

PMOC COMPREHENSIVE MONTHLY REPORT

East Side Access (MTACC-ESA) Project Metropolitan Transportation Authority New York, New York

Report Period March 1 to March 31, 2018

PMOC Contract No. DTFT60D1400017

Task Order No. 0002, Project No. DC-27-5287, Work Order No.6

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Length of time on project: Ten years on project for Urban Engineers

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Third Party Disclaimer

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For projects funded through FTA Full Funding Grant Agreements (FFGAs) program, FTA and its Project Management Oversight Contractor (PMOC) use a risk-based assessment process to review and validate a project sponsor’s budget and schedule. This risk-based assessment process is a tool for analyzing project development and management. Moreover, the assessment process is iterative in nature; any results of an FTA or PMOC risk-based assessment represent a “snapshot in time” for a particular project under the conditions known at that same point in time. The status of any assessment may be altered at any time by new information, changes in circumstances, or further developments in the project, including any specific measures a sponsor may take to mitigate the risks to project costs, budget, and schedule, or the strategy a sponsor may develop for project execution. Therefore, the information in the monthly reports will change from month to month, based on relevant factors for the month and/or previous months.

EXECUTIVE SUMMARY

This summary highlights key events and important issues for the current month.

Overall Program Status: The current Overall Program is 76.0% actual versus 80.0% as-planned (based on invoice cost).

Construction Status: The Construction Status is 76.4% actual versus 81.2% as-planned (based on invoice cost).

Contracts Awarded/Completed: None

Construction Progress CM014B, CS084, VS086 (all continuing).

Issues:

Program Funding: MTACC anticipates completing its review of program costs in April 2018. Subsequent accommodations, if necessary, in the current or next Capital Plan have not been determined.

Program Cost and Budget: (b)(4)

Risk Management: 10 major risks remain.

Harold Interlocking: Completed four of ten 2018 signal pre-cutover testing weekends during 1Q2018; all planned work completed.

Key Stakeholder Issues: LIRR – Late completion of Positive Train Control design, late final approval of all CS179 final designs for 10 control and 19 non-control systems; CS084 SCADA Finalization; Amtrak – Continuing Force Account availability issues; MTACC - Change Order processing issues.

Construction Safety: 0.0 - Lost Time and 0.0 - Recordable Injuries during February 2018.

ELPEP Compliance: No issues.

Project Management Plan: No issues.

All Project Sponsor cost and schedule data included in this report is based on the MTACC East Side Access Monthly Progress Report, January 2018 referenced in this report as the ESA January 2018 MPR, which has a cost and schedule data date of February 1, 2018. Unless otherwise noted, all progress percentages in this report are based on invoiced costs.

REPORT FORMAT AND FOCUS

This report is submitted in compliance with the terms of the Federal Transit Administration (FTA) Contract No. DTFT60D1400017, Task Order No. 0002. Its purpose is to provide information and data to assist the FTA as it continually monitors the Sponsor's technical capability and capacity to execute a project efficiently and effectively, and hence, whether the Sponsor continues to be ready to receive federal funds for further project development. This report covers the project and quality management activities on the East Side Access (ESA) Mega-Project managed by MTA Capital Construction (MTACC) with MTA as the Sponsor and financed by the FTA FFGA.

QUARTERLY SUMMARY**1. PROJECT DESCRIPTION**

The East River tunnels in Manhattan are at capacity. The ESA project is anticipated to improve LIRR tunnel capacity constraints and enable the growth of the overall system. The project comprises a 3.5 mile commuter rail extension of the Long Island Rail Road (LIRR) service from Sunnyside, Queens, to Grand Central Terminal (GCT), Manhattan, utilizing the existing 63rd St. Tunnel under the East River and new tunnels in Manhattan and Queens, including new power and ventilation facilities. The project includes a new eight track terminal constructed below the existing GCT and a new surface rail yard in Queens for daytime train storage. Future ridership forecast is 162,000 daily riders (27,300 new riders). The project will provide increased capacity for the commuter rail lines of the LIRR and direct access between suburban Long Island and Queens and a new passenger terminal in Grand Central Terminal (GCT) in east Midtown Manhattan, in addition to the LIRR's current Manhattan connection at Penn Station.

2. CHANGES DURING 1st Quarter 2018**a. Engineering/Design Progress**

In the ESA January 2018 MPR, the PMT reported that the overall Engineering effort is 99.0% complete compared to planned completion of 100%. The ESA January 2018 Total Cost Report shows that 98.1% of the overall EIS and Engineering budget, including 98.3% of the Design budget, have been invoiced.

b. New Contract Procurements

No new contracts were awarded for the ESA project during 1Q2018.

Contract CS086 Tunnel Systems Package 2 – Signal Installation: The February 5, 2018 NTP was missed and the contract was not on the agenda for the March 2018 MTA board meeting.

Contract CH057D, Harold Trackwork: Four bids were opened on February 20, 2018. Negotiations continued through March 2018.

Contract CH058A Harold Structures Part 3A, B/C Approach Structure, was not advertised as planned on February 22, 2018.

c. Construction Progress

In the ESA January 2018 MPR, MTACC reported that total construction progress reached 76.4% complete compared with planned progress of 81.2%. The January 2018 MPR shows that 76.3% of the total construction cost has been invoiced.

d. Continuing and Unresolved IssuesPotential Funding Constraints through 2020

The PMOC remains concerned that there will be increasing demands on the program's unallocated contingency until the PMT completes the cost assessment and incorporates the information in the Capital Plan, if necessary. At present, the PMT has committed to the MTA board to complete the cost plan in April 2018, which should reveal how funding for the ESA project would be drawn down through the start of revenue operations. (b)(4)

Harold Re-Sequencing Plan (“ESA First”)

During 2016, the “ESA First” Harold Re-sequencing Plan was adjusted to accommodate railroad force account constraints. The impacts caused by insufficient Amtrak support were reduced during 2016, 2017, and through 1Q2018, but not totally eliminated, by frequent program re-planning and re-sequencing. This situation continues to be a challenge for MTACC.

Forecast Force Account, OCIP, and Professional Services Cost Overruns

The projected Amtrak and LIRR Force Account cost overruns have been evaluated and the total additional costs are estimated to be approximately \$111 million for the FFGA work scope, not including the costs of delay impacts to third party contracts. Additional OCIP costs have been estimated at \$190 million. The cost to extend the current PM/CM, GEC, and CCM professional services contracts will likely exceed \$100 million.

Amtrak Preparation for Extended East River Tunnel Outages

The PMOC has continuing concerns regarding the impact to the ESA Harold work due to the Amtrak program to harden East River Tunnel (ERT) Lines 1, 3, and 4 in preparation for extended outages for ERT Lines 1 and 2 to complete Hurricane Sandy damage-related reconstruction work. This work was originally planned for 2019 starting with Line 2, and has now been rescheduled for 2025. Amtrak has provided no details regarding how this change might affect the remaining predecessor hardening work for ERT Lines 1 and 4.

LIRR Positive Train Control (PTC)

There are two potentially significant impacts of PTC implementation: first, design changes to active Contracts CS179 and VS086 and pending Contract CS086; second, potential delay to the remaining ESA Harold work after the originally planned May 2018, now July 2018, LIRR CIL cutovers, should FRA not grant LIRR’s waiver request to postpone the December 31, 2018, deadline for PTC operation in Harold Interlocking. LIRR was not able to complete the PTC design in 4Q2017, as earlier projected, nor in 1Q2018, as most recently forecast. If FRA does not grant LIRR’s waiver request, LIRR may be required to significantly reduce its support for the ESA work in Harold in order to install, test, and activate PTC by the end of 2018.

Late Approvals for Contractor Designs and RFI Closure on Contracts CS179, CS084, and VS086:

The PMOC has been reporting delays in the process of GEC and LIRR review and approval of the contractors’ final systems designs and closure of RFIs. Periodic improvements have been noted, but increased attention to this issue continues to be needed.

Manhattan/Systems Performance Risk: The Manhattan/Systems near-critical schedule path involving Contracts CM007, CM014B, CS179, CS084, and future CS086 currently has only 7 CDs of remaining float. The forecast substantial completion dates for the aforementioned contracts extend from May 2020 to January 2021, or 26 to 34 months from now. Concern is the likelihood of using this float in the near future and this schedule path becoming critical.

e. New Cost and Schedule Issues

The January 2018 IPS update shows that the Public/Target RSD slipped 6 weeks to May 26, 2021, due to delays on the primary critical path through Harold Interlocking. This critical path has no float and each delay draws from the program schedule contingency. Time was also lost on both the second critical path through Manhattan/Systems work (7 calendar days of float remaining) and the third critical path through Queens (48 calendar days of float remaining).

The PMT continues to review program costs for the ESA project to address various issues – those that have occurred and those anticipated to occur in the future – which it currently expects to complete in April 2018. Identified potential needs include funding for railroad force account cost overruns, continuing OCIP coverage, a number of Owner Initiated Changes to Contract CM014B, as well as extensions to the existing PM/CM, CCM, and GEC professional services contracts. The schedule may be influenced by funding constraints through 2020 and issues stemming from the slower than planned progress on certain contracts. Depending on the outcome of the update, further coordination with funding and capital planning may be required.

3. PROJECT STATUS SUMMARY AND PMOC ASSESSMENT

a. Sponsor Management Capacity and Capability

The PMOC continues to have concerns regarding the ability of MTACC to manage the GEC and LIRR to effectively support timely reviews for systems design submittals by the CS179 Facilities Systems, the VS086 Signal Equipment Procurement, and the CS084 Traction Power contractors and the amount of time required to respond to RFIs and field change requests on both of these contracts. Additionally, the time to process and approve contract modifications is excessive and needs to be improved to minimize cost and schedule impacts.

b. Real Estate Acquisition

In its January 2018 Monthly Progress Report, ESA reported that MTA Real Estate continues to coordinate future construction of the 48th Street Entrance with the building owner at 415 Madison Avenue and includes negotiations for a Utilities Relocation Agreement so that the current phase of work can be closed out.

c. Engineering/Design

Progress for remaining design work continues to lag design milestone targets. The GEC and PMT continue to miss target dates for completing remaining design activities on the project due to scope transfers between contract packages, the inability to provide definitive requirements and answers to contractor questions in a timely manner, and other issues involving stakeholders.

Additionally, LIRR delayed reviews of the CS179 Facilities Design and CS084 Traction Power systems designs. Late GEC responses to RFIs and Change Requests and MTACC's long processing durations for Contract Modifications are not supporting the construction schedules.

d. Procurement

The January 2018 MPR shows that total procurement for the ESA Program is 88.5% complete, with \$9.0 billion awarded of the \$10.17 billion current project budget. No new contracts were awarded for the ESA project this quarter.

The PMOC notes that procurement is being delayed due to late completion and approvals of the designs and bid packages. Also, Contract CM015, 48th Street Entrance, is on indefinite hold pending an agreement between MTA and the owner of the building at 415 Madison Avenue. Active procurements include:

- CS086 Tunnel Systems Package 2 – Signal Installation
- CH057D Harold Trackwork
- CH058A Harold Structures Part 3A, Tunnel B/C Approach Structure

e. Railroad Force Account (Support and Construction)

During 1Q2018, LIRR Signal personnel continued “pre-cutover” testing activities at the new “H1”, “H2”, “H5”, “H6”, and Location 30 Central Instrument Locations (CILs) in Harold Interlocking in preparation for cutover of those CILs. During March 2018, the LIRR FRA signal compliance group determined that approximately 4,000± additional tests would need to be conducted on the new signal system to comply with FRA regulations. This has tentatively delayed the cutovers from May 2018 to July 2018. The ESA PMT is presently reviewing its 2018 schedule sequence to mitigate potential delay impacts due to this situation. LIRR Traction Power personnel continued installation of traction power cables from various tracks to the new G02 Substation and installed new 3rd rail on the new ML4 Track and the existing New Haven Track NH2. Amtrak support during 1Q2018 was limited, although Electric Traction personnel resumed construction of catenary wire over the LIRR Eastward Passenger Track for the “PW2 Overrun” portion of the project. Amtrak C&S personnel also resumed signal modifications on the New Haven tracks east of Harold in support of the planned LIRR signal cutovers.

f. Third-Party Construction and Procurement

Manhattan:

Contract CM006 Manhattan North Structures: During 1Q2018, the CM006 contractor’s (Manhattan North Structures) continued to progress activity toward achieving Substantial Completion (SC).

Contract CM007 GCT Station Caverns and Track: The CM007 contractor continued construction of the North and South Back of House (BOH) facilities at both the East and West Caverns. In both the East and West Caverns during 1Q2018, the CM007 contractor installed platform and smoke plenum precast elements. Laboratory qualification testing of direct fixation track components and trackwork construction continued.

Contract CM014A GCT Concourse & Facilities Fit-Out: On October 16, 2017, the B-30 Substation was turned over to CM014B and this contract, throughout November 1, 2018, has moved into Closeout Phase. MTACC reports that the contractual Substantial Completion date of September 7, 2015, was not met.

Contract CM014B GCT Concourse & Facilities Fit-Out: Substantial Completion is being further extended to May 18, 2020, from the previous March 4, 2020, from the original August 18, 2018; 639 calendar days behind. In Wellways #1 and #2, escalator work is complete and ready for inspection. In Wellways #3 and #4, architectural work is complete, and removal of temporary scaffolding has begun.

Contract VM014 Vertical Circulation Elements: Through January 2018, MTACC reports that this contract was approximately 62.2% complete. The rigging for escalators is ready for erection at Wellways #3 and #4.

Queens:

Contract CQ032 Plaza Substation and Queens Structures: During 1Q2018, the CQ032 contractor continued to progress activity toward achieving Substantial Completion (SC).

Contract CQ033 Mid-Day Storage Yard Facility: The CQ033 contractor continued the following activities during 1Q2018: yard lighting installation, traction power ductbank, personnel access bridge, demolition of the Montauk Cut-off Structure, and utilities and civil site work.

Harold Interlocking:

Contract CH061A – Track A Cut and Cover Structure: During 1Q2018, the CH061A contractor completed placement of all invert concrete throughout the Track A Cut and Cover section, completed construction of the mechanical room, and began placement of roof sections and sidewall waterproofing and re-bar at the portal and east ends of the tunnel.

Systems:

Contract CS179 – Systems Facilities Package No. 1: During 1Q2018, the CS179 contractor continued installation of conduit, cable, fire stopping, fire standpipe, lighting, etc., in the tunnels and at the various facilities where access was obtainable. Water infiltration and Buy America issues must still be remedied. Design completions of Control and Non-Control Systems continue to fall behind schedule. Additionally, the contractor contends that a significant number of Notice of Change (NOC) submissions with potential for cost and design impacts remain as open items that are already impacting work progress.

Contract CS084 Traction Power Systems Package 4: The contractor continues to cite numerous conditions in the various substation facilities that prevent it from beginning work in those locations (See Appendix L for details). During 1Q2018, only limited installation work in the Vernon (C05) substation occurred due to a Stop Work Order (SWO) related to a floor issue in the Traction Power Substation (TPSS) room and obstructions from another contractor's installations. The SCADA design continues to delay equipment fabrication; and, major issues related to the delivery of equipment, the installation of traction power cables, and incomplete work by other ESA contractors remain as open items that pose significant concerns regarding the timely completion of this contract. A second transformer failed the hi-pot test in February 2018.

Contract VS086, Systems Package 3 – Signal Equipment Procurement: The timeliness of responses from MTA on design submittals and inquiries continues to be a concern and an impediment to the efficient progression of the work. Key design decisions by the MTA that have the potential to impact designs already in progress, interim contract milestones, and the overall substantial completion of this contract, remain as open items.

g. Vehicles

The PMOC notes that LIRR's procurement of the M-9A vehicles for ESA remains behind schedule. Total delay could be up to 25 months, dependent upon which car builder is ultimately selected as the successful bidder.

h. Commissioning and Start-Up

Discussion in this report related to the commissioning and startup of the ESA revenue service is based on information obtained during the most recent Operational Readiness briefing which was the 3Q2017 briefing held on October 19, 2017, and subsequent meetings with LIRR personnel. Commissioning of the work and startup of ESA service is dictated by an ESA Rail Activation Plan (RAP) being developed by the ESA Operational Readiness Group; a group consisting of 11 Task Working Groups (TWGs).

i. Project Schedule

In January 2018, the Target RSD slipped 6 weeks to May 26, 2021, due to work on the primary critical path – Harold Interlocking, and resulting in a loss of 41 calendar days of program contingency. The Manhattan/Systems work lost 9 calendar days of float over the reporting period and remained as the second critical path with 7 calendar days of float remaining. The work path

through Queens lost 80 calendar days of float and remained the third critical path, with 48 calendar days of float remaining.

Table 1 provides a summary of critical milestone dates including PMOC and Sponsor forecasts:

Table 1: Summary of Critical Dates

Program Milestone	FFGA	Forecast (F) Completion, Actual (A) Start		Amended FFGA ***
		Project Sponsor*	PMOC**	
Begin Construction	Sept. 2001	Sept. 2001(A)	Sept. 2001(A)	Sept. 2001
Construction Complete	Dec. 2013	Dec. 2022 (F)	Sept. 2023(F)**	Dec. 2023
Revenue Service	Dec. 2013	Dec. 2022 (F)	Sept. 2023 (F)	Dec. 2023

Notes: * Project Sponsor forecast Revenue Operations Date per presentation to the MTA CPOC, June 2014.

** Source – PMOC 2014 schedule trending analysis representing a medium degree of mitigation.

*** Source – Amended FFGA, August 2016

j. Project Cost

Table 2 provides a summary of FFGA budgets and project cost forecasts and expenditures through January 2018.

Table 2: Project Budget/Cost Table

(Cost shown in millions)

	FFGA			MTA Current Budget			Expenditures	
	Original FFGA	Amended FFGA	Pct. of FFGA	Obligated	CBB	Pct. of CBB	Expenditures	Pct. of CBB
Grand Total	7,386.0	12,038.0	100.00%	9,627.4	11,214.0	100.00%	8,157.9	72.8%
Financing Cost	1,036.0	1,116.0	14.03%	617.6	1,036.0	9.24%	617.6	59.6%
Total Project Cost	6,350.0	10,922.0	85.97%	9,009.8	10,178.0	90.76%	7,540.3	74.1%
Total Federal Share	2,683.0	2,683.0	36.33%	2,698.8	2,699.0	24.07%	2,698.0	100.0%
5309 New Starts share	2,632.0	2,632.0	35.63%	2,436.7	2,437.0	21.73%	2,435.9	100.0%
Non New Starts share	51.0	51.0	0.69%	66.7	67.0	0.60%	66.7	100.0%
ARRA	0.0	0.0	0.00%	195.4	195.0	1.74%	195.4	100.2%
Local Share	3,667.0	8,239.0	49.65%	6,311.0	7,479.0	66.69%	4,842.3	64.8%

k. Project Risk

The PMOC notes the ESA project continues to experience the risk of schedule delays – not only for the CIL pre-testing and cutovers on Harold Interlocking primary critical work path, but also for the work on the second and third most critical paths. Despite apparent good progress in the field for CIL pre-testing in Harold Interlocking it was determined that additional testing is necessary, which forecast to push the completion of the CIL cutovers out to July 2018. While the PMOC is concerned about this particular risk because working in Harold Interlocking is

complicated and requires a great deal of coordination and cooperation among stakeholders, the amount of time lost on the second and third most critical paths was even greater. The PMOC notes that completion of the Harold work planned for 2018 is critical for the overall ESA program schedule performance; however, the program remains at risk if there are additional delays on the other schedule paths. The PMOC is concerned about the continued erosion of programmatic float, which dropped from 605 CDs to 564 CDs during the period of November 2017 through January 2018.

MONTHLY UPDATE

The information contained in the body of this report is in accordance with Oversight Procedure #25, to “inform the FTA of the most critical project occurrences, issues, and next steps, as well as professional opinions and recommendations”.

ELPEP COMPLIANCE SUMMARY

The current status of each of the remaining main ELPEP components is summarized as follows:

- **Technical Capacity and Capability (TCC):** MTACC has previously indicated that it will review the TCC Plan and propose revisions, if required, to reflect the current status of the Program. MTACC submitted an updated TCC Plan in September 2017 and the PMOC continues its review of the plan.
- **Continuing ELPEP Compliance:** The ESA project should continue to make additional improvements in the following areas: Management Decision; Design Development; Change Control Committee (CCC) Process and Results; Stakeholder Management; Procurement; and Risk-Informed Decision Making. The PMOC has noted progress in two previously identified areas – Issues Management and Timely Decision Making, particularly when responding to new issues arising with the railroads’ Force Account resource availability, track outages, and other issues regarding the remaining work in the Harold Interlocking.
- **Project Management Plan:** MTACC is using the current version of the PMP, Rev. 10, that the PMOC reviewed and the FTA accepted earlier in 2017.
- **Cost/Schedule Contingency:** MTACC has reached agreement with the FTA and the PMOC on the ELPEP minimum cost and schedule contingency hold points, levels, and drawdowns. MTACC continues to report the actual cost and schedule contingency levels against the ELPEP minimums in its quarterly reports to the FTA. Schedule and Cost Contingency status, use, and trending are discussed respectively, reports Sections 4.0 and 5.0.
- **Schedule Management Plan (SMP):** The ESA project should continue to make additional improvements in the following areas: Integrated Project Schedule (IPS) Updating, Forecasting, and Schedule Contingency Management against a current baseline schedule. MTACC is using Rev. 2 of the SMP dated September 2016.
- **Cost Management Plan (CMP):** The ESA project should continue to make additional improvements in the following areas: Project Level EAC Forecasting, Project Level EAC Forecast Validation, and MTACC Cost Contingency Management and Secondary Mitigation. MTACC is using Rev. 2 of the CMP dated October 2016.

The PMOC notes that, with completion of the most recent Schedule Management Plan and Cost Management Plan updates as well as the FFGA amendment, the ESA project is better able to generally remain compliant with ELPEP.

Revisions to the ELPEP Document: MTACC submitted an updated ELPEP with suggested revisions in September 2017 and the PMOC continues its review of the proposed revisions.

1.0 SPONSOR'S CAPABILITIES AND APPROACH

1.1 Management Capacity and Capability

a) Organization

The PMOC has not noted any significant change in the Sponsor's ability to generally maintain the required level of Management Capacity and Capability. The PMOC does note, however, continuing problems with regard to the GEC and LIRR support of the review and approval process for the contractors' final designs for systems and equipment submittals under Contracts CS179, CS084, and VS086, as well as the GEC's responsiveness to RFIs and Field Change Requests on these and other contracts. Additionally, the processing and approval of construction contract modifications is taking too long and this creates cost and schedule impacts. Management focus on these issues has resulted in some improvements, but PMOC notes that these issues have continued through 1Q2018. The new MTACC president is making significant changes to the ESA project organization and operation to better focus efforts on improving the effectiveness of management decision making and coordination with LIRR, the primary project stakeholder.

b) Staffing

The PMOC has no specific concerns or recommendations about the Sponsor's staffing at this time. The PMOC notes that correcting issues with regard to GEC and LIRR support of the review and approval of submittals for the CS179, CS084, and VS086 contracts may require staffing adjustments. Staffing adjustments are also anticipated based on implementation of the MTACC president's Six-Point Plan for the ESA Program.

1.2 Project Management Plan

a) History of Performance

The MTACC has "re-planned" the ESA program 3 separate times since the 2006 FFGA, resulting in budget increases and longer completion schedule to the Revenue Operations Date. The current re-planned budget (\$10.177B) and schedule (December 2022 RSD [late forecast]) were presented to the MTA CPOC in June 2014 and approved. The PMOC notes that ESA has been dealing with schedule performance set-backs primarily in the following areas: earlier funding issues that delayed award of contracts and systems contract options; poor performance by the CM006 and CM014B contractors; insufficient progress of work on Contracts CS179, CS084, and VS086; late award and NTP for Contracts CM007 and CQ033; significant delays to completion of designs for CM015 and CS086; and ongoing challenges in Harold Interlocking work caused by continued lack of adequate railroad force account support.

b) PMP

MTACC is using the final version, dated June 2016, of Revision 10.0 to the East Side Access Project Management Plan that was accepted by the FTA in early 2017.

1.3 Project Controls

a) Schedule

MTACC re-baselined the ESA program schedule in June 2014 with a late RSD of December 2022, which included (b)(4) contingency from the February 2021 Target RSD. The PMT submitted a draft schedule contingency drawdown plan and hold point values in December 2014 as required by the ELPEP agreement, which – after discussions with FTA and PMOC – was endorsed by all parties in October 2015.

The ESA program level schedule contingency (b)(4) at the end of the January 2018 as a result of the Target RSD slipping to May 2021. The Harold sub-program remains as the primary critical path with no float (zero days); the second critical path is controlled by the Manhattan/System sub-program with 7 calendar days of float; and the Queens sub-program controls the third critical path with 48 calendar days of float.

b) Cost

MTACC re-baselined the ESA program budget in June 2014 with a value of \$10.177 billion (excluding Rolling Stock Reserve). MTACC agreed to the minimum cost contingency hold point values proposed by FTA/PMOC and commenced reporting on the cost contingency drawdown in their Quarterly Progress Reports to the FTA. (b)(4)

1.4 Federal Requirements

a) FFGA

As a result of MTACC’s re-baselining of the ESA Project budget and schedule, an FFGA amendment was developed and approved by the FTA on August 2, 2016. This amended FFGA incorporated the changes in the Baseline Cost Estimate and Revenue Service Date that have occurred since December 2006, when the original FFGA was signed, and now includes a budget of \$10.922 billion (\$10.459 billion before Rolling Stock Reserve and Finance costs) and an FFGA Revenue Operation Date of December 2023. In June 2014, MTACC presented a new project budget of \$10.177 billion (excluding the Rolling Stock Reserve and finance costs) and schedule with an RSD of December 2022 to the MTA CPOC.

b) Federal Regulations

As a Full Funding Grant recipient, MTA is required to meet the requirements of the Buy America Act. The PMOC outlines current and new issues regarding this requirement in this section with additional details in Section 2.3 and Appendix G. On Contract CS179, Systems Package 1, there are currently three potential Buy/Ship America issues affecting proposed equipment.

1.5 Safety and Security

a) Safety and Security Certification Process

In the 3Q2017 Operational Readiness meeting, MTACC indicated that its managerial focus shifted from Security Certifications to the “management” of the Safety Certification process. During 4Q2017, MTACC continued to catch up on the Safety and Security Certification processes; with several more design and construction contracts reviewed, and safety and security elements identified for future validation upon completion of design and construction phases of the contracts.

b) Project Construction Safety Performance

Through February 2018, ESA project safety statistics for lost time accident and OSHA recordable injuries on active construction contracts continued to trend below the Bureau of Labor Statistics (BLS) national average with a CY2018 project wide ratio of 0.0 versus 1.70 (2018 BLS average) lost time accidents per 200,000 work hours. The ESA recordable injury ratio for CY2018 through February 2018 was 0.0 versus 2.8 (2018 BLS average).

c) Security

The ESA PMT did not report any significant security issues in its ESA January 2018 Progress Report.

1.6 Project Quality

Quarterly Quality Oversight (QO): The 4Q2017 QO Audit was conducted during the first quarter of 2018. Final Reports were issued and the contractors advised of audit results and findings prior to formal issuance of the reports.

Table 3.1 provides a summary of the current Quality Audit results.

Table 3.1 – 4Q2017 Quality Audit Results

Contract	Overall Score
CS179	87%
CH061A	60%
CM014B	91%
CM007	85%
CQ033	88%

Nonconformance Reports (NCRs): Table M located in the Appendix provides a summary of NCR status on the major active contracts for ESA, as per the March 2018 contractor NCR logs. The total number of NCRs for each contract are tabulated to show closed NCRs, NCRs open for less than 90 days, and NCRs open for over 90 days. The table includes data for the most active construction contracts over the past four quarters.

1.7 Stakeholder Management

a) Railroads

MTACC’s East Side Access Project involves nearly \$500 million in construction in Harold Interlocking performed by third-party contractors requiring railroad access and protection provided by both Amtrak and LIRR. In addition, Amtrak and LIRR track, signal, and traction power construction work totaling over \$400 million will be accomplished using railroad Direct Force Account labor. Construction progress requires an extraordinary level of detailed planning, coordination and communication for which MTACC has assumed the risk. Significant current challenges are summarized below:

Long Island Rail Road:

As the agency that will operate the new ESA facilities, LIRR is the primary project stakeholder. The project is now in the next phase of construction to complete the GCT station facility, install all the trackwork and systems, and complete the testing, start-up, and commissioning. LIRR’s level of direct involvement with the ESA project has increased and will continue to do so through commencement of revenue service. LIRR will need to commit the resources and management

availability to work with MTACC in support of the ESA project needs and to provide timely decisions when requested in response to design, construction, or operational issues.

