

# PMOC Monitoring Report

## National Capital Purple Line Light Rail Transit Project Montgomery and Prince George's Counties, MD

Maryland Transit Administration (MTA)

August 2018

PMOC Contract Number	DTFT60-15-D-00003		
Task Order Number	05	Project Number	FTA- DC-27-5312
Work Order Number	04		
OPs Referenced	25		

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# EXECUTIVE SUMMARY

## Project Description

The National Capital Purple Line (“Purple Line”) is a 16.2 mile east-west Light Rail Transit (LRT) line extending inside the Washington, DC Beltway from Bethesda in Montgomery County, MD to New Carrollton in Prince George’s County, MD. The Purple Line will operate largely at street level in a combination of dedicated and semi-exclusive right-of-way, and also includes segments on elevated structures and in tunnels. The alignment for the Purple Line will provide direct connections to Washington Metropolitan Area Transit Authority (WMATA) at Bethesda, Silver Spring, College Park, and New Carrollton, MD. The project will also connect to all three Maryland Area Regional Commuter (MARC) commuter rail lines, Amtrak, and local bus routes. The project includes twenty-one stations, two storage and maintenance facilities, and 25 light rail vehicles (LRVs). MTA is executing the project using a Public-Private Partnership (P3) method of project delivery. As documented in the Full Funding Grant Agreement (FFGA), the estimated project cost is \$2,407,030,288 and the scheduled Revenue Service Date (RSD) is December 31, 2022.

## Project Status

Following the execution of the FFGA on August 22, 2017, the Purple Line Project is currently in the Construction phase, with Purple Line Transit Partners (PLTP) as the P3 Concessionaire.

### Scope / Significant Activities

- MTA is forecasting PLTP design completion in March 2019, slipping further by approximately three months. This latest schedule slippage is primarily due to PLTP delays in advancing packages from “final” to Released for Construction” (RFC), and by PLTP’s lack of finalized third party agreements.
- MTA continued negotiations and has made progress with CSX on amendments to the existing third party agreement regarding station finishes details and required vertical clearance at the Silver Spring Transit Center (SSTC) mezzanine connector pedestrian bridge, an electrification crash barrier, CSX drainage design requirements, and final approvals for the new access road into the CSX yard.
- After accepting the Alternative Technical Concept (ATC) offered during the proposal process for the Baltimore-Washington Parkway bridge span widening construction methods, MTA is preparing documentation that this ATC has no impact on the project’s environmental decision to submit to FTA for concurrence.
- The ATC offered during the proposal process for the use of jet fans at the Bethesda Station in lieu of vent shafts is nearing the final reviews for acceptance. PLTP’s final design package is anticipated in late August 2018 and will be submitted to the State Fire Marshall to enable the State Fire Marshall to offer a final decision. If the ATC is found to be acceptable by the Fire Marshall, it would eliminate the need for vent towers and their associated Right of Way (ROW) acquisition.
- Construction activities continued throughout the corridor. Demolition of structures on acquired properties continued in multiple project areas. Pile driving for the new Lyttonsville Bridge north abutment commenced; and the upper parking lot at Silver Spring International Middle School was completed and opened for use. Tree clearing, which is

desired to be completed prior to the expiration of the limited Right of Entry on August 31, 2018, has not yet started at the Rosemary Hills Elementary school pending approval of the PLTC work plan by CSX. Construction of the Purple Line construction box continues at Bethesda with three slabs and one wall pour completed to date. Support of Excavation (SOE) continued with pile driving and installation of lagging at the Manchester station and the west tunnel portal. At Plymouth Tunnel east portal, tunneling continued at approximately two rounds (eight feet) per day, with 235 feet of the top heading completed. Median removal along Kenilworth Avenue continued and preparations for drilling piles for the retaining wall along Veteran's Parkway commenced. At the Baltimore-Washington Parkway Bridge, stone veneer removal continued and cutting and benching for the temporary bridge commenced. Grading continued for the Glenridge Operations and Maintenance Facility building pad.

- Vehicle manufacturing activities, coordinated with design progress, continued in Spain in July and early August 2018. All CAF intermediate design submittals have been completed and approximately 45% of the Final Design packages have been submitted to MTA for review to date. The carbody stress (crashworthiness) analysis, which was returned with comments, continues to undergo comment resolution by CAF. Actual carbody shell testing will be conducted on the second vehicle shell to be manufactured in Spain. Shock and vibration test continue to be performed by various manufacturers. Fire and smoke tests are scheduled for September 2018, and toxicity tests results are due in 30 to 60 days. CAF has not yet responded to MTA's rejection of the design deviation request for testing the vehicle in an environmental test chamber shorter than the overall vehicle. MTA recently returned the vehicle noise report with comments, and is awaiting the response from PLTP/CAF. CAF was making final preparations to ship the first carshell from Spain to Elmira, NY for final assembly. The shipment will be made in segments, with the five modules arriving in September and October 2018.
- The Purple Line project continues to prepare documentation of minor changes to the project to submit for FTA concurrence with MTA's assessment of no impact to the project's environmental clearance and Record of Decision, including;
  - MTA submitted a large package of several hundred Limits of Disturbance (LOD) changes to FTA on June 21, 2018, FTA identified several issues in the package (e.g., boundaries, acreages, etc.), and MTA is working with PLTP to resolve the questions and to resubmit the cases affected.
  - MTA requested and received an exception to the moratorium on tree clearing, supported by the work of an on-site biologist and ornithologist, to enable the project to comply with a request from Rosemary Hills Elementary School to perform the planned tree removal before children return to school in the fall.
- The Purple Line team's priority for submitting additional pending NEPA requests is as follows:
  - The updated large package of several hundred LOD cases
  - The LOD case for the Montpelier stormwater management site in Prince George's County
  - Documentation of the change in construction approach represented in the recently approved ATC for the Baltimore-Washington (B-W) Bridge

- Several LOD changes associated with B-W Parkway ATC arising from Section 4(f) accommodations
- MTA is responsible for providing offsite streams, wetlands and stormwater mitigation:
  - For wetlands mitigation, MTA received site development approval from MDE in July 2018, and can now finalize the plans to be included in the solicitation for the construction contract.
  - For stream mitigation, MTA completed the 100% design packages in June 2017 and received approval from MDE in May 2018. MTA is preparing the solicitation package.
  - MTA had received MDE approval for greater than the 5 acres required to be in place by June 30, 2018 in accordance with the P3 contract, and is awaiting PLTP’s final approved on-site mitigation capacity, which is expected by the end of 2018, to determine if any off-site facilities need to be constructed.
  - The site development design package for the Prince George’s County Montpelier Basin site for SWM is advancing through review. PLTP needs to resolve several comments to obtain the Soil Conservation District approval, which would then be followed by MDE delegated authority approval. Subsequent to that, MTA will be submitting several LOD cases related to the Montpelier site for FTA concurrence.
- Right of Way acquisition activities continue for the required 468 private and 139 public parcels (607 parcels total). As of August 16, 2018, properties from only 6 private owners remain for which MTA does not yet have possession for construction activities. According to MTA, only two of these properties have potential impacts on construction progress, and MTA is focusing its effort to resolve these as quickly as possible. MTA also evaluated and reduced the approximately 280 additional small acquisitions initially identified by the P3 Concessionaire for utility relocations to a current total of approximately 168 parcels, of which 10 are now in MTA possession. The cost responsibility for these additional parcels has not yet been negotiated.
- The additional costs and funding for the Polk Street replacement for the Prince George’s County Parks maintenance facility were processed in an amendment to a Memorandum of Agreement (MOA) with Prince George’s County, which was executed on July 11, 2018. The solicitation package is currently completing MTA legal and internal reviews, and the expected advertisement date is August 27, 2018, with Notice to Proceed (NTP) anticipated no later than March 2019.
- As the project ramps up construction activities, MTA is similarly adapting its management capacity and capability by adjusting its personnel resources, including the addition of a Deputy Project Manager with strengths in construction management to the PMC team in August 2018.

#### Cost

- The project’s documented expenditures are \$838.3 million through June 2018.
- Currently, all \$149.35 million of the original \$149.35 million contingency remains.

- Several Change Orders that have a potential cost impact on the project contingency are in process.
- Mitigation to recover the schedule may also result in added costs to the project.
- Refer to the Core Accountability Table below for additional project cost information.

Schedule

- The following are the current key milestone dates for the project based on the March 15, 2017 progress update of the master project schedule (latest approved issue of the schedule was over a year ago) and as modified by the most recent project developments discussed between MTA and the PMOC. (Previously actualized milestones are not shown here for brevity, but are presented in the body of the report.)

National Capital Purple Line LRT Key Milestone Dates	
All Significant ROW Acquisition & Relocation	As needed by construction
P3 Ready to Commence Revenue Service	TBD*
MTA Opens for Revenue Service	March 2022*
Revenue Operations Date (includes contingency)	December 31, 2022*
FFGA Revenue Service Date (includes contingency)	December 31, 2022

\* Project Open for Revenue Service and Revenue Operations dates are dependent on the ongoing Recovery Schedule development, and dates indicated reflect expected future schedule recovery and mitigation efforts, which have not yet been achieved.

- PLTC currently does not have an approved recovery schedule. Instead, PLTP submits four-week look-ahead schedules on a weekly basis, and MTA project controls personnel track historical and forecasted project progress based on these submittals. Through January and February 2018, MTA and PLTP conducted schedule mitigation workshops and PLTP has been submitting multiple progressive versions of a mitigated schedule for MTA review; however, agreement on a schedule to achieve the FFGA Revenue Service date has not yet been reached. See the **Major Problems and/or Issues** subsection of this report, below.

**Core Accountability**

FFGA Core Accountability Items			
Project Status:		Original at FFGA:	Current Estimate (EAC):
<b>Cost</b>	Cost Estimate	\$2,407,030,289	\$2,407,030,289
<b>Contingency</b>	Unallocated Contingency	\$90,535,748	\$90,535,748
	Total Contingency (allocated plus Unallocated)	\$149,349,825	\$149,349,825
<b>Schedule</b>	Revenue Service Date (FFGA)	December 31, 2022	December 31, 2022
	MTA Target Revenue Service Date	March 31, 2022	TBD

<b>FFGA</b>			
<b>Core Accountability Items</b>			
		<b>Amount (\$)</b>	<b>Percent (as percent of total)</b>
<b>P3 Planned Value to Date</b>	Total budgeted cost of work scheduled to date (if available) <b>NOTE 1</b>	Not Available	---
<b>P3 Earned Value to Date</b>	Budgeted cost of work completed to date, i.e., actual total value of work earned or done (if available) <b>NOTE 1</b>	Not Available	---
<b>P3 Actual Cost</b>	Total cost of P3 work completed to date (actual total expenditures)	\$468,631,633	25.9%
<b>Total Project Actual Cost</b>	Total cost of work completed to date (actual total expenditures)	\$838,251,437	34.8%
		<b>Amount (\$)</b>	<b>Percent</b>
<b>Contracts</b>	Total contracts awarded to date ( <b>Note 2</b> )	\$2,219,446,988	92.2%
	Total construction contract awarded to date (construction contracts only) ( <b>Note 3</b> )	\$1,043,378,886	99.5%
	Physical construction work completed (amount of construction contract work actually completed) ( <b>Note 4</b> )	\$138,747,535	13.2%
<b>Major Issues</b>	<b>Status</b>	<b>Comments / Action / Planned Action</b>	
	See discussion below		
<b>Date of Next Quarterly Meeting (if known):</b>		November 7, 2018	

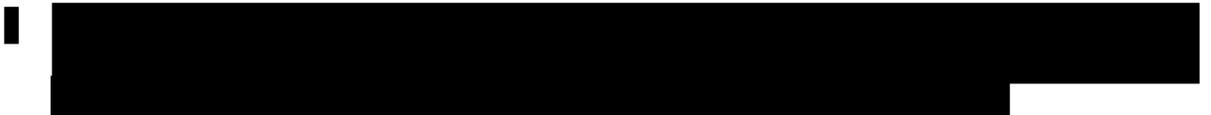
**NOTE 1** (Core Accountability Table). The Planned Value to Date and the Earned Value to Date are currently not available, since even approximated values have become unreliable and/or misleading until re-baselining of the P3 cost-loaded schedule is completed. This effort is ongoing with the P3 Contractor, and is anticipated no earlier than 3Q CY2018.

