of Concessionaire.

Concessionaire shall maintain flexible pavement at an acceptable condition and level of safety for use, and meet all other technical requirements for flexible pavement set forth in the Contract Documents. Concessionaire shall repair all pot holes and slippage areas greater than 1 square foot in area and/or between 1 inch and 2 inches in depth within seven days of noting or being notified of deficiency. Concessionaire shall repair all pot holes and slippage areas greater than 2 inches deep within two days of noting or being notified of deficiency. Concessionaire shall seal all cracks greater than half an inch in width and 25 feet in length within 30 days of noting or being notified of deficiency.

Concessionaire shall determine the Pavement Condition Index of all flexible pavements once every five years after Final Completion. The Pavement Condition Index shall be determined using the method required in ASTM D 6433. All pavements having a Pavement Condition Index of 70 or lower shall be rehabilitated using Maintenance Treatments in accordance with Section VIII of the Maryland MDSHA *Pavement Design Guide*. All pavements having a Pavement Condition Index of 55 or lower shall be milled, full-depth patched, and overlaid. Pavements having a Pavement Condition Index of 40 or lower shall be completely reconstructed in accordance with the MDSHA *Pavement Design Guide*.

Concessionaire shall maintain rigid pavement at an acceptable condition and level of safety for use and meet all other technical requirements for rigid pavement set forth in the Contract Documents. Concessionaire shall repair all spalls and pot holes greater than 1 square foot in area and/or between 1 inch and 2 inches in depth within seven days of noting or being notified of deficiency. Concessionaire shall repair all spalls and pot holes greater than 2 inches in depth within two days of noting or being notified of deficiency. Concessionaire shall seal all slab cracks and shall seal all joints when 50 percent of the joint seal has lifted or deteriorated within 30 days of noting or being notified of deficiency. Concessionaire shall repair or replace all slabs where movement is evident or subgrade has failed, regardless of the number of pieces slab has broken into within 60 days of noting or being notified of deficiency.

Concessionaire shall determine the Pavement Condition Index of all rigid pavements once every five years after Final Completion. The Pavement Condition Index shall be determined using the method dictated in ASTM D 6433. All pavements having a Pavement Condition Index of 70 or lower shall be rehabilitated using Concrete Pavement Restoration (CPR) methods in accordance with Section VIII of the MDSHA *Pavement Design Guide*. All pavements having a Pavement Condition Index of 40 or lower shall be reconstructed in accordance with the MDSHA *Pavement Design Guide*.

5.2 Facilities

Concessionaire shall maintain facilities to meet requirements provided below.

5.2.1 Station and Station Facilities

Concessionaire shall maintain each Station's Platforms, canopies, pathways, art-in-transit artwork, and furniture so that they are free of deterioration. Painted surfaces shall be free of rust, exposed substrate, and paint chips. Painted surfaces shall be repainted not less than once

every five years, and chipped or rusted surfaces corrected within two months of detection. Platforms, approach walkways, and other paved surfaces shall be maintained to comply with ADA Accessibility Guidelines

All passenger information displays shall provide current information at all times.

Station furniture shall be securely fastened to Station infrastructure. Site furnishings (benches, waste receptacles, fencing, etc.) and hardscape elements (sidewalks, pavers, etc.) shall be maintained in good repair at all times. Replacements or repairs shall be made when a site furnishing is in disrepair, vandalized, or not in place.

Station lighting fixtures and lighting shall be fully functional and working. Burned-out lamps shall be replaced within 48 hours of detection by Concessionaire.

Canopies and windscreens shall be clear of visible scratches and discoloration. Damage due to scratches or discoloration shall be corrected within 48 hours of detection except for damage which requires materials that are not available within the 48-hour period, in which case those items shall be ordered and repaired as soon as practicable.

Damage due to vandalism shall be repaired within 24 hours of detection except for damage which requires materials that are not available within the 24-hour period, in which case those items shall be ordered and repaired as soon as practicable.

News boxes, stickers, posters, and other items placed by others without permission from Concessionaire or Owner shall be removed within 48 hours of detection. News boxes shall be stored for pickup by owner of boxes in accordance with MTA requirements. Concessionaire shall call the appropriate Emergency Services to handle items of a suspicious nature.

For each art-in-transit installation, Concessionaire shall consult with the selected artist to identify mutually acceptable procedures, materials and methods for cleaning and repairing artwork and shall implement those cleaning and repair procedures for the O&M Period. Concessionaire shall maintain artwork clean, and clear of graffiti, leaves, snow and ice. Damaged or vandalized artwork shall be repaired as soon as practicable.

5.2.1.1 Elevators and Escalators

Concessionaire shall perform preventative maintenance on escalators or elevators in accordance with Maintenance Plans. Such maintenance shall not be performed during Peak Periods unless Owner agrees in writing that the planned Work cannot be completed in an available off-peak period and cannot be sub-divided into separate work periods that individually can be completed in successive off-peak periods.

A minimum of one elevator shall be in service at all times at every Platform.