During 1Q2018, several key ESA issues involving LIRR continued to challenge the project:

- The Qualification Testing (QT) for the High Attenuation Resilient Tie Block (RTB) fastener system is expected to start in early April 2018. High Attenuation Direct Fixation Fastener QT and Special Trackwork RTB QT was completed in 1Q2018. Test results are under review.
- Review and concurrence by LIRR of the final designs for the 10 control systems (Contract CS179) has progressed much slower than scheduled. LIRR has formally signed-off on only 7 of these systems. As of the end of 1Q2018, the completion and approval of all 10 Control System final designs is 22 months late.
- Review and approval of the contractor submittals for the Traction Power System (Contract CS084) has progressed much slower than scheduled. However, TPSS component fabrication has started, but cannot be completed until final design issues regarding SCADA are resolved.
- LIRR's decisions regarding use of LED signal lighting and specialized track circuits provided by the Signal Equipment Procurement contract (Contract VS086) remain unresolved.
- LIRR's plan for Positive Train Control (PTC) design, installation, testing, and commissioning has presented a number of challenges to ESA for planning the remaining work in Harold Interlocking and incorporation of PTC in the ESA tunnels and GCT terminal. LIRR transmitted a waiver request and a subsequent revision to the FRA to exempt it from the FRA requirement to implement PTC in Harold Interlocking by December 31, 2018, based on Harold Interlocking's continuing status as an active construction area. As of March 31, 2018, FRA has not formally granted the waiver. Additionally, the ESA-GEC is awaiting completion of LIRR's design for PTC to incorporate it into the CS179, VS084, and CS084 contracts. PTC design was not completed by March 31, 2018 as forecast.
- Planned 2018 LIRR direct work will be significantly greater than during previous years, will require a substantial commitment of LIRR Force Account personnel, and will include:
 - Placing the new GO2 Substation into service (planned 1Q2018; now 4Q2018)
 - Completing all CIL pre-cutover activities (planned May 2018; now June 2018)
 - Completing cutovers for the remaining 5 CILs (planned May 2018; now July 2018)
 - Completing all Harold NE Quadrant trackwork (June/July 2018; now August 2018)
 - Completing all track/signal/3rd rail/catenary modifications in preparation for the Tunnel B/C Approach Structure work (3Q and 4Q2018).

Amtrak:

As the agency that jointly, with LIRR, operates and maintains Harold Interlocking in Long Island City, Queens, Amtrak is a key project stakeholder.

Based on Amtrak’s continued inability to provide sufficient force account support, especially Electric Traction (ET) personnel, ESA has significantly revised the Harold construction schedule twice since 2014. As a result, the ESA PMT produced the “ESA First” construction schedule which re-prioritized work elements in Harold to operate new LIRR service into GCT and delayed some of the FRA-funded work not required to operate into GCT. Through March 2018, although the effects of Amtrak’s lack of support have been somewhat mitigated, this still remains a significant challenge for MTACC.

In 2016, Amtrak announced plans to reconstruct its East River Tunnels (ERT) Line 1 and Line 2 that were damaged by Superstorm Sandy in 2012. Amtrak had originally announced that this work would begin in 2019, but it was recently announced that work will be postponed until 2025. This work does, however, remain a potential risk based on the necessary predecessor work to harden ERT Lines 1 and 4 in preparation for the extended tunnel outages for ERT Lines 1 and 2.

The PMOC recognizes MTACC’s efforts to actively engage Amtrak to develop some specific mitigations for certain risks and to proactively deal with these issues as they arise. The PMOC also recognizes MTACC’s engagement of a consultant to develop a resource loaded schedule for all regional force account commitments, including Amtrak and LIRR, to assist in short- and long-term resource allocation decisions. Continued force account resource shortcomings will continue to challenge the current Harold schedule and hence, influence the ESA critical path. The PMOC recommends that the PMT continue to actively engage executive management in MTACC and the MTA to assist with resolution of such problems.

b) Other Stakeholders

Although there are other external stakeholder issues that ESA must continue to address, at present there are no indications that any might have a significant negative impact on the project schedule or cost.

1.8 Local Funding

a) MTA/New York State (Capital Plan)

Potential and forecast cost overruns have been identified for the ESA program. The PMT is analyzing program costs, the result of which it anticipates presenting at the CPOC committee meeting in April 2018. If the analysis determines that additional funding is needed, the MTA/MTACC will consider options to address anticipated cost increases, which include seeking additional funds through the current or next Capital Plan. Until adjustments are approved, if necessary, the PMT would use project contingencies to fund additional costs, including: railroad force account cost overruns; continuing OCIP coverage; Owner Initiated Changes to CM014B; as well extensions to the PM/CM, CCM, and GEC professional service contracts. Currently, the PMT forecasts that sufficient contingencies are available for planned awards and identified cost overruns through the fourth quarter of 2018. The PMOC is concerned that this risk may have potentially significant impacts on the program budget and schedule as well as the target Revenue Service Date.

b) Other Sources

The total FTA funding commitment, as of February 1, 2018, remains \$2.699 billion.

1.9 Project Risk Monitoring and Mitigation

a) Risk Management Plan (RMP)

The current MTACC RMP, Rev. 2, is a sub-plan within the ESA Project Management Plan (PMP), and was updated to incorporate FTA/PMOC comments to bring it into compliance with ELPEP principles and requirements. It was conditionally accepted by the FTA on March 4, 2013. The ESA Risk Manager updated the RMP during 4Q2017, which the PMOC is presently reviewing.

b) Monitoring

The ESA Risk Manager continues to update, track, and issue program level risk updates to the Risk Register on a regular basis. A comprehensive risk review for remaining Harold Interlocking work was completed in April 2017.

c) Mitigation

ESA continues to identify and implement risk mitigation strategies in a number of project areas.

2.0 PROJECT SCOPE

2.1 Engineering/Design and Construction Phase Services

In the January 2018 MPR, the PMT reported the overall Engineering effort as 99.0% complete versus 100% planned. The ESA January 2018 Total Cost Report shows that 98.1% of the overall EIS and Engineering budget and 98.3% of the Design budget, have been invoiced.

Status of Construction Packages Advertised:

CS086 Tunnel Systems Package 2 – Signal Installation was advertised as an RFP on August 10, 2017. A single proposal was received on October 31, 2017 and negotiations with the proposer are continuing. The February 5, 2018 NTP was missed and the revised date, March 26, 2018, was not be achieved.

CH057D Harold Trackwork was advertised on November 30, 2017 and four bids were opened on February 20, 2018. The February 27, 2018 NTP was missed as well as the revised date, March 29, 2018. Award and NTP is now forecast for April 2018.

Status of Construction Packages Not Advertised:

On Contract CM015 (48th St. Entrance) - MTA notified the building owner that construction of the 48th St. Entrance will be deferred, which subsequently deferred negotiations to finalize the corresponding Work and Easement Agreements. Design work on this package remained suspended through March 2018.

MTACC-ESA is developing an alternative LIRR GCT entrance at 47th Street and is preparing a Technical Memorandum for the FTA. MTACC has approved the GEC contract modification for design of the alternate 47th Street Entrance. MTACC's current plan is to build the alternate 47th Street Entrance by contract modification to the current active CM014B contract.

Contract CH058A, Harold Structures – Part 3A, B/C Approach will include construction of the Tunnel B/C Approach Structure. The 100% design package was submitted on December 1, 2017, but it was not advertised as planned on February 22, 2018. The Division 1 Specification is in review by MTACC Legal.

Contract FQA33A and FQA33B, Mid-Day Storage Yard Facility (MDSY) – Amtrak F/A, includes several different options for connection of the MDSY to Harold main line tracks to provide access for LIRR trains into Penn Station. All yard exit options are presently being considered by ESA, Amtrak, and LIRR. The design package has been completed with incorporated LIRR review comments. Amtrak design concurrence is expected in April 2018. The design package for FQA33B that provides a second MDSY exit route remains on hold, pending identification of

funding source. The second exit route, however, will not be built under the current ESA program that only includes the single exit provided by FQA33A.

Contract FQL33, LIRR FA for Mid-Day Storage Yard – LIRR has returned comments on the 100% design package that included some revisions to the ET work package. The GEC is incorporating the LIRR comments and expects to return a revised submission to LIRR in April 2018.

Positive Train Control Design by LIRR

The MOU between MTACC and LIRR for the implementation of Positive Train Control (PTC) on ESA has been executed and the “Technical Concurrence Document” has been agreed upon by both parties. LIRR continued to advance the PTC design, but missed the December 31, 2017, forecast date for completion of this work. The most recent forecast for completion of the PTC design by March 31, 2018 was not achieved. LIRR previously provided the GEC with “advanced design” documents for the GEC’s use to prepare modifications to Contracts CS179, VS086, and CS086 to provide for overlay of the LIRR designed PTC onto the ESA systems. LIRR’s late completion of the final design may be delaying the GEC’s final design changes and the subsequent contract modifications for the above listed contracts.

Status of MTACC and LIRR Review and Approval of Systems Contractors’ Final Designs:

Contract CS179, Systems Facilities Package 1

The CS179 contractor continues to work on the completion of the final designs of the various contract required systems; a process that, as of the end of 1Q2018, is 22 months late. Additionally, the LIRR has formally approved only seven of the ten Control System Final Designs (FDs) as of the end of 1Q2018. Further, the contractor advises that the resolution of a number of NOCs submitted, but still unresolved, could further impact design completion and is already impacting progression of equipment and rack fabrication. [Ref: ESA-125-Sep16]

Contract CS084, Traction Power Systems Package 4

The CS084 contractor, while continuing to transmit contractual submittals, also continues to assert that previous delays related to design submittals were caused by MTA and have impacted its ability to meet its own original design, procurement, fabrication, and installation schedules. The MTA’s inability to reach timely decisions on design items that have potential schedule impacts continues to be an issue that is an impediment to MTACC’s ability to effectively manage this contract. Numerous issues related to coordination with other ESA contractors remain unresolved; and, the contractor contends that the contract schedule continues to slip on a day-to-day basis due to unresolved design issues – including SCADA issues. [Ref: ESA-125-Sep16]

Contract VS086, Systems Package 3 – Signal Equipment Procurement

Unresolved design decisions by the MTA continue to delay the timely progression of the contract work. In 1Q2018, one major equipment issue was resolved; but, others remain, posing a significant, and yet undetermined, delay in the fabrication, testing, and delivery of equipment. The continued absence of an accurate and comprehensive schedule that shows all contemplated contract activities is an impediment to the MTACC’s ability to effectively manage this contract.

[Ref: ESA-125-Sep16]

PMOC Overall Engineering/Design/CPS Observations:

The GEC and PMT continue to consistently miss target dates for completion of remaining design activities on the project, with corresponding procurement and construction delays. The result is

that schedule float is used during procurement and is then not available during construction when it is needed to mitigate future risks. Some delays have been caused by the need to add Positive Train Control requirement to associated systems and equipment designs.

PMOC Overall Engineering/Design/CPS Concerns and Recommendations:

MTACC needs to focus on achieving intermediate milestones in a timely fashion and to work closely with all parties to achieve this. The continual shifting of scope among various packages has made finalizing plans and specifications extremely difficult. Additionally, MTACC management needs to more actively engage outside stakeholders such as building owners, Amtrak, and the LIRR to resolve lingering design issues. The PMOC remains concerned about potential impacts to the CS179, VS086, and CS084 contract schedules that may result from the lack of timely design decisions and the lengthy turn-around time to review and respond to contractor design submittals and contractor inquiries. The PMOC notes the ESA PMT and senior management's increased efforts to resolve issues related to Systems design reviews with GEC and LIRR management. More improvement and continued focus is needed, however. The PMOC continues to recommend that the PMT develop a design milestone tracking process for the remaining design work on the project in order to more effectively manage the design effort. [Ref: **ESA-125-Sep16**].

2.2 Procurement

The ESA October 2017 Total Cost Report shows that total procurement for the ESA Program is 88.8% complete, with \$9.03 billion awarded of the \$10.17 billion current project budget. In June 2017, the ESA-PMT advised that all design work on Contract CM015, 48th Street Entrance, had been suspended. Total bid advertisement delay is 19 months. This package is currently not considered as an active procurement.

Status: The status of the current active procurements includes:

- CS086 Tunnel Systems Package 2 – Signal Installation – Advertised on August 10, 2017, one single proposal submitted on October 31, 2017. Negotiations are continuing. The February 5, 2018, NTP was missed and the contract has not been awarded as of March 31, 2018.
- CH057D, Harold Track Work, was advertised on November 28, 2017, and four bids were opened on February 20, 2018. An award is expected in April 2018.
- CH058A Harold Structures Part 3A, B/C Approach Structure, was not advertised as planned on February 22, 2018.

Concerns and Recommendations:

The lack of stability in the contracting strategy and Contract Packaging Plan (CPP) remains a concern. Scope shifts among different packages during 2016 and through 2017 have made it difficult to fully understand the impact of these changes to the overall ESA Project. The PMOC continues to recommend that the ESA PMT make every effort to adhere to CPP revision 11.0 and minimize shifting scope for the remainder of the project.

2.3 Construction

The PMT reported in the January 2018 MPR that the total construction progress reached 76.4% complete vs. 81.2% planned. Refer to Appendix J for the budget, cost, and schedule status of each

contract and force account package discussed below. The percentage of work complete is calculated using invoiced costs and current awards, as shown throughout this report.

Manhattan Contracts

Costs and substantial completion dates are tabulated below for active Manhattan contracts.

	Current Budget	Appr'd Contract	Rem Budget	Invoice	EAC	Planned Comp	Invoice Comp	Current BL SC	Forecast SC	Notes
CM006	361.6	350.2	11.4	346.0	352.8	100.0%	99.3%	6/1/17	3/16/18	3
	nc 361.6	nc 350.2	nc 11.4	nc 346.0	nc 352.8	nc 100.0%	nc 99.3%	nc 6/1/17	nc 3/16/18	
CM007	712.3	661.9	50.4	229.1	698.8	39.3%	34.5%	1/28/20	6/29/20	
	nc 712.3	+0.3 662.2	(-0.2) 50.2	+18.3 247.4	(-0.9) 697.9	nc 39.3%	nc 34.5%	nc 1/28/20	(-3cd) 6/26/20	
CM014A	61.1	60.5	0.6	58.9	58.1	100.0%	97.4%	9/7/15	2/28/18	3,4
	nc 61.1	nc 60.5	nc 0.6	nc 58.9	nc 58.1	nc 100.0%	nc 97.4%	nc 9/7/15	nc 2/28/18	
VM014	46.2	34.9	11.3	20.2	44.9	NA	58.9%	10/25/1	10/16/2	2
	nc	nc	nc	+1.5	nc	NA	nc	9	0	
	46.2	34.9	11.3	21.7	44.9	NA	58.9%	nc 10/25/1 9	nc 10/16/2 0	
CM014B	463.6	446.4	17.3	220.9	510.4	82.4%	49.5%	8/18/18	5/18/20	1
	nc 463.6	+0.4 446.8	(-0.4) 16.9	+6.6 227.5	+1.9 512.3	nc 82.4%	nc 49.5%	nc 8/18/18	nc 5/18/20	

Notes: For each contract: line 1 = prior value; line 2 = period change, nc = no change; and, line 3 = current value.

1. Current approved contract does not include full scope.
2. Contract Budgets for Force Account work are made on an annual basis. Actual Cumulative % Complete based on Total Budget Value.
3. The substantial completion date was established but was not declared.
4. The forecast reflects a credit scope of -\$1.6M that will be taken out of CM014A during close out.

CM006 – Manhattan North Structures

Construction Progress: Through March 2018, the CM006 contractor continued to complete base contract work and open NCR work necessary for SC. SC was not achieved in the 1Q2018.

Observations/Analysis:

There are several open NCRs that need to be addressed and closed.

Concerns and Recommendations: ESA and the contractor must remain diligent to complete contract requirements for substantial completion.

CM007 - GCT Station Caverns and Track

Construction Progress:

South Back of House, East and West: Continued MEP and CMU installation and sloped stairway slab construction.

North Back of House, East and West: Continued MEP installation and 45th Street Lobby PAC construction.

East Cavern: Continued lower level platform precast installation, MEP work, Smoke Plenum precast installation, and grouting.

West Cavern: Continued Mezzanine electrical work, continued temporary cross passage closure, start track curb, continued smoke plenum installation, and grouting.

Through March 11, 2018, MTACC reports that precast beams and decks are 77.7% complete. Precast platform walls and deck panels are 31.2% complete. The ESA PMT reported that the precast smoke plenum at the Upper Level in the West Cavern is 45.5% complete.

Track: Continued construction of the Direct Fixation Track on Fasteners (DFF) at Track WB1, in the 63rd St. Tunnel, Queens, using permanent plates. Continued construction of the Direct Fixation Track on Resilient Tie Blocks (RTB) at Tracks B/C, WB1, and WB3. Continued laboratory qualification testing of Special Trackwork DFF and completed qualification testing for High Attenuation DFF. Through March 11, 2018, MTACC reports that Track and Third Rail installation is 31.2% complete.

Observations/Analysis: ESA must complete its review of the contractor's recovery schedule to achieve a revised contract schedule, so that a realistic schedule is available to track construction progress. As of March 31, 2018, CM007 trackwork is on the near critical program path.

Concerns and Recommendations: The PMOC remains concerned that continued delays in track submittals and qualification testing for the Special Trackwork RTB assembly have continued to impact milestones and Substantial Completion, which may also impact follow-on contract work.

CM014A – GCT Concourse & Facilities Fit-Out

Status: MTACC reports that the contract is 97% complete and that limited punch list work continues without declaration of a Substantial Completion date. MTACC reports that the contractual Substantial Completion date of September 7, 2015, was not met and that the CM is forecasting a February 28, 2018, date which may be delayed.

CM014B – GCT Concourse & Facilities Fit-Out

Construction Progress:

Schedule

The 47th St. Entrance redesign is now the primary critical path for this contract. The Structural Steel work is now the secondary critical path, and remains behind schedule. The Biltmore Room construction is now the tertiary critical path.

Milestone #4 (Comm. Closets CC-C3, CC-C7, & Room B3265); was originally March 5, 2017; extended to May 25, 2017; then August 25, 2017; now April 1, 2018 – This milestone has been split into 2 completion dates; 4A remains April 15, 2018 and 4B remains May 20, 2018 for extension of room CC-C7.

Milestone #5 (44th St. Vent Building) June 4, 2017, then December 29, 2017; then March 2018; now June 2018. The largest of the fans installed by the CS179 contractor was placed inside the building on March 14, 2018.

Milestone #5A (Completion of 48th St. Entrance) November 25, 2016 – This was delayed until October 2, 2017, and is now projected to May 1, 2018, from the previous April 3, 2018. The elevator shaft work is continuing. The elevator head house work is ongoing. This milestone now also includes EL #17 and EL #22 at 335 Madison.

Milestone #6 (Communication Closets CC-C4, CC-C8) May 20, 2018 – No further update has been provided.

Concourse (Madison Yard): Electricians continued with installation of racks and conduit throughout and for Unit Substations (US) #7 and #8. Mechanical work continues with the installation of ducts and fans. Painting of block walls and columns continues throughout Zones 1-4. Painting of Fire Stand Pipe continues throughout the Concourse.

Wellways: In Wellways #1 and #2, escalator work is complete and ready for inspection. In Wellways #3 and #4, architectural work is complete.

Biltmore Connection: The first track outage for the Biltmore Connection construction is ongoing.

47th Street Entrance/Cross Passageway: At Elevator #13, a Stop Work Order continues to be in effect because the elevator shaft does not extend as far down as expected and needs to be extended to the Concourse. The redesign of this entrance continues and the work is now the primary critical path for this contract.

48th Street Entrance: Backfilling and paving the south side of the street is underway.

50th Street Vent Building: The Vent Building continues in full fit-out mode. Work includes installation of conduit and pulling branch wires in all rooms in the Second Basement Level. Installation of Elevator #9 continues.

Observations/Analysis: The PMOC observes that the delays in structural steel, starting in the submittals phase, and now in the fabrication/delivery/erection phases, continues to impact the CS179 contractor, who cannot pull overhead wiring until overhead conduit is installed.

Concerns and Recommendations: The PMOC continues to be concerned that the slow contract modification process delays start of the associated work which may result in further delay to the Substantial Completion date.

VM014 –Vertical Circulation Elements (Escalators & Elevators)

Construction Progress: Through January 2018 MTACC reports that this contract was approximately 62.2% complete. Erection of rigging for escalators is ready for erection at Wellways #3 and #4.

Observations/Analysis: The VM014 contractor has advised that, although substation B-30 is fully operational, the CM014B subcontractor has not given them sufficient electrical power to run all of the 9 escalators in Wellways #1 and #2. Once installation is complete the escalators must be run every 30 days as a part of the contractor’s “In Contract Maintenance” (Phase 4).

Concerns and Recommendations: The PMOC is concerned that, even though the VM014 contractor has resumed fabrication of the Biltmore Room escalators, this contractor is advising the CCM that the CM014B contractor is not providing any assistance in access to the area for the required rigging to install the escalators. This could negatively impact the installation schedule for the escalators.

Queens Third-Party Contracts

Costs and substantial completion dates are tabulated below for active Queens contracts.

	Current Budget	Appr'd Contract	Rem Budget	Invoice Cost	EAC	Planned Comp	Invoice Comp	Current BL SC	Forecast SC	Notes
CQ032	265.4	261.7	3.7	260.6	263.7	100.0%	99.6%	9/6/16	4/13/18	1
	nc	nc	nc	nc	nc	nc	nc	nc	nc	
	265.4	261.7	3.7	260.6	263.7	100.0%	99.6%	9/6/16	4/13/18	
CQ033	308.0	293.9	14.2	48.3	308.0	NA	16.4%	8/10/20	12/8/20	
	nc	+0.1	(-0.1)	+11.3	nc	NA	nc	nc	+1cd	
	308.0	294.0	14.1	59.6	308.0	NA	16.4%	8/10/20	12/9/20	

Notes: For each contract: line 1 = prior value; line 2 = period change, nc = no change; and, line 3 = current value.

1. The substantial completion date was established but not declared.

CQ032 – Plaza Substation and Queens Structures

Construction Progress: During March 2018, the CQ032 contractor continued punch list work, preparation of documentation, and resolution of NCRs necessary for SC. SC was not achieved in 1Q2018.

Observations/Analysis: ESA reported that SC remains pending contractor compilation of a summary of all open commercial items and agreement.

Concerns and Recommendations: The PMOC is concerned that contract close-out remains delayed by resolution of contract requirements for substantial completion.

CQ033 – Mid-Day Storage Yard Facility:

Construction Progress: During March 2018, the CQ033 contractor continued traction power duct bank work, continued Car Appearance Maintenance (CAM) platform work, continued detention pipe, Pump Station and sanitary sewer installation, continued Personnel Access Bridge foundation work, started preparation of surcharge for Substation B16 and utilities at substation B15, and continued demolition of the Montauk Cutoff approach structure.

Observations/Analysis: ESA and the contractor continued to work well together.

Concerns and Recommendations: Access Restraints 1 and 2 remain impacted by required Amtrak work. Both ESA and the contractor are actively pursuing constructive options to mitigate schedule impacts.

Systems Contracts

Costs and substantial completion dates are tabulated below for active Systems contracts.

	Current Budget	Appr'd Contract	Rem Budget	Invoice	EAC	Planned Comp	Invoice Comp	Current BL SC	Forecast SC	Notes
CS179	606.9	552.8	54.2	368.9	605.2	66.2%	66.8%	7/1/20	11/30/20	1
	nc	+12.2	(-12.3)	+7.4	+5.0	nc	nc	nc	+50cd	
	606.9	565.0	41.9	376.3	610.2	66.2%	66.8%	7/1/20	1/19/21	
CS084	79.7	72.9	6.8	12.0	79.7	74.2%	16.4%	12/2/19	9/30/20	1
	nc	nc	nc	nc	nc	nc	nc	nc	(-1cd)	
	79.7	72.9	6.8	12.0	79.7	74.2%	16.4%	12/2/19	9/29/20	
VS086	21.8	19.9	1.9	8.3	22.2	NA	41.6%	10/14/19	10/14/19	1
	nc	nc	nc	+0.5	nc	NA	nc	nc	nc	
	21.8	19.9	1.9	8.8	22.2	NA	41.6%	10/14/19	10/14/19	
VH051	30.2	29.5	0.7	28.8	30.2	NA	97.6%	4/30/15	5/20/18	
	nc	nc	nc	nc	nc	NA	nc	nc	nc	
	30.2	29.5	0.7	28.8	30.2	NA	97.6%	4/30/15	5/20/18	

Notes: For each contract: line 1 = prior value; line 2 = period change, nc = no change; and, line 3 = current value.

1. Forecast SC is based on the approved schedule that does not account for open unresolved issues. The PMOC believes that addressing open issues will have significant negative impact on SC dates.

VH051 (Part 1) – Harold and Point Central Instrument Locations

Observations/Analysis: All signal equipment necessary for the cutovers of the 5 CILs is on hand.

Concerns and Recommendations: The PMOC has no concerns or recommendations.

CS179 Systems Package 1 – Facilities Systems

Design Progress: The backlog of needed reviews and decisions remains as a serious issue and contributes to delay of change orders needed to progress work and to facilitate the design of the control and non-control systems. Final designs for three of the ten control systems are not yet complete and approved. Progress on non-control systems designs is also delayed, partially due to open issues. The contractor reiterates that open issues and NOCs that remain unaddressed are already delaying its ability to complete designs, continue with equipment rack production, and progress construction activities; potentially impacting the timely completion of the contract. Additionally, three previously reported Buy/Ship America issues that are necessary to the successful completion of this contract remain unresolved. (See Appendix G for details).

Construction Progress: In 1Q2018, the contractor continued work on conduit, cable, fire stopping, fire standpipe, lighting, etc., in the tunnels and substation facilities to which it had access. The resolution of coordination issues with other contractors that are working or have worked in CS179 contract facilities has become an issue impacting the progression of work on multiple contracts. Resolutions will require some design efforts and the processing of multiple contract modifications; a lengthy process. As noted in previous PMOC reports, numerous water infiltration issues have significantly impacted progress. Infiltration remediation at the C05 (Vernon) substation is still incomplete. There remains a number of SWOs (due to: water infiltration, site conditions, scope transfers, etc.) which are impacting progress. As noted earlier, equipment rack production is now being delayed due to NCOs that remain as open issues.

Concerns and Recommendations: The PMOC remains concerned about the lack of a realistic schedule for this contract that details all remaining work and durations; including new activities

that may result from the NOCs and delays due to SWOs. The PMOC also has significant concerns about unresolved Buy/Ship America issues and waiver requests, if pursued. Delays in acquiring suitable alternatives could have a significant impact on the schedule. Additionally, the PMOC remains concerned about late completion of design reviews and approvals. Lastly, it should be noted that, despite the appearance in the above table that the contract's Actual progress is essentially the same as the Planned progress, when compared to the contract milestones that were re-established and effective as of April 2016 and planned for completion by the end of March 2018, the actual progress of this contract is significantly behind schedule. Only one of the ten milestones that was scheduled for completion by the end of March 2018 was completed. The progress percentages presented in the table are based on actual versus projected costs, not physical design or construction efforts. The PMOC has concerns about MTACC's ability to complete the contract work, especially all the Integrated System Testing, in time to meet the current forecast ESA Revenue Service Date.

CS084 Tunnel Systems Package 4 – Traction Power

A comparison of actual and planned completion percentages demonstrates that this contract is significantly behind schedule and has trended behind each month. The contractor contends that the reasons for the variance from planned progress are due to: 1) delays approving substation designs and equipment; 2) fabrication and procurement cannot be completed without design approval; and, 3) the lack of access to substation rooms precludes construction. As noted earlier, the progress data in the Table above is based on costs, not physical progress. Therefore, any lack of access to facilities or non-approval of equipment designs impacting equipment procurement and fabrication will impact the contractor's ability to expend costs; and, will further skew the percentages in the Table relative to the progress of work on the contract. As of the end of 1Q2018, the contractor obtained required design approvals for a substantial quantity of equipment and released the design of that equipment for fabrication. The fabrication and delivery of the equipment will eventually provide a significant change to the Planned versus Actual percentages in the above Table.

Design Progress: The contractor continued making submittals and asserts that previous delays in receiving MTACC comments on switchgear, SCADA, PLCs, and substation designs – in addition to MTA-directed design changes – has impacted and continues to impact design, procurement, fabrication, and equipment activities. Continuing delays in finalizing the C08 substation design and SCADA requirements is, per the contractor, causing day-to-day delays in the overall contract schedule.

Construction Progress: During 1Q2018, equipment installations on MTA property were limited due to SWOs and obstructions from other contractor's equipment installations. As previously reported, the contractor rejected areas turned over by other contracts and provided MTACC with a list of its concerns. That list (See Appendix P) is updated each month and discussed at the monthly progress meeting. As of the end of 1Q2018, many of the deficiencies have not been addressed and construction work is on hold in those areas. Major issues affecting cable installations from C08 to the tracks and the coordination of C01/C02 substation equipment deliveries with the tail track installation remain open and can potentially impact the schedule. New significant issues regarding missing floor penetrations, doorway enlargements, and the re-design of the lifting beam for the transformer installations at the C06/C07 substation location were identified in 1Q2018 and remain open. All three of these issues at the C06/C07 location will require contract modifications, as well as cost and schedule adjustments to the contract – the extent

of which is unknown at this time. During 1Q2018, one significant Quality-related issue occurred; that of a failure of a second transformer undergoing hi-pot testing. The first transformer failure occurred in April 2017 and quality improvement efforts were undertaken at the transformer manufacturer's facility. The second failure, the root cause of which is still under investigation, raises serious concerns about quality control at the transformer manufacturer's facility. The contractor is participating in the investigation into this failure.