**NOTE 2** (Core Accountability Table). Amount includes value of all construction, right of way, vehicle and professional services contracts awarded to date (right of way “awarded” value is the cost of right of way to date). Percentage is calculated based on total project cost estimate of \$2,407,030,289.

**NOTE 3** (Core Accountability Table). Amount includes the SCC 10 through 50 values of all contracts awarded to date. Percentage is calculated based on total project planned SCC 10 through 50 costs contained in the latest project SCC Workbook.

**NOTE 4** (Core Accountability Table). Amount includes the SCC 10 through 50 values expended to date. Percentage is calculated based on total project planned SCC 10 through 50 costs contained in the latest project SCC Workbook.

### Major Problems and/or Issues



- According to the PMP, the Master Schedule is to be updated monthly; however, the most recent approved Master Project Schedule update is as of March 15, 2017. Since the December 2016 baseline schedule no longer reflects project conditions, the project does

not currently have a current approved resource-loaded Master Integrated Project Schedule to serve as a management tool.

- During the first week of May 2018, MTA sent a Directive Letter to PLTP requiring PLTP to use the December 15, 2017 (data date) version previously submitted as a draft recovery schedule, and to include certain of the schedule mitigation actions agreed on during PLTP / MTA workshops through the first Quarter of 2018, as well as a revised right of way schedule that MTA produced with its latest information and provided to PLTP. According to MTA, the submitted schedule, which was received a month late on July 5, 2018, was not based on the December 2017 draft schedule update and did not include all the mitigations agreed to in the scheduling workshops, as directed by MTA. The mitigated version of the submitted schedule indicated the start of revenue service later than the current FFGA Revenue Service Date of December 31, 2022, and the schedule update was returned to PLTP, not accepted. MTA then received the June 15, 2018 schedule update. But MTA's technical review indicated that this update still does not take advantage of available schedule recovery opportunities.
- Mitigation to recover the schedule may potentially result in added costs to the project, which will need to be negotiated with PLTP.
- Both MTA's delivery of properties to Purple Line Transit Constructors (PLTC) and PLTC's progress toward needing those properties for construction are significantly behind the schedule anticipated in the P3 contract. MTA is managing this through weekly meetings of a MTA/PLTP right of way task force that evaluates the needs of the dynamic construction schedule "early start" and "late start" dates for construction activity on each property, and determines work around plans to avoid impacts to the extent possible.
- PLTP's forecasted completion of its design scope, now March 2019, is proceeding significantly behind the scheduled date of fall 2017 anticipated in the P3 contract. As a result, the construction schedule has also slipped, and therefore, PLTP's need for the properties discussed above has also slipped.

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## MONTHLY MEETING REPORT

### Introduction

*The Project Management Oversight Contractor (PMOC) visited MTA's Purple Line project offices in Riverdale, MD and toured areas of construction activity on August 16, 2018, and updated information as of that date is reflected in this report.*

### A. Project Status

After the U.S. Court of Appeals reversed the vacation of the Record of Decision (ROD) in July 2017 (refer to the **Environmental** section of this report for details), the FFGA was executed on August 22, 2017, approximately one year later than planned. The Purple Line project is currently in the Construction phase.

#### MTA Design

MTA's General Engineering Consultant (GEC) completed the Purple Line project design to approximately 30% design level in fall 2013 with incremental enhancements through late 2015, and this design formed the basis of the Request for Proposal (RFP) for the P3 contract. See the **P3 (Purple Line Partnership Constructors) Design** section below for the further advancement of this design.

MTA continued to advance the design to 100% for the following scopes, to support construction contracts under a Design-Bid-Build delivery method separate from the P3 scope:

- Wetlands mitigation – MTA completed the 100% design packages in June 2017, and subsequently addressed several late-arriving comments from MDE. *MTA received site development approval from MDE in July 2018, and can now finalize the plans to be included in the solicitation for the construction contract. The changes will require a change in the permit from the US Army Corps of Engineers prior to construction.* MTA plans to advertise in January 2019.
- Stream mitigation – MTA completed the 100% design packages in June 2017 and received approval from MDE in May 2018. The project team is working with the MTA Procurement department to prepare the solicitation package, *with a targeted issue date of December 2018.*
- Montgomery County off-site stormwater management (SWM) sites – MTA completed design and obtained MDE approval of more than the P3 contract-required 5 acres of off-site mitigation on May 29, 2018, ahead of the June 30, 2018 contract deadline, but may not need to actually construct the sites. See the **Environmental Mitigation** section of this report for the current requirements.

MTA also is performing the design to support a Design-Build contract for the replacement of the existing Prince George's County Parks Maintenance Facility with a facility on Polk Street. See the **Real Estate Activities** section of this report for further details.

### **P3 (Purple Line Transit Constructors) Design**

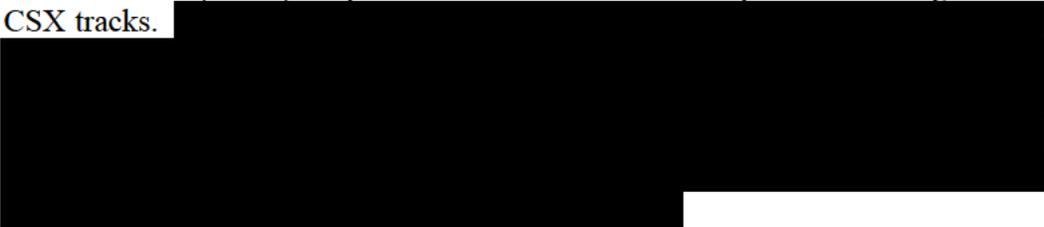
Among the Purple Line Transit Partners (PLTP) partnership, Purple Line Transit Constructors (PLTC) is the partner responsible for the design and construction of the capital project.

PLTC also continues to incorporate two remaining Alternate Technical Concepts (ATCs) identified during the proposal process that were approved by MTA:

- Use of jet fans at the Bethesda Station in lieu of vent shafts. MTA and Carr Properties came to agreement on Carr providing for an underground box structure in which the Purple Line project activities can continue while Carr's redevelopment proceeds above it. MTA and Carr Properties executed the MOA March 2018. Due to other slippages in the project schedule, the date by which the box structure is needed to allow Purple Line work to continue unimpeded was revised from December 2018 until March 2019. Carr's contractor continues excavation and support of excavation installation for the Carr development parking garage, which will support the Purple Line construction box. MTA issued PLTP a Limited Notice to Proceed to review Carr's calculations during construction to eliminate any related issues at construction turnover to PLTP. The final determination of compliance with National Fire Protection Association (NFPA) Standard 130, which will establish acceptability of the ATC, is with the State Fire Marshall, who reviewed and had no comments on the intermediate design, but will not offer a final decision until the final design is reviewed. *As of mid-August 2018, PLTP continues to state that the final design package will be delivered in August 2018, when it will be submitted to the State Fire Marshall for final approval.* If the jet fan ATC is found to be acceptable and is approved by the Fire Marshall, it would eliminate the need for vent towers and their associated Right of Way (ROW) acquisition. Also, if this ATC is accepted, PLTP will prepare the documentation substantiating that this change has no impact on the environmental decision on this project for MTA to submit for FTA's review and concurrence.
- Baltimore-Washington Parkway Bridge span widening construction methods. PLTC resolved and responded to comments from the National Parks Service (NPS) in Denver, CO, and the responses were accepted by the NPS in March 2018. The package of information that was submitted to the Maryland Historic Trust (MHT) in mid-February 2018 underwent MHT's 30-day review period, and MHT responded that it had no concerns with the ATC. The requisite PLTP performance bond language has been agreed and the bond has been executed. Final NPS approval of the ATC is through issuance of the Special Use Permit for work on the bridge, which was fully executed on June 7, 2018. *MTA is preparing the requisite documentation that this ATC has no impact on the project's environmental decision for submittal to FTA for concurrence.*

CSX Railroad informed the project team that its updated design criteria, which were issued after the "setting date" of the P3 contract, are now applicable to the Purple Line design.

MTA and CSX also continue to work on the Construction Agreement, and to resolve the applicable version of the design criteria and the following specific items:

- MTA continues to work with WMATA to resolve CSX comments that would disallow passenger amenities (fare gates and ticketing kiosks) on the Silver Spring Transit Center (SSTC) Purple Line mezzanine connector pedestrian bridge above CSX tracks. 
- Although CSX previously provided review comments disallowing revised drainage networks to connect to CSX's existing drainage culverts, *it is now saying that connections will be allowed, subject to CSX provisions. The Purple Line project is awaiting clarification of what those provisions are.* The drainage is due to the separately funded Capital Crescent Trail project, but the Purple Line project team is evaluating the situation to manage any resultant effects that could impact the Purple Line FFGA budget or schedule.
- Details for a new access road into the CSX yard that would minimize impact to both Purple Line and CSX operations. CSX and MTA reached an agreeable solution, which has been incorporated into the Purple Line construction amendment to the CSX agreement, *but Montgomery County and CSX both require acceptable design details before providing their formal concurrence. To date, PLTP has not been able to produce a detailed design acceptable to both parties.*
- CSX objected to the project's specification of a clear solid upper section of the electrification crash barrier based on the community's aesthetic preferences, and instead wants chain link fence which would dangle rather than fall if hit by a car. PLTC provided the detailed information requested by CSX to show the acceptability of the clear solid crash barrier, *and CSX requested additional documentation that, in addition to the shield, the posts would survive impact. PLTP is preparing the documentation.*

Agreements for use of WMATA property at the four common station areas is discussed in the **Real Estate Activities** subsection of this report.

*MTA's assessment of PLTC design progress is now forecasting design completion in March 2019, slipping further by approximately three months. This latest schedule slippage is primarily due to PLTP delays in advancing packages from final to RFC, and by PLTP's lack of finalized third party agreements. The original Baseline Schedule anticipated design completion by late fall 2017.*

In early 2018, PLTC realigned some of its design work to add resources and further expedite packages that have been slipping schedule. Specifically, PLTC added subcontractor HNTB to design some of the bridge and aerial structures that had previously been in subcontractor Atkin's scope. MTA's continued assessment of this change is that it has had a net beneficial effect on design progress.

## **Construction**

### **MTA Scope**

Although the P3 concessionaire is responsible for the majority of the project construction, MTA also has construction responsibility in the areas of the new Prince George's County Parks Maintenance Facility, wetlands mitigation, stream mitigation and some offsite stormwater management sites. Forest mitigation has been accomplished by MTA without the need for additional construction. None of these construction contracts have yet been awarded, but once awarded, they will be discussed in this section of the report.

### **P3 Scope**

*Recent (through mid-August 2018) construction activities throughout the alignment included:*

*Area 1: Prepared to demolish building on property acquired for first Traction Power Substation (TPSS); installation of the box culvert storm drain along Sleaford Road was completed; pile driving for the new Lyttonsville Bridge north abutment commenced; demolition of the building in the Spring Center Shopping Center continued; prepared to start demolition of the Rite Aid and FedEx buildings; the upper parking lot at Silver Spring International Middle School was completed and opened for use. Tree clearing, which is desired to be completed prior to the expiration of the limited Right of Entry on August 31, 2018, has not yet started at the Rosemary Hills Elementary school pending approval of the PLTC work plan by CSX.*

*Area 2: To date, three slabs and one wall pour have been completed to form the Purple Line construction box at Bethesda, the temporary parking lot was completed at the Manchester Place station; Support of Excavation (SOE) continued with pile driving and installation of lagging at the Manchester station and west tunnel portal. At Plymouth Tunnel east portal, tunneling continued at approximately two rounds (eight feet) per day, with 235 feet of the first heading completed as of August 16, 2018.*

*Area 3: Demolition of the Mega Mart was completed; median removal along Kenilworth Avenue continued; the concrete pad for a new UMD pumping station transformer was completed; at the Baltimore-Washington Parkway bridge, stone veneer removal continued and cutting and benching on the temporary bridge commenced; preparations for drilling piles for the retaining wall along Veteran's Parkway were under way; grading continued for the Glenridge Operations and Maintenance Facility building pad.*

*See Appendix 10 of this report for construction photographs.*

## **Real Estate Activities**

*As of August 14, 2018, the total number of planned property acquisitions is 607, including 468 privately owned properties and 139 public acquisitions. For the private properties, to*

date a total of 475 offers have been made including for parcels that have been eliminated, 234 offers have been accepted, *462 of the 468 private parcels are in MTA possession (some of which are properties that have been filed for condemnation under the State Highway Administration (SHA) process), and 254 properties have completed settlement.* Currently, 281 properties are in process for condemnation, and of these, condemnation has been filed for 142 properties, excluding those that have been optioned or settled. Additional small parcel acquisitions are expected to be added to the total as utility down-guys and other utility relocation needs are identified as the project progresses. In December 2017, PLTP submitted a list of approximately 280 such utility relocation-related parcels. MTA has resolved that it will acquire these properties, rather than executing amendments to the utility agreement to have the utility companies perform this function. MTA's ability to perform appraisals in-house for these parcels or to waive appraisals for low value, uncomplicated parcels is expediting the process somewhat. MTA continues to review such requests for additional properties from PLTP to eliminate the need wherever possible. *As of August 16, 2018, the initial request has been reduced to approximately 168 parcels.* Of these, 52 are public property and will be acquired by agreement *and 116 are private acquisitions.* Also, most of the additional parcels affect property already acquired or currently in the acquisition process. MTA is separately tracking the additional parcels (approximately 98% are for utility relocations) in its right of way tracking system to best manage changes to parcels already acquired or in the process of acquisition. *As of August 16, 2018, 10 of these additional properties are in MTA possession through rights of entry and/or options.* The MTA and PLTP cost responsibility for each parcel has not yet been worked out, with the immediate effort being on expediting the acquisitions so as to not impact construction.