Each escalator shall provide 93% availability at each Station when the Purple Line System is scheduled to be open to Users as measured on an annual average basis.

Elevators shall provide 98% availability for the Purple Line System when the Purple Line System is scheduled to be open to Users as measured on an annual average basis. In addition, at each Station where an elevator is provided and maintained by the Concessionaire, the elevators in each Station shall provide no less than 90% availability when the Purple Line System is scheduled to be open to Users as measured on a per Station annual average basis.

5.2.2 Landscaping

Concessionaire shall maintain Stations, access and circulation roads, operations and maintenance facility sites, equipment room sites and landscaping in accordance with

Maintenance Plans and to provide a functionally efficient transportation facility that facilitates a trash and litter-free environment. During the growing season turf shall be mowed such that height shall be maintained not to exceed 4 inches. Edge trimming shall be performed at lawn perimeters and tree wells; weeds shall be removed from plant saucers and mulched beds every three weeks. Trees and shrubs shall be pruned to maintain visibility of signs, protect trees from vehicle damage, and enhance pedestrian safety. Shrubs shall be pruned as required and trees pruned on a five-year cycle. Dead, damaged, or ailing trees, shrubs, and ground cover shall be replaced within either the current planting season, or the following planting season when identified for replacement outside a planting season.

Vegetation management along the alignment shall be evaluated during an annual walk-through. Dead trees, hazard trees, overhanging branches, and invasive plants shall be removed immediately following the walk-through inspection. During the fall season of the year, fallen leaves shall be removed weekly or more often should they cause slippery conditions on Platforms and walkways. Leaves shall be removed from gutters on Station canopies to assure clogging is eliminated. Landscaping islands shall be kept clear of trash, litter, and debris, and be groomed.

All arboricultural work shall be performed by an ISA Certified Arborist who possesses a Maryland Tree Expert license.

5.2.3 Yards and Maintenance Facilities

Concessionaire shall maintain yards and yard sites such that they provide a neat appearance with outside bulk materials stored neatly and safely organized. All lighting shall be fully functional. Oil and oil products shall be stored so that overflow onto site is not present. Concessionaire shall obtain and comply with an MDE-issued oil operations permit as required. Site drainage shall be unobstructed. Roadways and pavement shall be free of ruts and irregularities.

5.2.4 Signs, Pavement Markings and Lighting

Signs shall be maintained by Concessionaire at an acceptable level of safety for the traveling public to meet all technical requirements for signage set forth in Part 2B, Section 5.7 of the Technical Provisions. The Concessionaire shall:

- repair all damaged overhead signs and sign structures that pose imminent risk to the public within 1 day;
- repair or replace all damaged but functional and legible overhead signs and sign structures within 90 days;
- repair or replace all non-functional or non-legible warning signs within 2 days; and
- repair or replace all other signs, including posts that are damaged or missing within 10 days.

Roadway markings shall be replaced when they are no longer meeting the technical requirements for pavement markings set forth in Part 2B, Section 5.6 of the Technical Provisions or when roadway pavement maintenance and repairs impact existing pavement markings.

Lighting shall be fully functional and working. Burned-out lamps shall be replaced within 24 hours of detection by Concessionaire.

5.2.5 Mechanical, Electrical, and Plumbing

Concessionaire shall ensure that all MEP systems are functional at all times.

MEP systems shall be maintained to the same levels of functionality and safety as provided at Final Completion.

Mechanical systems, including HVAC, pumps, air compressors, and other mechanical equipment, shall be maintained to match manufacturer's specifications and recommendations for maintenance. Routine Maintenance Work on elevators and escalators shall not be performed during peak service hours unless otherwise approved in the Maintenance Plans.

Electrical wiring, breakers, and other devices shall be maintained to match electrical ratings by the manufacturer.

Plumbing systems, including incoming water, waste water, water recovery, oil/water separator, fire suppression, car wash, and other plumbing systems shall be maintained to match manufacturer's specifications and recommendations unless otherwise approved in the Maintenance Plans.

5.3 Light Rail Vehicles (LRVs)

Concessionaire shall perform all LRV Maintenance Work, including, at a minimum, daily inspections, running repair, preventive maintenance, heavy repair, and Renewal Work.

5.3.1 Daily Inspections

Daily inspections shall be performed before the LRV departs the yard to include, at a minimum, running gear, operator controls, brake lights, turn signals, and headlights to ensure each LRV entering Revenue Service will provide passenger safety and safe, reliable operation.

LRV components, exterior body, interior, and running gear shall be inspected for compliance against a checklist (to be developed by Concessionaire) before being released for Revenue Service.

LRV exteriors shall be undamaged and fully functional and meet, at a minimum, the following requirements:

- body shall be kept free of dents, scratches, and exposed rust;
- painted surfaces shall be uniform without faded areas or areas which appear to be of a different shade or finish;
- all panels, skirts, shrouds, and access doors shall be in place (not loose) and comply with overall body requirements above;
- all glazing shall not be cracked or scratched;
- all doors shall be fully operational;
- all exterior lights, turn signals, and stop, running, and headlights shall be fully functional; and
- all destination signs and graphics shall be fully operational as intended to provide passenger information.