Concerns and Recommendations: The PMOC continues to support all PMT efforts in working with LIRR to expedite design reviews and approvals to avoid delaying construction. At contract meetings, the PMOC continues to inquire about verification of manhole and conduit systems at CS084 substation locations so as to avoid a repeat of the issue that exists at C08. It appears that these manhole and conduit systems have yet to be surveyed. MTACC needs to address and resolve the open issues and incorporate any schedule impacts into the contract and overall ESA Project schedule.

VS086 Systems Package 3 – Tunnel Signal Procurement

Design Progress: The contractor continues to maintain that lack of timely responses from MTA to submittals and inquiries continues to cause delays. In 1Q2018, the LIRR approved the use of an alternate vendor to supply Low-Smoke-Zero-Halogen (LSZH) wire for Plaza Interlocking and the contractor placed the order for the wire. The contractor is now developing a schedule for the re-wiring of the signal cases and the completion of fabrication, testing, and delivery of Plaza Interlocking signal package. Several items related to the testing of the Plaza Interlocking signal package are now being portrayed by the contractor as issues that will impact the contract schedule; notably, Factory Acceptance Testing (FAT) and Factory Integrated Acceptance Testing (FIAT). The FAT occurs first and tests the individual equipment items, while the FIAT tests the interlocking designs and equipment as a composite systems package. Both the LIRR and the contractor are insisting that the contractor who will install and test Plaza Interlocking equipment under the CS086 contract be present at the FAT. As of the end of 1Q2018, the CS086 contract has yet to be awarded; so, the ability to coordinate the participation of the CS086 contractor at the FAT is a questionable open item. Further, the VS086 contractor advised MTACC that if the CS086 contractor does not attend Plaza Interlocking FAT, the operational integrity of the interlocking once installed in the field would not be guaranteed by the VS086 contractor. Additionally, design data from the CS179 contractor is required to perform the FIAT, and MTACC indicated that this design data was still under development by the CS179 contractor. Consequently, the completion dates for the FAT and the FIAT are unknown at this time and the delivery date for Plaza Interlocking also remains unknown. There are several other issues needing resolution or direction: 1) LED tunnel signal lights; 2) TRU-III track circuit equipment; 3) Positive Train Control; 4) ATT-20 track circuit equipment; and, 5) signal case electrical service modifications. Incorporation of these items will require a contract modification, might require changes to completed designs, and could impact contract cost and schedule.

Concerns and Recommendations: The PMOC remains concerned about the number of unresolved items with potential cost and schedule impacts. Since time to make and implement decisions for open issues is not in the schedule, the PMOC is concerned about the validity of contract and MTACC schedule completion dates. The PMOC supports all PMT efforts in working with LIRR and GEC to expedite design reviews and approvals to avoid delaying contract activities.

Harold Interlocking Contracts

Costs and substantial completion dates are tabulated below for active Harold contracts.

	Current Budget	Appr'd Contract	Rem Budget	Invoice Cost	EAC	Invoice Comp	Actual Comp	Current BL SC	Forecast SC	Notes
CH061A	42.0	34.3	7.7	15.3	39.0	68.1%	44.6%	5/28/18	5/28/18	
	nc	+0.1	(-0.1)	+2.1	nc	nc	nc	nc	+17cd	
	42.0	34.4	7.6	17.4	39.0	68.1%	44.6%	5/28/18	6/14/18	

Notes: For each contract: line 1 = prior value; line 2 = period change, nc = no change; and, line 3 = current value.

CH061A – Track A Cut and Cover Structure:

Construction Progress: During 1Q2018, the CH061A contractor completed placement of all invert concrete throughout the Track A Cut and Cover section, completed construction of the Tunnel A Mechanical Room, completed placement of 2 tunnel roof sections, and began sidewall waterproofing and rebar placement at both the portal (west) and east ends of the tunnel.

Observations/Analysis: The PMOC notes that the MTACC project staff and the contractor continue to work well together. During 1Q2018, the parties began negotiations on a recovery schedule to maintain the Substantial Completion date of June 14, 2018. Although formal agreement was not reached by March 31, 2018, the contractor has already begun to accelerate its work by adding swing shift work along with selected weekend work. MTACC is taking this action in order to avoid potential future conflict with force account resource availability that is needed for the critical 2018 Northeast Quadrant (CH057D) and B/C Tunnel approach (CH058A) construction projects.

Concerns and Recommendations: After initial delays with the underpinning of the 39th St. overhead bridge and demolition of the temporary mud slab at the Tunnel A portal (placed by CQ031), contract construction has proceeded smoothly. As a result, the PMOC has no concerns or recommendations at this time.

Railroad Force Account Contracts

Costs and substantial completion dates are tabulated below for active Force Account packages.

	Current Budget	Appr'd Contract	Rem Budget	Invoice Cost	EAC	Invoice Comp	Actual Comp	Current BL SC	Forecast SC	Notes
FHA01	18.8 nc 18.8	18.8 nc 18.8	-- nc --	18.6 nc 18.6	18.8 nc 18.8	100.0% nc 100.0%	99.5% nc 99.5%	2/4/16 nc 2/4/16	12/16/17 +518cd 5/18/19	1,2
FHA02	60.2 nc 60.2	38.8 nc 38.8	21.4 nc 21.4	55.2 +0.5 55.7	66.4 nc 66.4	100.0% nc 100.0%	90.2% nc 90.2%	8/15/17 nc 8/15/17	2/24/19 +112cd 6/16/19	1,2
FHL01	24.4 nc 24.4	20.8 nc 20.8	3.6 nc 3.6	24.4 nc 24.4	24.4 nc 24.4	100.0% nc 100.0%	105.7% nc 105.7%	4/9/15 nc 4/9/15	6/7/18 +238cd 1/31/19	1,2
FHL02	96.6 nc 96.6	48.2 nc 48.2	48.4 nc 48.4	95.0 +1.4 96.4	96.6 nc 96.6	100.0% nc 100.0%	96.7% nc 96.7%	11/25/16 nc 11/25/16	8/19/20 +7cd 8/26/20	1,2

Notes: For each contract: line 1 = prior value; line 2 = period change, nc = no change; and, line 3 = current value.

1. Current approved budget does not include full scope.
2. Budgets for Force Account work are made on an annual basis. Invoice percent complete is calculated using the approved contract value rather than total budget.

FHA01 Harold Stage 1 – Amtrak F/A

Construction Progress: Amtrak did not perform any significant FHA01 construction during March 2018. The PMOC is not concerned about this because the remaining Stage 1 work will only take one day to complete and is presently scheduled after the LIRR 2018 CIL cutovers in July 2018.

Observations/Analysis: The PMOC has no particular observations at this time concerning Amtrak's FHA01 efforts to support the ESA Program.

Concerns and Recommendations: The PMOC has no concerns or recommendations about FHA01 construction at this time.

FHA02 Harold Early Stage 2 – Amtrak F/A

Construction Progress: During March 2018, Amtrak Electric Traction personnel, who had not been able to support ESA since early January 2018, resumed catenary modifications necessary to install a portion of the overhead catenary wires over the LIRR Port Washington #2 Track, known as the "PW2 Overrun". Amtrak C&S personnel, who had also not been able to support ESA for a much longer period of time, resumed signal system modifications east of Harold Interlocking that are predecessor activities to the LIRR CIL cutovers, which are presently scheduled for July 2018.

Observations/Analysis: It appears to the PMOC that, unless unforeseen events pre-empt Amtrak's current Electric Traction and C&S efforts, both will be able to complete their respective predecessor work before the LIRR CIL cutovers. LIRR's extension of the cutovers by approximately 2 months has helped to increase the likelihood of this.

Concerns/Recommendations: The PMOC recommends that Amtrak do everything possible to maintain its ET and C&S presence on the ESA Program during this critical period leading up to the LIRR CIL cutovers.

FQA65 Loop Interlocking CIL – Amtrak F/A

Construction Progress: During March 2018, Amtrak did not perform any significant FQA65 construction.

Observations/Analysis: Since FQA65 construction is not a necessary component of the “ESA First” schedule, its priority has been downgraded and its schedule extended. The PMOC notes that this contract provides Regional Investment work scope in Harold Interlocking and is considered to have independent utility that is not specifically required to provide the connection for LIRR service to GCT that is part of the FFGA scope of work. FQA65 work does, however, impact the FFGA efforts because it places additional demands on scarce Amtrak force account resources.

Concerns/Recommendations: The PMOC has no concerns about or recommendations for the FQA65 work package at this time.

FHL01 Harold Stage 1 – LIRR F/A

Construction Progress: During March 2018, LIRR 3rd Rail personnel began to construct an extension of the 3rd rail from the LIRR Freight Track to Amtrak’s New Haven Track #2 (NH2).

Observations/Analysis: LIRR’s cable installation for the new G02 Substation is essentially complete, but there is still 3rd party electrical work under Contract CH053 that is located inside the substation that needs to be completed before the substation can be placed in service. As a result, LIRR 3rd Rail personnel have recently concentrated efforts to install 3rd rail on new tracks that will be placed in service within the next several months. 3rd rail personnel will resume G02 construction after the 3rd party work inside the substation is complete.

Concerns and Recommendations: The PMOC does not have any concerns or recommendations about FHL01 construction at this time.

FHL02 Harold Early Stage 2 – LIRR F/A

Construction Progress: During March 2018, LIRR Signal personnel continued to “pre-test” the new signal system in Harold Interlocking at the new “H1”, “H2”, “H5”, “H6”, and Location 30 CILs in preparation for the CIL cutovers, which are now scheduled for July 2018. Through March 31, 2018, signal personnel had successfully completed 4 of 10 “pre-cutover” weekend signal tests scheduled in 2018 prior to the actual cutovers.

Observations/Analysis: In early March 2018, the LIRR signal group responsible to ensure that the new design for these CILs fully complies with FRA regulations informed LIRR field forces that an additional 4,000± signal tests would need to be performed in order to do so. As a result, LIRR field forces estimated that an additional 4 weekends of pre-testing (for the new total of 10) would be required, which is the reason that the cutover schedule has been extended by approximately 2 months. Although this represents a setback in the 2018 ESA construction schedule, the PMOC realizes that the action taken by LIRR is entirely appropriate. Furthermore, ESA continues to analyze and adjust its 2018 construction schedule in an attempt to mitigate the impact of this delay.

Concerns and Recommendations: LIRR’s continual signal presence in Harold Interlocking and its successful completions of its weekend “pre-test” procedures have greatly alleviated the PMOC’s earlier concerns about LIRR’s capabilities. The PMOC recommends that LIRR continue to progress its signal work prior to the cutovers in exactly the same fashion as it has for the past several months.

2.4 Operational Readiness

Status: The most recent quarterly update (1Q2018) Operational Readiness briefing was held on April 19, 2018; and, the status of work activities by the individual Task Working Groups (TWGs) that was presented represented activity through that date. The next Quarterly update (2Q2018) will be held on July 19, 2018. Details of the progress of the Rail Activation Plan (RAP) and specific TWGs are contained in Appendix Q.

Observations and Analysis: As noted earlier in this report, the activities of TWG #7, Safety and Security, are now proceeding satisfactorily and are no longer a concern to the PMOC. The structure of the TWGs working on the Operational Readiness Group's Rail Activation Plan (RAP), the document being developed by TWG #1, has been modified to provide more stakeholder input and direction to the process. LIRR managers are now co-leaders of every TWG. The PMOC met separately in March 2018 with LIRR representatives to discuss railcar procurement efforts under TWG #11 and the status of the LIRR's Staffing and Training Plan being developed by TWG #6 to support the ESA service operation. Information about the procurement of railcars is noted below in Section 2.5. The LIRR's plan for staffing and training, while still a work in progress, is moving along rapidly. An original staffing proposal was developed using input from the various LIRR departments involved in the planning, acquisition, and implementation of personnel resources to conduct ESA revenue service. That plan has been modified several times during the intense vetting process and will require several more iterations before it can be presented to senior LIRR Management for approval. LIRR personnel report that some preliminary funding for staffing was approved in LIRR's 2018 Operating Budget.

2.5 Vehicles

Status: LIRR is procuring the new M-9A vehicles that will be used for ESA service using a two-step RFP process. The first step, to determine each prospective vendor's qualifications, was solicited in November 2017. The second step, the "Cost/Technical" portion of the RFP, was originally scheduled for solicitation before the end of March 2018, but that has been delayed due to LIRR review of the qualifications portion of the proposals that were submitted.

LIRR procurement of M-9A vehicles is a joint effort with its sister MTA agency, Metro North Rail Road (MNR), to provide sufficient new vehicles for future planned service expansion. The acquisition of these vehicles is being financed using both New York State and federal funding. Two similar vehicles will be procured, designated M-9 and M-9A. The M-9 cars have already been purchased by MNR using New York State funding. The 214 M-9A cars, which will be modified M-9 cars for use on LIRR, will be purchased using federal funds.

Observations/Analysis: Based on the Draft January 2018 LIRR Vehicle Procurement Schedule available to the PMOC, if the present M-9 car builder is selected to provide the M-9A vehicles, M-9A vehicle deliveries could begin in December 2019, 11 months earlier than LIRR reported in its October 2017 Procurement Schedule. All 214 vehicles would be delivered in time to support MTACC's late RSD of December 2022 and the FFGA ROD of December 2023 for LIRR service into GCT.

The schedule indicates, however, that, if a different car builder is selected as the successful bidder, M-9A vehicle deliveries would not begin until January 2023. This would be after MTACC's late RSD of December 2022, but before the FFGA ROD of December 2023. The schedule also indicates that only 144 M-9A vehicles would be delivered by the FFGA ROD of December 2023 and that the total of 214 vehicles will not be delivered until June 2024.

Concerns and Recommendations: The PMOC remains concerned about the LIRR M-9A vehicle procurement and recommends that the current review be concluded as quickly as possible so that the procurement process may be resumed.

2.6 Property Acquisition and Real Estate

Status: In its January 2018 Monthly Progress Report, ESA reported that MTA Real Estate continues to coordinate future construction of the 48th Street Entrance with the building owner at 415 Madison Avenue and includes negotiations for a Utilities Relocation Agreement so that the current phase of work can be closed out. All real estate requirements are up to date to meet the ESA construction schedule.

Observations/Analysis: MTA Real Estate continues to perform its real estate responsibilities on behalf of the ESA Project in an entirely effective manner.

Concerns and Recommendations: The PMOC has no concerns or recommendations for MTA Real Estate at this time.

2.7 Community Relations

Status: The ESA January 2018 Progress Report indicates that Community Relations outreach for the month centered on notification and coordination with the Queens community surrounding the Montauk Cutoff concerning noise and other impacts of its demolition.

Observations and Analysis: The PMOC believes that the MTACC Community Relations Staff continues to perform its outreach campaign in an entirely effective manner.

Concerns and Recommendations: The PMOC has no concerns about ESA community relations at this time and recommends that the ESA Community Relations staff continue to perform its duties in the same manner as it has in the past.

3.0 PROJECT MANAGEMENT PLAN AND SUB PLANS

Status: MTACC's current version of the Project Management Plan (PMP), Revision 10, is acceptable to the FTA.

Observation: MTACC plans to update several PMP sections for the next revision: - Risk Management, Procurement, Operational Readiness, and Systems Testing and Startup. MTACC has not established a schedule for these planned revisions.

3.1 PMP Sub-Plans

The PMOC anticipates that the PMT will update one or all of the Project, Cost, and/or Schedule Management Plans to document changes called for by the incorporation of the MTACC President's 6-point management plan for reducing potential programmatic risks.

Status:

The PMOC completed its evaluation of the current revisions of both the Cost Management Plan (CMP) and Schedule Management Plan (SMP), concluded that the CMP and SMP are acceptable, and the FTA notified MTACC that they are acceptable.

MTACC has updated the following PMP Sub-Plans:

- Technical Capacity and Capability Plan
- Risk Management Plan

- ESA Project Quality Manual

All are in various stages of review by the PMOC.

Observations: MTACC is using the most recently revised Project, Cost, and Schedule Management Plans as accepted by the FTA/PMOC.

Concerns and Recommendations: MTACC should continue to ensure that the proper candidate revisions are prepared and presented to the CCC for approval before any changes are incorporated into these plans.

3.2 Project Procedures

Status: The revised CMP and SMP may require updates to referenced Project Procedures. The PMT updated Procedure No. PCA-036 Rev. 5, Construction Contract Modifications for the East Side Access, on December 18, 2017.

Observations: The PMT is planning to incorporate the new revision of PCA-036 in the CMP.

Concerns and Recommendations: There are no significant concerns at this time.

4.0 PROJECT SCHEDULE

4.1 Integrated Project Schedule

The schedule information in this report is based on ESA Integrated Project Schedule (IPS) 102 (data date: February 1, 2018) and IPS Progress Report. The forecast for the Target Revenue Service Date (RSD) slipped to May 26, 2021, approximately 6 weeks later than April 15, 2021 as was reported three months prior (in IPS 99 (November 1, 2017)). IPS 102 reported that the Late RSD remained on December 13, 2022, as previously forecast.

(b)(4)



The PMT is actively managing the IPS as can be seen by the changes it has made to the work that comprises the Harold Interlocking work path. This work is being led by the PMT's work on the Regional Schedule in coordination with the other Harold Interlocking stakeholders, in addition to its refinements to the work for contracts CH057D and CH058A, which are not yet under contract. Additional detail is expected when the contracts are awarded to perform this work.

Table 4.1 shows dates, remaining durations and contingencies for the Target, Late, and FFGA Revenue Service Dates.

Table 4.1: Schedule Contingency as of the February 1, 2018 ESA IPS 102

(b)(4)



The three primary program critical paths in IPS 102 are: 1) work in Harold Interlocking (no float); 2) Manhattan/Systems work (7 CDs float); and, work in Queens (48 CDs float). The Harold path completion date slipped 41 CDs, pushed the Target RSD out to May 26, 2021, and reduced the ESA program contingency. The end date for each of the three critical paths slipped since the November 1, 2017, schedule update. The Harold Interlocking completion date slipped to January 21, 2021; the Manhattan/Systems completion date slipped 50 CDs to January 19, 2021; and, the Queens completion date slipped 121 CDs December 9, 2020. The key dates for these paths are summarized in the following chart, which depicts schedule completion dates, floats, and contingencies for the February 1, 2018, and November 1, 2017 IPS schedules. The current critical path is shown by contract in Appendix F, ESA Critical Path Chart.

Chart 1: Comparison of Program Float and Contingency Changes

(b)(4)



4.2 Primary Critical Path

The ESA February 1, 2018 IPS shows that the ESA Program primary critical path still runs through the Harold Interlocking work path, as noted above. The Harold path lost 41 days of program contingency and its end date is delayed to January 26, 2021 (no float remaining). As represented in the February IPS, the completion dates for the CIL cutovers on the initial portion of the Harold path are held and time is lost due to revisions for CH057D and CH058A. However, the initial CIL cutover portion of the critical path will lose time in the next IPS update when the PMT adds time for the additional testing, which will push the May 2018 CIL cutover completion date out to July 2018, as shown in the Regional Schedule.

The PMT augmented the February 2018 IPS with placeholder activities for CH057D, CH058A, and also updated FHL04. These three contracts individually add approximately one week, four weeks, and two weeks, respectively, to the schedule for an aggregate delay of 41 calendar days.

Table 4.2 shows the work and contracts that comprise the Harold work path through the Late RSD along with forecast start and finish dates, as reported in the February 1, 2018 IPS. The PMOC notes that two of these contracts – CH057D and CH058A – have not started, and the IPS May 2018 date for completing the CIL cutovers will be pushed out to July 2018 based on additional required pre-testing.

TABLE 4.2 – Primary Critical Path

Activity Name	Duration	Start	Finish
FHL02 CIL Testing and Cutovers‡	292	1-Aug-17	20-May-18
CH057D† Harold Northeast Quadrant Trackwork	167	21-May-18	4-Nov-18
FHL02 Decommission Harold CIL	28	5-Nov-18	3-Dec-18
CH058A† B/C Approach Structure	692	4-Dec-18	26-Oct-20
FHL04 Harold Testing and Cutovers	91	27-Oct-20	26-Jan-21
LIRR Staff Training and LIRR Final 3 Months Period	119	27-Jan-21	26-May-21
Target Revenue Service Date			26-May-21
ESA Program Schedule Contingency	(b)(4)		
Late Revenue Service Date			

Notes: † Contracts CH057D and CH058A have not yet been procured.

‡ The finish date is shown as reported in IPS 102; however, the Regional Coordination Schedule currently shows completion in July 2018.

The PMT reported that it built on their successful completion of Harold Interlocking CIL pre-cutover work and testing in 2017 and carried it forward into 2018. But despite apparent good progress in the field for CIL pre-testing, LIRR determined that additional FRA testing is necessary, which will delay the completion of the CIL cutovers out to July 2018 as shown in the Regional Schedule.

The critical path analysis for the February 1, 2018 IPS shows that the remaining Harold CIL pre-testing and cutovers will control the Program Critical Path until May 2018. Table 4.3 lists the activities that comprise this section of the critical path along with IPS dates and durations from the November 1, 2017, and February 1, 2018 IPS schedules.

TABLE 4.3 – Detailed Critical Path to Harold Cutover

Id	Description	IPS 99 – Nov. 1, 2017			IPS 102 – Feb. 1, 2018		
		Dur	Start	Finish	Dur	Start	Finish
FHL02							
CSR466	H5/H6/30 South Pre-Cutover Testing	151	3-Jul-17A	1-Dec-17	286	3-Jul-17A	15-Apr-18
CSR463	H1/H2/30 North Pre-Cutover Testing	217	7-Jul-17A	9-Feb-18	247	7-Jul-17A	11-Mar-18
CSR1280	Days Lost / Weekend Work / Cutover Float	60	12-Feb-18	4-May-18	15	16-Apr-18	4-May-18
66330	Cutover (2GHI): H5 / H6 / Loc 30 CIL + 6156, 6176,	2	5-May-18	6-May-18	2	5-May-18	6-May-18
CSR1170	Pre-testing for H1/H2 2J	10	7-May-18	18-May-18	10	7-May-18	18-May-18
7260	Cutover 2J: H1/ H2 / Loc 30 CIL	2	19-May-18	20-May-18	2	19-May-18	20-May-18

Sub Program Longest Path – Manhattan/Systems

The finish date for the longest path through Manhattan/Systems work slipped 50 calendar days from the November 1, 2017 IPS to the February 1, 2018 IPS. However, float decreased by only 9 CDs to 7 CDs (from 16 CDs) due to the amount of time lost on the Harold (primary) critical path. Work on the critical path shows progress on CM007 east and west cavern construction. The remaining work includes CM007 installation of communications conduit, and power and light conduit and devices in the caverns; then through CS179 device installation, wire pulling, and testing in the caverns; and finishes with completion of CS179 Integrated Systems testing on January 19, 2021.

Sub Program Longest Path – Queens

The finish date for the longest path through Queens work slipped 121 calendar days from the November 1, 2017 IPS to the February 1, 2018 IPS. Float decreased by 80 CDs to 48 CDs (from 128 CDs) due to the amount of time lost on the Harold (primary) critical path. The critical path runs through catenary work (transferred from CH061A to CQ033) that is being delayed due to a conflict with an existing Amtrak signal trough; then through CQ033 track, signals, and power systems construction; and, ending on December 2, 2020, with the conclusion of testing for the Midday Storage Yard. The catenary work appeared on the critical path in 2017 and has remained there pending a resolution of the conflict with the Amtrak signal trough. The PMT is believes that the time provided in the schedule for this is work is conservative and is hopeful that delays can be mitigated.

4.3 90-Day Look-Ahead of Important Activities

Appendix G provides a Look-Ahead schedule that includes milestones and significant activities that are forecast for the next 90 days for active contracts. Table 4.4 lists upcoming procurement milestones that are forecast to occur through July 2018, as reported by the PMT. Three contracts are critical to on-time completion of the ESA project. Two of these – CH057D and CH058A – are on the primary critical path.

TABLE 4.4 – Upcoming Contract Procurement Milestones

Contract Description	Advertise Date	Bid Date	NTP	Project Period	Substantial Completion
CS086 Tunnel Systems Pkg 2 – Signal Installation	8/10/17A	10/31/17A	3/26/18	33 Months	12/24/20
CH057D Harold Track work	11/30/17A	2/20/18A	3/29/18	15 Months	6/22/19
CH058A B/C Tunnel	3/15/18	5/14/18	7/18/18	27 Months	10/26/20

Negotiations continued through February 2018 for CS086, Tunnel Systems Package 2 – Signal Installation, for the RFP received on October 31, 2017 from a single proposer. The February 5, 2018 NTP was missed and the revised date, March 26, 2018, will not be achieved because the contract was not on the agenda for ratification at the March 2018 MTA board meeting.

Four bids were opened on February 20, 2018 for CH057D, Harold Trackwork. The contract was not awarded by the forecast March 29, 2018 award date. CH058A, Harold Structures – B/C Approach, was not released for advertisement as planned on March 15, 2018. Timely procurement

of these contracts is important for maintaining the ESA project schedule because they both are on the primary critical path through Harold Interlocking.

The procurement of CM015, 48th Street Entrance, is being removed from active reporting until coordination with the property owner can be completed and design resumes. The PMOC notes that the PMT is developing alternative access at 47th Street – to be built by contract modification under the existing ESA CM014B contract – and that CM015 48th St. entrance will not be critical to the completion of the ESA program.

PMOC Observations, Analysis, and Concerns

The PMOC has the following observations and concerns about the ESA schedule:

1. The PMOC is concerned that the slippage on the primary critical path through Harold Interlocking pushed out the Target RSD and consumed six weeks of Programmatic Contingency during the three months from November 1, 2018, to February 1, 2018. Further slippages will likewise further erode this contingency, with ever dwindling opportunities to recover schedule time.
2. Concerns regarding procurement continue for CH057D Harold Structures, and CH058A B/C Tunnel Approach, which are both on the program primary critical path. Delays on either of these contracts are certain to impact the Program schedule. The PMOC recommends that these contracts be awarded and contractor schedules be obtained as soon as possible so that inter-contract milestones and interfaces – and the critical path – can be validated.
3. Concerns continue about the ESA secondary critical path, which runs through Manhattan/Systems work and which lost one week during the three months from November 1, 2018, to February 1, 2018. It is likely that the remaining float could be consumed and the Manhattan/Systems path would control completion of the ESA program. **[Ref: ESA-128-Sep17]**
4. Progress on CS084, Tunnel Systems Package 4 – Traction Power, is slow and is currently reported at 16.4% complete vs. 76.8% planned. The PMOC observes that much of the work has had day-for-day delays in each IPS update period. The PMT is working with the contractor to get a realistic schedule; however, the PMOC believes that a revised schedule will incorporate delays in the delivery of equipment that will push out milestone dates. The PMOC recommends that ESA analyze options to recover the schedule: focusing on major electrical equipment submittals and layouts; identifying major issues; and, determining corrective measures.
5. Concerns continue for the delays in the procurement of CS086, Tunnel Systems Package 2 – Signal Installation. With the award of CS086 potentially delayed until May 2018, the PMOC is concerned that the delays may eventually impact the Program schedule.

5.0 PROJECT COST

5.1 Budget/Cost

The PMT reported in the January 2018 MPR that total project progress was 76.0% compared with planned progress of 80.0% of the \$10.178 billion Current Baseline Budget (CBB).

The MTACC established the revised budget of \$10.178 billion (excluding the rolling stock reserve and financing costs) for the ESA project in June 2014. The June 2014 budgets, along with the original and amended FFGA budgets, are shown by standard cost category in comparison with the monthly current baseline budgets in Table 5.1. There have been only small budget adjustments among the physical construction cost categories (nos. 10 through 50), while budgets for the other categories – including contingencies – have remained constant during this quarter.

Table 5.1: Comparison of Standard Cost Categories: FFGA vs. CBB
(Cost shown in millions)

Standard Cost Category	FFGA Dec 2006	June 2014 Project Budget	Amended FFGA Aug 2017	Nov 2017 CBB	Dec 2017 CBB	Jan 2018 CBB	CBB / FFGA Var.	CBB / Amend FFGA Var.
10 Guideway & Track Elements	1,988.7	3,405.5	3,353.4	3,510.8	3,524.6	3,412.3	71.6%	1.8%
20 Stations, Stops, Terminals, Intermodal	1,168.7	2,238.2	2,326.8	2,328.2	2,328.2	2,327.7	99.2%	0.0%
30 Support Facilities (Yards, Shops, Admin)	356.3	474.2	450.8	513.1	513.1	513.1	44.0%	13.8%
40 Site Work and Special Conditions	205.1	610.6	562.5	560.9	560.9	560.7	173.4%	-0.3%
50 Systems	619.3	605.6	627.7	587.2	577.5	690.4	11.5%	10.0%
60 ROW, Land, Existing Improvements	165.3	219.4	192.2	215.4	215.4	215.4	30.3%	12.0%
70 Vehicles	494.0	209.9	879.5	209.9	209.9	209.9	-57.5%	-76.1%
80 Professional Services	1,184.0	1,975.4	1,809.0	2,015.7	2,015.7	2,015.7	70.2%	11.4%
90 Unallocated Contingency	(b)(4)							
Subtotal								
100 Financing Cost								
Total								

The PMT is working on a comprehensive review and update of the ESA program budget, which is now anticipated to be complete by the end of April 2018. The update would address identified cost needs as well as contingencies.