The Purple Line Project will require a total of 157 relocations, of which 57 are residential and 100 are businesses. *Through August 14, 2018, 156 move outs have been completed.* In February 2018, MTA came to agreement with the relocation of the Post Office, which was the last remaining tenant in the Spring Center Shopping Center acquired by the project. July 31, 2018 is the move-out date according to the Spring Center Shopping Center lease termination agreement with the Post Office. The Post Office signed a lease to relocate to the Silver Spring Library building for the at least the short term until its final location is decided and ready. Construction at the Silver Spring Library to prepare the facility for the Post Office to move in is was completed in early July 2018 except for the installation of the new IT system by the Post Office's contractor, *which was completed in early August 2018, after which the Post Office completed its move. The project is responsible to up to 10 month's rent at the new location. If the Post Office decides to not make this its permanent location, the Purple Line project will be responsible for a second and final relocation. The entire property at the former Spring Center location of the Post Office is now available for construction activities and is undergoing remaining demolition.*

Properties that have not yet settled due to disputed compensation values have been going to trial in accordance with the ROW acquisition process. MTA is tracking actual acquisition costs versus planned expenditures so that contingency can be effectively managed, and shares this information with the PMOC. *Settlement / condemnation values continue to trend somewhat higher than the SCC budget.*

Certain parcels of property currently owned by WMATA and needed for the Purple Line project (at Bethesda, Silver Spring, College Park and New Carrollton) will be acquired via easements from WMATA, as approved by WMATA's Board in late January 2018. In lieu of monetary compensation, MTA will provide WMATA with some of MTA's current property at New Carrollton. The property plats at Bethesda have already been approved by WMATA, *and the plats for the property at Silver Spring have been submitted for approval. The WSSC utility relocations at College Park have been resolved, and after the College Park plats are prepared*, these and the plats for the New Carrollton property will be submitted to WMATA for approval. Since MTA has identified that federal (Highway) funding sources were used for the acquisition of the New Carrollton property, MTA will provide FTA with the requested documentation upon transfer on the property, *which is not expected to occur for several more months*, to appropriately record responsibility for parcels with federal funding assistance.

MTA's delivery of properties to PLTC has fallen significantly behind the schedule committed in the P3 contract. On the other hand, PLTC's progress toward needing those properties for construction is also significantly behind the schedule anticipated in the P3 contract. To manage its risk relative to property availability for construction by the concessionaire, MTA had assembled a task force of Purple Line project team members specializing in right of way, construction management, scheduling, risk management and third party agreements. The task force has been meeting recently a weekly basis to review the forecasted property availability dates based on the latest ROW schedule update relative to the concessionaire's progressed schedule, including the concessionaire's "early start" and "late start" dates for construction activity on each property. *As of August 16, 2018, properties from only 6 private owners remain for which MTA does not yet have possession. According to MTA, only two of these properties have potential impacts on construction progress, and MTA is focusing its effort to resolve these as quickly as possible.*

The relocation of the existing Prince George's County Parks Maintenance Facility to make way for the siting of the new Purple Line Glenridge light rail maintenance facility, is being implemented as a negotiated/functional replacement. MTA's Procurement Department is managing the Design-Build (D-B) contract solicitation for the Prince George's County facility. The RFP for the Polk Street Facility Design-Build contract was initially advertised on September 21, 2016 and resulted in two proposals that significantly exceeded the Engineer's Estimate. The RFP was canceled. MTA worked with Prince George's County to revise the scope to reduce pricing expected on a re-solicitation, and to secure an additional \$2 million commitment from Prince George's County in October 2017 to address the remaining funding gap. *The additional costs and funding were processed in an amendment to the Memorandum of Agreement (MOA) with Prince George's County, which was executed on July 11, 2018. The amendment also includes a clause holding Prince George's County Maryland National Capital Parks Commission responsible for up to an additional \$2 million in the case that proposals received exceed the Engineer's Estimate.* The updated design package incorporating the agreed cost saving measures was completed, including five bid alternates to allow flexibility in the final award and associated cost, and was submitted to Prince George's Parks for a two-week review period.

All comments were resolved and the package was forwarded to MTA's Procurement Department for incorporation into the solicitation for the D-B contract. [REDACTED]

[REDACTED] *Bids will be due on November 22, 2018, and NTP is anticipated in February 2019 unless a Best and Final Offer request is necessary, in which case NTP is anticipated in March 2019.* A 16-month design and construction period is being reflected in the solicitation documents. In the interim, the Prince George's County Maintenance facility functions have been relocated to a temporary facility, and are currently not being impacted by events related to the construction of the replacement facility.

### **Third Party Agreements**

All major third party agreements, specifically, those agreements with Washington Gas, Verizon, Potomac Electric Power Company (Pepco), CSX Railroad, the University of Maryland (UMD), Montgomery County Parks, Prince George's County Parks, Washington Metropolitan Area Transit Authority (WMATA), Washington Suburban Sanitary Commission (WSSC), Montgomery County and Prince George's County, were executed as of June 7, 2016.

After execution of its Third Party Agreement, Verizon required that certain currently overhead lines be placed underground when they cross the alignment. To minimize the total cost impact of this change, MTA and Verizon reduced the number of occurrences to 34 locations. PLTC submitted its cost estimate to place these 34 locations underground, and that cost estimate continues in negotiation between MTA and PLTC. [REDACTED]

[REDACTED] *Cost responsibility will be negotiated after agreement is reached on the final estimated cost, for which MTA and PLTP continue to exchange comments.*

In early June 2018, MTA and PLTP completed negotiation of all remaining third party agreements with the smaller utility and fiber companies, recently executing agreements with Verizon Business and MEDCO. According to MTA, most of the minor fiber / telecom utilities are not co-located with the electrical utilities, and where they are, Pepco's arrangement with the fiber / telecom utilities does not require Pepco's relocation schedule to be driven by that of the minor fiber / telecom companies.

In addition, amendments for existing executed agreements continue as needed, with current significant items including:

- With CSX, for various issues as discussed earlier in this report
- A security agreement amendment with UMD to address shared data

### **Project Delivery Method, Contract Packaging and Procurement**

The MTA project team identified Public Private Partnership (P3) as the project delivery method for the Purple Line. The majority of the capital cost of the Purple Line project has

been packaged into a Design-Build-Finance-Operate-Maintain (DBFOM) P3 contract. This delivery method fits the State's legal definition of a P3 in that it involves a long-term, performance-based agreement between MTA and a private entity (the P3 "Concessionaire") where appropriate risks and benefits are allocated in a cost-effective manner between the contractual partners. The concessionaire is performing some functions normally undertaken by the transit agency, but MTA remains ultimately accountable for the Purple Line and its public function.

The Request for Qualifications (RFQ) for the P3 contract was issued on November 8, 2013 and resulted in the receipt of submittals from six teams. An RFP was issued to four proposers on July 25, 2014. After multiple addenda, including requests for Alternative Technical Concepts and requests made by the Maryland Secretary of Transportation for scope cost reduction concepts and commercial/financial cost reduction concepts, technical and financial proposals were received from all four P3 proposing teams in November 2015 and December 2015, respectively. MTA negotiated an approximate 36-year P3 contract, including nearly 6 years of construction and 30 years of operations, and on March 2, 2016, announced that Purple Line Transit Partners (PLTP) had been selected as the P3 concessionaire. Commercial Close occurred on April 7, 2016, and Financial Close of the P3 occurred on June 17, 2016.

### **Environmental**

The FTA issued a Record of Decision (ROD) on March 19, 2014. The National Park Service (NPS) issued its ROD on July 16, 2014. MTA has continued to submit re-evaluations as required based on design advancement and other causes. Approximately 65 Limits of Disturbance (LOD) cases were initially submitted to FTA and approved. The project team then identified over 600 additional LODs, which were packaged into two additional submittals. The first expedited package of approximately 20 high priority cases was submitted to FTA and was approved by FTA on February 9, 2018. In addition, an emerging urgent need for approval of an LOD change associated with one specific property acquisition (the Kaldis property) was identified in April 2018 and submitted to FTA the week of May 7, 2018, and was approved by FTA on June 8, 2018. MTA submitted the remaining cases in a large package of several hundred cases to FTA on June 21, 2018. FTA identified several issues in the package [REDACTED] and MTA is working with PLTP to resolve the questions and to resubmit the cases affected.

*The Purple Line team's priority for submitting additional pending NEPA requests is as follows:*

- The LOD case for the Montpelier stormwater management site in Prince George's County
- Documentation of the change in construction approach represented in the recently approved ATC for the Baltimore-Washington (B-W) Bridge, for FTA concurrence that this ATC has no impact on the project's environmental decision
- *Several LOD changes associated with B-W Parkway ATC arising from Section 4(f) accommodations*

The ATC for the Bethesda station jet fan will be submitted for FTA review after that change is formally accepted by MTA.

The Rosemary Hills Elementary School requested MTA to perform the planned tree removal during summer 2018 before children return to school in the fall due to safety concerns. *Since this would require tree removal in designated “forested areas” during the moratorium period, MTA requested and FTA approved an exception to the moratorium as expressed in the Purple Line Record of Decision based on examination and documentation by a biologist and an ornithologist that migratory birds would not be affected. As of August 16, 2018, MTA was waiting for CSX approval of the work plans, since the work is close to CSX tracks and requires flagging.*

On August 3, 2016 in response to the lawsuit filed by the Friends of the Capital Crescent Trail against the FTA, a federal judge filed his Order and accompanying Memorandum Opinion. In those documents, it was ordered that the ROD for the Purple Line was vacated and remanded, and that a Supplemental Environmental Impact Statement (SEIS) be prepared, in accordance with the accompanying Memorandum Opinion. In a subsequent Order and Opinion filed on November 22, 2016, the judge in part revised the earlier Order by remanding to FTA the responsibility to determine if an SEIS is required, however, the ROD remained vacated. On May 30, 2017, the judge issued his ruling that dismissed the lawsuit except for the reassessment of the impact of declining Washington Metro ridership on the Purple Line Project’s Environmental Impact Statement. The Washington Metro ridership aspect of the ruling was immediately appealed by the Maryland Attorney General. On July 19, 2017, the U.S. Court of Appeals reversed the vacation of the ROD, and set an expedited schedule for the appeals process. The appeals hearing occurred on November 1, 2017. The Appeals Court ruling was issued on December 19, 2017, in which the judges ruled in favor of FTA and the project, and that the transit agencies would not have to conduct a new environmental study to examine other potential routes for the Purple Line.