LRV interiors shall be undamaged and fully functional and meet, at a minimum, the following requirements:

- seating shall be securely fastened, clean and un-damaged, and free of any dislodged seat components;
- interior lighting and stop request buttons shall be fully functional and un-damaged;
- stanchions shall be tightly fastened;
- all CCTV, PA, PID, APC, and other control and communications systems shall be fully functional;
- a system map shall be securely fastened and shall be updated promptly when system changes are made;
- all HVAC equipment shall be fully functional and shall operate to provide passenger comfort in both heating and cooling modes meeting performance requirements specified in the Contract Documents;
- all operator cab controls, indicator lights, radio(s), passenger communication system, and audible alarms shall be fully functional and working; and
- all Train Control Systems, TWC, and AVL systems shall be fully functional.

Traction motors, propulsion inverters, truck assemblies (both powered and non-powered), gearboxes, articulation joints, wheels/treads, couplers, pantograph, auxiliary power supplies, brake control and application equipment, signal system equipment, and air compressor and/or hydraulic pumps, shall be fully functional. Requirements are:

- all equipment shall be fully functional and working within original manufacturers' specifications and tolerances unless otherwise allowed in the approved in the Maintenance Plans; and
- wheels shall not have flat spots that exceed 1/32 of an inch deep, not to exceed a diameter of 1 inch, or other defects which cause poor ride quality or safety concerns.

5.3.2 Preventative Service and Repairs

Running service and maintenance shall be performed so that adequate consumables, including, at a minimum, sand, window washer fluids, and light bulbs are provided.

Preventive maintenance shall be performed to ensure all components, equipment, and materials meet specifications of the LRV manufacturer. Heavy repairs shall be conducted such that those items being repaired are restored to full functionality. Records of repairs are to be provided to Owner in accordance with Part 3, Section 5 of the Technical Provisions and as part of the Monthly Performance Monitoring Report in Part 3, Section 1.13.3 of the Technical Provisions.

Renewal Work shall be conducted when components can no longer be repaired to meet manufacturer's recommended tolerance for components. Details of overhauls of exterior body, interior and running gear shall be recorded and provided to Owner in accordance with Part 3, Section 5 of the Technical Provisions and as part of the Monthly Performance Monitoring Report in Part 3, Section 1.13.3 of the Technical Provisions.

5.4 Systems

Systems shall include, at a minimum, Traffic Signal Systems, Train Control System, Traction Power, OCS, Communications, Control and Monitoring, Fire and Security, Corrosion Control, and Fare Systems. Concessionaire shall maintain all original Systems functionality and safety throughout the O&M Period. Concessionaire shall inspect, test and maintain all Systems and

equipment provided by the Concessionaire except as noted below, including all off-site equipment including, at a minimum, radio base stations and conduits and fiber optic cables provided for Owner's exclusive use.

After being accepted by the responsible AHJ, Concessionaire shall not be responsible for maintenance of the following systems items:

- WSSC Radio tower and associated radio equipment;
- all systems associated with the WMATA south entrance at Bethesda;
- all systems associated with the new Silver Spring Metrorail mezzanine and connecting bridge at Silver Spring Transit Center;
- all traffic signal controllers and associated traffic signal devices, (except as noted in Section 5.4.1) but not including associated gates and gate controllers, and not including associated bar signals;
- MDOT CIB network switches; and
- any EMI mitigation equipment installed by Concessionaire in research facilities on the University of Maryland campus.

Concessionaire shall provide MDOT representatives with continuous unescorted access to the Purple Line System in order to perform the necessary maintenance of MDOT CIB switches.

Concessionaire shall maintain all systems in accordance with this Part 3, Section 5.4 of the Technical Provisions and the following:

- original system functionality and performance including redundancy as provided at Final Completion shall be maintained unless otherwise approved in the Maintenance Plan;
- reliability and availability consistent with all operational Performance Requirements; and
- the planned equipment life as approved in the Asset Management Plan and the Handback Renewal Work Plans.

5.4.1 Traffic Signal Systems

Concessionaire shall maintain all equipment used to initiate TSPP requests to the traffic signal controllers, and/or associated gates.

If a supplementary traffic signal gate fails in the down position, Concessionaire shall immediately dispatch personnel to raise the gate manually and restore traffic flow.

Concessionaire shall operate the gate manually until such time as the defect is corrected

In addition, Concessionaire shall operate and maintain all traffic signals, and traffic signal equipment for the signals listed in Exhibit 5.1 below in accordance with all Federal, State and local statutory requirements, including, at a minimum, those standards identified in Part 2B, Section 5.2 of the Technical Provisions. Operations responsibilities shall include monitoring the performance and status of each intersection from the OCC, monitoring system alarms and initiating corrective action and revising phase sequences, phase actions and phase timing when directed by Owner.