As previously reported, cost information released by the PMT indicated that \$111.4 million in additional Amtrak and LIRR Force Account funds would be needed to complete the ESA FFGA scope (revenue service); a total of \$245 million in additional F/A funds would be needed to complete the full Harold 14-4M alignment, which includes both the FFGA scope and the Regional Investment scope; and an additional \$191 million would be needed to fund the OCIP insurance program through February 2022.

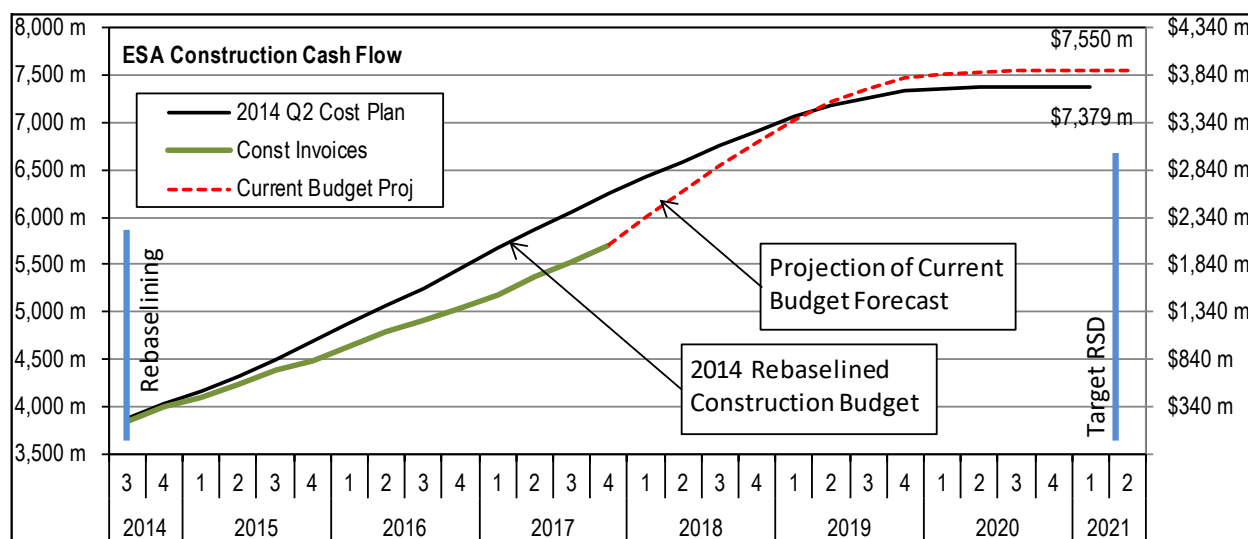
The budget review will also address added costs at the GCT Concourse for remediation of water leaks, Wi-Fi and cellular service, and digital advertising. The PMOC has also observed that the additional funds to continue the PM/CM, CCM, and GEC contracts through to the Target RSD will be significant and may approach or exceed \$100 million. These additional costs are not currently addressed in the ESA budgets.

Concerns and Recommendations: Until the PMT completes its cost forecasting exercise and addresses any resulting timing or funding impacts, the project will be open to potential funding risks. The PMT has not determined whether the funding adjustments, if required, would be addressed in the current or next capital plan. Until adjustments are approved, if necessary, the MTA would need to draw any needed funds from the remaining project contingency or to modify its current cost plan. This may significantly impact the remaining contingencies, with potential implications to the required ELPEP minimums. The PMOC is concerned about all potential impacts to the program budget and the start of revenue service. Specific impacts will not be known until the PMT review is complete as expected in April 2018.

5.2 Project Cost Management and Control

The ESA January MPR shows that construction progress – based on invoiced construction costs – reached 76.4% of the CBB compared with planned progress of 81.2%. (Details of active contract budgets and expenditures are in Appendix J). Cost trends have remained consistent since the re-baselining with actual expenditures below plan, making the completion of construction to support the start of revenue service in the second quarter of 2021 more challenging.

Table 5.2: Planned vs Actual Construction Cash Flow



The construction cash flow plan was prepared for the ESA 2014 cost and schedule re-baselining to support the project through the Target Revenue Service Date in the first quarter of 2021. Invoiced construction costs through 4Q2017 are plotted on the chart to monitor progress on this plan. The chart reveals that cumulative cost invoices have remained approximately \$500 million below planned expenditures over the last year, with the divergence between planned and actual construction expenditures continuing to increase. The PMOC’s simple cost projection – modeled on the 2014 Rebaseline using the current construction budget – shows that a significant increase in production – in excess of previous production - is required through 2018 and into 2019. To

date, construction cost increases have been offset by contingency drawdowns with a result that the overall program budget has remained constant at \$10.178 billion. The PMOC is concerned that: 1) continued inability to achieve the planned rate of construction spending; and, 2) budget increases, may impact the timely achievement of revenue service. The PMOC will review the MTACC's cost update as soon as it is available.

Table 5.3 shows the ESA budget status with amounts awarded and costs invoiced-to-date.

Table 5.3: Project Budget and Invoices
(Cost shown in millions)

Elements	Baseline Total Budget June 2014	January 2018			
		Current Budget	Actual Awards	Invoice to Date	Invoice Pct. of Budget
Construction Subtotal	7,379.3	7,549.6	6,999.5	5,582.3	73.94%
Soft Cost Subtotal	2,798.5	2,628.2	2,034.2	1,958.0	74.50%
Engineering	720.6	735.9	737.4	720.1	97.85%
OCIP	282.6	307.6	307.6	307.4	99.92%
Project Mgmt.	972.2	972.2	867.7	812.7	83.60%
Real Estate	182.1	178.0	118.8	117.8	66.13%
Rolling Stock	202.0	202.0	2.7	0.0	0.00%
Projectwide Reserve	(b)(4)				
Total w/o Financing					

5.3 Change Orders

Table 5.4 lists the contract modifications with magnitudes greater than \$100,000 which were executed during November and December 2017 and January 2018. The PMOC reviewed several of these change orders and found that PMT procedures for change orders were followed. Refer to Appendix N for further information.

Table 5.4: Change Order Log (>\$100,000)

Contract	Description / Mod No.	Amount
	November 2017	
CM007	Deletion of Restraining Rail (mod. 26)	(706,884)
CM014B	MNR Transformer Rigging Frame (mod. 94)	1,600,000
CQ032	Deletion of Painting at Plaza Interlocking (mod. 86)	(848,770)
CQ033	B-926WA Guy Anchor (mod. 3)	126,000
CS179	Yard Services Building Changes in Telephone Layout (mod. 54)	171,700
CS179	Interim Maintenance Equipment List Revision (mod. 64)	500,000
GEC	ESA MTA Corporate IT Network Infrastructure (mod. 144)	390,809
GEC	CS179 Modifications to Access Control and CCTV Systems (mod. 146)	260,936
	December 2017	
CM007	Cavern Pit Walls As-Built Discrepancies (mod. 24)	163,563
CM014B	Elevator EL-13 Pit Elevation (mod. 105)	598,633
CQ032	Remove Support Excavation at the 23 rd St. Vent. Facility (mod. 88)	210,869
CQ033	B-928W and B-924WA Material Installation (mod. 8)	139,500
CH057A	Deletion of Remaining Scope and Contract Close Out (mod. 32)	33,007,011
GEC	CQ032 to CS179 Scope Transfers (mod. 149)	448,149
	January 2018	
CM007	Value Engineering Change Proposal Smoke Plenum (mod. 28)	(792,526)
CM014B	44th Street Ventilation Building Sidewalk Elevations (mod. 119)	120,100
CQ033	B-929 2/3W Installation (mod. 4)	100,738
CH057	Electrical Wayside Interferences (mod. 32)	260,000
CH057	GWP Additional Tamping, Lining and Ballast (mod. 33)	109,012
CH057	Credit for unused Allowances (mod. 34)	(1,036,759)
CS179	Tunnel A HVAC Changes (mod. 61)	141,879
GEC	Positive Train Control (mod. 141)	937,113
GEC	Extension to 12/31/2018 (mod. 150)	2,984,571

5.4 Project Funding

The MTA is holding off making a determination about funding (i.e. modification of the current Capital Plan or inclusion in the next Capital Plan) anticipated cost overruns, if necessary, until the ongoing program cost assessment is concluded in April 2018. Until a funding plan is approved, the Project Contingency will be used to fund additional program costs, if necessary. The PMT estimates that there are sufficient contingency funds to cover all planned contract awards and identified cost overruns through 4Q2018. The PMOC is concerned that a delay to this plan could potentially result in a funding gap that could impact the program [ESA-A47-Dec17].

Federal Funding: The total Federal funding commitment to the ESA project is \$2.699 billion, of which \$2.698 billion was expended through February 1, 2018.

Local Funding: The budget for Local Funding is \$7.479 billion, of which \$4.842 billion was expended through February 1, 2018. Financing costs are funded separately by local sources.

5.5 Project Cost Contingency

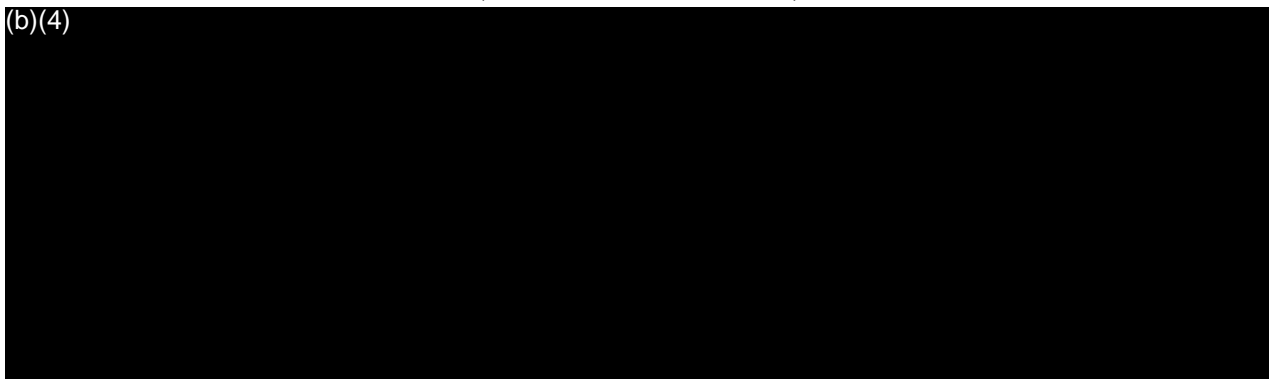
(b)(4)

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The PMOC remains concerned that there will be ongoing demands on the program’s contingencies until the PMT completes the ESA cost assessment and makes related budget adjustments, if required. In February 2018, the PMOC refreshed an order-of-magnitude review using information about anticipated future costs and found that the program could likely maintain the minimum ELPEP contingency at the conclusion of the project; however, the PMOC does not yet see a clear path for the project to maintain the necessary ELPEP contingency levels on the way to reaching that goal.

Table 5.5: Summary of ESA Cost Contingency
(Costs shown in millions)

(b)(4)

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Concerns and Recommendations:

The PMOC remains concerned that there will be increasing demands on the program’s Unallocated Contingency until the cost forecast update is complete and a determination is made – and executed – to handle address funding needs, if necessary. The extent of potential impacts will be analyzed when the PMT completes the forecast and re-plans the project expenditures through the start of revenue service. The PMOC anticipates receiving the cost analysis in April 2018 and evaluating the new budget along with the revised schedule.

6.0 RISK MANAGEMENT

The PMOC focuses here on discussion of the most critical risks.

Harold Interlocking – ESA Risk

Harold Re-Sequencing Plan (“ESA First”)

In an effort to reduce the impacts of Amtrak’s force account resource constraints, especially supply of Electric Traction (ET) personnel, ESA has re-sequenced its Harold construction schedule on three separate occasions and developed what is known as the “ESA First” schedule as a result. Although this has helped to reduce the impact of insufficient Amtrak support, it has not eliminated it entirely and it continues to be a challenge for MTACC.

Amtrak Preparation for Extended East River Tunnel Outages

The PMOC remains concerned about the potential impact that Amtrak’s program to harden the East River Tunnel (ERT) Lines 1 and 4 will have on the Harold work. The Amtrak program is in preparation for extended track outages to repair Hurricane Sandy damage in ERT Lines 1 and 2. This work was originally planned to begin in 2019 starting with Line 2, but Amtrak has now postponed it until 2025. Amtrak has provided no details regarding how this change might affect the remaining predecessor hardening work for ERT Lines 1 and 4.

Positive Train Control

This risk has two distinct elements, as discussed here.

- a.) A potential risk that may be realized in the near future is the impact that LIRR installation of Positive Train Control (PTC) in Harold Interlocking may have on the Harold Critical Path work, especially the successor activities to the CIL cutovers scheduled for May 2018. Although LIRR originally submitted a waiver request to the FRA in early October 2017 to have the December 31, 2018, deadline extended and submitted a revised request in late December 2017, the possibility exists that FRA might not grant the waiver. If the waiver is denied, PTC installation may take precedence over the ESA work in Harold after completion of the CIL cutovers in May 2018.
- b.) Another risk is that LIRR may divert some level of force account resources away from support for the ESA work to provide support for LIRR’s systems-wide PTC work during the remainder of 2018.

Capital Funding Risk

Since early in 2017, the MTACC has been weighing whether to seek additional funds through the current or next Capital Plan. The PMOC is concerned that the potential funding constraint may significantly impact the program budget and schedule as well as the start of Revenue Service. Specific cost, budget, and potentially schedule impacts will not be known until ESA completes its evaluation and finalizes a plan forward. The PMT is preparing a project update for release in April 2018. [Ref: ESA-127-Jun17]

ESA Vehicle Risk

The PMOC remains concerned about the schedule slippage of the LIRR M-9A vehicle procurement program, which could potentially impact delivery of the vehicles, and, hence, MTACC’s Revenue Service Date. The PMOC had previously determined that, if LIRR could resolve these delays before the end of 2017, there would be minimal, if any, impact to the FFGA Revenue Operations Date of December 2023. The PMOC’s analysis of LIRR’s most recent

Vehicle Procurement Schedule (January 2018), however, indicates that 214 vehicles would be available by the FFGA Revenue Operations date if the present M-9 car builder is awarded the M-9A contract, but only 144 vehicles would be available if a different car builder is awarded the contract. Whether or not this would be sufficient to begin ESA service into GCT would be dependent upon the LIRR's Service Plan, which has not yet been fully developed yet.

Manhattan/Systems Performance Risk

The primary PMOC concern is that this near critical schedule path currently has only 7 CDs of float remaining and the forecast substantial completion dates for the Contracts CM007, CM014B, CS179, CS084, and future CS086 extend from May 2020 to January 2021, 26 to 34 months from now. The PMOC believes that it is probable that the Manhattan/Systems schedule path will become the primary critical path based on the following [Ref: ESA-128-Sep17]:

- Contract CS084 is reported at only 16.4% complete (actual) vs. planned 74.2%.
- Contract CM014B is reported at only 49.5% complete (actual) vs. planned 82.4%.
- Trackwork installation is behind planned schedule on Contract CM007.
- Contract CS086 has not yet been awarded.
- Managing inter-contract handoffs and interfaces will be increasingly challenging and represents significant MTACC-retained risks.
- Due to contractor work site time and access constraints, there is very limited opportunity for the contractors to make up the time lost to interface delays. Should delays continue to accumulate, a meaningful recovery will likely not be possible.

6.1 Risk Process

Status/Observations:

The PMOC observes that the ESA Risk Manager continues working to re-establish the ESA risk management process as a key element for the PMT's decision making process. During 2017, he conducted a Contract CM014B Risk Refresh workshop and a comprehensive Risk Review for the remaining ESA work in the Harold Interlocking that was facilitated by an experienced outside consultant. Also, he submitted a revised Risk Management Plan to the FTA and PMOC during 4Q2017.

Concerns and Recommendations:

The PMOC believes that the risk management process could be improved through increased involvement by the Construction Management staff to provide their input for development and implementation of more effective risk mitigation measures, especially with regard to coordination risks.

6.2 Risk Register

Status/Observation:

The most recent Risk Register update was issued in September 2017 as the third-quarter update.

Concerns and Recommendations:

1. ESA should continue to issue regularly scheduled updates of the Risk Register as called for in the Risk Management Plan.

2. The PMOC considers the major remaining risks for the East Side Access Program to be:
 - a) Program Funding – 2015-19 Capital Plan potential risk of funding constraint;
 - b) Recovery of lost time due to significant schedule delays on Contracts CM014B, CS179, and CS084;
 - c) Successful execution of multiple hand-off interfaces across several contracts;
 - d) Contractor access and work area coordination in Manhattan;
 - e) Duration of Integrated Systems Testing;
 - f) Continued availability of adequate Amtrak and LIRR force account resources;
 - g) Continued availability of required track outages in Harold Interlocking;
 - h) Maintaining adequate schedule performance of the remaining work in Harold Interlocking;
 - i) Remaining schedule path float will be used in the near future and Manhattan/Systems path will become critical; and,
 - j) Coordination risk retained by MTACC in Manhattan and the ESA tunnels with regard to construction and testing interface management for the systems work.

3. The comprehensive Harold risk review conducted during 2Q2017 identified a number of potentially significant risks that could delay completion of the critical work in Harold Interlocking planned for 2017-18 and cause a significant delay to the Revenue Service Date. These risks include the following:

A. Major Risks included in the Risk Assessment

1. Positive Train Control: Installation, testing, and activation of Positive Train Control by LIRR in Harold Interlocking to meet the December 31, 2018, FRA mandated deadline. LIRR formally requested a waiver from the FRA to extend installation beyond the deadline based on the interlocking's status as an active construction area. LIRR submitted a revised waiver request to the FRA on December 22, 2017, and is awaiting a response.
2. LIRR Force Account Performance: Ability of LIRR force account resources to provide both a very high level of support for third-party contractor access and protection and adequate productivity for significantly increased direct labor work involving track, 3rd rail, and signals, in accordance with the current 2018 ESA schedule plan.
3. Northeast Quadrant Rail Work: Ability of MTACC-ESA, Amtrak, and LIRR to fully prepare for and execute the remaining work in the Northeast Quadrant in Harold Interlocking, in accordance with the current ESA schedule plan, on a very tight schedule involving significant long-term Amtrak and LIRR track outages.
4. LIRR CIL Cutovers: Ability of LIRR to complete the pre-testing and final cutovers of CILs H1/H2/H5/H6/Loc 30 in accordance with the current ESA schedule plan.
5. Contract CH058A Preparation Work: Ability of Amtrak and LIRR force account resources to complete, in accordance with the current ESA schedule plan, all track, catenary, signal and third-rail work required prior to NTP for CH058A.

B. Potential Risks with Major Schedule Impacts – Not Included in Risk Assessment

1. ESA Project funding constraints (Now realized in 2Q2017);
2. Ongoing and future “Regional Projects” requiring extensive support from Amtrak;
3. Amtrak program to reconstruct existing ERT Lines 1 and 2 now apparently rescheduled to 2025.

6.3 Risk Mitigations

Current Risk Mitigation Efforts:

The PMOC notes that the PMT is implementing mitigation strategies for a number of the current identified risks. Examples include:

- Advancing procurement of the eight CILs for the Mid-Day Storage Yard;
- Actively engaging Amtrak and LIRR to develop some specific strategies to mitigate many of the identified risks;
- Labor clearance initiatives with Amtrak and LIRR to release selected ESA work normally claimed by the railroad unions and permit the work to be done, instead, by a third-party contractor;
- Implementation of the Harold schedule re-sequencing to support the “ESA First”;
- The Harold Management Team has consistently worked to re-plan, re-schedule and re-sequence both third-party contractor and force account work to reduce impacts of railroad personnel constraints;
- LIRR formally requested a waiver of the December 31, 2018 deadline for PTC implementation in the Harold Interlocking from the FRA; and,
- Establishment and implementation of an integrated schedule for planning deployment of Amtrak and LIRR Force Account resources across all Regional capital and railroad projects, e.g., the schedule process allows different projects in the Metropolitan area to identify conflicts that effect their respective track outages well in advance, thus making it possible to mitigate negative impacts on each project.

Concerns and Recommendations:

1. The PMOC recognizes that MTACC and ESA have been proactive in dealing with railroad force account and track outages issues over a very long period of time and also recognizes ESA’s efforts to re-baseline the remaining work in Harold Interlocking to reflect more realistic expectations of Amtrak and LIRR support. However, the situation still needs to be improved and the PMOC recommends that the PMT actively engage executive management in MTACC and MTA to assist with resolution of outstanding issues with Amtrak and LIRR. **[Ref: ESA-124-Jun16 (Amtrak)]**
2. The PMOC is concerned about current delays to construction work along the Manhattan/Systems near-critical schedule path and future contractor coordination issues, especially with regard to the installation, integration, and testing of the 10 control systems, 19 non-control systems, train signal system, and the MDSY systems. Managing the many inter-contract turnovers and interfaces is increasingly a challenge and represents a significant MTACC retained risk. Mitigating schedule risk for work along the Manhattan/Systems schedule path will be particularly challenging because it involves three different third-party contractors, a significant

number of contract interfaces for room/area turnovers and the coordination of systems installation, testing, and integration. The PMOC recommends that MTACC-ESA consider establishment of a dedicated coordination team to work closely with the Construction Managers, Project Management Team, the GEC, and LIRR to assist with resolution of issues with minimum cost and schedule impacts.

7.0 PMOC CONCERNS AND RECOMMENDATIONS

Priority in Criticality column

1 – Critical 2 – Near Critical

No. / Date Initiated	Section	Issues/Recommendations	Criticality
ESA-124- Jun16	6.3-Risk Mitigations	<p><u>Continued issues with insufficient Amtrak FA support of third-party contractors and lack of required track outages.</u> <u>Current Status:</u> During 1Q2018, ESA continued to experience insufficient Amtrak Track Foremen and Electric Traction Force Account personnel to support its 3rd Party contractor, CH061A. Amtrak provision of Force Account resources continued to challenge ESA during 1Q2018 and still requires improvement. <u>Recommendation:</u> The PMOC recognizes ESA’s efforts to re-baseline the remaining work in the Harold Interlocking to reflect more realistic expectations of Amtrak support and to more effectively engage Amtrak at the management level. However, the situation still requires improvement and the PMOC recommends that the PMT engage senior management in MTACC and MTA to assist with resolution of this problem.</p>	1
ESA-125- Sep16	2.1 Engineering/ Design and CPS	<p><u>On Contracts CS179, VS086, and CS084, there are continued issues with late completion of review and approval of contractors’ final systems designs and closure of RFIs.</u> <u>Current Status:</u> The PMOC has been reporting delays in the process of GEC and LIRR review and approval of the contractors’ final systems designs and closure of RFIs. Although there has been intermittent progress on the CS084 contract, nonetheless this issue still requires significant improvement on the CS179 and VS086 contracts and a renewal of focus on the CS084 contract. ESA senior management continues to elevate discussions involving the ESA PMT, the CM, the GEC and LIRR. <u>Recommendation:</u> It is recommended that these efforts continue, on a critical priority basis, until the contributing issues are resolved, the work backlog is significantly reduced, and there are no longer delays to the systems’ design review and approval.</p>	1
ESA-127- Jun17	6.0 Risk Management	<p>Since early in 2017, the MTACC has been weighing whether to seek additional funds through the current or next Capital Plan. This risk of funding constraint may significantly impact the project. The PMOC is concerned about potentially significant impacts to the program cost, budget, and schedule, as well as the start of Revenue Service. <u>Current Status:</u> ESA is currently re-evaluating the current program costs, budget, and schedule and has been doing so since May 2017. Details are anticipated for April 2018.</p>	1

No. / Date Initiated	Section	Issues/Recommendations	Criticality
		<p><u>Recommendation:</u> The PMT should expedite completion of the program re-evaluation and reach an agreement with MTACC and MTA senior management on an achievable plan forward for achieving Revenue Service.</p>	
ESA-128-Sep17	4.0 Project Schedule	<p><u>Issue:</u> A primary PMOC concern for Contracts CM007, CM014B, CS179, and CS084 is that this near-critical schedule path has only 7 CDs of float. The work remaining in these contracts is currently forecast to be completed between May 2019 and January 2021. It is quite likely that the remaining schedule path float will be used in the near future and Manhattan/Systems path will become the primary critical path for the program. This will place additional schedule pressure on the ESA target RSD of May 2021.</p> <p><u>Current Status:</u> Contracts CM014B and CS084 are significantly behind schedule. Contract CS179 has improved its construction rate, but will be constrained in numerous locations due to late completion of predecessor work under CM014B and CS084.</p> <p><u>Recommendation:</u> MTACC/ESA should focus on managing the coordination between these three contracts to minimize any further delays and to maximize available schedule recovery opportunities.</p>	1

8.0 SPONSOR’S ACTIONS FROM QUARTERLY AND MONTHLY MEETINGS

Priority in Criticality column 1 – Critical 2 – Near Critical

No. / Date Initiated	Section	Sponsor Actions	Criticality	Resolution Date
ESA-A47- Dec17	Section 5.1	<p>Since early 2017, MTACC has been weighing whether it to seek additional funds through the current or next Capital Plan. MTACC has deferred this decision pending the outcome of their ongoing program cost review. Until a revised funding plan is approved, project contingencies will be used to fund additional necessary costs. ESA anticipates that there are sufficient contingency funds to cover all planned contract awards and identified cost overruns through 4Q2018. The PMOC is concerned that a delay to this plan could potentially result in a funding gap that could impact the program. MTACC had initially planned to complete the revised funding plan by August 2017, then by end of remaining two quarters in 2017, then by March 31, 2018, and is now forecasting plan completion by April 30, 2018.</p>	2	4/30/2018 [Revised Projected Date]

APPENDIX A - LIST OF ACRONYMS

ARRA	American Recovery and Reinvestment Act	MTA	Metropolitan Transportation Authority
BIM	Building Information Management	MTACC	Metropolitan Transportation Authority Capital Construction
CBB	Current Baseline Budget	N/A	Not Applicable
C&S	Communication and Signals	NOC	Notice of Change
CCC	Change Control Committee	NTP	Notice to Proceed
CCM	Consultant Construction Manager	NYCT	New York City Transit
CM	ESA Construction Manager assigned to each contract	NYSPTS	New York State Public Transportation Safety Board
CMP	Cost Management Plan	OR	Operational Readiness
CPOC	Capital Program Oversight Committee	PE	Preliminary Engineering
CR	Candidate Revision	PEP	Project Execution Plan
CIH	Central Instrument House (Amtrak designation)	PMOC	Project Management Oversight Contractor (Urban Engineers)
CIL	Central Instrument Location (LIRR designation)	PMP	Project Management Plan
CPR	Contractor Proposal Request	PMT	Project Management Team
CPRB	Capital Program Review Board	PQM	Project Quality Manual
CPP	Contract Packaging Plan	PWE	Project Working Estimate
DCB	Detailed Cost Breakdown	QA	Quality Assurance
DFF	Direct Fixation Fasteners	RAMP	Real Estate Acquisition Management Plan
ELPEP	Enterprise Level Project Execution Plan	RAP	Rail Activation Plan
ERT	East River Tunnel	RFP	Request for Proposal
ESA	East Side Access	RMP	Risk Management Plan
ET	Electric Traction	ROD	Revenue Operations Date
F/A	Force Account	ROW	Right of Way
FFGA	Full Funding Grant Agreement	RSD	Revenue Service Date
FTA	Federal Transit Administration	RTB	Resilient Tie Block
GCT	Grand Central Terminal	SC	Substantial Completion
GEC	General Engineering Consultant	SCC	Standard Cost Category
GUI	Graphic User Interface	SMP	Schedule Management Plan
HTSCS	Harold Tower Supervisory Control System	SSMP	Safety and Security Management Plan
IEC	Independent Engineering Consultant (to MTA)	SSOA	State Safety Oversight Agency
IFB	Invitation for Bid	SSPP	System Safety Program Plan
IPS	Integrated Project Schedule	STRTB	Special Trackwork Resilient Tie Block
IST	Integrated System Testing	TBD	To Be Determined
LIRR	Long Island Rail Road	TBM	Tunnel Boring Machine
LTA	Lost Time Accidents	TCC	Technical Capacity and Capability
MEP	Mechanical/Electrical/Plumbing	WBS	Work Breakdown Structure
MNR	Metro-North Railroad	WBY	Westbound Bypass Tunnel

APPENDIX B - PROJECT OVERVIEW AND MAP

Project Overview and Map – East Side Access



MTA/LIRR East Side Access Project

Scope

Description: This project is a new commuter rail extension of the Long Island Rail Road (LIRR) service from Sunnyside, Queens to Grand Central Terminal (GCT), Manhattan, utilizing the existing 63rd Street tunnel under the East River and new tunnels in Manhattan and Sunnyside yard. Ridership forecast is 162,000 daily riders (27,300 new riders).

Guideway: This two-track project is 3.5 route miles long, it is below grade in tunnels and does not include any shared use track. In Harold interlocking, it shares ROW with Amtrak and the freight line.

Stations: This project will add a new 8 track major terminal to be constructed below the existing GCT. The boarding platforms and mezzanines of the new station will be located approximately 90 feet below the existing GCT lower level. A new passenger concourse will be built on the lower level of the terminal.