A second lawsuit was filed by the Friends of the Capital Crescent Trail after the FFGA signing and groundbreaking ceremony was held on August 28, 2017. The September 19, 2017 Preliminary Hearing resulted in no temporary injunctions or restraining orders, and project construction is proceeding as the case progresses through the court system. On December 5, 2017, FTA and MTA filed a Motion to Dismiss. The plaintiffs subsequently amended and significantly revised the complaint in December 2017, and on March 1, 2018, MTA and FTA filed a Motion to Dismiss. On March 29, 2018, the Plaintiffs filed their response. *Both parties continue to await the judge’s decision.*

### **Environmental Mitigation**

Required mitigation for reforestation was achieved through the purchase of 82.5 acres of off-site credits. This is expected to be more than needed, which will be confirmed by the design performed by the P3 Concessionaire. The Forest Conservation Plan (FCP) was formally submitted to the Maryland Department of Natural Resources (DNR) in August 2016 for approval. The DNR concurred with the FCP on January 31, 2017, and the final approved FCP was received from DNR on July 31, 2017. As LOD cases are identified,

they are also reviewed against the FCP credits to maintain an accurate accounting of the reforestation mitigation.

The Joint Permit Application (JPA) for Wetlands and Stream mitigation was formally submitted to the USACE and the MDE in August 2016. In late February 2018, MDE issued its Non-Tidal Wetlands and Waterways permit in advance of the USACE permit, even though it was a joint application. However, due to the passage of time since the permit had been drafted, MDE updated and issued the permit again on March 5, 2018, after which it went into a 30-day review period. Two comments, related to traffic, were received and closed, and the permit was finalized as of the first week of April 2018. The USACE completed its National Environmental Policy Act (NEPA) and conditions review and public interface, receipt of comments and comment resolution, and issued the Section 10 404 Permit on March 14, 2018. This timing supports MTA's planned advertisement for the Wetlands and Streams mitigation construction contracts.

The project team continues to address the environmental mitigation for wetlands through the development of the off-site Ken-Gar location. The Ken-Gar final plans were submitted to the Maryland Department of the Environment (MDE) and the US Army Corps of Engineers (USACE) in June 2017, completing the requirements for permits to be issued by these agencies. Wetlands mitigation will be implemented by a separate design-bid-build construction contract administered by MTA. MTA reviewed the JPA permits as issued, and found nothing that would cause a change in the wetlands mitigation design as developed; however, *MDE had several minor comments which MTA addressed and subsequently received MDE approval for site development in July 2018.*

Stream mitigation is continuing through the development of Paint Branch. The Paint Branch final plans were also submitted to the MDE and the USACE in June 2017. Stream mitigation will also be implemented by a separate design-bid-build construction contract administered by MTA. MTA reviewed the JPA permits as issued, and found nothing that would cause a change in the stream mitigation design as developed. MDE also concurred with the design.

*The construction duration is scheduled for greater than one year due to required seasonal work suspensions in the summer months, with project completion anticipated in late 2020.*

The project continues with plans to address stormwater mitigation beyond what can be mitigated on the project site, through retrofitting off-site locations in both Montgomery County and Prince George's County. For Montgomery County, the off-site stormwater mitigation sites, if needed, will be implemented via MTA stand-alone contracts. The Purple Line project initially estimated that approximately 17 acres of offsite mitigation would be required in Montgomery County in total. However, as PLTC advanced the project design, that estimate dropped significantly to approximately one acre, although the estimate continues to oscillate up and down as project details are finalized during design

advancement. The Purple Line project committed to providing 5 acres of offsite mitigation for Montgomery County in place (i.e., approved by MDE) within the first two years after Financial Close of the P3 contract, which was by June 30, 2018. MTA received conceptual approvals from MDE, and then advanced site development of sites to provide at least 5 acres and submitted them to MDE for final review. As of June 14, 2018, MTA received final MDE approvals for a total of 5.53 acres, satisfying the contract requirement. MDE has also been reviewing PLTP's on-site mitigation for Montgomery County, which will determine the amount of construction, if any, of offsite mitigation required. PLTP is now expected to have the on-site approvals from MDE in late 2018.

The implementation of the Prince George's County stormwater mitigation sites is included within the scope of the P3 contract, although MTA had been assisting in the identification of potential sites. One of the two large Prince George's County Montpelier Basin sites identified during the P3 procurements phase has been determined to be the only site, if any, needed in Prince George's County. The site development phase design package for this Prince George's County Montpelier Basin site was submitted to MDE, who also involved the Prince George's County Soil Conservation District for review and approval. *As of mid-August, 2018, PLTP needs to resolve several comments to obtain the Soil Conservation District approval, which would then be followed by MDE delegated authority approval. Subsequent to that, MTA will be submitting several LOD cases related to the Montpelier site for FTA concurrence.* The Montpelier site is estimated to generate 6.1 acres of credit; current estimates of Prince George's County *offsite stormwater mitigations needs are for approximately five acres.* For the stormwater mitigation sites, once each 100% design package is submitted to and approved by the MDE delegated authority/Soil Conservation District, the credit represented by that package is available to support construction of the project, even though construction of the stormwater mitigation site, if needed, would not yet have been completed.

The joint MTA and University of Maryland (UMD) technical board continued its efforts on the mitigation of noise, vibration and electro-magnetic interference (EMI) at the UMD facilities. The vibration report was received in December 2017, but only evaluated areas near critical campus buildings, resulting in approximately 1,300 feet of mitigation, whereas the UMD agreement required the entire campus to be evaluated, which would lead to approximately 6,100 feet of mitigation. The committee is currently awaiting PLTP's submittal of its revised Noise and Vibration report.

## **B. Project Management Plan and Subplans**

### **Project Management Plan (PMP)**

The current active version of the PMP is Version 10, which was submitted on May 10, 2016. After completing its review, the PMOC issued its Oversight Procedure (OP) 20 PMP review report on May 28, 2016, finding that the PMP Version 10 met the FTA requirements for a PMP at the FFGA execution stage of the project. Certain areas of the PMP were noted



### **Real Estate Acquisition Management Plan (RAMP)**

The PMOC reviewed the Purple Line RAMP Version 7, dated May 2016 in accordance with OP23. The PMOC's review, as documented in its OP23 report issued on May 27, 2016, found that RAMP Version 7 met the requirements of OP23 for the then current phase of the project and for the execution of an FFGA. MTA prepared an update of the RAMP in December 2017, and submitted Purple Line RAMP Version 8, dated April 18, 2018 for FTA/PMOC review. The PMOC completed its review and issued its OP23 report dated June 2018, which required revision and resubmittal of the RAMP. *MTA subsequently addressed the comments and submitted RAMP Version 8 in mid-August 2018. The PMOC has commenced its review of RAMP Version 8 in accordance with OP23.*

### **Fleet Management Plans**

The current FTA/PMOC reviewed version of the Purple Line Rail Fleet Management Plan (RFMP) is RFMP Version 7.0, dated February 15, 2016, which incorporates information from the selected P3 Concessionaire's proposal. The PMOC completed review of RFMP Version 7.0, and documented in its OP37 RFMP review report issued on May 27, 2016 that Version 7.0 met the requirements of OP37 for execution of an FFGA. The review also recommended that MTA submit an update to RFMP Version 7.0 to FTA and the PMOC to reflect the P3 Concessionaire's own Rail Fleet Management Plan after MTA review has confirmed that it meets Purple Line project requirements. The P3 contract requires PLTP to submit its RFMP for MTA review and approval within 90 days after the June 17, 2016 P3 contract Financial Close, to submit the RFMP with the LRV Preliminary Design submittal, to submit an updated RFMP with the LRV Final Design submittal, to submit a further updated version no later than six months prior to the scheduled beginning of Revenue Service, and to update the RFMP annually once in revenue service. MTA received, reviewed and approved PLTP's Purple Line Rail Fleet Management Plan Revision 0 dated June 22, 2016 after Financial Close, in accordance with contract requirements. At the time of the LRV Preliminary Design submittal, MTA and PLTP reviewed the RFMP again and determined that Revision 0 dated June 22, 2016 was still valid. MTA submitted PLTP's RFMP Revision 0 dated June 22, 2016 to the FTA/PMOC. This PLTP Revision 0 version of the RFMP had not yet had the benefit of any significant engineering by PLTP after contract award, and has not been reviewed by the PMOC in accordance with OP37.

The current version of the Bus Fleet Management Plan (BFMP) is BFMP Version 8.1, which was submitted for FTA/PMOC review on February 12, 2016. The PMOC completed its review of BFMP Version 8.1 and issued the final OP37 BFMP Review Report on March 4, 2016, concluding that the BFMP met the requirements of OP37 for the execution of a FFGA for the Purple Line project.

### **Risk and Contingency Management Plan (RCMP)**

The current version of the RCMP is Version 10, dated May 2016. The PMOC's OP40 review found that Version 10 met the requirements of OP40 for an RCMP at the FFGA

stage of a project. [REDACTED]

[REDACTED] MTA had not been able to establish routine bi-monthly Risk Management Committee meetings or formal updates of the Risk Register as required by the RCMP. MTA resumed bimonthly meetings in October 2017. MTA completed an update of the Purple Line Risk Register in March 2018 and provided a copy to the PMOC. MTA also completed preparation of an RCMP revision, and submitted it to FTA/PMOC for review in April 2018. Also see the **Project Risk** section of this report.

### **Safety and Security Certification Plan (SSCP)**

The current version of the Purple Line SSCP is Version 3 dated November 4, 2014, which was reviewed as a companion document to the SSMP. The PMOC review found that Version 3 met the FTA requirements in support of the FFGA application. An updated version incorporating requirements from the P3 Concessionaire should be submitted for review after the updated SSMP submittal (see SSMP above), *and will be reviewed by the PMOC subsequent to the SSMP review.*

## **C. Project Management Capacity and Capability**

Through the PMOC's observations and discussions with MTA, especially MTA Transit Development and Delivery (TDD) and Purple Line project management personnel, the PMOC has noted that MTA has been responsive to finding and assigning management capacity and capability as needed to sufficiently complete the project in compliance with applicable FTA requirements. This has included bringing talent, either MTA or Maryland Department of Transportation (MDOT) personnel or consultants, onto the project to manage the current needs, such as planning, P3 procurement and contracting, real estate acquisition, construction, etc.

*Recent (July-August 2018) Purple Line staffing activity has included the following:*

- *A Deputy Project Manager was added to the PMC staff with strength in Construction Management.*
- *MTA continues to interview for a Spanish-speaking replacement to fill the remaining Community Liaison position vacancy.*
- *A job posting remains open for an MTA person in Construction Safety.*
- *MTA is seeking to fill an opening for a Right of Way specialist for the Purple Line project team.*

The PMOC continues to monitor the effectiveness of the MTA staff and the added personnel resources from consultants, MDOT and other modal administrations as they have been integrated into overall MTA project management of the Purple Line Project.

## D. Project Cost

*Appendix 6 of this report summarizes the project's actual expenditures and forecast at completion compared with the project budget as reported in MTA's June 1, 2016 Standard Cost Category (SCC) Workbook, which is the basis of the Purple Line FFGA. The project documented expenditures of \$838.3 million through June 15, 2018 (PLTP costs) /June 30, 2018 (MTA costs). Refer also to the FFGA Core Accountability table in the Executive Summary section of this report for details on the planned and actual expenditures on the project.*

In the cost estimate presented in the June 1, 2016 SCC Workbook, which is the basis for the FFGA, contingency in Year of Expenditure (YOE) dollars is as follows:

Allocated Contingency	\$58.814 million
Unallocated Contingency (SCC 90)	\$90.536 million
Total Contingency	\$149.350 million

To date, five Change Orders and one Change Order Amendment have been executed under the P3 contract, which have resulted in a \$0 net change to the estimated cost of the FFGA project. Accordingly, the remaining contingency is the original amount of \$149.350 million. There are also multiple Change Orders pending or proposed under the P3 contract that have potential cost impact on the P3 project. Working with the PMOC, the Purple Line project team developed a three-part change tracking system that documents:

- Executed Change Orders
- Pending Change Orders that are pending execution, and Proposed Change Orders that are currently either being priced by the contractor or are in various stages of negotiation
- Potential Change Orders that the contractor has formally submitted to protect specific rights and privileges, but which have not been either fully developed by the contractor or accepted by MTA

The PMOC monitors the executed, pending, proposed and potential changes reflected in monthly updates to these change logs and reviews any noteworthy changes with the project team.