Exhibit 5.1 – Traffic Signal Maintenance
Campus Drive at Presidential Drive
Presidential Drive/Union Drive at Valley Drive
Campus Drive at Regents Drive
Rosborough Lane at Paint Branch Parkway
Paint Branch Parkway at Paint Branch Trail
Paint Branch Parkway at MFRI Entrance
Paint Branch Parkway at Metro Entrance
Paint Branch Parkway at River Road
Paint Branch Parkway at Corporal Frank Scott Drive
River Road at Rivertech Court
River Road at Haig Drive
Ellin Road at Hanson Oaks Drive
Ellin Road and Bus Loop
Ellin Road at Harkins Road

5.4.2 Train Control Systems

The Concessionaire shall perform all Train control equipment inspections and tests as required and/or recommended by FRA, MUTCD, and AREMA and as in the approved Maintenance Plans.

Train Control System functionality shall be tested by Concessionaire at least quarterly and all defects corrected in accordance with the test report and/or the approved Maintenance Plans or Contract Documents.

If a grade crossing warning system or cross-street protection system gate fails in the down position, Concessionaire shall immediately dispatch personnel to raise the gate manually and restore traffic flow. Concessionaire shall operate the gate manually until such time as the defect is corrected. Concessionaire’s maintenance responsibility for grade crossing warning system and cross-street protection system gate control systems shall include the gate mechanisms, gate controller, all associated warning lights and all interconnecting cables including the interface cable to the traffic signal controller. Concessionaire’s maintenance responsibility for bar signals associated with all grade crossing warning systems and all cross-street protection systems shall include all bar signals and associated cables to the point of control.

Any item of Train control equipment that fails a safety test shall immediately be taken out of service by Concessionaire and shall remain out of service until corrective action and a successful safety test have been completed.

5.4.3 Traction Power Systems

Concessionaire shall maintain Traction Power systems in accordance with the manufacturers’ recommendations unless otherwise approved in the Maintenance Plan. Maintenance shall include:

- Traction Power system functionality including all wayside emergency trip stations shall be tested at least quarterly and all defects corrected; and
- exposed bus bars shall be cleaned annually.

5.4.4 Overhead Contact System (OCS)

The OCS and equipment maintenance shall include:

- OCS balance weight assemblies and disconnect switches shall be inspected at least annually;
- ultrasound testing of OCS poles shall be performed at least every five years;
- contact wire isolation from ground and continuity shall be tested at least every two years;
- contact wire cross-sectional area and registration shall be measured at least annually and any registration areas found out of tolerance corrected; and
- contact wire shall be replaced before the cross-sectional area falls below the allowable minimum as used in the design calculations for voltage drop.

5.4.5 Public Communications Systems

Public communications systems, including, at a minimum, PAVMS, CCTV, SETs, WETs, and the Project website, shall be available at all times (24 hours per day, 365 days per year).

The communications systems and equipment maintenance shall include:

- system configuration shall be adjusted as necessary and current configuration, access authorizations and password records maintained.

5.4.6 Control and Monitoring Systems

The control and monitoring system and equipment maintenance shall include:

- system configuration shall be adjusted as necessary, and current configuration, access authorizations and password records maintained.

5.4.7 Fire and Security Systems

Fire and security systems shall be available 24 hours per day, 365 days per year.

5.4.7.1 Fire Detection and Alarm Systems

Fire detection and alarm systems shall be properly inspected, tested, and maintained by Concessionaire in accordance with NFPA 72, National Fire Alarm and Signaling Code, to provide at least the same level of performance and protection as designed. Any changes in system configurations shall be reported to, and approved by the State Fire Marshal.

Fire detection and alarm system components considered for inspection, testing, and maintenance in accordance with NFPA 72 include, at a minimum:

- heat detectors;
- smoke detectors;
- fire alarm panel;
- Fire Management Panels; and
- water flow detectors and tamper switches.

Personnel who perform inspection, testing, and maintenance shall meet one or more of the following criteria:

- factory trained and certified for specific type and brand of system being serviced;
-

- certified by a nationally recognized certification organization acceptable to the AHJ;
- registered, licensed, or certified by a state or local authority to perform service on systems addressed within the scope of NFPA 72; and
- qualified by an organization listed by a nationally recognized testing laboratory for the servicing of systems within the scope of NFPA 72.

5.4.7.2 Security Systems

Security systems are defined as access control systems and CCTV systems. Security systems shall be properly inspected, tested, and maintained in accordance with NFPA 731, Standard for the Installation of Electronic Premises Security Systems.

Security system contractors who perform inspection, testing, and maintenance shall be licensed in the State of Maryland in accordance with COMAR Section 29.04.05.01. Items to be maintained include the following:

- doors, gates, hatches, and windows fitted with access control shall be maintained in fully functional condition so as not to cause alarms due to a permanently open condition;
- Concessionaire shall maintain a current database of all personnel access authorizations and issue access cards to all personnel; and
- CCTV camera lenses shall be cleaned annually or when the view becomes unclear or obstructed. CCTV system configuration shall be adjusted as necessary and current configuration, access authorizations, and password records maintained.