Support Facilities: New facilities will include: the LIRR lower level at GCT, new passenger entrances to the existing GCT, the East Yard at GCT, the Arch Street Shop and Yard, a daytime storage and running repair/maintenance shop facility in Queens, and ventilation facilities in Manhattan and Queens.

Vehicles: The scope and budget for the ESA project include the procurement of 160 new electric rail cars to support the initial service.

Ridership Forecast: MTA projects that, by 2020, the ESA project will handle approximately 162,000 daily riders to and from GCT. This Ridership projection is based on a 2005 study performed by DMJM/Harris (AECOM).

Original Schedule

9/98	Approval Entry to PE	12/10	Estimated Rev Ops at Entry to PE
02/02	Approval Entry to FD	06/12	Estimated Rev Ops at Entry to FD
12/06	FFGA Signed	12/13	Estimated Rev Ops at FFGA
08/19	Revenue Service Date at date of this report (MTA schedule)		

Cost

\$4,300 million	Total Project Cost (\$YOE) at Approval Entry to PE
\$4,350 million	Total Project Cost (\$YOE) at Approval Entry to FD
\$7,386 million	Total Project Cost (\$YOE) at FFGA signed
\$11,936.0 million	Total Project Cost (\$YOE) at Revenue Operations
\$11,972.1 million	Total Project Cost (\$YOE) as of October 31, 2017, including \$1,036.1 million in Finance Charges & Regional Investment Program
\$7,734.5 million	Amount of Expenditures as of January 31, 2018, based on the Total Project Budget of \$10,177.8 million
88.8%	Percent Complete, based on the Re-plan budget of \$10,177.8 million and invoices in the January 2018 MPR.
(b)(4)	
76.4%	Construction Percent Complete vs. 81.2% planned
76.0%	Overall Project Percent Complete vs. 80.0% planned

APPENDIX C – LESSONS LEARNED

No.	Date	Phase	Category	Subject	Lessons Learned
1	Dec-12	Construction	Construction	Muck Handling	See below Lessons Learned: During cavern excavation, the CM019 contractor became muck-bound, which caused a project delay of several months. The PMOC recommended that the contractor make extraordinary effort to evacuate the muck. After several months, it finally did, but the schedule time could not be recovered by that point. Lesson learned was to develop a well thought out muck handling plan (including establishment of proper haul roads) before work begins and to follow it during excavation.
2	Dec-12	Construction	Management	Stakeholder Management	See below Lessons Learned: The CH053 contractor incurred many months of initial construction delay because Amtrak did not approve the Electric Traction design documents on the project's schedule. A major contributing factor to this was because the MTACC had not established a contractual working relationship with Amtrak prior to letting CH053. The PMOC recommended that the MTACC and GEC more closely design the project in accordance with the comments that Amtrak was submitting. To date, the MTACC has exhibited some improvement in this matter, but there are still 2+ Stages to construct, and improvement has not been fast enough or consistent over time. Lesson learned was to develop good working relationships with all project stakeholders before any contracts are awarded.
3	June-13	Construction	Planning/ Construction	Haul Roads	See below Lessons Learned: Haul roads to remove muck need to be passable (preferably paved with a mud slab) with locations pre-determined in areas of confined space such as caverns and tunnels. Deep, muck-filled haul roads contributed to the contractor's slow progress in removal of muck during construction. Lesson learned was to plan haul roads in advance and ensure that the muck haulers can travel at a specific rate of speed in order to meet production goals.
4	June-13	Construction	Training	Operator Skill with drill rigs	See below Lessons Learned: Lack of proper operator training contributed to inconsistent drilling of 10' deep blast holes which resulted in under/overbreak of excavated material, thus requiring rework to achieve desired results. Lesson learned was to ensure that drill rig operators are properly trained before being allowed to operate a production drill rig.
5	June-13	Procurement	Contract Development	Contract Packaging	See below Lessons Learned: Access to work sites, interface with other contracts, and contract staging must be considered when projects employ multiple contractors that may conflict with each other, particularly in confined spaces such as tunnels and caverns. Lesson learned is to carefully consider the access that each contractor may require, perhaps developing a scale model of the expected operation, so that expected operation of each contractor is included in its contractual requirements.

No.	Date	Phase	Category	Subject	Lessons Learned
6	June-13	Administration	Quality	Submittals	See below
<p>Lessons Learned: Identification and resolution of quality issues (e.g. As-Built drawings, NCRs, etc.) must be managed on a daily basis to avoid creation of a backlog. Lesson learned is for the owner to have a well-trained staff with a consistent, coordinated approach (including appropriate pre-approved corrective action) when obtaining contractually required documents from contractors.</p>					
7	June-13	Contract Specs/ Construction	Construction	Pneumatically Applied Concrete (PAC)/ Shotcrete	See below
<p>Lessons Learned: Use of PAC/Shotcrete involves consideration of site specific limitations on a case by case basis. Lesson learned is that projects which anticipate use of PAC/shotcrete should carefully examine all aspects of its use and that a careful engineering analysis of the expected use be made so that the approved use can be included in the contract documents for the project.</p>					
8	June-13	Procurement/ Construction	Procurement	Qualified Personnel	See below
<p>Lessons Learned: Ensure that project key personnel are properly qualified and experienced for the positions they will fill on the project. Lesson learned is that personnel not properly qualified, experienced, or possessing the requisite credentials can adversely impact construction progress and may cause delays. The owner should ensure that it is getting the contractor's best personnel when excavating a tunnel or cavern.</p>					
9	June-13	Scheduling	Construction	TBM Production	See below
<p>Lessons Learned: Project management should ensure that accurate, up-to-date, production rates for machinery are used when project schedules are developed. PMOC analysis has revealed that ESA schedules for the Manhattan Tunnel Boring Machines were based on a planned excavation rate of 53 linear feet/day. Actual TBM excavation averaged 34 LF/day, a difference of 35%. Lesson learned is that, depending on the length of excavation, inaccurate production rate estimates can have a significant impact on the project schedule.</p>					

APPENDIX D – SAFETY AND SECURITY CHECKLIST

Project Overview			
Project mode (Rail, Bus, BRT, Multimode)		Rail	
Project phase (Preliminary Engineering, Design, Construction, or Start-up)		Construction	
Project Delivery Method (Design/Build, Design/Build/Operate/Maintain, CMGC, etc.)		Primarily Design Bid/Build	
Project Plans	Version	Review by FTA	Status
Safety and Security Management Plan	12/2010 Rev. 2	2012	Sponsor has forwarded the revised SSMP directly to FTA.
Safety and Security Certification Plan	11/2008 Rev. 1		Is within the SSPP of LIRR.
System Safety Program Plan	11/2008 Rev. 1		N/A
System Security Plan or Security and Emergency Preparedness Plan (SEPP)	11/2010		Is within the SSPP of LIRR.
Construction Safety and Security Plan	3/2007 Rev. 1		Project Construction Safety and Security Plan, contractors' site specific safety and security plans.
Safety and Security Authority	Y/N	Notes/Status	
Is the Sponsor subject to 49 CFR Part 659 state safety oversight requirements?	Y		
Has the state designated an oversight agency as per Part 659.9?	Y	The New York State Public Transportation Safety Board (NYSPTSB) is the SSOA. The SSOA has stated that they will not interface with the safety certification process for ESA until such a time as it is signed and certified by LIRR.	
Has the oversight agency reviewed and approved the Sponsor's SSPP as per Part 659.17?	In Development	In Q4 of 2013, the SSOA has asked the FTA for guidance on approving the SSPP.	
Has the oversight agency reviewed and approved the Sponsor's Security Plan or SEPP as per Part 659.21?	In Development	The New York State Public Transportation Safety Board (NYSPTSB) is the SSOA. The SSOA has stated that they will not interface with the security review process for ESA until such a time as it is signed and certified by LIRR.	

Safety and Security Authority	Y/N	Notes/Status
Did the oversight agency participate in the last Quarterly Program Review Meeting?	N	<p>The SSOA has no plans to attend these meetings. Sponsor to transmit SSMP to SSOA through the Sponsor's System Safety Dept., in accordance with new MAP- 21 provisions, the FTA recently audited the NYS SSOA. Preliminary FTA findings indicate a need for more funding in order for the SSOA to accomplish its mandate from FTA. Simultaneously, the SSOA was able to transfer an existing NYS employee into the SSOA. It is anticipated that the above events will lead to a greater ability for the SSOA to more effectively and efficiently accomplish its mission moving forward.</p> <p>The SSOA has stated that they will not interface with the safety certification process for ESA until such a time as it is signed and certified by LIRR.</p>
Has the Sponsor submitted its safety certification plan to the oversight agency?	Y	The Sponsor has submitted its safety certification plan to the NYS SSOA.
Has the Sponsor implemented security directives issues by the Department Homeland Security, Transportation Security Administration?	N	<p>The MTA unified threat vulnerability methodology was applied to the ESA design. A vulnerability log was developed for ESA based on the feedback from the applied methodology. Controls within the design have been implemented to reduce the relative risk of those vulnerabilities identified. Analysis indicated that the controls within design were adequate for the vulnerabilities identified.</p>
SSMP Monitoring	Y/N	Notes/Status
Is the SSMP project-specific, clearly demonstrating the scope of safety and security activities for this project?	Y	
Sponsor reviews the SSMP and related project plans to determine if updates are necessary?	Y	Sponsor has forwarded the revised SSMP directly to FTA.

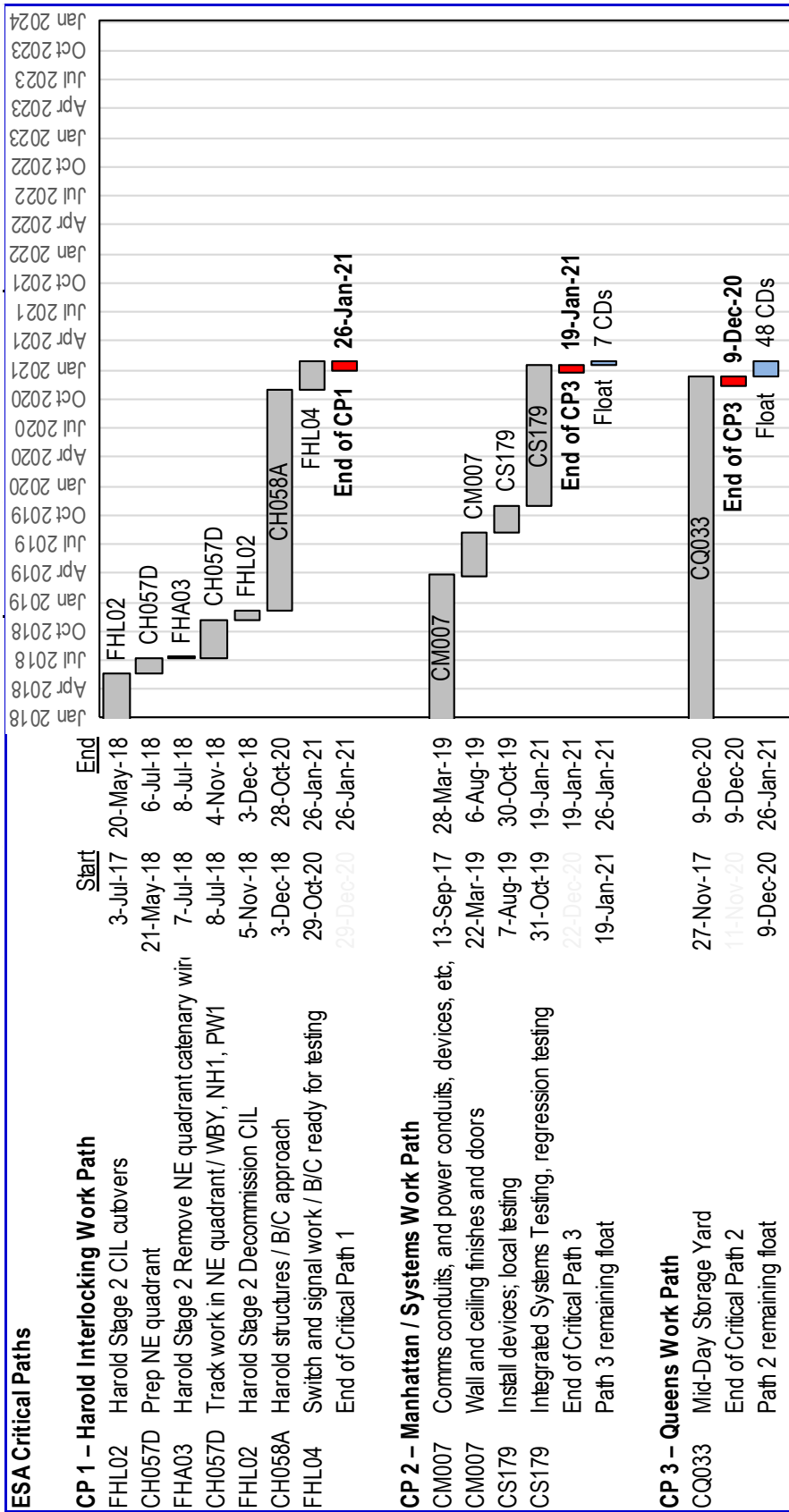
SSMP Monitoring	Y/N	Notes/Status
Does the Sponsor implement a process through which the Designated Function (DF) for Safety and DF for Security are integrated into the overall project management team? Please specify.	Y	The safety certification designee for MTACC, as well as the MTACC quality chief, meets regularly with the project management team. The CCM and the Sponsor's safety and security personnel are integrated into the management team. Integration is also achieved through implementation of ESA HASP, monthly project wide safety meetings, quarterly audits, OCIP inspections, weekly MTACC and contractor joint safety audits, and interface w/MTA Police and NYPD Infrastructure Protection Unit of the NYPD's Counter-Terrorism Division. The Sponsor has added a security function assessment to its internal quarterly contractor audit.
Does the Sponsor maintain a regularly scheduled report on the status of safety and security activities?	Y	Safety and Security are reported on during the monthly safety meetings and are incorporated into Sponsor's monthly project reports.
Has the Sponsor established staffing requirements, procedures and authority for safety and security activities throughout all project phases?	Y	Contained within the Sponsor's safety procedure documents.
Does the Sponsor update the safety and security responsibility matrix/organizational chart as necessary?	Y	To be incorporated into the next revision of the SSMP.
Has the Sponsor allocated sufficient resources to oversee or carry out safety and security activities?	Y	MTA, GEC, CCM, and contractors provide personnel and resources to carry out safety and security activities. Additionally, an MTACC consultant conducted a safety and security review of all MTACC projects. The consultant's report included programmatic and system security recommendations that are currently being reviewed by MTACC and MTA Police.
Has the Sponsor developed hazard and vulnerability analysis techniques, including specific types of analysis to be performed during different project phases?	Y	The Safety Certification Committee process is comprehensive and provides for this.
Does the Sponsor implement regularly scheduled meetings to	Y	Safety Certification committee meetings as well as project wide monthly safety meetings take place.

SSMP Monitoring	Y/N	Notes/Status
track to resolution any identified hazards and/or vulnerabilities?		
Does the Sponsor monitor the progress of safety and security activities throughout all project phases? Please describe briefly.	Y	Accomplished through daily audits by contractor and CCM and through the comprehensive SSMP Committee process.
Does the Sponsor ensure the conduct of preliminary hazard and vulnerability analyses? Please specify analyses conducted.	Y	The Safety Certification Committee process provides for TVRA, safety, and security analysis as well as input from subject matter experts on the SSMP Committee.
Has the Sponsor ensured the development of safety design criteria?	Y	The Safety Certification Committee has validated the safety design criteria developed by the GEC.
Has the Sponsor ensured the development of security design criteria?	Y	Accomplished through the SSMP Committee process.
Has the Sponsor ensured conformance with safety and security requirements in design?	Y	Achieved through the Safety Certification Committee process.
Has the Sponsor verified conformance with safety and security requirements in equipment and materials procurement?	Y	The Sponsor has not verified conformance for materials procured to date. Thus far, the Sponsor has relied on design specifications and manufacturers' quality controls for verification. The PMOC has advised that this course of action is insufficient and does not align with FTA established guidelines. The Sponsor is attempting to devise a workable solution. Since the 4th quarter of 2014, the Sponsor has begun to document said verifications by use of their Quality Department reports and CM inspection reports.
Has the Sponsor verified construction specification conformance?	Y	Through ongoing contract review.
Has the Sponsor identified safety and security critical tests to be performed prior to passenger operations?	N	Although the Sponsor has established preliminary hazard analysis (PHA) and a system test plan, the Sponsor needs to identify safety and security critical tests in its Test Program Plan. The Sponsor is working within the PMP to identify critical submittals relevant to system certification. PMOC has expressed concerns, both at meetings and in reports, about the non-linear pattern of completed construction vs. incomplete critical testing. Sponsor believes that all hazards listed on the PHA log are either safety and/or security critical.

SSMP Monitoring	Y/N	Notes/Status
Has the Sponsor verified conformance with safety and security requirements during testing, inspection and start-up phases?	In Development	Project is not at these phases yet. The Sponsor is in the process of implementing requirements of the SSMP to conform to construction testing and integration requirements.
Does the Sponsor evaluate change orders, design waivers, or test variances for potential hazards and /or vulnerabilities?	In Development	Systems area design modifications not originally evaluated per the unified methodology are analyzed and controls are incorporated into the design. Controls have been put in place whereby the GEC verifies that any change orders and/or waivers do not affect the certification analysis process.
Has the Sponsor ensured the performance of safety and security analyses for proposed workarounds?	In Development	
Has the Sponsor demonstrated through meetings or other methods, the integration of safety and security in the following: Activation Plan and Procedures Integrated Test Plan and Procedures Operations and Maintenance Plan Emergency Operations Plan	Y	An Emergency Preparedness Plan was promulgated by the Sponsor in 11/2010. The EAP operational readiness group has been finalized to include MNR, LIRR, MTAPD, and FDNY. The first meeting took place in March of 2013. A Safety Certification update has been incorporated into this meeting, with the MTACC Assistant Chief of Safety and Security providing regular status report. Task work group meetings have resulted in a white paper being formulated. The paper suggests that management hierarchy of GCT be presented as a single establishment (incorporating MNR and LIRR) in accordance with SIMS and NIMS requirements. The Sponsor has advised that the white paper reflecting the incident management hierarchy is being presented to the respective executives of each railroad, with the recommendation that LIRR and MNR's GCT incident commanders report to a unified incident commander from MTA Headquarters.
Has the Sponsor issued final safety and security certification?	N	Project is not at this stage.
Has the Sponsor issued the final safety and security verification report?	N	Project is not at this stage.

**APPENDIX E – ON-SITE PICTURES
(TRANSMITTED AS A SEPARATE FILE)**

Appendix F – ESA CRITICAL PATH CHART



APPENDIX F - SCHEDULE ANALYSIS TABLES

Table F: 90 Day Look-Ahead Schedule – IPS 102 February 1, 2018 Schedule

ACTIVITY ID	ACTIVITY DESCRIPTION	START	FINISH
CH053: Harold Structure - Part 1 & G.O.2 Substation			
CH053-5140	Con-Ed Energize High Voltage Service at GO2 Substation		28-Feb-18
CH053-6110	CH053 Handover GO2 Substation to LIRR		24-Sep-18
CH053FC	CH053 – Final Completion		24-Sep-18
CH057: Harold Structure - Part 2/3 Loop Box Approach, & EBRR West Approach & Tunnel			
CH057-54661	Complete Option 1		30-Dec-17 A
CH057-M008	Final Completion		30-Dec-17 A
CH057A - Westbound Bypass Structure (exclude Slab)			
CH057A-5190	CH057A Milestone 3 – Substantial Completion		17-Nov-17 A
CH057A-5590	CH057A Milestone 4 – Final Completion		1-Feb-18
CH061A: Tunnel A			
CH061A-55341	Intermediate Milestone #2 – Pole Completion for CQ033 Area 2		1-Dec-17 A
CH061A-55351	MS#1 – Port Wash 2 Overrun Catenary Structures		12-Feb-18 A
CH061A-8280	Fabricate Catenary Structures	7-Feb-18	26-Mar-18
CH058A: Harold Structures - B/C Structure/ Catenary Structure			
CH058A-0020	Develop/Finalize 100% Design Documents - CH058A	22-Jun-16A	1-Dec-17 A
CH058B: Harold Structures - Eastbound Reroute Structure			
CH058-3090	CH058 60% - 100% Design Documentation	20-Jul-10A	5-Apr-18
FHL01: Harold Stage 1 - LIRR F/A			
FHL01-1150	Complete Trough H2 to H3 (Track A)		1-Dec-17 A
FHL01-1340	Energize GO2 Substation (CH053-Milestone #3)		10-Mar-18
FHL02: Harold Stage 2 - LIRR F/A			
FHL02-SI5010	Install Remaining Conduit and Pull boxes in H5-CIL Location	31-Jan-17A	15-Jan-18 A
FHL02-7800	EO Control Complete		21-Feb-18
FHL02-CSR1240	H5/H6/30 South Pre-Cutover Testing	3-Jul-17A	23-Feb-18
FHL03: Harold Stage 3 - LIRR F/A			
FHL03-1660	Track D Ready for Final IST on Harold		27-Oct-19
FHA01: Harold Stage 1 - Amtrak F/A			
FHA01-1000	ET Catenary: Complete Catenary Work for Stage 1		18-May-19
FHA02: Harold Stage 2 - Amtrak F/A: Balance Work			
SUMFHA02-1540	Cutover - ZJ1/ZJ2 (747)		4-Feb-18
FHA02-1060	CH054A - Completed SMUS 1 & 2 / Install New RTU		8-Feb-18
FHA02-4000S	ESA Complete Material Procurement		31-Oct-17 A
FHA03: Harold Stage 3 - Amtrak F/A			
FHA03-CA3698	ET Catenary – CH061A Complete Port Wash 2 Overrun Catenary Structures		12-Feb-18 A
VH051A (Part 1): Harold & Point CILs			
VH51C0340	FIAT COMPLETED (w/HTSCS Contract)		1-Apr-18
VH051B (Part 2): Harold Tower SCS			
VH51H0300	As-Built Drawings	01-May-15A	15-Apr-18
VHA03: Procure Materials for Harold Stage 3 - Amtrak F/A			
VHA03	VHA03 -Procure Amtrak Materials - Harold Stage 3	05-May-14A	22-Dec-24
VHA04: Procure Materials for Harold Stage 4 - Amtrak F/A			
N/A	No Milestones in IPS over the next 90 days	N/A	N/A
VHL02: Procure Materials for Harold Stage 2 - LIRR F/A			
VHL02-1010	Procure ZE Crossover	30-Jul-14A	01-Feb-18

ACTIVITY ID	ACTIVITY DESCRIPTION	START	FINISH
VHL03: Procure Materials for Harold Stage 3 - LIRR F/A			
N/A	No Milestones in IPS over the next 90 days	N/A	N/A
VHL04: Procure Materials for Harold Stage 4 - LIRR F/A			
N/A	No Milestones in IPS over the next 90 days	N/A	N/A
CM005: Manhattan South Structures			
CM005-1050	Milestone 5 Final Completion - MS70 (May 6, 2016)		28-Feb-18
CM013A: 55th Street Vent Facility			
CM013A-280	CM13A - MS#3 Final Completion		3-Mar-18
CM004: 245 Park Ave. Entrance & 44th Street Vent Structure			
CM04-C0940	CM004 Contractual Final Completion (ML#2 Date 820 CDs from NTP)		1-Feb-18
CM006: Manhattan North Structures			
CM006-MS2A	CM006 Milestone #2A (55th Street Vent Facility Complete - 702 days from NTP (3/2/16)		8-Feb-18
CM006-SC	CM006 Milestone #2 Substantial Completion)		16-Mar-18
CM007: GCT Caverns			
CM007-CS179-CIA.19A	East Cavern Lower Level – Under Platform Conduits		10-Apr-18
CM007-P4-1420	Independent Lab Performs Offsite Qualification Testing for SWP	27-Nov-17	19-Jan-18 A
CM014A: GCT Concourse and Facilities Fit Out			
CM014A-1090	Permanent Power Available @ B30		01-Nov-15 A
CM014B: GCT Concourse and Facilities Fit Out (BL)			
CM014B-AR#04	CM006 Areas – Access to Footprint of CM006 after S.C. (Shaft 4/50 th St/52 nd St Drop)		01-Jun-17 A
CM014B-AR#06	Access for Cavern Signage		6-Feb-18
CM014B-44TH-IMS-001	Access Provided to CS179		11-Nov-17 A
CM014B-8690	Start 46 th St. Emergency Exit		1-Feb-18
CM014B-8440	Commence Installation of Wellway #1 Escalators		1-Feb-18
CM014B-9330	Commence Installation of Wellway #2 Escalators		1-Feb-18
CM014B-VM014-0060	Delivery EL-10		8-Jun-18
CM014B-VM014-0110	Delivery EL-17		26-Dec-17 A
CM014B-VM014-0150	Delivery ES-02		1-Feb-18
CM014B-VM014-0290	Delivery ES-44		7-Mar-18
CM014B-VM014-0280	Delivery of ES-43		28-Feb-18
CM014B-VM014-0320	Delivery of ES-47		1-Feb-18
CM014B-VM014-0330	Delivery of ES-48		8-Feb-18
CM014B-VM014-0180	Delivery of ES-32		2-Mar-18
CM014B-VM014-0340	Delivery of ES-49		16-Mar-18
CM014B-VM014-0350	Delivery of ES-50		23-Mar-18

ACTIVITY ID	ACTIVITY DESCRIPTION	START	FINISH
CQ032: Plaza Substation & Queens Structures			
CQ032-MS06	MILESTONE #6 – SUBSTANTIAL COMPLETION		13-Apr-18
FQA65: Loop Interlocking - Amtrak F/A			
N/A	No Milestones in IPS over the next 90 days	N/A	N/A
VQ065A: Loop Interlocking CIL (Amtrak)			
VQ065RI	VQ065 RI - Loop Interlocking	12-Sep-12A	15-Dec-19
CQ033: Mid-Day Storage Yard Facility (Procurement Status TBD)			
CQ033-1002	AR#2 – CH061A Catenary Poles	23-Aug-18	
CQ033-MS2	MS#2 – Temporary Construction Fence Along Arch St. Access Route		9-Oct-17 A
CQ033-MS3	MS#3 – RWIC Trailer		19-Jun-17 A
CS084: Tunnel Systems Package 4 – Traction Power Systems			
CS084-AR005	Access Restraint # 5- C01 and CO2 (Tail Tracks) Traction Power Substation		2-Feb-18
CS084-AR002	Access Restraint # 2- C04 (2 nd Ave) Traction Power Substation		16-Feb-18
CM007-CO4-1	WB1 Track between GCT5 and GCT6 Completion		3-Aug-18
CM007-CO3-2	WB1 Track between GCT4 and GCT5 Completion		3-Aug-18
CS179: System Package 1 - Facilities Systems			
CIA#008	(CM006 – CS179) – 55 th Street Ventilation Facility – Traction Power Substation C03	1-Feb-18	
CIA#011	(CM006 – CS179) – EB4 (Upper) West of GCT-5 to East of GCT-3	1-Feb-18	
CIA#013	(CM006 – CS179) – GCT-3 Rooms	1-Feb-18	
CIA#010	(CM006 – CS179) – WB3 (Upper) West of GCT-5 to East of GCT-3	1-Feb-18	
CIA#015	(CM006 – CS179) – 50 th Street Adit	1-Feb-18	
CIA#004	(CM006 – CS179) – GCT-5 Rooms	6-Feb-18	
CIA#014	(CM006 – CS179) – Tracks 301 & 302 & 303 & 304 – GCT-3 to Cavern	1-Feb-18	
CIA#012	(CM006 – CS179) – GCT-3 Crossover, Wyes and Rooms & Cross Passages #2, #4, and #5	2-Feb-18	
CIA#005	(CM006 – CS179) – Cross Flue	6-Feb-18	
CIA#009	(CM006 – CS179) – 55 th Street Ventilation Facility	1-Feb-18	
VS086: System Package 3 - Signal Equipment Procurement			
VS086-1005	Prepare/Furnish Signal Equipment Catalog Cuts	12-Dec-14A	17-Jan-18 A

**APPENDIX G – MTA EAST SIDE ACCESS PROJECT –
BUY AMERICA STATUS SUMMARY
TABLE G – CONTRACT CS179 (As of March 2018)**

Equipment	Current Status
Small HVAC Units for Equipment Rooms	The contractor asserts that the specified low-profile HVAC unit is not available from any US-based HVAC manufacturer and that the manufacturer of the specified unit (Mitsubishi) cannot manufacture the unit in the USA. The MTACC advised that documentation to substantiate a Buy America waiver request was sent to the FTA as of the end of October 2016. In May 2017, the FTA requested some cost information related to these HVAC units. The MTA provided that information in June 2017 and is waiting for a decision regarding the approval of the waiver request.
Video Display Panels	The contractor reports that, despite an exhaustive search, there is no USA-based manufacturer of the main video display panels that will be used in the various control rooms. The MTACC advised that documentation to substantiate a Buy America waiver request to the FTA continues to be assembled.
Public Address System Speakers	The contractor reports that some of the Public Address (PA) speakers specified in the CS179 contract are no longer manufactured in the USA. As of the end of March 2018, the contractor and the GEC have been unable to identify an American made speaker that meets the specification requirements in the contract. A Buy America Waiver request is being prepared.