In addition to the Change Orders above, mitigation to recover the schedule (see the **Project Schedule** section of this report, below) may potentially result in added costs to the project, which will need to be negotiated with PLTP.

### **Project Funding**

The funding for the Purple Line project, as reflected in Attachment 3 for the FFGA, is as follows:

## Sources of Federal Funding and Matching Share Ratios

	<b>Costs Attributed to Source of Funds Dollars</b>	<b>Federal/ Local Matching Ratio within Source</b>	<b>All Federal Funds Dollars</b>	<b>Local Funds Dollars*</b>
Federal 5309 New Starts	2,362,030,286	38/62	900,000,000	1,462,030,286
Federal Other (FTA Section 5307)	45,000,000	80/20	36,000,000	9,000,000
<b>Total</b>	<b>2,407,030,286</b>		<b>936,000,000</b>	<b>1,471,030,286</b>
<b>Overall Federal Share of Project</b>			<b>38.9%</b>	
<b>New Starts Share of Project</b>			<b>37.4%</b>	

\* Local includes costs funded by the MDOT TTF as well as the P3 concessionaire funded costs. The P3 concessionaire uses Transportation Infrastructure Finance and Innovation Act (TIFIA), private financing, and equity to fund its costs. The P3 concessionaire funded costs are treated as Local Match for the 5309 New Starts funds.

### Standard Cost Category (SCC) Worksheets

Appendix 7 presents the Purple Line project cost estimate, based on the June 1, 2016 update of the SCC Workbook in FTA's Standard Cost Category format.

## **E. Project Schedule**

The PMOC receives copies of the master project schedule updates, including the native Primavera scheduling software files, once the update has been approved by MTA. The March 15, 2017 progress update of the master project schedule was approved as noted in May 2017, *and continues to be the latest approved version of the schedule, as later submissions of schedule updates from PLTP have not been approved for various reasons.* A copy of the schedule critical path of the March 15, 2017 master project schedule progress update is included in Appendix 8 of this report.

Both MTA and the P3 Concessionaire acknowledge that the schedule slips experienced prior to the execution of the FFGA result in the need for significant mitigation to avoid overall impact to the Revenue Service Date. In early August 2017 after the reinstatement the Record of Decision, executive representatives from PLTP, PLTC, Purple Line Transit Operators (PLTO), MTA and the MDOT Secretary produced a plan for the project management and project controls specialists of the PLTP, PLTC, PLTO and MTA organizations to collaborate and to generate in the very near term a detailed six-month schedule for the start of construction. The draft six-month construction schedule was provided to MTA in early September 2017, but was not approved by MTA. However, PLTP submits four-week look-ahead schedules on a weekly basis, and MTA project controls personnel are currently tracking historical and forecasted project progress based on these submittals. Progress payments continue to be made based on *earned value against the approved schedule of values.* Schedule mitigation concepts developed by integrated MTA/PLTP teams in workshops held during summer 2017 were partly incorporated into the draft mitigated schedule submitted in early December 2017. Since MTA

found many issues with this revision, MTA/PLTP scheduling workshops were held over the following two months and resulted in the submittal, review and rejection of multiple revisions of the schedule from December 2017 through March 2018. Although MTA was encouraged by recent progress, agreement on the schedule had not been achieved by the targeted date of March 31, 2018 nor in the succeeding months. PLTP’s monthly schedule updates were based on the most recently approved (March 2017) schedule, which no longer reflect reality on the project. As a result, during the first week of May 2018, MTA sent a Directive Letter to PLTP requiring PLTP to use the December 15, 2017 (data date) version of the above schedule iterations for the next schedule update. According to the Directive Letter, this schedule update was to be as of the May 15, 2018 data date, and was to include certain of the schedule mitigation actions agreed on during the above workshops, as well as a revised right of way schedule that MTA produced with its latest information and provided to PLTP. This schedule update was due from PLTP on June 5, 2018, but was not received until July 5, 2018. Although this schedule update was not provided to or reviewed by the PMOC, MTA reported that it was not based on the December 2017 draft schedule update and the “mitigated” version of the schedule update did not include all the mitigations agreed to in the scheduling workshops, as directed by MTA. The mitigated version of the schedule indicated the start of revenue service later than the current FFGA Revenue Service Date of December 31, 2022. *The May 15, 2018 update was returned to PLTP, not accepted. MTA then received the June 15, 2018 schedule update. But MTA’s technical review indicated that this update still does not take advantage of available schedule recovery opportunities. The July 15, 2018 schedule update was received on August 16, 2018, and MTA review is commencing. FTA issued a letter to MTA in early August expressing concern with the amount of time that the project has advanced without an approved schedule, and requested MTA’s formal response by September 30, 2018.*

In a parallel effort, MTA requested PLTP to use the June 5, 2018 schedule update (data date of May 15, 2018) data as the basis for revising the Time Impact Analysis (TIA) for the impacts due to the approximately one year delay in the FFGA. MTA received the TIA and is currently reviewing it, [REDACTED]

**Key Milestones**

*The following are the current key milestone dates for the project based on the March 15, 2017 progress update of the master project schedule and as modified by the most recent project developments discussed between MTA and the PMOC.*

<b>National Capital Purple Line LRT Key Milestone Dates</b>	
Locally Preferred Alternative (LPA) Approval Date	August 4, 2009 (A)
FTA Approval to Enter PE	October 7, 2011 (A)
FTA Record of Decision	March 19, 2014 (A)
Issue Final RFP for P3 Concessionaire	July 28, 2014 (A)
FTA Approval to Start enter Engineering Phase	August 28, 2014 (A)
Issue Addenda 4 through 6 to the P3 RFP	July through Nov. 2015 (A)
P3 Technical Proposals Due	November 17, 2015 (A)
P3 Financial Proposals Due	December 8, 2015 (A)

National Capital Purple Line LRT Key Milestone Dates	
Evaluation and Announcement of Selected P3 Proposer	January 2-March 2, 2016(A)
Board of Public Works (BPW) Approval-P3	April 6, 2016 (A)
P3 Commercial Close	April 7, 2016 (A)
Limited Notice to Proceed (LNTP) for P3 Engineering	April 7, 2016 (A)
MTA submit Full Funding Grant Agreement Application	May 24, 2016 (A)
P3 Financial Close	June 17, 2016 (A)
Full Funding Grant Agreement signed	August 22, 2017 (A)
Start of First Major Construction Activity	August 28, 2017 (A)
All Significant ROW Acquisition & Relocation	As needed by construction
P3 Ready to Commence Revenue Service	TBD*
MTA Opens for Revenue Service	March 2022*
Revenue Operations Date (includes contingency)	December 31, 2022*
FFGA Revenue Service Date (includes contingency)	December 31, 2022

\* Open for Revenue Service and Revenue Operations dates indicated reflect expected future schedule recovery and mitigation efforts, which have not yet been achieved.

### **90-day Look Ahead**

The critical 90-day look-ahead activities for the National Capital Purple Line project are

Scheduled Date	Activity / Event
Ongoing	P3 submittal / MTA review of design packages
Ongoing	Completion of critical Real Estate acquisitions and relocations
Ongoing	MTA and PLTP collaboration for agreement on a mitigated project schedule
Late August 2018	Receipt of the Bethesda Station ATC final design package leading to approval of the ATC
August 27, 2018	Polk Street Facility D-B Request for Proposal ready for advertisement
August 31, 2018	Completion of tree removal activities near the Rosemary Hills Elementary School
Early September 2018	Arrival of first LRV carshell from Spain in Elmira, NY for final assembly
September 2018	Submittal of the “no environmental impact” documentation to FTA for the B-W Parkway ATC
September 30, 2018	MTA response to FTA regarding status of the updated and mitigated project schedule and its approval

### **Critical Path Activities**

*The critical path as reflected in the June 15, 2018 schedule update although not approved by MTA, continues to show the critical path through Segment 7, which includes the aerial structure and Riverdale Park station near Kenilworth Avenue. This work was previously identified as a near critical path that underwent re-design by the new member of the PLTP design team, HNTB. The shift in critical path was partly due to the redesign effort on Segment 7, as well as greater than planned progress on Segment 4, due to the lower than expected bedrock in the Plymouth Tunnel area delaying the need for blasting.*

## F. Quality Assurance / Quality Control (QA/QC)

The Purple Line QA/QC is addressed in Section 10 of the PMP, Quality Program Plan, and the updated MTA Quality Assurance Program Revision 8.0, which incorporates the implementing Quality Plans prepared by PLTP. The most current versions of the PMP, the Purple Line Document for Quality and the QAP are as discussed in the **Project Management Plan and Subplans** section of this report. MTA has been reviewing the multiple updated Quality Assurance plans submitted by PLTP, with PLTP's Design Quality Plan being the last outstanding PLTP plan to be submitted. *MTA provided comments on the formal submittal of PLTP's updated Design Quality Plan, which requires resubmittal.* [REDACTED]

The Purple Line project continues to conduct its monthly meeting to review the QA/QC activities performed by the Purple Line project team, including those by the P3 Concessionaire, PMC and the GEC. Documentation from these meetings is distributed separately. The PMOC performs an overview of each distributed package, with more detailed reviews conducted on periodic basis.

The project's Monthly Progress Report to FTA also contains a brief summary of the significant current QA/QC activities/events on the project, including quality audits and quality reviews of PLTP submittals.

## G. Safety and Security

*PLTP has conducted thirty-six Preliminary Hazard Analysis (PHA) workshop sessions to date.* PLTP's Safety and Security Working Group (SSWG) continues to oversee the hazard management process. MTA has representation on the group to provide comments and insight, but does not vote on topics before the PLTP SSWG.

MTA chairs a Safety and Security Certification Committee (SSCC) that reviews, comments on, and approves PLTP hazard management and certification issues. The first meeting of the MTA SSCC was conducted on March 20, 2018. Starting with July 11, 2018, the meeting will be held on a monthly basis on the second Wednesday of the month until the level of activity requires more frequent meetings.

The PLTP System Safety team completed development of its first DCCC in May 2017 and submitted it for MTA approval. However, it did not meet MTA expectations and was returned for revision and resubmittal. PLTP had not been preparing DCCCs until January 2018, when they resumed preparing them. [REDACTED]

[REDACTED] MTA (assisted by the PMC) reviews the DCCCs as part of the Final Design Package according to the established submittal review process. Per PLTP, the DCCCs will be verified prior to the issuance of Released for Construction (RFC) packages. However, MTA continues to return the Certified Elements List (CEL) and the Certified items List (CIL) with comments, to be revised and

resubmitted. Revisions to the CEL and CIL could affect DCCCs that have already been issued with RFC packages, and require them to be revised.

PLTP also completed its initial Threat and Vulnerability Assessment (TVA) process and submitted the draft TVA report for MTA review and comment. MTA's review resulted in a significant number of comments, which were returned to PLTP to be addressed. *PLTP updated the TVA report and submitted it to MTA, and it is undergoing MTA/PMC review.*

The MTA Purple Line Safety and Security personnel review and comments on the PLTP design submittals, including those of the vehicle supplier.

MTA continues to conduct Fire/Life/Safety meetings with each Montgomery and Prince George's Counties on bi-monthly basis. The meetings provide a basis for the County emergency responders to understand the features of the Purple Line systems, and to resolve any concerns. *Current topics with Montgomery County addressed reviewers for submitted Fire Protection designs, placement of fire hydrants at the stations and construction blasting plans.*

As required by the P3 contract, the P3 concessionaire, PLTP, is responsible for directly implementing many of the safety and security requirements for the project, including construction safety and the collection and maintenance of the Occupational Safety and Health Administration (OSHA) safety statistics for the project. *The Purple Line project statistics as of July 2018, as reported by MTA:*

- Recordable Rate (Construction – heavy civil):
  - Actual: 0.04
  - PLTP goal: 0.45
  - National Ave. 2.8
- Lost Time Rate:
  - Actual: 0.00
  - PLTP goal: 0.00

See Section B of this report for the status of the safety and security related subplans of the PMP. Appendix 1 of this report includes extensive additional safety and security-related information for the Purple Line project on a quarterly basis.

## **H. Americans with Disabilities Act (ADA)**

The PMOC confirmed that the Design Criteria Manual applicable to the Purple Line project addresses ADA requirements, including references to the requirements in the Maryland Accessibility Code (MAC), the ADA Accessibility Guidelines for Buildings and Facilities (ADAAG), and the ADA Standards for Transportation Facilities.