5.4.8 Fire Protection Systems

Fire protection systems include automatic sprinklers, standpipes and hose systems, non-aqueous fire protection systems, and fire department connections and hydrants.

5.4.8.1 Automatic Sprinklers Systems

Automatic sprinkler systems shall be properly inspected, tested, and maintained in accordance with NFPA 25, Standard for the Inspection, Testing and Maintenance of Water-Based Fire Protection Systems.

Contractors or Personnel who perform inspection, testing, and maintenance shall be licensed in the State of Maryland in accordance with COMAR Section 29.06.05.04.

5.4.8.2 Standpipes and Hose Systems

Standpipe systems installed shall be properly inspected, tested, and maintained in accordance with NFPA 25, Standard for the Inspection, Testing, and Maintenance of Water-Based Fire Protection Systems.

5.4.8.3 Non-Aqueous Fire Protection Systems

Non-aqueous fire protection systems shall be properly inspected, tested, and maintained in accordance with NFPA 2001, Standard on Clean Agent Fire Extinguishing Systems.

5.4.8.4 Fire Department Connections

Concessionaire shall inspect Fire Department Connections (FDC) at least quarterly to verify the following:

- FDCs are visible and accessible;

- couplings or swivels are not damaged and rotate smoothly;
- plugs or caps are in place and undamaged;
- gaskets are in place and in good condition;
- identification signs are in place;
- check valves are not leaking;
- the automatic drain valve is in place and operating properly; and
- FDC clapper(s) is in place and operating properly.

Concessionaire shall restore/repair the FDCs to enable usage by Emergency Services.

5.4.9 Stray Current/Corrosion Control Systems

At two-year intervals following the start of Revenue Service, during Peak Periods, Concessionaire shall repeat the stray current survey conducted during the Trial Running period utilizing all the test points from the previous survey. All measured values shall be less than 20mV variance from the equivalent measured values taken during the Trial Running period. If any measured values fail to meet this requirement, Concessionaire shall diligently investigate the cause for increase and take corrective action to bring the system back into compliance.

Concessionaire’s personnel responsible for corrosion control shall set up a record system to accurately record and monitor changes in test values. These records will alert Concessionaire to problems and will form the basis for remedial measures and components replacements. The record system may be a manual, card, map or computerized system, but shall be comparable and compatible with other Project records. The following chart is a general guideline of the results of stray current effects and required actions:

CHART OF STRAY CURRENT EFFECTS

Test Value Fluctuation, mV	Level	Action
0 to + 20	negligible	None
+ 20 to + 100	low	Correct within 6 months
+ 100 to + 300	moderate	Correct within 6 months
+ 300 to + 1000	high	Correct within 6 months
> + 1000	excessive	Correct within 6 months

Concessionaire shall measure rail-to-ground resistance throughout the alignment at intervals of five years +/- six months after the start of Revenue Service. If the tests identify any track section with rail-to-ground resistance of less than 75% of the equivalent value measured at Revenue Service Availability, Concessionaire shall complete corrective action in not more than one year including a retest to demonstrate that the track section is in compliance.

Concessionaire shall test the electrical continuity of reinforced structures at intervals of five years +/- six months after the start of Revenue Service. If the tests identify any loss of continuity, Concessionaire shall complete corrective action in not more than six months including a retest to demonstrate that continuity has been restored.

Concessionaire shall test the electrical resistance of every TPSS to ground including any surrounding metallic fences at intervals of twelve months +/- one month after the start of Revenue Service. If the tests identify any location where the reading is greater than 120% of the value measured at Revenue Service Availability, Concessionaire shall complete corrective action in not more than one week including a test to demonstrate that the location is in compliance. Until such time as the corrective action is completed, Concessionaire shall secure the area as necessary to prevent the possibility of electric shock to personnel and the public. If the TPSS ground mat is accessible, a continuity test between the TPSS and fences and the ground mat is permissible except that a test to ground shall be performed every tenth year.

Concessionaire shall test the electrical resistance of every OCS pole at intervals of twelve months +/- one month after the start of Revenue Service. If the tests identify any location where the reading is greater than 120% of the value measured at Revenue Service Availability, Concessionaire shall complete corrective action in not more than one week including a test to demonstrate that the location is in compliance. Until such time as the corrective action is completed, Concessionaire shall secure the area as necessary to prevent the possibility of electric shock to personnel and the public. If the top of the applicable ground rod is accessible, a continuity test between the pole and the ground rod is permissible except that a test to ground shall be performed every tenth year.