**APPENDIX H – AMTRAK REMAINING ESA ELECTRIC TRACTION (ET)
CONSTRUCTION***

**Table H – Remaining Catenary Construction Start and Finish Dates
from IPS Data Date February 1, 2018**

Last Activity in IPS ID# String	Scope	IPS Start	IPS Finish	Status
FHA03-CA5182	Install 7,100 LF CA WBY Track	1/11/23	1/17/23	Only 6 of 25 catenary poles required for this task have been installed as of March 31, 2018.
FHA03-1800	Re-install CAs at three CH057D Turnout locations ¹	7/25/18	8/9/18	CH057D contractor to install three Turnouts as part of NEQ track construction in August 2018. Amtrak to re-install CAs after NEQ track work is completed.
FHA03-CA4660	Relocate cross catenary east of 39th St. as result of const. of Tunnels A, B/C, and D	10/21/18	10/23/18	Tunnel B/C predecessor construction has not started yet. Amtrak will install CAs during and after track construction is complete.
FHA03-1130	Install 1,000 LF (est.) CA MDSY Sub 3 to North Runner	10/22/19	12/26/19	The CQ033 contractor began catenary demolition for the MDSY during 4Q2017, but, to date, has not begun to install the catenary poles necessary for the Sub 3 to North Runner connection. Amtrak will transfer wires after CQ033 completes installation of the catenary poles.
FHA04-1050	Install 3,600 LF CA EBRR Track	12/5/24	2/21/25	CH058B not advertised yet. CH058B to install 10 catenary poles prior to Amtrak installation of CAs.
FHL02.TK.00350	Install CAs 1 Turnout location ² FHL02	1/12/19	1/13/19	LIRR to install the #3234W turnout. Amtrak will install CAs after LIRR installs the turnout.
FHA04-1020 and FHL04-1120	Install CAs 6 Turnout locations ³ FHA04		12/22/24	LIRR to install turnouts prior to Amtrak installation of CAs. Turnout installation scheduled to begin in September 2018 and be complete by July 2020.
FHA03-CA8106	Complete Loop 1A Electrification	12/16/18	12/25/18	Amtrak Loop 1A Track construction partially complete. Amtrak ET will install Catenary wires after track construction is complete.
FQA65-1092	Install CAs 14 Turnout locations ⁴ in Loop and T Interlockings - FQA65	3/12/17	10/16/25	Turnout procurement for Loop and T “on hold” by MTACC since early 2016. Amtrak ET will install catenary assemblies after all turnouts are procured and installed.
FHA03-CA88	PW2 Overrun	2/12/18	4/25/18	Amtrak began catenary construction of PW2 Overrun in June 2017. The CH061A contractor completed installation of the required catenary poles in January 2018.

CA = Catenary Assembly, CP = Catenary Pole, TO = Turnout, XO= Crossover

* This table is a high level summary of the remaining Electric Traction construction program. The PMOC will maintain details for FTA review.

1. #1121W (CH057D-0240), #1112E (CH057D-0250), and #1123W (CH057D-0260)

2. #3234W (FHL0207110)

3. #5165W (FHL04-1630), #5165E (FHL04-1390), #4145 (FHL04-1020), #2254 (FHL04-1150), #5155 (FHL04-1710), and #2155 (FHL04-1170)

4. All 14 Loop and “T” Interlocking Turnouts

APPENDIX I – REMAINING HAROLD INTERLOCKING CONSTRUCTION PROGRESS SCHEMATICS

The purpose of Appendix I is to depict, in schematic fashion, the major ESA Force Account and 3rd Party construction elements that remain in Harold Interlocking. At present, three such items will be included in the PMOC's Quarterly Comprehensive Reports. As additional elements are identified, they will be added to the reports. The original three are:

Schematic #1: Remaining Amtrak Harold Overhead Contact System (OCS) to be Installed

This diagram depicts the tracks, crossovers, and turnouts over which Amtrak Force Account Electric Traction personnel will install catenary system components (overhead contact system) in order to operate Amtrak trains through the reconfigured Harold Interlocking. New overhead catenary to be installed is shown in bold red.

Schematic #2: Remaining Harold Third Rail System (3rd Rail) to be Installed

This diagram depicts the tracks, crossovers, and turnouts adjacent to which LIRR and 3rd Party contractors will install Third Rail and components in order to operate expanded LIRR service into the new Grand Central Terminal (GCT). New 3rd Rail to be installed is shown in bold red.

Schematic #3: Status of Harold Interlocking Turnouts and Crossovers to be Installed

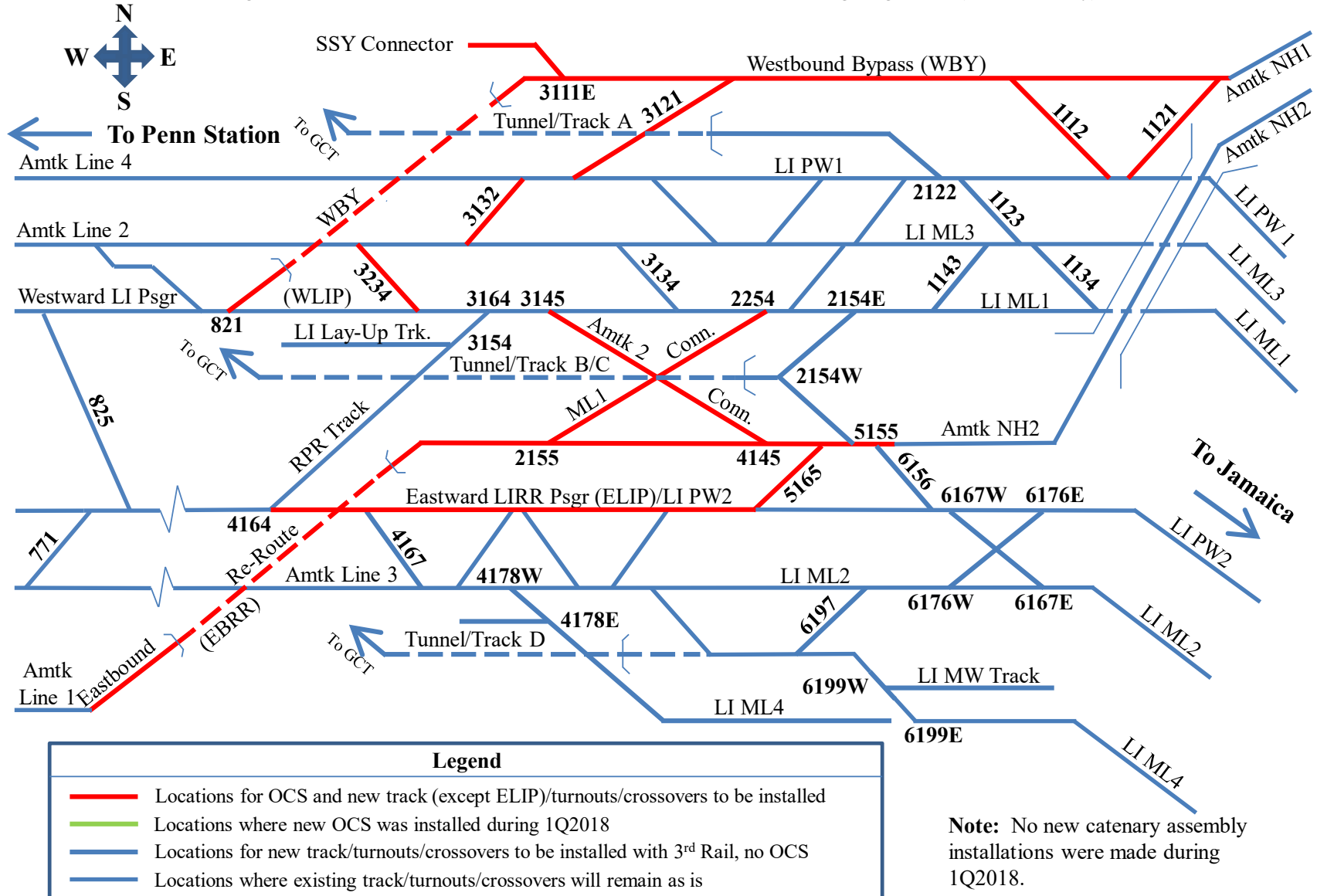
This diagram depicts, along with existing tracks, crossovers, and turnouts that will not be renewed, the present construction status of ESA constructed tracks, crossovers, and turnouts that have been or will be installed to make LIRR service into GCT possible. Existing trackage that will not be renewed is shown in non-bold, new crossovers and turnouts already installed by LIRR ESA forces are shown in bold green, and new tracks, crossovers, and turnouts scheduled, but not yet installed, are shown in bold red.

The information shown on these schematics will be updated with each PMOC Quarterly Comprehensive Report and will trace construction progress for that quarter.

Appendix I: Harold Progress Monitoring Schematic

Schematic #1: Remaining Amtrak Harold Overhead Contact System (OCS) to be Installed

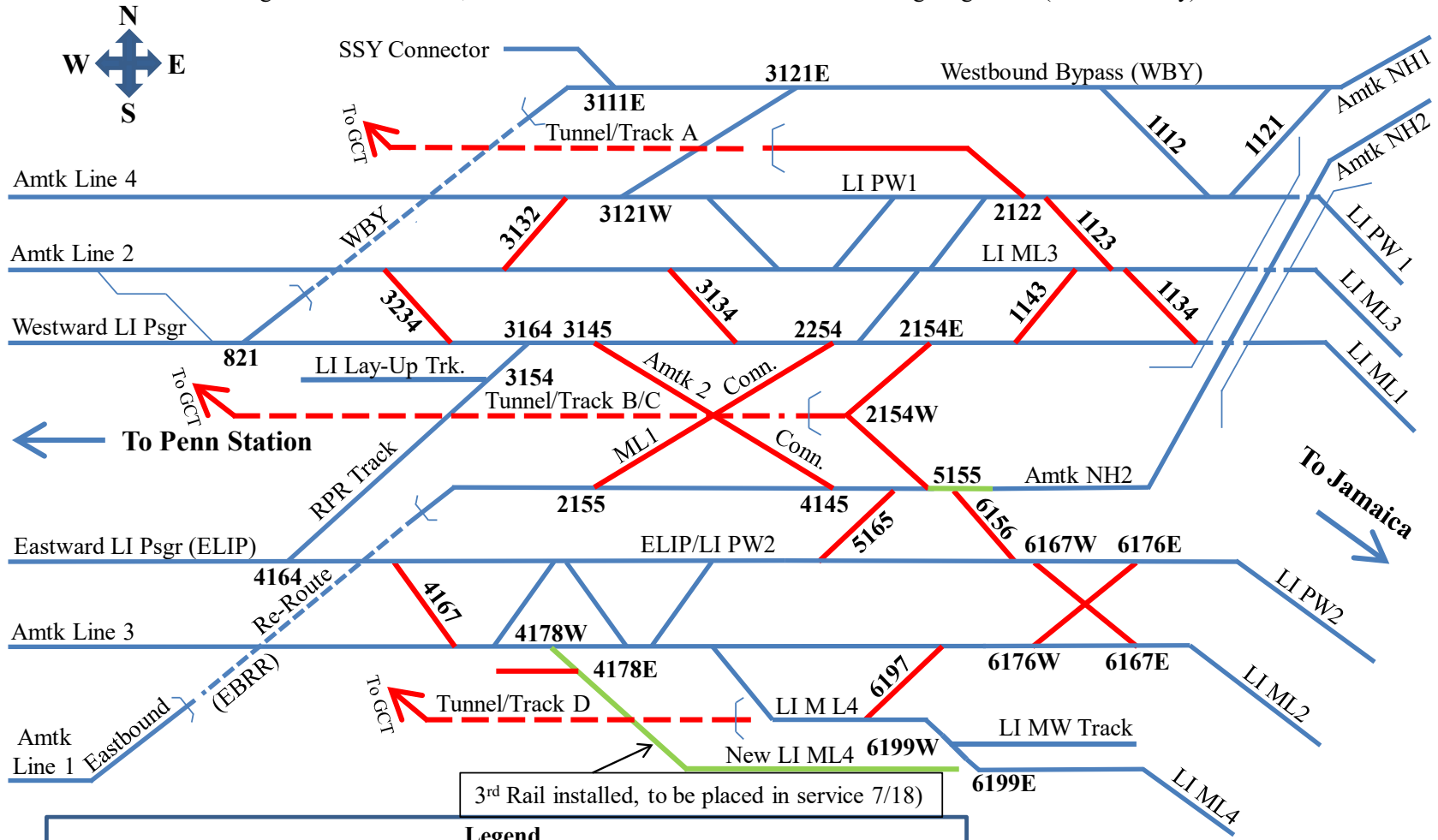
Progress as of March 31, 2018 - based on ESA 14-4 Harold Interlocking Alignment (main line only)



Appendix I: Harold Progress Monitoring Schematic

Schematic #2: Remaining Harold Third Rail System (3rd Rail) to be Installed

Progress as of March 31, 2018 - based on ESA 14-4 Harold Interlocking Alignment (main line only)



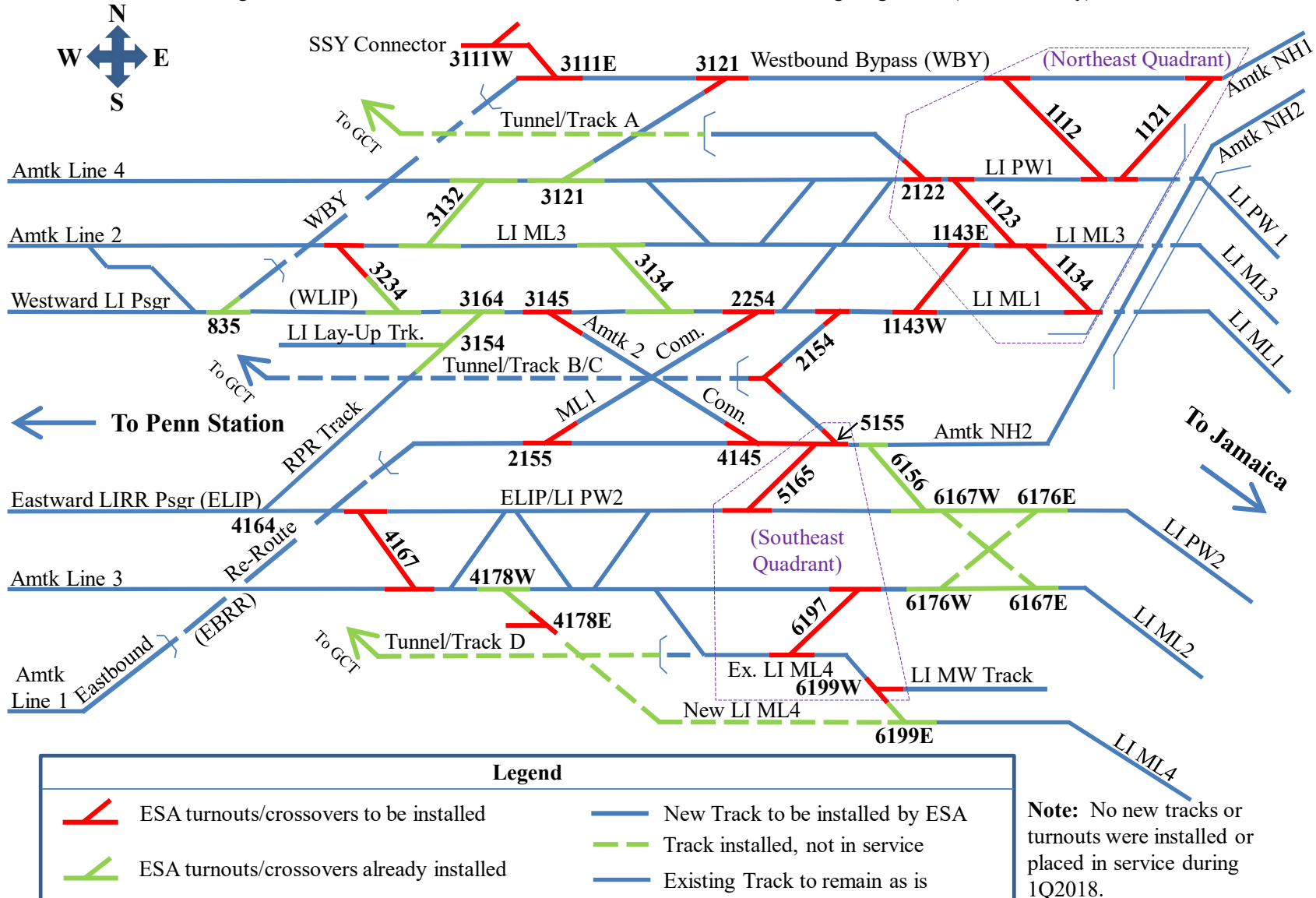
Legend	
—	Locations for 3 rd Rail and new track (except ELIP)/turnouts/crossovers to be installed
—	Locations where 3 rd Rail and new track were installed during 1Q2018
—	Locations for new track/turnouts/crossovers to be installed without OCS
—	Existing track/turnouts/crossovers to remain as is or be constructed (WBV & EBRR)

Note: 3rd Rail was installed on new LIRR ML4 Track and on the LIRR Freight Track during 1Q2018. ML4 is scheduled to be cut into existing track and placed in service in July 2018.

Appendix I: Harold Progress Monitoring Schematic

Schm. #3: Status of Harold Interlocking Turnouts, Crossovers, and Tracks to be Installed

Progress as of March 31, 2018 - based on ESA 14-4 Harold Interlocking Alignment (main line only)

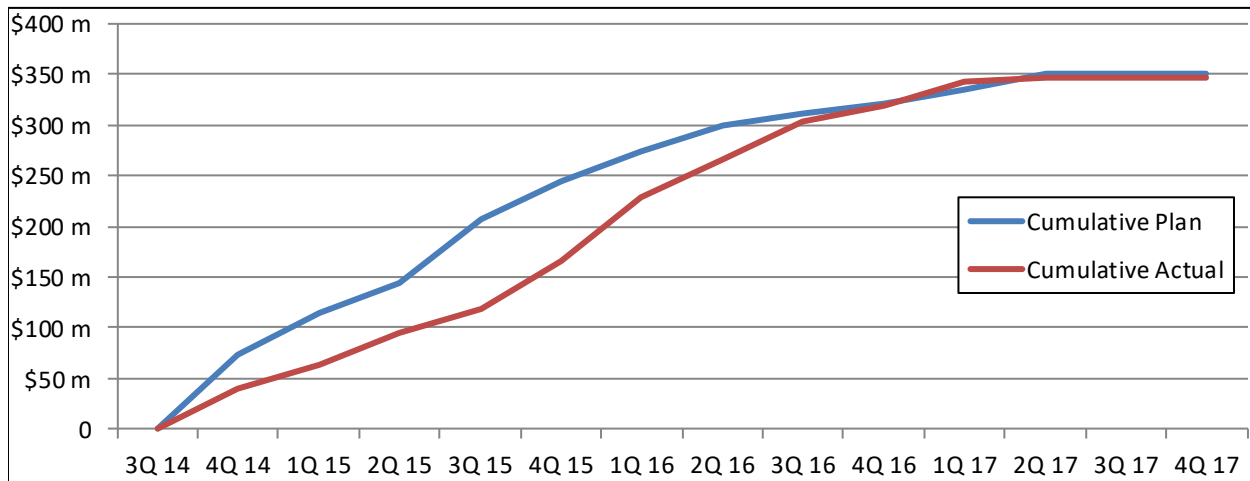
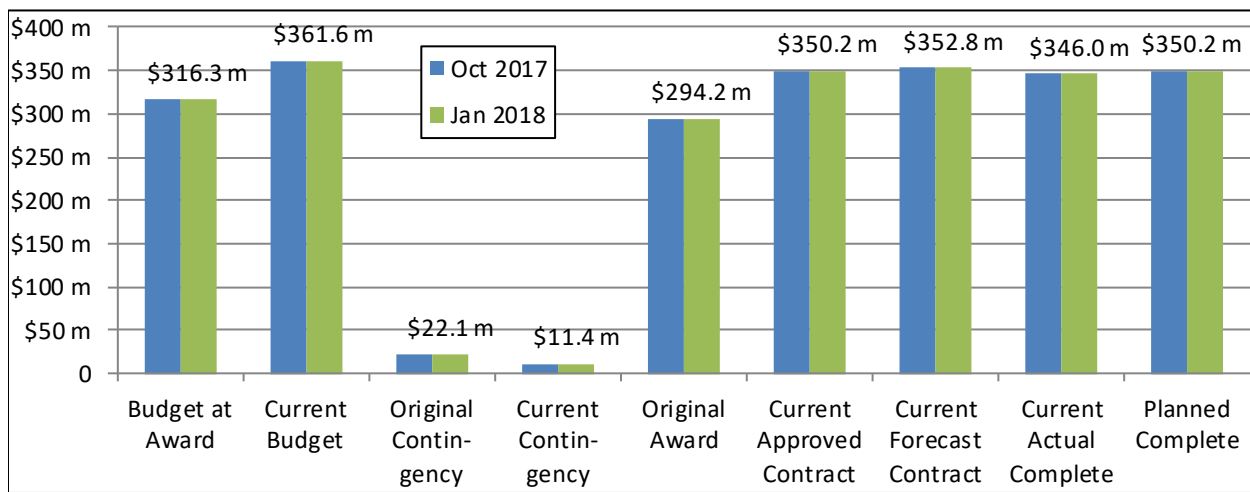


APPENDIX J – COST PERFORMANCE

CM006 Manhattan North Structures

Jan 2018

Budget at Award	Current Budget	Change from Original to Current	Contract at Award	Current Approved Contract	Change from Original to Current	Current Forecast	Change from Current Forecast to Budget at Award
\$316.3	\$361.6	(2-1) \$45.3	\$294.2	\$350.2	(5-4) \$56.0	\$352.8	(7-1) \$36.5
Percent Complete		Actual Prog Last 12 Mths		Actual Prog Last 6 Mths		Average Required Progress to reach forecast SC	
Planned	Actual	Total	Avg/Mth	Total	Avg/Mth		
100.0%	99.3%	7.1%	0.6%	0.6%	0.1%	0.23% per month	

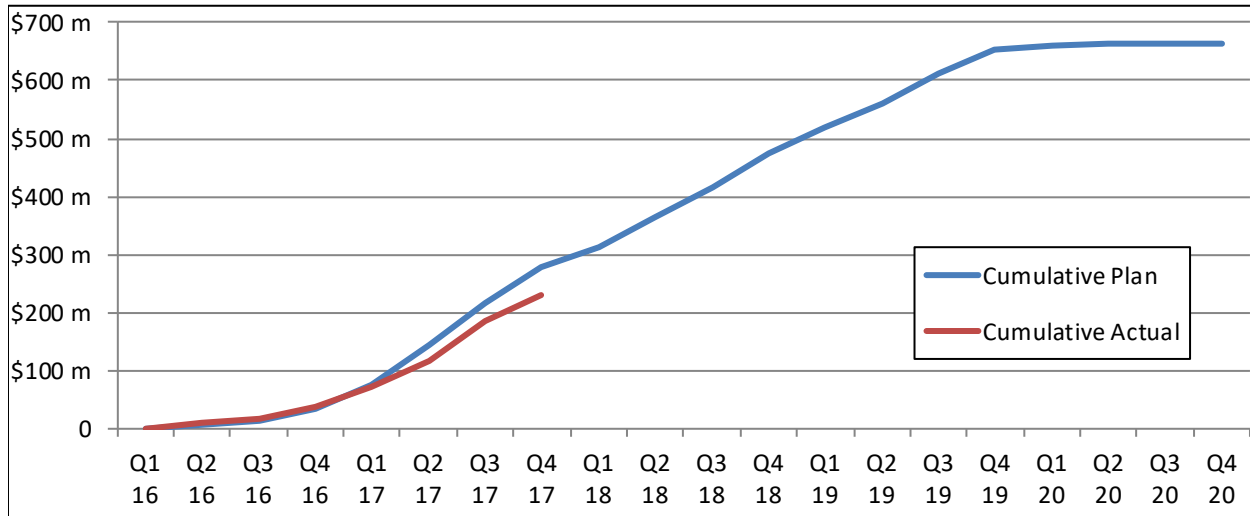
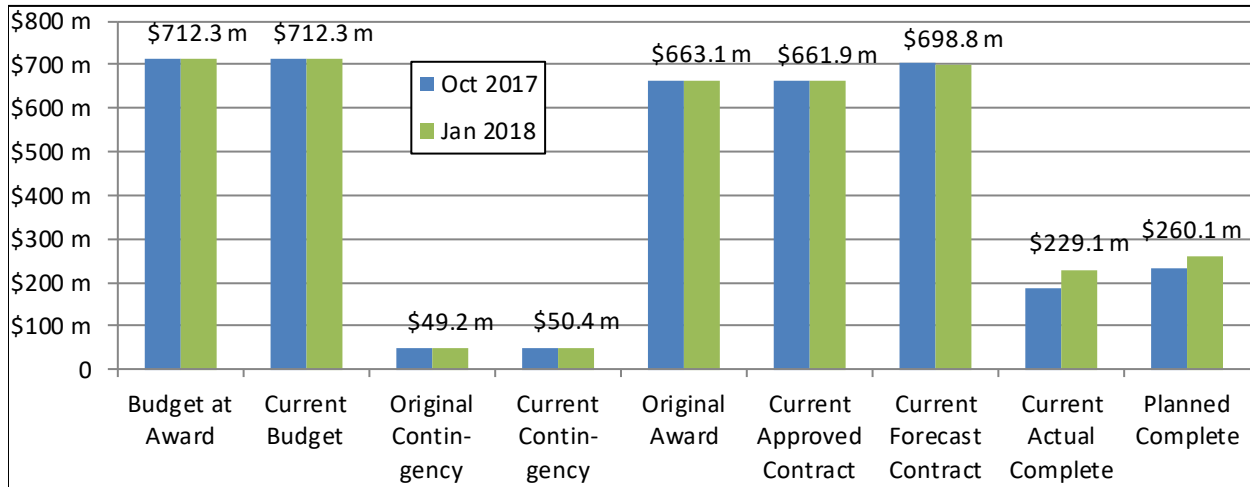


APPENDIX J – COST PERFORMANCE

CM007 GCT Caverns

Jan 2018

Budget at Award	Current Budget	Change from Original to Current	Contract at Award	Current Approved Contract	Change from Original to Current	Current Forecast	Change from Current Forecast to Budget at Award
\$712.3	\$712.3	(2-1) \$0.0	\$663.1	\$661.9	(5-4) (\$1.2)	\$698.8	(7-1) (\$13.5)
Percent Complete		Actual Prog Last 12 Mths		Actual Prog Last 6 Mths		Average Required Progress to reach forecast SC 2.18% per month	
Planned 39.3%	Actual 34.5%	Total 27.4%	Avg/Mth 2.3%	Total 14.9%	Avg/Mth 2.5%		

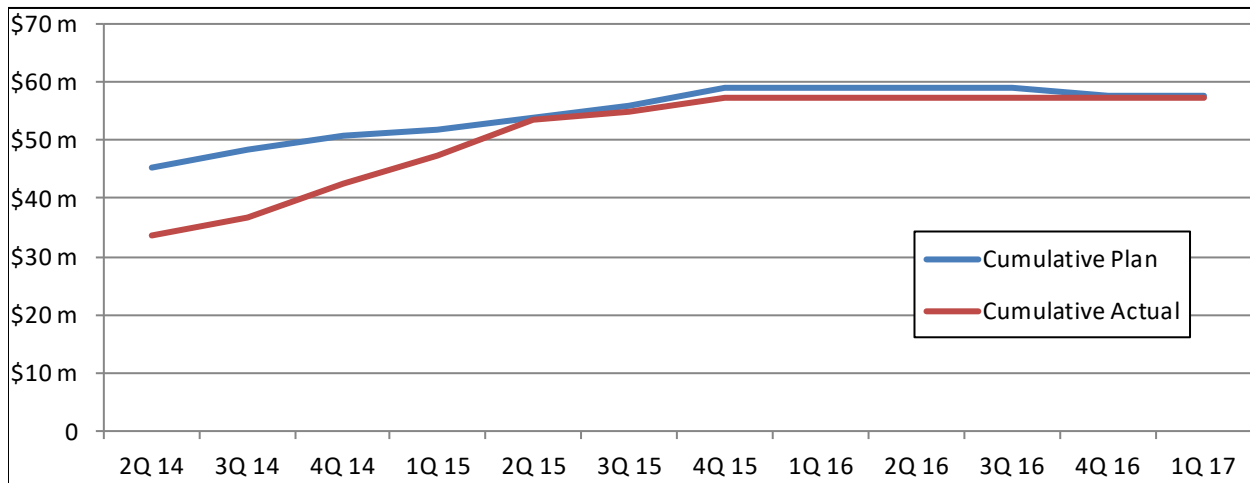
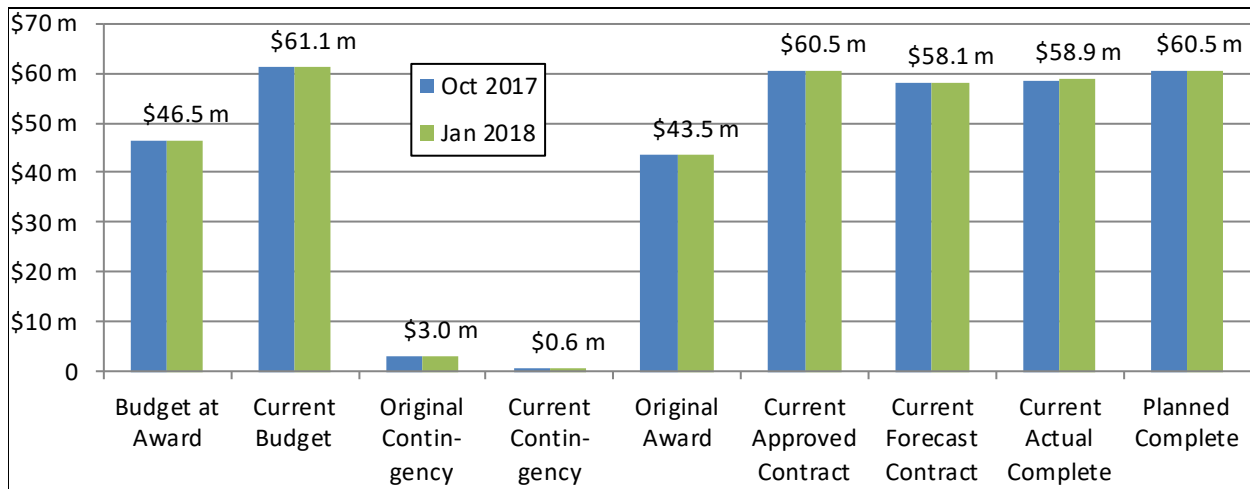