Accessibility and compliance with ADA are required as part of the functional requirements for stations and guideway and as part of the codes and standards for light rail vehicles within the P3 contract (Book 2 Part 2) for the Purple Line project. The design packages

prepared in accordance with the P3 contract by PLTC are reviewed by MTA and its consultants. In project reviews conducted by the PMOC, MTA has confirmed that it includes ADA compliance in its QA Oversight reviews of PLTC's design packages. ADA compliance is included in the PMOC periodic project reviews, during which timely project ADA-related items are discussed. *In July-August 2018, there were no ADA issues identified across the project, including with the vehicles.*

## **I. Buy America**

The PMOC has discussed Buy America requirements with the Purple Line project team during the PMOC project review meetings, and has confirmed that MTA understands that Buy America compliance applies not only to the rail vehicles but is also required for procurement of all manufactured products, including all iron and steel. MTA is also aware that domestic manufacture of all federally-funded procurements is required and should be certifiable. Compliance with Buy America is contained in MTA standard clauses for its procurements, and the P3 contract contains explicit Buy America language in its Appendix 16.

*To date, the largest challenges have been with utility relocations. Washington Gas has warned MTA that Buy America compliant materials will require longer lead times, and this should be accommodated in the utility relocation schedules.*

PLTP passed the Buy America requirements on to the vehicle supplier, CAF. The Buy America Pre-Award audit was conducted by Virginkar and Associates, who concluded that there is reasonable certainty that CAF will satisfy the Buy America requirements as stated in 49 CFR 661.

[REDACTED] An intermediate post-award Buy America audit for added confidence that the post-delivery audit will not identify issues was conducted of CAF's Elmira, NY facility during the week of October 2, 2017. There were no significant findings, and based on the audit, the domestic content of the LRVs is currently estimated at approximately 62% as compared to the required 60% for these vehicles. CAF is targeting 65% domestic content in the completed vehicle.

## **J. Vehicles and Vehicle Technology**

Based on the contract negotiated with PLTP, the vehicles will be 136-foot long, multiple articulated light rail vehicle operated as single car maximum length trains. Due to the vehicle's extended length, only 25 vehicles (21 plus 4 spares) will be provided under the FFGA for opening year.

PLTP executed the LRV contract with CAF on June 17, 2016 and issued CAF Notice to proceed on July 5, 2016.

*Vehicle manufacturing activities, coordinated with design progress, continued in Spain in July and early August 2018. All CAF intermediate design submittals have been completed and final design submittals continue. To date, approximately 45% of the Final Design packages have been submitted to MTA for review. The carbody stress (crashworthiness) analysis, which was returned with comments, continues to undergo comment resolution by CAF. Actual carbody shell testing will be conducted on the second vehicle shell to be manufactured in Spain. Shock and vibration test continue to be performed by various manufacturers. Fire and smoke tests are scheduled for September 2018, and toxicity tests results are due in 30 to 60 days.*

*MTA rejected CAF's requested design deviation to utilize an environmental test chamber shorter than the overall vehicle for a second time, and CAF has not yet responded what they will change to accommodate the full length of the vehicle. MTA recently returned the vehicle noise report with comments, and is awaiting the response from PLTP/CAF. Also, although the P3 contract requires solar-powered wayside track lubricators, CAF's design included only on-board lubricators, and MTA returned that design package asking PLTP to research the relative benefits of the two systems. CAF was making final preparations to ship the first carshell from Spain to Elmira, NY for final assembly. The shipment will be made in segments, with modules A and D arriving in mid-September, modules C1 and C2 arriving in late September and module B arriving in October 2018.*

Additional Vehicle Status information is included as Appendix 9 of this report on a quarterly basis.

## **PROJECT RISK**

MTA has established a risk management organization, which is defined in the project's Risk and Contingency Management Plan, and which is overseen by MTA's Risk Management Committee. Two major elements of the RCMP are the performance of Quantitative Risk Assessments and the maintenance and use of a Risk Register.

During the approximately one-year period of time in which the ROD had been vacated by the federal judge in his decision related to the Friends of the Capital Crescent Trail lawsuit, MTA did not conduct formal Risk Management Committee meetings, conduct additional Quantitative Risk Assessments or perform formal updates of the Risk Register. Though, the Purple Line project management team did assess and respond to the risks associated with that unforeseen chain of events.

The project team resumed formal risk meetings in October 2017, including individual updates of each risk on the current Risk Register by the risk owner. An overall update of the Risk Register was completed as draft in January 2018, and updated further and reissued in March 2018. Updating of the Risk Register is an ongoing process throughout a project's duration, and according to MTA's current RCMP, is to be performed bi-monthly. MTA also prepared a formal revision of the RCMP to update it to the current project status, and submitted it to FTA/PMOC for review in April 2018.

The top risks from the project's latest issued update of the Risk Register and PMOC-assessed risks are included as Appendix 2 of this report on a Quarterly basis.

## **ACTION ITEMS**

Action Items are identified at MTA/FTA Quarterly Progress Meetings, at MTA/PMOC Monthly Progress Meetings and at MTA/FTA Biweekly New Starts Progress Conference Calls. Separate lists for each are included. Items identified as closed are removed from the subsequent monthly report. Currently there are no open or new action items related to the Purple Line project.

## APPENDICES

The following Appendices or placeholders are provided with this report:

- Appendix 1 Safety and Security Checklist  
Per OP25, this item is issued quarterly. Refer to the June 2018 Monitoring Report for the most recent quarterly issuance.
- Appendix 2 Top Project Risks  
Per OP25, this item is issued quarterly. Refer to the June 2018 Monitoring Report for the most recent quarterly issuance.
- Appendix 3 Roadmap to Revenue Operations  
Per OP25, this item is issued quarterly “as a separate attachment”. Refer to the June 2018 Monitoring Report for the most recent quarterly issuance.
- Appendix 4 Project Map
- Appendix 5 Acronyms
- Appendix 6 Cost vs. Budget
- Appendix 7 FTA SCC Workbook – BUILD Main Worksheet
- Appendix 8 Project Schedule
- Appendix 9 Vehicle Status Report  
Per OP25, this item is issued quarterly. Refer to the June 2018 Monitoring Report for the most recent quarterly issuance.
- Appendix 10 Construction Photographs

**Appendix 1            Safety and Security Checklist**

Per OP25, this item is issued quarterly. Refer to the June 2018 Monitoring Report for the most recent quarterly issuance.

## **Appendix 2            Top Project Risks**

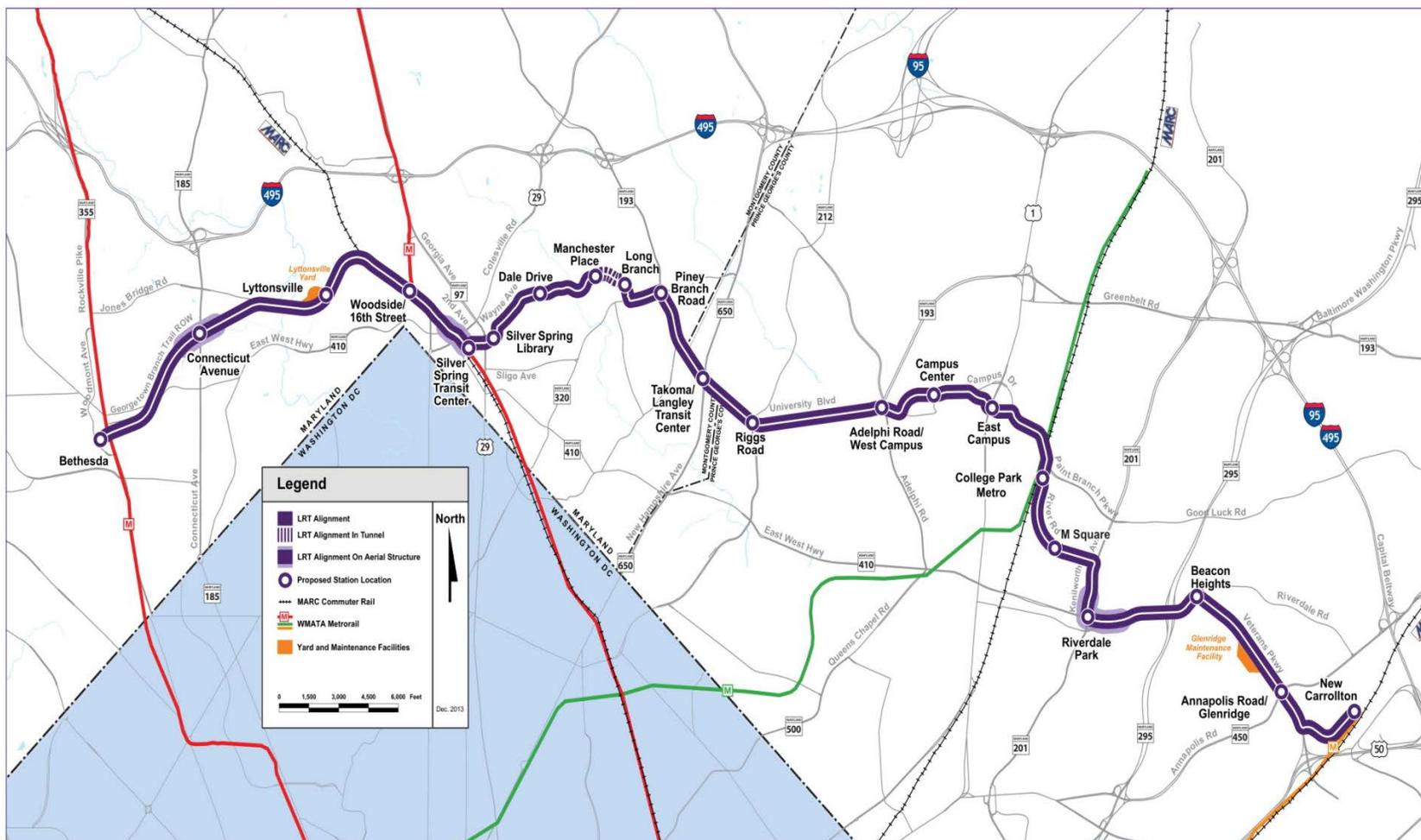
Per OP25, this item is issued quarterly. Refer to the June 2018 Monitoring Report for the most recent quarterly issuance.

### **Appendix 3            Roadmap to Revenue Operations**

In accordance with OP25, the Roadmap to Revenue Operations, prepared from the Project Sponsor's Master Schedule, is issued quarterly as a separate electronic file. Since the Project Sponsor's Master Schedule is undergoing a major revision for schedule recovery, the dates currently shown on this issue of the roadmap are likely to change.

Refer to the June 2018 Monitoring Report for the most recent quarterly issuance.