5.4.10 Fare System

Concessionaire shall maintain all Fare System Equipment (vending machines, Validators, handheld units, workstations, spare equipment, special tools, and components contained therein). Fare System Equipment shall be monitored for intrusion and equipment, and system faults and failures by Concessionaire. TVM's shall be monitored for operational status including, at a minimum, fare media stock availability and capacity of cash bins. The specific quantities of equipment to be maintained at each station is listed below:

	Station Name	Quantity of TVM's	Quantity of Fixed Validators
1	Bethesda	3	4
2	Chevy Chase Lake/ Connecticut Avenue	2	4
3	Lyttonsville	2	2
4	Woodside/16th Street	2	4
5	Silver Spring Transit Center	3	3
6	Silver Spring Library	2	4
7	Dale Drive	2	2
8	Manchester Place	2	4
9	Long Branch	2	2
10	Piney Branch Road	2	2
11	Takoma/Langley Transit Center	2	2
12	Riggs Road	2	2

	Station Name	Quantity of TVM's	Quantity of Fixed Validators
13	Adelphi Road/West Campus	2	2
14	Campus Center	2	4
15	Campus Center (off Station)	2	2
16	East Campus	2	4
17	College Park Metro	2	2
18	M Square	2	4
19	Riverdale Park	2	4
20	Beacon Heights	2	4
21	Annapolis Road/Glenridge	2	4
22	New Carrollton	2	2
Total Quantity		46	67

Concessionaire shall maintain twenty-one (21) total handheld verification units for the Project. A minimum of nineteen (19) total handheld verification units shall be operational at all times when Stations are open for Revenue Service. Each Station shall have a minimum of one operational TVM and two operational Validators at all times when Station is open for Revenue Service. If, at any time, this requirement is not met, Concessionaire shall immediately dispatch two personnel members to the Station with the necessary portable equipment to sell and validate fare media.

5.4.11 Electromagnetic Interference

Concessionaire shall maintain all LRVs, OCS, TPSSs, disconnect switches, interconnecting Traction Power cables and cable terminations, bond wires, negative bonding of tracks and negative return cables, and cable terminations to keep radiated emissions at levels that do not exceed the lesser of:

- the requirements for EMI as specified in Part 2B, Section 11.3.5 of the Technical Provisions; and
- 10% higher than the values measured in the Spectral Analysis of Radiated Emissions-Trial Running.

Except within the University of Maryland campus between stationing 598+00 and 658+00, Concessionaire shall repeat the analysis in the Spectral Analysis of Radiated Emissions – Trial Running at intervals of five years and submit the test results for Review and Comment in accordance with Part 2B, Section 11 of the Technical Provisions.

Any locations within 100 feet of the track centerline on both sides of the alignment failing to meet the radiated emissions criteria above shall be corrected and a successful repeat of the spectral analysis of radiated emissions test in the affected area shall be completed within three months of the original test unless a longer timeframe is approved by Owner.

Within the University of Maryland campus between stationing 598+00 and 658+00, Concessionaire shall repeat the analysis in the Spectral Analysis of Radiated Emissions – Trial Running at least once per year (excluding incidences of complaints). Such repeat of the analysis shall be performed within 60 days prior to the anniversary of the date when the Spectral Analysis of Radiated Emissions – Trial Running was performed.

After achievement of Revenue Service Availability, Concessionaire shall continue to implement any required Operational Phase Mitigation during the O&M Period in accordance with the approved Operational Phase Mitigation Plan in Part 2B, Section 11.3.5.4 of the Technical Provisions. Upon conclusion of the performance of such Operational Phase Mitigation Plan, Concessionaire shall repeat the Spectral Analysis of Radiated Emissions-Trial Running.

If Concessionaire receives any substantiated complaints of excessive radiated emissions within 100 feet of the track centerline on both sides of the alignment or within the University of Maryland campus between stationing 598+00 and 658+00, Concessionaire shall repeat the analysis in the Spectral Analysis Radiated Emissions –Trial Running only in the limits covered by the complaint and submit the updated analysis for Review and Comment in accordance with Part 2B, Section 11.5 of the Technical Provisions. If the analysis identifies radiated emission levels in excess of the permissible levels, the rectification/mitigation requirements shall be in accordance with Part 2B, Section 11.5 of the Technical Provisions and implemented by Concessionaire. .

5.5 Summary of Submittals

Item	Section	Submittal	Action
1	5.1.2	Structures Inspection Test Result Reports	Review and Comment
2	5.1.3	Track Maintenance Manual	Review and Comment
2	5.1.3	Noise Measurement Test Results	Review and Comment
3	5.4.11	Spectral Analysis of Radiated Emissions Test Results	Review and Comment

6 ASSET MANAGEMENT

Concessionaire shall develop and implement an Asset Management Plan in accordance with MAP-21 and the FTA's regulations, guidance and reporting requirements. The Asset Management Plan shall address asset management processes, activities, tools, the annual asset management work and work planning. This Asset Management Plan shall provide comprehensive documentation of how Concessionaire will manage the assets over their lifecycle, an asset inventory, information on asset condition and performance, and a plan for asset preservation and/or renewal as applicable. The plan shall assure each asset is kept in a State of Good Repair during its lifecycle and be used as the foundation for all Maintenance Plans.