APPENDIX J – COST PERFORMANCE

CM014A GCT Concourse & Facilities Fit Out Early Work

Jan 2018

Budget at Award	Current Budget	Change from Original to Current	Contract at Award	Current Approved Contract	Change from Original to Current	Current Forecast	Change from Current Forecast to Budget at Award
\$46.5	\$61.1	(2-1) \$14.6	\$43.5	\$60.5	(5-4) \$17.0	\$58.1	(7-1) \$11.6
Percent Complete		Actual Prog Last 12 Mths		Actual Prog Last 6 Mths		Average Required Progress to reach forecast SC	
Planned	Actual	Total	Avg/Mth	Total	Avg/Mth	N/A per month	
100.0%	97.4%	0.3%	0.0%	1.1%	0.2%		

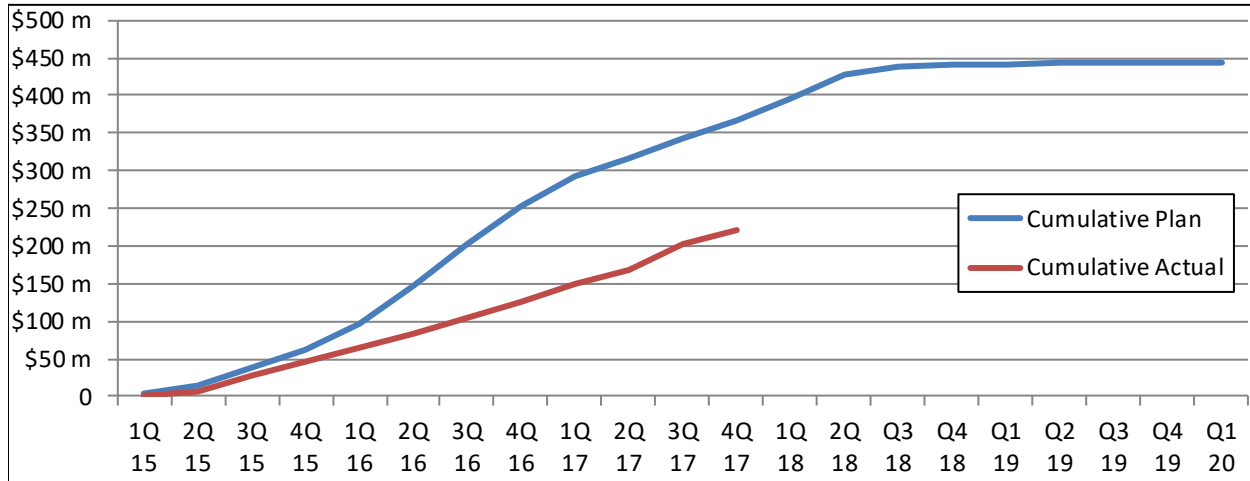
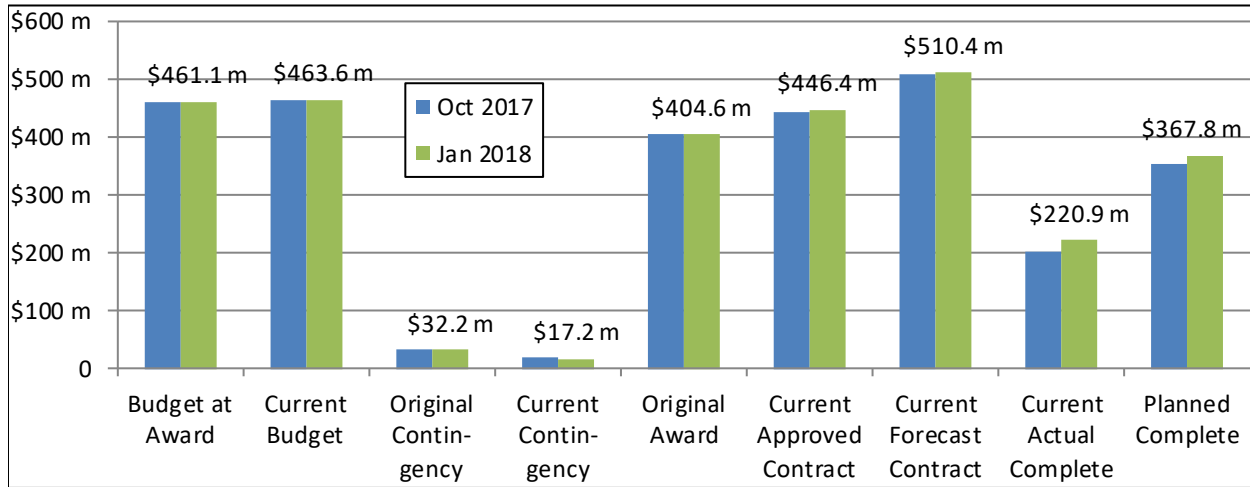


APPENDIX J – COST PERFORMANCE

CM014B GCT Concourse & Facilities Fit Out

Jan 2018

Budget at Award	Current Budget	Change from Original to Current	Contract at Award	Current Approved Contract	Change from Original to Current	Current Forecast	Change from Current Forecast to Budget at Award
\$461.1	\$463.6	(2-1) \$2.5	\$404.6	\$446.4	(5-4) \$41.8	\$510.4	(7-1) \$49.3
Percent Complete		Actual Prog Last 12 Mths		Actual Prog Last 6 Mths		Average Required Progress to reach forecast SC	
Planned	Actual	Total	Avg/Mth	Total	Avg/Mth	1.74% per month	
82.4%	49.5%	19.2%	1.6%	8.6%	1.4%		

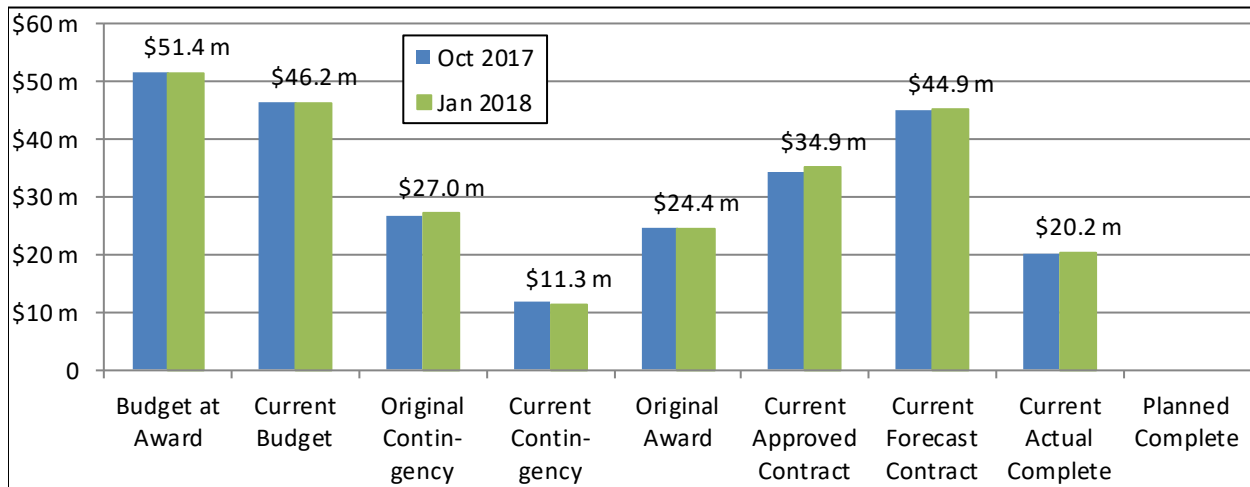


APPENDIX J – COST PERFORMANCE

VM014 Vertical Circulation Elements (Escalators & Elevators)

Jan 2018

Budget at Award	Current Budget	Change from Original to Current	Contract at Award	Current Approved Contract	Change from Original to Current	Current Forecast	Change from Current Forecast to Budget at Award
\$51.4	\$46.2	(2-1) (\$5.2)	\$24.4	\$34.9	(5-4) \$10.5	\$44.9	(7-1) (\$6.5)
Percent Complete		Actual Prog Last 12 Mths		Actual Prog Last 6 Mths		Average Required Progress to reach forecast SC	
Planned	Actual	Total	Avg/Mth	Total	Avg/Mth	1.21% per month	
NA	58.9%	20.1%	1.7%	18.3%	3.1%		

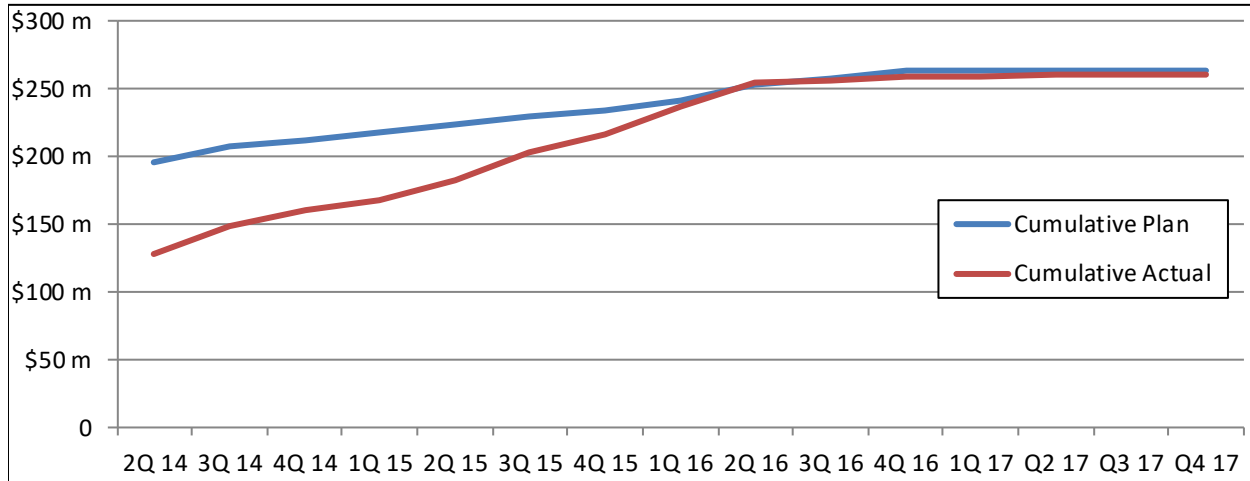
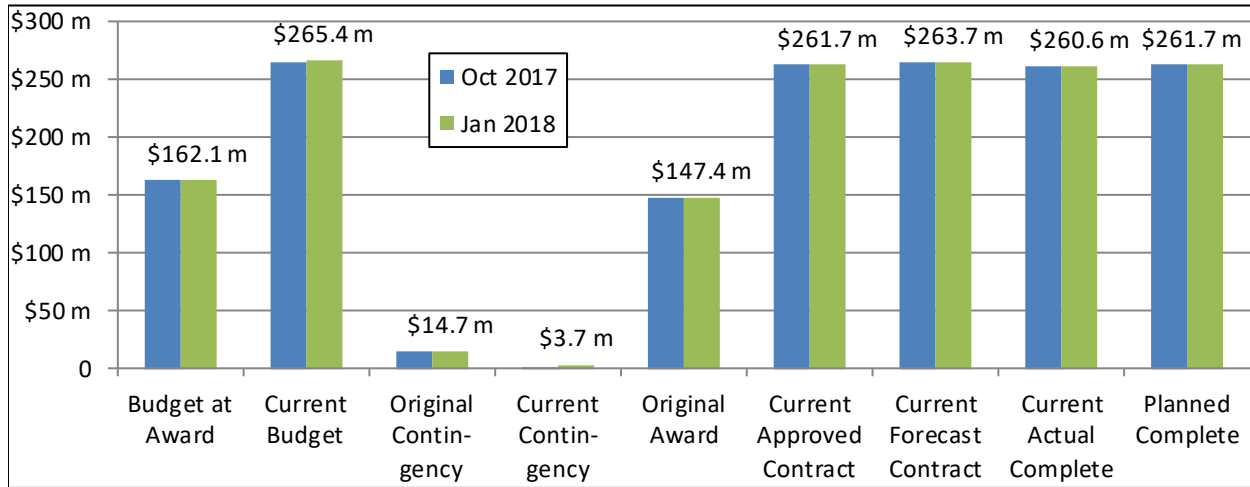


APPENDIX J – COST PERFORMANCE

CQ032 Plaza Substation & Queens Structures

Jan 2018

Budget at Award	Current Budget	Change from Original to Current	Contract at Award	Current Approved Contract	Change from Original to Current	Current Forecast	Change from Current Forecast to Budget at Award
\$162.1	\$265.4	(2-1) \$103.3	\$147.4	\$261.7	(5-4) \$114.3	\$263.7	(7-1) \$101.6
Percent Complete		Actual Prog Last 12 Mths		Actual Prog Last 6 Mths		Average Required Progress to reach forecast SC	
Planned 100.0%	Actual 99.6%	Total 0.7%	Avg/Mth 0.1%	Total 0.3%	Avg/Mth 0.1%		
							0.13% per month

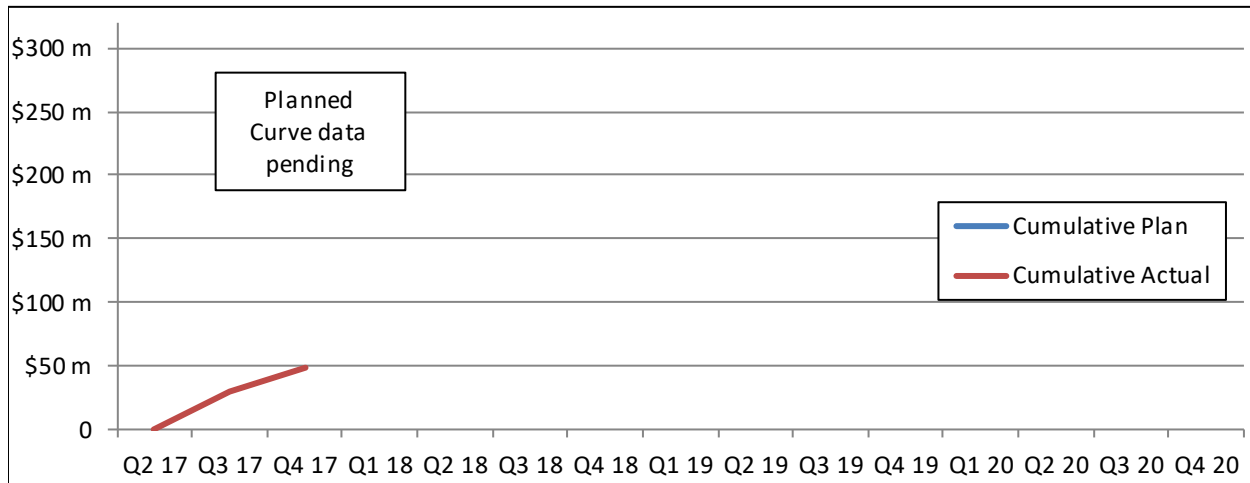
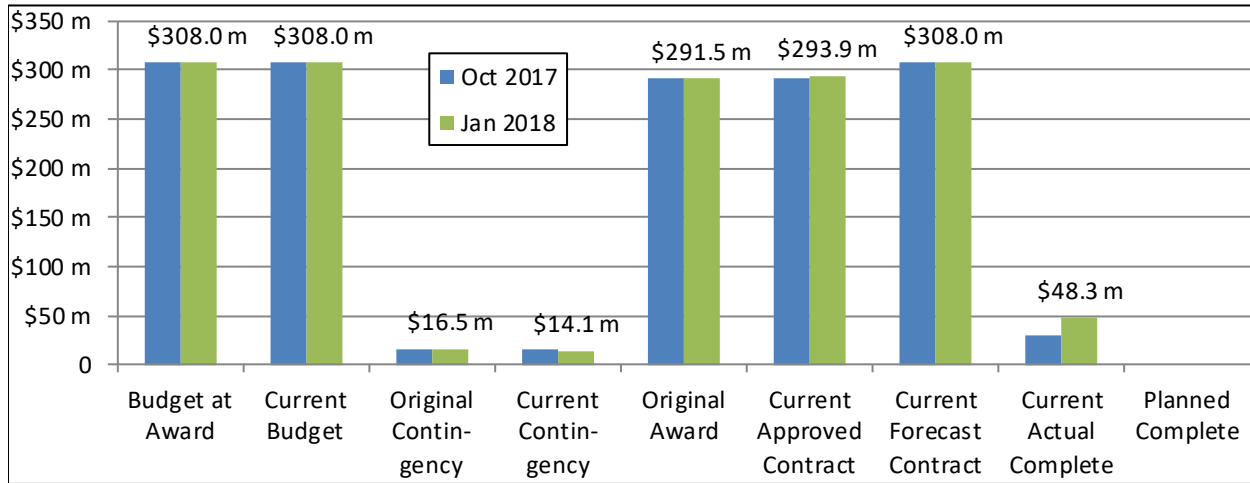


APPENDIX J – COST PERFORMANCE

CQ033 Mid-Day Storage Facility

Jan 2018

Budget at Award	Current Budget	Change from Original to Current	Contract at Award	Current Approved Contract	Change from Original to Current	Current Forecast	Change from Current Forecast to Budget at Award
\$308.0	\$308.0	(2-1) \$0.0	\$291.5	\$293.9	(5-4) \$2.4	\$308.0	(7-1) \$0.0
Percent Complete		Actual Prog Last 12 Mths		Actual Prog Last 6 Mths		Average Required Progress to reach forecast SC	
Planned	Actual	Total	Avg/Mth	Total	Avg/Mth		
NA	16.4%	NA	NA	13.1%	2.2%	2.39% per month	

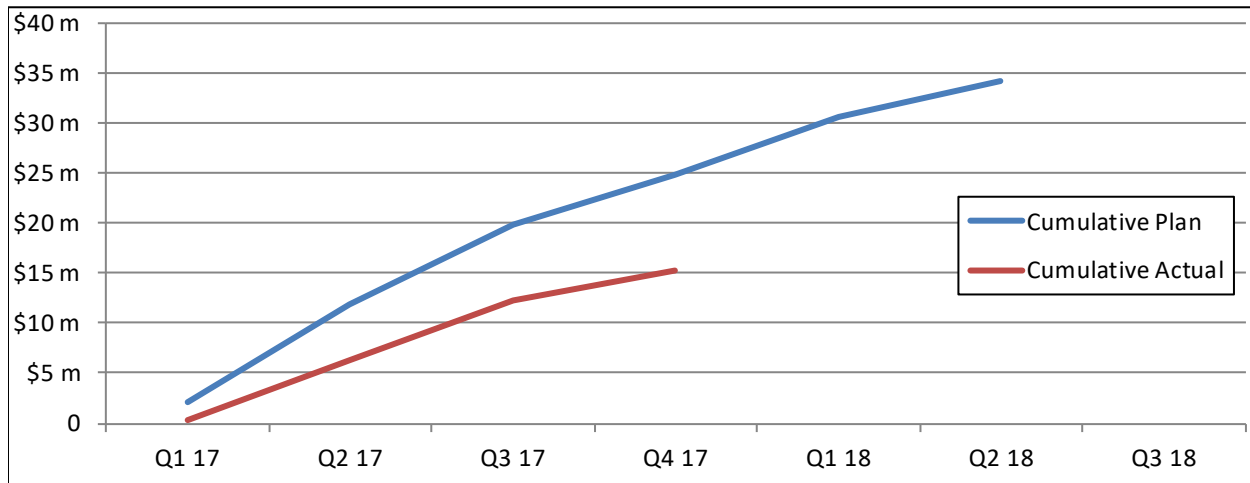
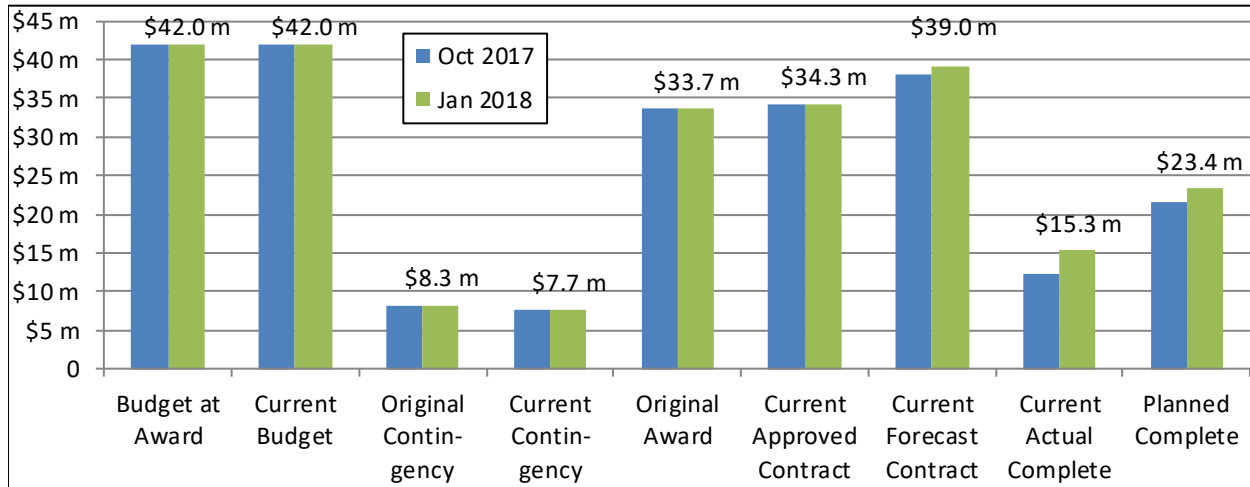


APPENDIX J – COST PERFORMANCE

CH061A Track A Cut and Cover Structure

Jan 2018

Budget at Award	Current Budget	Change from Original to Current	Contract at Award	Current Approved Contract	Change from Original to Current	Current Forecast	Change from Current Forecast to Budget at Award
\$42.0	\$42.0	(2-1) \$0.0	\$33.7	\$34.3	(5-4) \$0.6	\$39.0	(7-1) (\$3.0)
Percent Complete		Actual Prog Last 12 Mths		Actual Prog Last 6 Mths		Average Required Progress to reach forecast SC	
Planned	Actual	Total	Avg/Mth	Total	Avg/Mth	11.08% per month	
68.1%	44.6%	44.6%	3.7%	26.3%	4.4%		



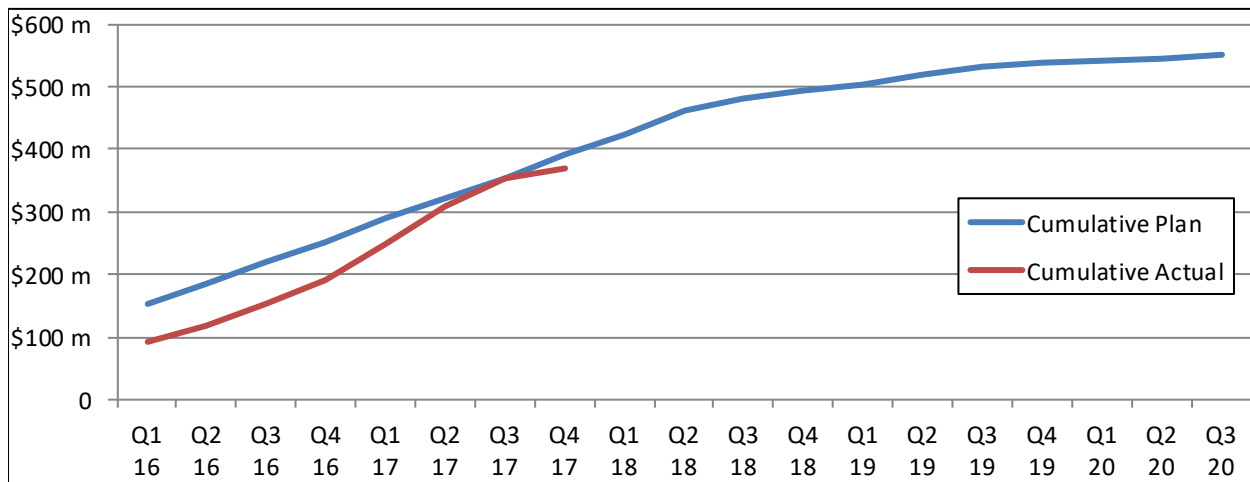
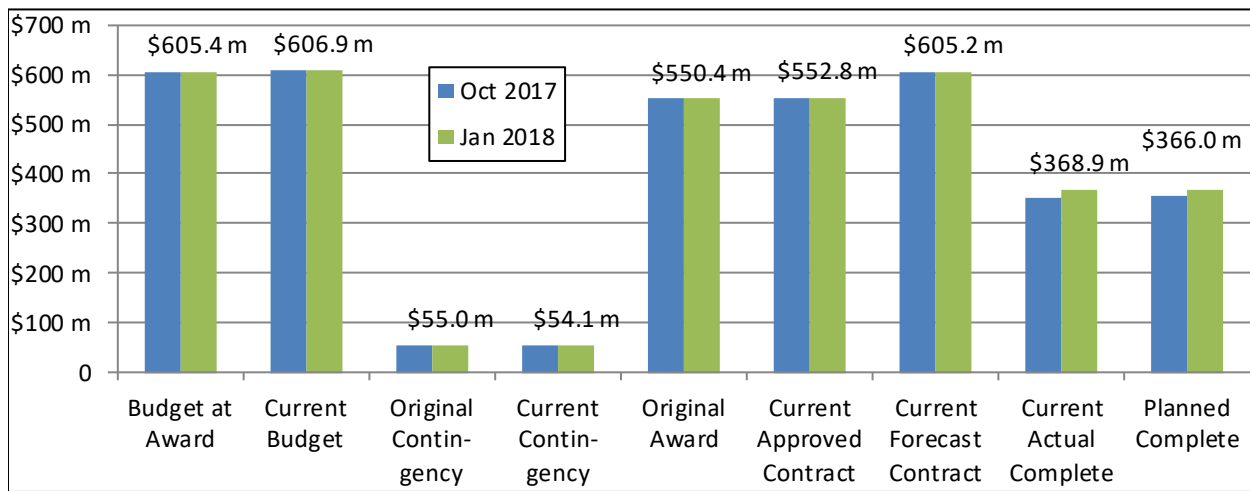
APPENDIX J – COST PERFORMANCE

CS179 Systems Package 1 – Facilities Systems

Jan 2018

Budget at Award	Current Budget	Change from Original to Current	Contract at Award	Current Approved Contract	Change from Original to Current	Current Forecast	Change from Current Forecast to Budget at Award
\$605.4	\$606.9	(2-1) \$1.5	\$550.4 **	\$552.8	(5-4) \$2.4 (options+mods)	\$605.2	(7-1) (\$0.2)
Percent Complete		Actual Prog Last 12 Mths		Actual Prog Last 6 Mths		Average Required Progress to reach forecast SC	
Planned	Actual	Total	Avg/Mth	Total	Avg/Mth		
66.2%	66.8%	31.9%	2.7%	10.4%	1.7%	0.95% per month	