Appendix 4 Project Map



## Appendix 5      List of Acronyms

ADA	-	Americans with Disabilities Act
ADAAG	-	ADA Accessibility Guidelines for Buildings and Facilities
ATC	-	Alternate Technical Concepts
BFMP	-	Bus Fleet Management Plan
BPW	-	Board of Public Works
CAF	-	Construcciones y Auxiliar de Ferrocarriles
CDQP	-	Concessionaire's Design Quality Plan
D-B	-	Design-Build
DBE	-	Disadvantaged Business Enterprise
DBFOM	-	Design/Build/Finance/Operate/Maintain
DCCC	-	Design Criteria Conformance Checklist
DNR	-	Maryland Department of Natural Resources
E&S	-	Erosion and Sediment
EMI	-	Electro-Magnetic Interference
FCP	-	Forest Conservation Plan
FFGA	-	Full Funding Grant Agreement
FTA	-	Federal Transit Administration
GEC	-	General Engineering Consultant
JPA	-	Joint Permit Application
LNTTP	-	Limited Notice to Proceed
LOD	-	Limits Of Disturbance
LPA	-	Locally Preferred Alternative
LRT	-	Light Rail Transit
LRV	-	Light Rail Vehicle
MAC	-	Maryland Accessibility Code
MARC	-	Maryland Area Regional Commuter
MDE	-	Maryland Department of the Environment
MDOT	-	Maryland Department of Transportation
MHT	-	Maryland Historic Trust
MOA	-	Memorandum of Agreement
MTA	-	Maryland Transit Administration
NEPA	-	National Environmental Policy Act
NFPA	-	National Fire Protection Association
NPS	-	National Parks Service
NTP	-	Notice to Proceed
OP	-	Oversight Procedures
OSHA	-	Occupational Health and Safety Administration
P3	-	Public Private Partnership
PD	-	Project Development
PEPCO	-	Potomac Electric Power Corporation
PHA	-	Preliminary Hazards Analysis
PLTC	-	Purple Line Transit Constructors
PLTO	-	Purple Line Transit Operators
PLTP	-	Purple Line Transit Partners

PMC	-	Project Management Consultant
PMOC	-	Project Management Oversight Contractor
PMP	-	Project Management Plan
QA	-	Quality Assurance
QAP	-	Quality Assurance Plan
QC	-	Quality Control
RAMP	-	Real Estate Acquisition and Management Plan
RCMP	-	Risk and Contingency Management Plan
RFMP	-	Rail Fleet Management Plan
RFC	-	Released for Construction
RFP	-	Request for Proposal
RFQ	-	Request for Qualifications
ROD	-	Record of Decision
ROW	-	Right-of-Way
RSD	-	Revenue Service Date
SCC	-	Standard Cost Category
SEIS	-	Supplemental Environmental Impact Statement
SHA	-	State Highway Administration
SSCC	-	Safety and Security Certification Committee
SSCP	-	Safety and Security Certification Plan
SSMP	-	Safety and Security Management Plan
SSTC	-	Silver Spring Transit Center
SWM	-	Stormwater Management
SSWG	-	Safety and Security Working Group
TDD	-	Transit Development and Delivery
TIA	-	Time Impact Analysis
TIFIA	-	Transportation Infrastructure Finance and Innovation Act
TPSS	-	Traction Power Substation
TVA	-	Threat and Vulnerability Assessment
UMD	-	University of Maryland
USACE	-	United States Army Corps of Engineers
WMATA	-	Washington Metropolitan Area Transit Authority
WSSC	-	Washington Suburban Sanitary Commission
YOE	-	Year of Expenditure

## Appendix 6 Cost vs. Budget

The following are project budgets, actual expenditures and forecast at completion amounts through June 15, 2018 (for PLTP costs) and June 30, 2018 (for MTA costs), compared with the project budget as reported in MTA's June 1, 2016 SCC Workbook and MTA's current Working Budget.

(in \$1,000)

SCC	Cost Category	Budget (June 1, 2016 SCC Workbook)	Working Budget* (Jan. 1, 2017 SCC Workbook)	Expended	Forecast at Completion
10	Guideway and Track	280,620,726	258,782,885	25,470,543	258,782,885
20	Stations	114,857,016	116,127,445	3,607,233	116,127,445
30	Maintenance Facility	94,155,591	94,155,591	10,005,970	94,155,591
40	Sitework	521,968,990	315,482,782	68,800,656	315,482,782
50	Systems	263,887,313	263,887,313	30,863,133	263,887,313
	Subtotal 10 thru 50	1,275,489,636	1,048,436,017	138,747,535	1,048,436,017
60	Right-of-Way	229,600,000	229,600,000	164,415,442	229,600,000
70	Vehicles	212,940,927	212,940,927	16,508,094	212,940,927
80	Professional Services (total)	571,658,114	798,711,733	18,580,366	798,711,733
80.01	Project Development (PD)	87,149,878	87,149,878	87,149,878	87,149,878
80.02	Engineering	139,766,036	114,618,846	98,447,924	114,618,846
80.03	Project Management for Design and Construction	148,555,323	227,047,206	122,781,681	227,047,206
80.04	Construction Administration & Management	83,269,280	255,349,776	165,069,790	255,349,776
80.05	Professional Liability; other Non-Construction Insurance	34,534,796	34,534,796	28,756,417	34,534,796
80.06	Legal; Permits; Review Fees by other agencies, cities, etc.	5,805,117	10,205,293	7,993,804	10,205,293
80.07	Surveys, Testing, Investigation, Inspection	15,164,346	16,798,570	8,380,873	16,798,570
80.08	Start up	57,413,338	53,007,367	-	53,007,367
	Subtotal 10 - 80	2,289,688,678	2,289,688,678	838,251,437	2,289,688,678
90	Contingency	90,535,748	90,535,748	-	90,535,748
100	Finance Charges	26,805,863	26,805,863	-	26,805,863
	Total	2,407,030,288	2,407,030,288	838,251,437	2,407,030,288

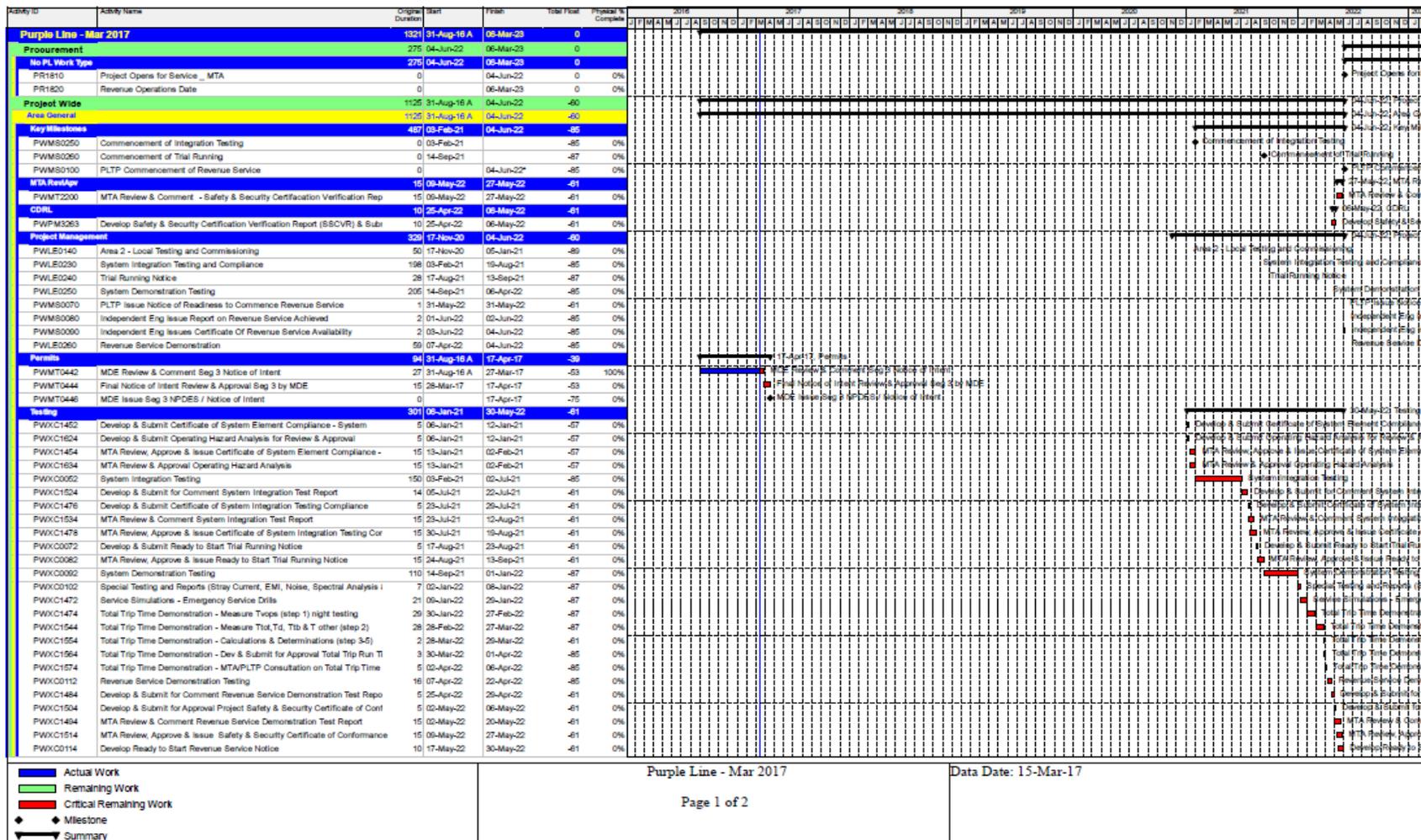
\* NOTE: The Purple Line Working Budget is based on the current approved (December 2016) cost and resource loaded Baseline Project Schedule, which is undergoing mitigation and revision. Once the project schedule is re-baselined, the budget can be accordingly updated.