6.1 Asset Management Program

The asset management program shall include all assets in the O&M Limits as set forth in Part 1, Section 7 of the Technical Provisions for which Concessionaire is responsible for maintenance. The asset rehabilitation, overhaul, and replacement process, including resulting Renewal Work, shall be based on the condition and performance assessments for each asset.

6.1.1 Asset Management Plan

The Asset Management Plan shall include, at a minimum:

- the inventory of assets, including description, location, cost, age, and current condition;
- estimated Useful Life and projected Residual Life by asset;
- criteria for determining whether rehabilitation, overhaul, or replacement will be used such that the asset meets the operational, performance, and life-remaining requirements of the asset;
- specific details identifying which assets will be replaced requiring a Planned Service Interruption in the upcoming 12 months;
- planned preventative maintenance of the asset over its lifecycle consistent with the approved Maintenance Plans;
- planned Renewal Work, including refurbishment, major rehabilitation, overhaul, or replacement of the assets throughout the O&M Period;
- process to recover asset condition as result of an accident;
- projected rehabilitation, overhaul and replacement costs and anticipated replacement timing for each asset;
- process for assessing and reporting on risk associated with asset failure, likelihood of occurrence, and magnitude of impact;
- identification of those assets which are critical to Project performance;
- method and procedures for determining condition and Residual Life of asset;
- policy for asset preservation including implementation of preventative maintenance program;
- estimated cost in current Fiscal Year dollars of asset management work for each year of the O&M Period;

- summary of major asset rehabilitation, overhaul, and replacement completed in each previous fiscal year; and
- method for recording condition, performance, and history for each asset in inventory (manual or software based).

The Asset Management Plan shall include a description of the organization responsible for asset preservation and the organizational relationship to Concessionaire’s senior management.

Concessionaire shall submit the Asset Management Plan for Review and Approval according to the following schedule:

- a minimum of 12 months before the scheduled start of Trial Running;
- at the start of Trial Running; and
- annually on every anniversary of the start of Trial Running.

6.1.2 Asset Management Work Program

Concessionaire shall perform all asset rehabilitations, overhauls, and replacements identified in the approved Asset Management Plan in accordance with the schedule identified in the approved Asset Management Plan.

Concessionaire shall identify and provide a justification for any deviations from the approved Asset Management Plan.

6.2 Summary of Submittals

Item	Section	Submittal	Action
1	6.1	Asset Management Plan	Review and Approval
2	6.1	Asset Management Plan – Annual Update	Review and Approval

7 HANDBACK

Concessionaire shall return the Project assets to Owner at the end of the Term in a State of Good Repair with the Residual Life as required below.

7.1 Residual Life of Project Assets

Subject to Section 8.13.3.2 of the Agreement, the Residual Life of Project assets at the conclusion of the O&M Period shall be the greater of:

- the remaining Useful Life of each asset had it been maintained in a State of Good Repair;
- 10 years for trackwork cross ties; or
- no less than three years after the end of the Term assuming that regular maintenance consistent with Concessionaire's Maintenance Plans continues after completion of the Handback requirements.

Any asset rehabilitation, overhaul, or replacement scheduled to occur in the three-year period following handback shall be accelerated to occur before the handback such that no asset rehabilitation, overhaul, or replacement will be required during that period as determined by Concessionaire's Asset Management Plan.

7.2 Handback Renewal Work Plan

The Handback Renewal Work Plan shall be a supplement to the Asset Management Plan. Concessionaire shall submit the Handback Renewal Work Plan for Review and Approval according to the following schedule:

- 60 months prior to the end of the Term; and
- every 12 months thereafter,
or within a reasonable period before any Early Termination Date.

At a minimum, the Handback Renewal Work Plan shall include:

- additional asset actions required to meet the condition of no asset rehabilitation, overhaul, or replacement being performed in the three-year period immediately following Handback;
- plan for the transition of operation and maintenance responsibilities to Owner;
- procedure for acceptance of the Project elements by Owner; and
- procedure for training Owner on operations and maintenance of Project elements.

7.2.1 Assessment of Condition, Performance, and Residual Life

The Handback Renewal Work Plan shall detail the methods and tests which will be used during condition and performance assessments, acceptance criteria, and acceptance measures or limits which must be satisfied, and conditions and data which will be used to calculate Residual Life of all Project elements. The Handback Renewal Work Plan shall also include scope, schedule, detailed tests and inspection procedures, processes and evaluations required, acceptance criteria, and acceptance measures which will be used to verify and demonstrate to Owner that all facilities, equipment, and systems function as specified; that they comply with

applicable Codes and Standards set forth in the Contract Documents; and that they meet Residual Life requirements specified in the Contract Documents.

Test and inspection procedures detailed in the Handback Renewal Work Plan shall include reference standards, or other information used to support testing, inspection, and the asset evaluation process, including updates to standards which occur during the Term.

Concessionaire shall use the asset list in the Handback Renewal Work Plan when determining required inspections and tests.

7.2.2 Handback Renewal Work Plan

The Handback Renewal Work Plan shall detail Concessionaire's approach to maintenance, repair, reconstruction, rehabilitation, overhaul, and replacement of Project assets such that they meet operational, performance, and life-remaining requirements.

Concessionaire's Handback Renewal Work Plan shall be developed based on:

- assessment of operation, performance, and Residual Life of Project assets; and
- the assumption that Project assets will be maintained in accordance with Contract Documents for the remainder of Term.

The Handback Renewal Work Plan shall contain Concessionaire's proposed schedule for implementation of maintenance, repair, reconstruction, rehabilitation, overhaul, or replacement of Project assets. The Handback Renewal Work Plan shall contain details of the cost of executing Handback Renewal Work.

The Handback Renewal Work Plan shall include any areas which are under remedial Work. Concessionaire shall retain all remediation responsibility (and liability) until such time that Concessionaire submits to Owner a full description of remedial Work and results of such Work, and receives from Owner acceptable documentation indicating that Concessionaire has complied with all directives and fulfilled and completed its remediation obligations.

7.2.3 Execution of the Handback Renewal Work Plan

Upon receipt of approval of the Handback Renewal Work Plan Concessionaire shall execute the Renewal Work in accordance with the Handback Renewal Work Plan and the Contract Documents. All references to Work in other Sections of the Contract Documents shall also apply to the Renewal Work.

7.2.4 Training and Transition Plan

The Handback Renewal Work Plan shall include a Training and Transition Plan. Training and Transition Plan shall detail how Concessionaire will work with Owner to ensure a seamless transfer of O&M Work responsibilities and safe operations back to Owner at the end of Term.

At least six months prior to end of the Term or within a reasonable period before any Early Termination Date, Concessionaire shall provide a comprehensive O&M training program for Owner personnel which shall cover in detail all operations and maintenance functions of the Project, and an on-the-job transition Project plan and schedule. The training program shall include a review of certain Project records as well as all O&M manuals, plans and procedures. Complete curriculum for this training program shall be contained in the Training and Transition Plan component of the Handback Renewal Work Plan.

At least one month before the end of the Term or within a reasonable period before any Early Termination Date, Concessionaire shall complete all training of Owner personnel identified in the Training and Transition Plan.

7.3 Turnover of Replacement Parts

At the end of the Term and prior to Owner's Review and Approval of Concessionaire's final Request for Availability Payment in accordance with Section 13.2.3 of the Agreement, Concessionaire shall transfer to Owner all replacement parts, supplies, and materials which it has in its inventory and possession for purposes of operations and maintenance of the Project. For further certainty, at the end of the Term, Concessionaire shall have an inventory of replacement parts, supplies, and materials which is reasonably in accordance with amount and type of inventory maintained throughout the O&M Period in compliance with the Contract Documents. Owner reserves the right not to accept obsolete, damaged, or any other replacement parts from Concessionaire's inventory if the use of which Owner deems not to be in the best interest of Owner. Concessionaire shall ensure that all replacement parts, supplies, and materials are stored at a maintenance facility within O&M Limits at the end of the Term. At the end of the Term, Concessionaire shall be deemed to have released and transferred to Owner all its right, title and interest in any and all such replacement parts.

Concessionaire shall submit a replacement parts inventory list for Information 90 days prior to the end of the Term.

7.4 Turnover of Operations and Maintenance Equipment and Documents

At the end of the Term and prior to Owner's Review and Approval of Concessionaire's final Request for Availability Payment in accordance with Section 13.2.3 of the Agreement, Concessionaire shall transfer to Owner all Record Documents, operations and maintenance equipment and materials which it has in its inventory and possession for purposes of operations and maintenance of Project. These items shall include, at a minimum, the following:

- all maintenance equipment procured and furnished by Concessionaire, including maintenance vehicles and test equipment (items procured by individual personnel members with their own funds shall remain the property of the personnel members);
- all office furniture and equipment, including telephone systems and equipment;
- all computer servers, work stations, laptops and associated network equipment, printers, and data storage devices, including all software, software licenses and accumulated data collected during the Term;
- all training program materials, including electronic data files;
- all operations and maintenance manuals, including electronic data files; and
- all Project electronic and hard copy documents and records.

Concessionaire shall ensure that all items are stored at a Project facility at the end of the Term. At the end of the Term Concessionaire shall be deemed to have released and transferred to Owner all its right, title, and interest in any and all such items.

Concessionaire shall submit an operations and maintenance equipment inventory list for Information 90 days prior to the end of the Term.

7.5 Summary of Submittals

Item	Section	Submittal	Action
1	7.2	Handback Renewal Work Plan	Review and Approval
2	7.2	Handback Renewal Work Plan – Annual Update	Review and Approval
3	7.3	Replacement Parts Inventory	Information
4	7.4	Operations and Maintenance Equipment Inventory	Information

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