## Appendix 7 FTA SCC Workbook – BUILD Main, June 1, 2016 Update

MAIN WORKSHEET - BUILD ALTERNATIVE									0
Maryland Transit Administration						Today's Date		5/24/16	
Maryland National Capital Purple Line						Yr of Base Year \$		2016	
FFGA Application						Yr of Revenue Ops		2022	
	Quantity	Base Year Dollars w/o Contingency (X000)	Base Year Dollars Allocated Contingency (X000)	Base Year Dollars TOTAL (X000)	Base Year Dollars Unit Cost (X000)	Base Year Dollars Percentage of Construction Cost	Base Year Dollars Percentage of Total Project Cost	YOE Dollars Total (X000)	
<b>10 GUIDEWAY &amp; TRACK ELEMENTS (route miles)</b>	<b>16.20</b>	<b>259,766</b>	<b>0.00</b>	<b>259,766</b>	<b>\$16,035</b>	<b>22%</b>	<b>12%</b>	<b>280,621</b>	
10 01 Guideway At-grade exclusive right-of-way	3.26	2,978		2,978	\$913			3,244	
10 02 Guideway At-grade semi-exclusive (allows cross-traffic)	9.67	12,497		12,497	\$1,292			13,205	
10 03 Guideway At-grade in mixed traffic	1.20	12,862		12,862	\$10,718			13,961	
10 04 Guideway Aerial structure	0.46	67,018		67,018	\$145,692			73,222	
10 05 Guideway Built-up fill	0.00	0		0				0	
10 06 Guideway Underground cut & cover	0.00	0		0	\$0			0	
10 07 Guideway Underground tunnel	0.36	58,344		58,344	\$162,068			62,735	
10 08 Guideway Retained cut or fill	1.25	20,805		20,805	\$16,644			22,693	
10 09 Track Direct fixation		6,948		6,948				7,570	
10 10 Track Embedded		29,159		29,159				30,811	
10 11 Track Ballasted		30,012		30,012				32,575	
10 12 Track Special (switches turnouts)		19,141		19,141				20,606	
10 13 Track Vibration and noise dampening		0		0				0	
<b>20 STATIONS, STOPS, TERMINALS, INTERMODAL (number)</b>	<b>21</b>	<b>103,521</b>	<b>0</b>	<b>103,521</b>	<b>\$4,930</b>	<b>9%</b>	<b>5%</b>	<b>114,857</b>	
20 01 At-grade station stop shelter mall terminal platform	16	23,884		23,884	\$1,493			26,295	
20 02 Aerial station stop shelter mall terminal platform	3	45,703		45,703	\$15,234			51,031	
20 03 Underground station stop shelter mall terminal platform	2	30,698		30,698	\$15,349			33,933	
20 04 Other stations landings terminals Intermodal ferry trolley etc	0	0		0				0	
20 05 Joint development		0		0				0	
20 06 Automobile parking multi-story structure		0		0				0	
20 07 Elevators escalators		3,236		3,236				3,599	
<b>30 SUPPORT FACILITIES: YARDS, SHOPS, ADMIN. BLDGS</b>	<b>16.20</b>	<b>87,590</b>	<b>0</b>	<b>87,590</b>	<b>\$5,407</b>	<b>7%</b>	<b>4%</b>	<b>94,156</b>	
30 01 Administration Building Office sales storage revenue counting		29,571		29,571				31,894	
30 02 Light Maintenance Facility		951		951				1,062	
30 03 Heavy Maintenance Facility		44,357		44,357				47,842	
30 04 Storage or Maintenance of Way Building		0		0				0	
30 05 Yard and Yard Track		12,710		12,710				13,358	
<b>40 SITEWORK &amp; SPECIAL CONDITIONS</b>	<b>16.20</b>	<b>481,579</b>	<b>2,405</b>	<b>483,984</b>	<b>\$29,876</b>	<b>41%</b>	<b>22%</b>	<b>521,969</b>	
40 01 Demolition Clearing Earthwork		45,651		45,651				48,789	
40 02 Site Utilities Utility Relocation		143,356	1,596	144,952				154,044	
40 03 Haz mat/ contam'd soil removal/mitigation ground water treatments		17,099		17,099				18,439	
40 04 Environmental mitigation e.g wetlands historic/archeologic parks		24,936	808	25,744				27,716	
40 05 Site structures including retaining walls sound walls		64,172		64,172				70,248	
40 06 Pedestrian / bike access and accommodation landscaping		22,662		22,662				24,399	
40 07 Automobile bus van accessways including roads parking lots		135,633		135,633				148,189	
40 08 Temporary Facilities and other indirect costs during construction		28,072		28,072				30,145	
<b>50 SYSTEMS</b>	<b>16.20</b>	<b>225,424</b>	<b>10,376</b>	<b>235,800</b>	<b>\$14,556</b>	<b>20%</b>	<b>11%</b>	<b>263,887</b>	
50 01 Train control and signals		53,515		53,515				60,164	
50 02 Traffic signals and crossing protection		32,772		32,772				36,580	
50 03 Traction power supply substations		29,992		29,992				32,849	
50 04 Traction power distribution catenary and third rail		42,788		42,788				47,710	
50 05 Communications		33,620		33,620				37,775	
50 06 Fare collection system and equipment		2,918	10,376	13,294				15,568	
50 07 Central Control		29,819		29,819				33,240	
<b>Construction Subtotal (10 - 50)</b>	<b>16.20</b>	<b>1,157,880</b>	<b>12,781</b>	<b>1,170,661</b>	<b>\$72,263</b>	<b>100%</b>	<b>52%</b>	<b>1,275,490</b>	
<b>60 ROW, LAND, EXISTING IMPROVEMENTS</b>	<b>16.20</b>	<b>186,092</b>	<b>37,187</b>	<b>223,279</b>	<b>\$13,783</b>		<b>10%</b>	<b>229,600</b>	
60 01 Purchase or lease of real estate		166,132	32,483	198,615				203,143	
60 02 Relocation of existing households and businesses		19,959	4,704	24,664				26,457	
<b>70 VEHICLES (number)</b>	<b>25</b>	<b>192,691</b>	<b>0</b>	<b>192,691</b>	<b>\$7,708</b>		<b>9%</b>	<b>212,941</b>	
70 01 Light Rail	25	186,771		186,771	\$7,471			206,351	
70 02 Heavy Rail	0	0		0				0	
70 03 Commuter Rail	0	0		0				0	
70 04 Bus	0	0		0				0	
70 05 Other	0	5,920		5,920				6,590	
70 06 Non-revenue vehicles	0	0		0				0	
70 07 Spare parts	0	0		0				0	
<b>80 PROFESSIONAL SERVICES (applies to Cats. 10-50)</b>	<b>16.20</b>	<b>535,369</b>	<b>6,032</b>	<b>541,401</b>	<b>\$33,420</b>	<b>46%</b>	<b>24%</b>	<b>571,658</b>	
80 01 Project Development		87,150		87,150				87,150	
80 02 Engineering		136,688		136,688				139,766	
80 03 Project Management for Design and Construction		131,594	5,872	137,466				148,555	
80 04 Construction Administration & Management		76,410		76,410				83,269	
80 05 Professional Liability and other Non-Construction Insurance		32,697		32,697				34,535	
80 06 Legal Permits Review Fees by other agencies cities etc		5,530	88	5,618				5,805	
80 07 Surveys Testing Investigation Inspection		14,214	73	14,287				15,164	
80 08 Start up		51,086		51,086				57,413	
<b>Subtotal (10 - 80)</b>	<b>16.20</b>	<b>2,072,032</b>	<b>56,000</b>	<b>2,128,032</b>	<b>\$131,360</b>		<b>95%</b>	<b>2,289,689</b>	
<b>90 UNALLOCATED CONTINGENCY</b>				<b>81,652</b>			<b>4%</b>	<b>90,536</b>	
<b>Subtotal (10 - 90)</b>	<b>16.20</b>			<b>2,209,684</b>	<b>\$136,400</b>		<b>99%</b>	<b>2,380,224</b>	
<b>100 FINANCE CHARGES</b>				<b>24,128</b>			<b>1%</b>	<b>26,806</b>	
<b>Total Project Cost (10 - 100)</b>	<b>16.20</b>			<b>2,233,812</b>	<b>\$137,890</b>		<b>100%</b>	<b>2,407,030</b>	
Allocated Contingency as % of Base Yr Dollars w/o Contingency				2.70%					
Unallocated Contingency as % of Base Yr Dollars w/o Contingency				3.94%					
Total Contingency as % of Base Yr Dollars w/o Contingency				6.64%					
Unallocated Contingency as % of Subtotal (10 - 80)				3.84%					
YOE Construction Cost per Mile (X000)								\$78,734	
YOE Total Project Cost per Mile Not Including Vehicles (X000)								\$135,438	
YOE Total Project Cost per Mile (X000)								\$148,582	

## Appendix 8 Project Schedule

The following is the Purple Line project Schedule Critical Path, as of the March 15, 2017 progress update, which is the most recent approved update of the Purple Line Schedule. As noted in the body of the report, the critical path as reflected here is subject to change as the fully mitigated schedule is developed and agreed to by PLTP and MTA.



Activity ID	Activity Name	Original Duration	Start	Finish	Total Float	Physical % Complete	2016												2017												2018												2019												2020												2021												2022											
							J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D
<b>Area 2 Tunnels - Sta 408+00 to 429+05</b>																																																																																										
<b>Segment 4 - Sta 408+00 to 429+05</b>																																																																																										
<b>Tunnels</b>																																																																																										
24TU008	Site Grubbing, Grading & Temp Fencing - Manchester	20	18-Apr-17	15-May-17	-53	0%																																																																																				
24TU0086	Demo 2 Bldgs @ Manchester Station	30	16-May-17	27-Jun-17	-53	0%																																																																																				
24TU0330	Setup Temp Facilities/Utilities/Grading- Manchester	30	07-Jun-17	19-Jul-17	-53	0%																																																																																				
24TU0108	Install Soldier Piles - Manchester - South	38	20-Jul-17	12-Sep-17	-53	0%																																																																																				
24TU0260	Install Soldier Piles - Manchester - Temp. Parking	14	13-Sep-17	02-Oct-17	-53	0%																																																																																				
24TU0340	Excavation / Lagging/Bracing & Mudmat - Manchester - Temp. Parking	30	03-Oct-17	15-Nov-17	-53	0%																																																																																				
24TU0240	Temporary parking for Kenwood House - Manchester	20	16-Nov-17	14-Dec-17	-53	0%																																																																																				
24TU0138	Install Soldier/Secant Piles - Manchester - North	36	15-Dec-17	07-Feb-18	-53	0%																																																																																				
24TU0300	Install Soldier Piles - Manchester	5	08-Feb-18	14-Feb-18	-53	0%																																																																																				
24TU0198	Excavation & Lagging/ Bracing Installation - Manchester - Phase 1	105	15-Feb-18	13-Jul-18	-53	0%																																																																																				
24TU0114	Install Waterproofing C&C Slab & Walls - Manchester - Phase 1	28	16-Jul-18	20-Aug-18	-53	0%																																																																																				
24TU0116	FRP C&C Base Slab - Manchester - Phase 1	44	13-Aug-18	15-Oct-18	-53	0%																																																																																				
24TU0140	Install Platform Walls & Pre-Cast Platform Panels - Manchester - Phase 1	30	15-Jan-19	25-Feb-19	-53	0%																																																																																				
24TU0118	FRP C&C Walls - Manchester - Phase 1	125	16-Oct-18	15-Apr-19	-53	0%																																																																																				
24TU0122	FRP Roof /Waterproofing - Manchester - Phase 1	114	26-Feb-19	06-Aug-19	-53	0%																																																																																				
24TU0190	Full Excavation/Lagging & Bracing Egress Shaft - Manchester - Phase 1	24	07-Aug-19	10-Sep-19	-53	0%																																																																																				
24TU0210	FRP Full Egress Shaft/Waterproofing - Manchester - Phase 1	20	11-Sep-19	21-Oct-19	-53	0%																																																																																				
24TU0144	Backfill - C&C Tunnel - Manchester - Phase 1	4	22-Oct-19	25-Oct-19	-53	0%																																																																																				
24TU0184	Construct Permanent Parking Lot - Manchester	25	28-Oct-19	09-Dec-19	-42	0%																																																																																				
24TU0194	Removal of Temporary Parking Lot/Facilities - Manchester	5	10-Dec-19	16-Dec-19	-55	0%																																																																																				
24TU0230	Excavate/Lagging/Soil Nail Retaining Walls - Manchester	9	17-Dec-19	30-Dec-19	-55	0%																																																																																				
24TU0282	Install Waterproofing - Slab & Walls - Manchester - Phase 2	12	31-Dec-19	16-Jan-20	-55	0%																																																																																				
24TU0294	FRP C&C Base Slab - Manchester - Phase 2	14	09-Jan-20	29-Jan-20	-55	0%																																																																																				
24TU0290	FRP C&C Walls - Manchester - Phase 2	27	30-Jan-20	09-Mar-20	-55	0%																																																																																				
24TU0350	Install Platform Walls & Pre-Cast Platform Panels - Manchester - Phase 2	15	10-Mar-20	30-Mar-20	-55	0%																																																																																				
24TU0292	FRP C&C Roof & Waterproofing - Manchester - Phase 2	86	31-Mar-20	30-Jul-20	-55	0%																																																																																				
24TU0352	Install Fare Collection System - Manchester	25	05-Oct-20	17-Nov-20	-32	0%																																																																																				
24TU0320	Mechanical / Electrical Fitout - Manchester	80	10-Aug-20	02-Dec-20	-40	0%																																																																																				
24TU0362	Install Elevators - Manchester	80	14-Jul-20	02-Dec-20	-33	0%																																																																																				
24TU0310	Install Civil/Architectural/Finishes - Manchester	150	08-Jun-20	11-Jan-21	-42	0%																																																																																				
<b>Trackwork</b>																																																																																										
24TW0004	FRP Pilebts - Tunnels - Seg 4	16	16-Jul-20	06-Aug-20	-55	0%																																																																																				
24TW0002	Distribute Rail & DF Mat, Construct Track - Tunnels - Seg 4	19	07-Aug-20	02-Sep-20	-55	0%																																																																																				
24TW0006	Weld & Dress Track - Tunnels - Seg 4	10	03-Sep-20	17-Sep-20	-55	0%																																																																																				
<b>Train Control</b>																																																																																										
24TC0002	Install Train Control Equip/Pul & Term Wire & Cable - CH 05	40	08-Sep-20	16-Nov-20	-31	0%																																																																																				
<b>Communications</b>																																																																																										
24CM0002	Install Communications Equip - Tunnel	34	21-Sep-20	17-Nov-20	-45	0%																																																																																				
24CM0004	Pull & Term Communications Wire & Fiber - Tunnel	21	05-Nov-20	15-Dec-20	-45	0%																																																																																				
<b>Testing</b>																																																																																										
24XC0004	Checkout & Testing Train Control System	10	17-Nov-20	07-Dec-20	-31	0%																																																																																				
24XC0002	Checkout & Testing Fare Collection System	10	18-Nov-20	08-Dec-20	-32	0%																																																																																				
24XC0006	Checkout & Testing Communications System	10	16-Dec-20	05-Jan-21	-45	0%																																																																																				

█ Actual Work  
█ Remaining Work  
█ Critical Remaining Work  
◆ Milestone  
▬ Summary

Purple Line - Mar 2017  
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Data Date: 15-Mar-17

**Appendix 9            Vehicle Status Report**

Per OP25, this item is issued quarterly. Refer to the June 2018 Monitoring Report for the most recent quarterly issuance.

**Appendix 10      Construction Photographs**



(photo: MTA)

**Photo 1:** Top Heading of the Plymouth Tunnel, approximately 200 feet into the 1100-foot long tunnel



(photo: MTA)

**Photo 2:** Removal of the stone veneer (to be reused) from the Baltimore-Washington Parkway Bridge prior to required project-related modifications to the bridge.