** Contract at Award \$333.6 M + Planned Options \$216.8 M = \$550.4 M

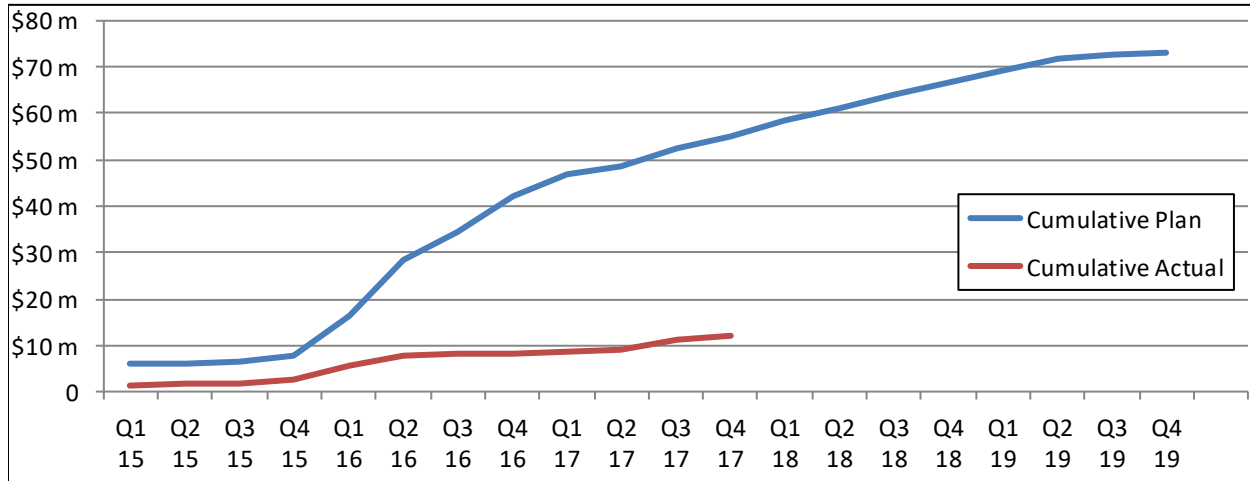
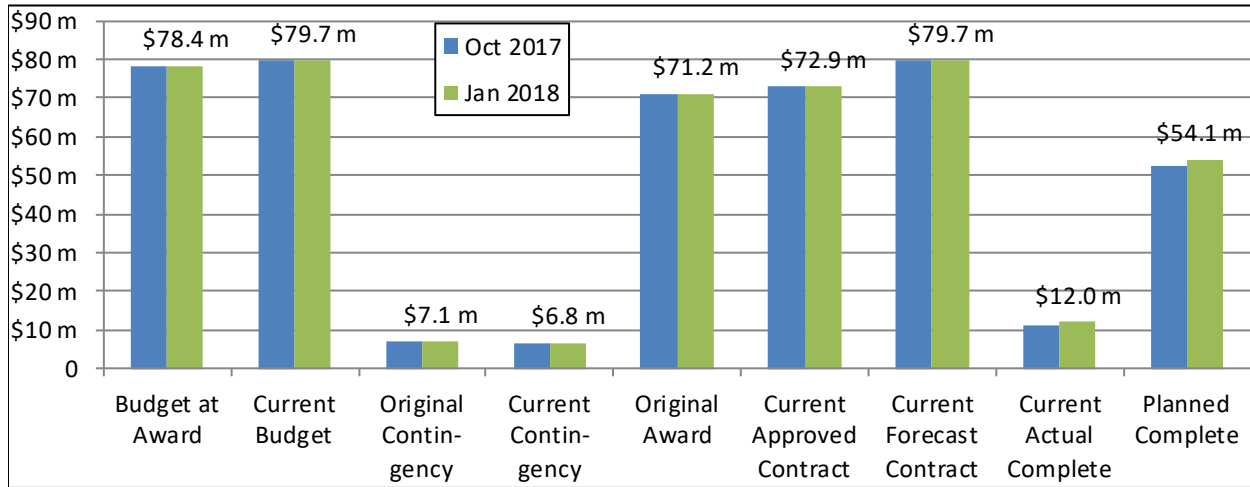


APPENDIX J – COST PERFORMANCE

CS084 Tunnel Systems Package 4 – Traction Power

Jan 2018

Budget at Award	Current Budget	Change from Original to Current	Contract at Award	Current Approved Contract	Change from Original to Current	Current Forecast	Change from Current Forecast to Budget at Award
\$78.4	\$79.7	(2-1) \$1.3	\$71.2	\$72.9	(5-4) \$1.7	\$79.7	(7-1) \$1.3
Percent Complete		Actual Prog Last 12 Mths		Actual Prog Last 6 Mths		Average Required Progress to reach forecast SC	
Planned	Actual	Total	Avg/Mth	Total	Avg/Mth	2.53% per month	
74.2%	16.4%	4.8%	0.4%	3.4%	0.6%		

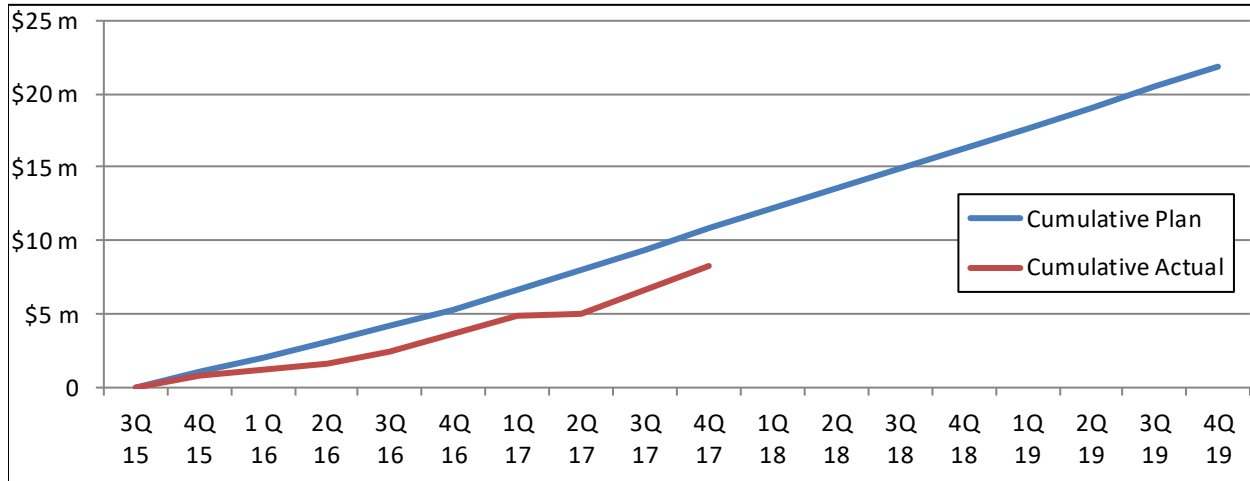
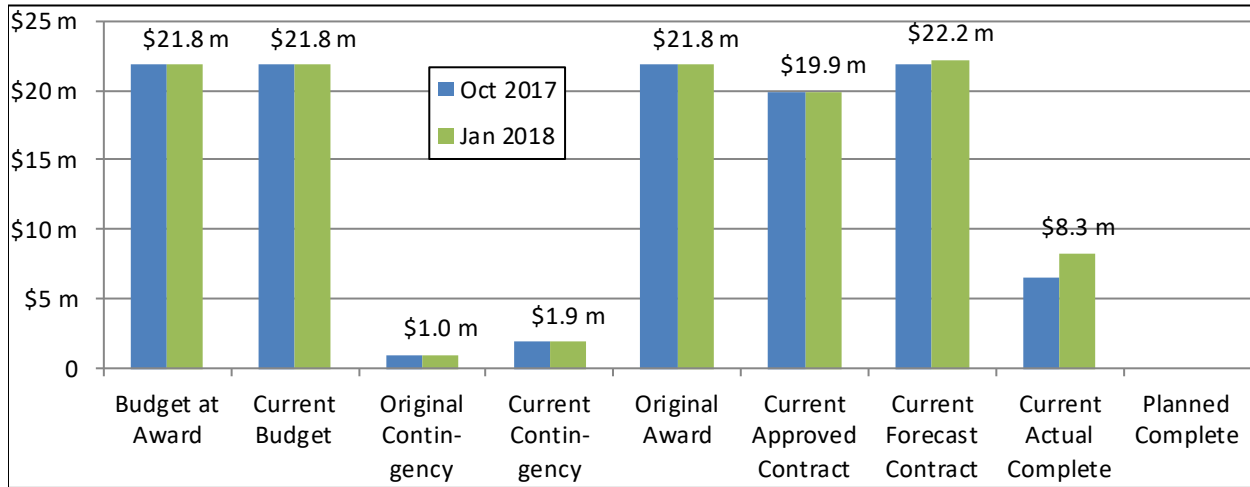


APPENDIX J – COST PERFORMANCE

VS086 Systems Package 3 – Signal Equipment Procurement

Jan 2018

Budget at Award	Current Budget	Change from Original to Current	Contract at Award	Current Approved Contract	Change from Original to Current	Current Forecast	Change from Current Forecast to Budget at Award
\$21.8	\$21.8	(2-1) \$0.0	\$21.8	\$19.9	(5-4) (\$1.9)	\$22.2	(7-1) \$0.4
Percent Complete		Actual Prog Last 12 Mths		Actual Prog Last 6 Mths		Average Required Progress to reach forecast SC	
Planned	Actual	Total	Avg/Mth	Total	Avg/Mth		
NA	41.6%	24.7%	2.1%	16.3%	2.7%	2.78% per month	

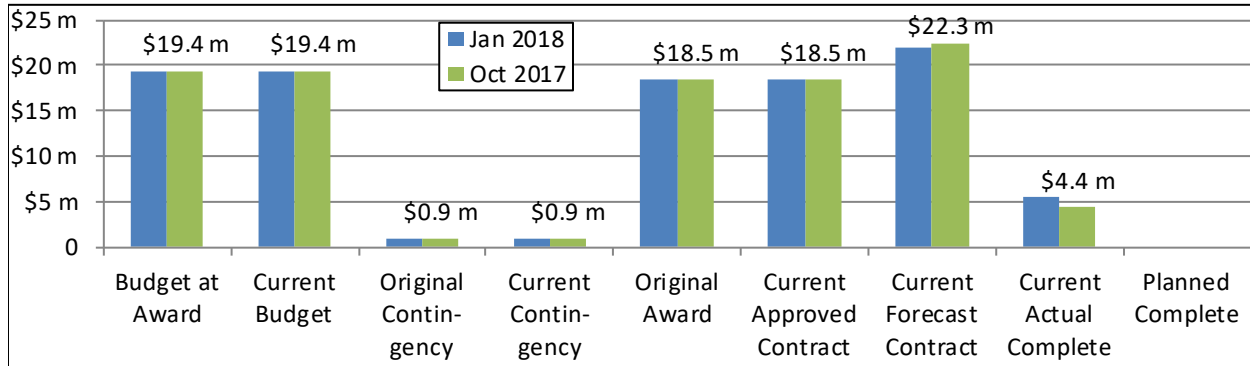


APPENDIX J – COST PERFORMANCE

VQ033 Midday Storage Yard CILs

Jan 2018

Budget at Award	Current Budget	Change from Original to Current	Contract at Award	Current Approved Contract	Change from Original to Current	Current Forecast	Change from Current Forecast to Budget at Award
\$19.4	\$19.4	(2-1) \$0.0	\$18.5	\$18.5	(5-4) \$0.0	\$22.0	(7-1) \$2.6
Percent Complete		Actual Prog Last 12 Mths		Actual Prog Last 6 Mths		Average Required Progress to reach forecast SC	
Planned	Actual	Total	Avg/Mth	Total	Avg/Mth		
NA	30.3%	16.1%	1.3%	7.5%	1.3%	2.68% per month	



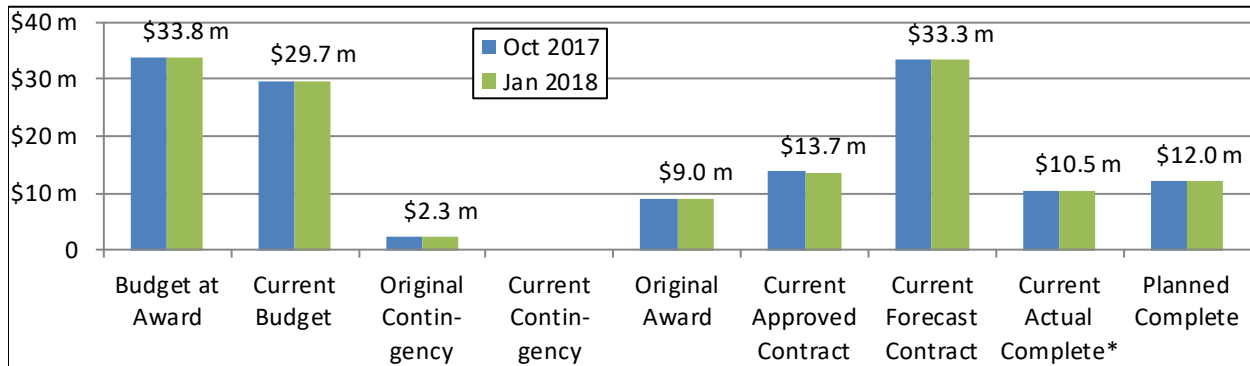
FQA65 Loop Interlocking – Amtrak F/A

Regional Investment

Jan 2018

Budget at Award	Current Budget	Change from Original to Current	Contract at Award	Current Approved Contract*	Change from Original to Current	Current Forecast	Change from Current Forecast to Budget at Award
\$33.8	\$29.7	(2-1) (\$4.1)	\$9.0	\$13.7	(5-4) \$4.7	\$33.3	(7-1) (\$0.5)
Percent Complete		Actual Prog Last 12 Mths		Actual Prog Last 6 Mths		Average Required Progress to reach forecast SC	
Planned	Actual	Total	Avg/Mth	Total	Avg/Mth		
87.8%	19.1%	2.1%	0.2%	0.0%	0.0%	0.87% per month	

* Current Approved Contract does not include full scope.

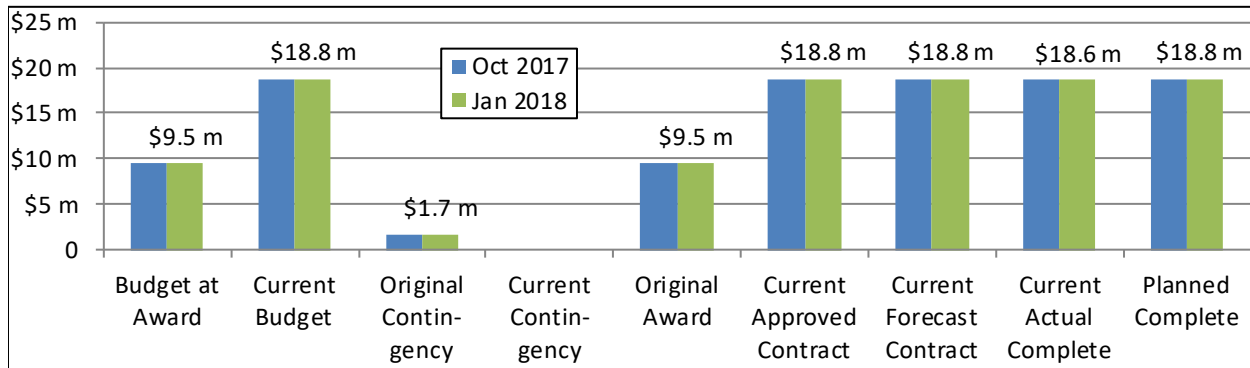


APPENDIX J – COST PERFORMANCE

FHA01 Harold Stage 1 – Amtrak F/A

Jan 2018

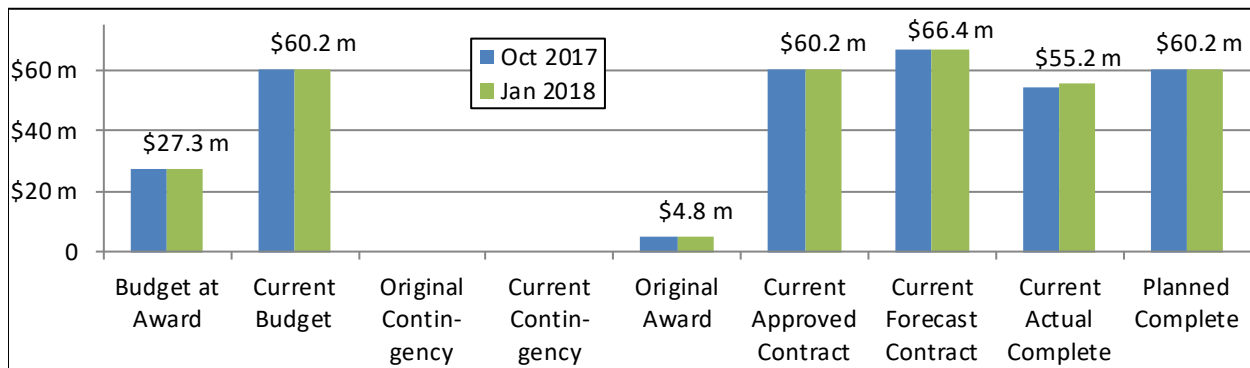
Budget at Award	Current Budget	Change from Original to Current	Contract at Award	Current Approved Contract	Change from Original to Current	Current Forecast	Change from Current Forecast to Budget at Award
\$9.5	\$18.8	(2-1) \$9.3	\$9.5	\$18.8	(5-4) \$9.3	\$18.8	(7-1) \$9.3
Percent Complete		Actual Prog Last 12 Mths		Actual Prog Last 6 Mths		Average Required Progress to reach forecast SC	
Planned	Actual	Total	Avg/Mth	Total	Avg/Mth	NA per month	
100.0%	99.5%	0.6%	0.1%	0.6%	0.1%		



FHA02 Harold Stage 2 – Amtrak F/A

Jan 2018

Budget at Award	Current Budget	Change from Original to Current	Contract at Award	Current Approved Contract	Change from Original to Current	Current Forecast	Change from Current Forecast to Budget at Award
\$27.3	\$60.2	(2-1) \$32.9	\$4.8	\$60.2	(5-4) \$55.4	\$66.4	(7-1) \$39.1
Percent Complete		Actual Prog Last 12 Mths		Actual Prog Last 6 Mths		Average Required Progress to reach forecast SC	
Planned	Actual	Total	Avg/Mth	Total	Avg/Mth	0.70% per month	
100.0%	90.2%	4.6%	0.4%	1.0%	0.2%		

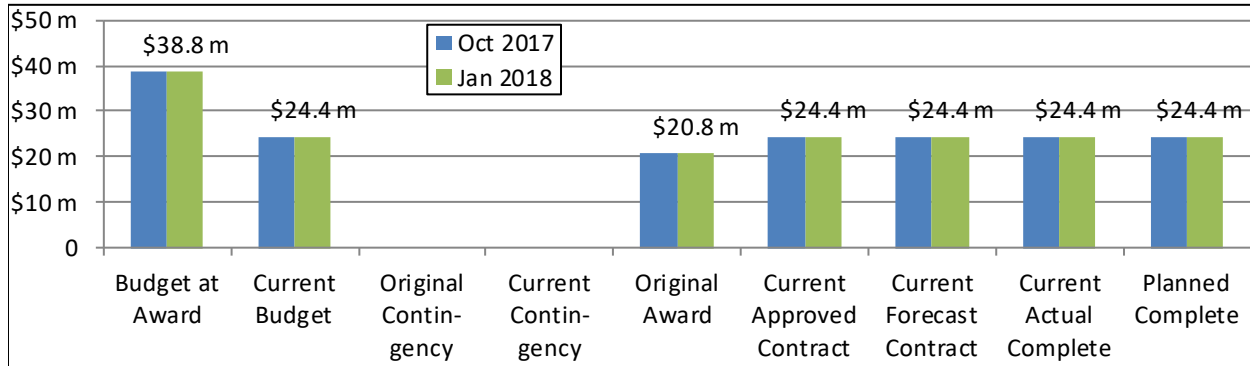


APPENDIX J – COST PERFORMANCE

FHL01 Harold Stage 1 – LIRR F/A

Jan 2018

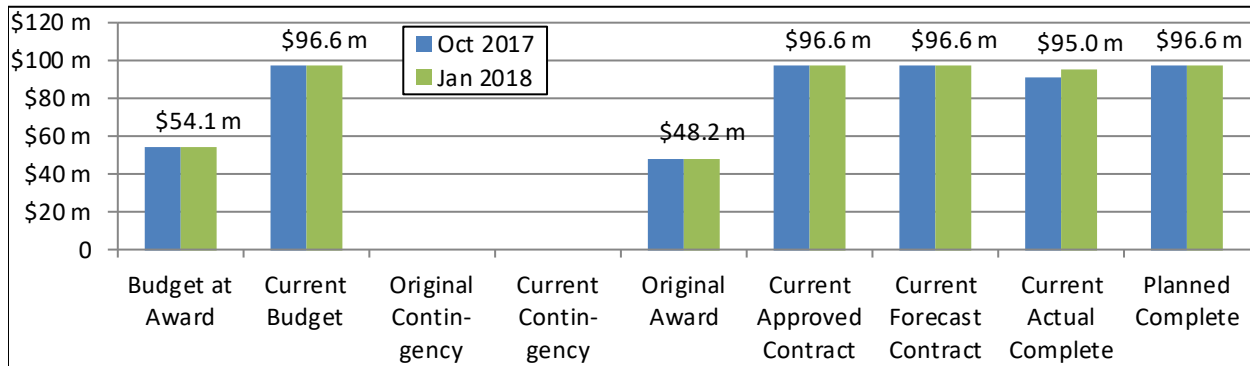
Budget at Award	Current Budget	Change from Original to Current	Contract at Award	Current Approved Contract	Change from Original to Current	Current Forecast	Change from Current Forecast to Budget at Award
\$28.8	\$24.4	(2-1) (\$4.4)	\$20.8	\$24.4	(5-4) \$3.6	\$24.4	(7-1) (\$4.4)
Percent Complete		Actual Prog Last 12 Mths		Actual Prog Last 6 Mths		Average Required Progress to reach forecast SC	
Planned	Actual	Total	Avg/Mth	Total	Avg/Mth		
100.0%	105.7%	13.8%	1.2%	7.2%	1.2%	-1.14% per month	



FHL02 Harold Stage 2 – LIRR F/A

Jan 2018

Budget at Award	Current Budget	Change from Original to Current	Contract at Award	Current Approved Contract	Change from Original to Current	Current Forecast	Change from Current Forecast to Budget at Award
\$54.1	\$96.6	(2-1) \$42.5	\$48.2	\$96.6	(5-4) \$48.4	\$96.6	(7-1) \$42.5
Percent Complete		Actual Prog Last 12 Mths		Actual Prog Last 6 Mths		Average Required Progress to reach forecast SC	
Planned	Actual	Total	Avg/Mth	Total	Avg/Mth		
100.0%	96.7%	4.2%	0.3%	-3.3%	-0.6%	0.10% per month	



APPENDIX K – 3rd PARTY CONTRACT MILESTONE METRICS

As of February 1, 2018 IPS Update

Mile-stone	Activity Description	IPS Baseline Date ¹ June 2014	Appr Cont Baseline Date ²	Current Contract Date ³	Current ESA Forecasted Date ⁴	Delta ⁵ IPS BL to Forecast	Notes
CM006: Manhattan Structures North							
NTP	Notice to Proceed	3/31/14A	N/A	N/A	3/31/14A	0	
SC	Substantial Completion	11/30/16	N/A	6/1/17	3/16/18	471	
FC	Final Completion	2/28/17	N/A	8/30/17	6/14/18	471	
CM007: GCT Caverns							
NTP	Notice to Proceed	4/19/16	4/11/16A	N/A	4/11/16A	-8	Approved baseline in Feb. 1, 2017 IPS.
4	Trackwork & 3rd Rail Work Complete (excludes STW @ GCT4, GCT6 & Plaza West)	N/A	10/3/19	8/7/19	2/7/20	127	Delta is measured against the Approved Contract Baseline Date for all milestones.
5	Substations US1 and US2 Complete	N/A	6/27/18	6/27/18	6/27/18	0	
5A	Caverns Ready for Integrated Systems Testing	4/11/19	8/7/19	8/7/19	8/14/19	7	
6	All Caverns and Tunnel Work Complete	N/A	12/16/19	12/16/19	2/3/20	49	
6A	Substantial Completion	7/19/19	1/28/20	1/28/20	6/26/20	150	
6B	Punchlist Completion	N/A	4/27/20	4/27/20	9/29/20	155	
7	Integrated System Testing Completion	N/A	6/1/20	6/1/20	1/19/21	232	
CM014B: GCT Concourse and Facilities Fit Out							
NTP	Notice to Proceed	11/2/14	2/2/15A	N/A	2/2/15A	92	Approved baseline in Nov. 1, 2016 IPS.
1	TMC/ CC-C5/ CR-C2 Comm Room & F/O Backbone Route from TMC-CRC2	12/3/15	6/1/16A	N/A	6/1/16A	181	
2	50th St. Comm Room CR102, Tunnel Fan Control Room, Electrical RM #126 & ICC (Room Ready)	3/3/16	4/17/17	N/A	4/17/17A	410	
3	Comm Room CR-C1/ Comm Closet CC-C1/ C2 & C6 & F/O Backbone from CR-C2 to CR-C1	5/3/16	11/30/16	N/A	12/3/16A	214	
4	Comm Closets CC-C3, CC-C7 & Room B3265	12/2/16	3/5/17	3/5/17	5/20/18	534	
5	44th St Vent Facility Complete	3/3/17	7/2/17	6/4/17	6/4/18	458	
5A	Complete all work at 48th St Entrance	2/15/18	3/20/17	10/2/17	5/1/18	75	
6	Comm Closets CC-C4 and CC-C8	5/12/17	5/20/18	5/20/18	5/20/18	373	
7	Completion of 50th Street 2nd Phase	10/26/17	1/27/18	1/27/18	3/1/19	491	
8	Substantial Completion	7/24/19	1/21/19	8/18/18	5/18/20	299	
8A	Punchlist Complete	5/17/18	5/21/19	12/16/18	9/15/20	852	
9	Integrated Systems Testing Completed	7/24/19	3/23/20	10/25/19	1/19/21	545	
9A	Ready for Integrated Systems Testing	5/17/18	10/2/18	5/20/18	11/13/19	545	

Mile-stone	Activity Description	IPS Baseline Date ¹ June 2014	Appr Cont Baseline Date ²	Current Contract Date ³	Current ESA Forecasted Date ⁴	Delta ⁵ IPS BL to Forecast	Notes
10	Shaft 4	N/A	7/1/18	7/1/18	9/1/19	427	Delta is measured against the Approved Baseline Date for this milestone only.
11	Final Completion	10/22/19	3/23/20	8/8/20	1/19/21	455	

CQ032: Plaza Substation and Queens Structures

NTP	Notice to Proceed	8/10/11A	8/10/11A	N/A	8/10/11A	-	
6	Substantial Completion	10/8/15	N/A	9/6/16	4/13/18	918	
7	Final Completion	1/7/16	N/A	12/5/16	7/12/18	917	

CQ033: Mid-Day Storage Yard

NTP	Notice to Proceed	7/4/15	N/A	N/A	4/11/17A	-	Approved baseline in Nov. 1, 2017 IPS.
1	Precondition Site Survey	N/A	6/10/17	6/10/17	9/29/17A	-111	
2	Temporary Construction Fence Along Arch St. Access Route	N/A	6/10/17	6/10/17	10/9/17A	-121	
3	RWIC Trailer	N/A	7/10/17	7/10/17	6/19/17A	21	
4	Submission of Integrated Test Plan	N/A	4/11/18	4/11/18	4/11/18	0	
4A	Ready for Integrated Testing MDSY	N/A	3/11/20	3/11/20	7/10/20	121	
5	YS Track Completion	N/A	4/11/18	4/11/18	2/14/19	309	
6	Substantial Completion	10/25/18	8/10/20	8/10/20	12/9/20	776	Delta measured against Current Cont Date for all milestones except 6 and FC.
8	Completion of Plaza Work	N/A	7/12/18	7/12/18	7/12/18	0	
9	Complete Option 1 - Demo Amtrak Buildings	N/A	5/27/20	5/27/20	5/27/20	0	
FC	Final Completion	1/23/19	N/A	N/A	3/11/21	778	Current Forecast Date is end of "Demobilization" activity in IPS. No FC activity was found in the IPS.

CH057A: Harold Structures Part 3 - Westbound Bypass

NTP	Notice to Proceed	12/2/13A	12/2/13A	N/A	12/2/13A	-	Approved baseline in Aug. 1, 2015 IPS.
1	Signal Bridge 24 & 30	8/17/14	N/A	8/9/14A	8/9/14A	-8	
2	Signal Bridge 16	4/12/15	N/A	2/28/16A	2/28/16A	322	
3	Substantial Completion	4/22/16	N/A	10/30/17	11/17/17A	574	
4	Final Completion	7/21/16	N/A	1/28/18	2/1/2018A	560	

CH061A: Harold Structures Part 3 - Track A Cut and Cover Structure

NTP	NTP CH061A - A Approach	7/5/16	1/27/17A	N/A	1/27/17A	206	
1	PW2 Catenary Structures	N/A	9/7/17	9/7/17	2/12/18A	158	Actual date reported later than data date.
2	Montauk Cutoff Catenary Structures	N/A	9/11/17	9/11/17	12/1/17A	81	The Aug. 1, 2017 IPS Report notes that the baseline was approved in July 2017. It is assumed
3	Substantial Completion	9/20/17	5/28/18	5/28/18	6/14/18	17	
4	Final Completion	N/A	8/27/18	8/27/18	9/12/18	16	

Mile-stone	Activity Description	IPS Baseline Date ¹ June 2014	Appr Cont Baseline Date ²	Current Contract Date ³	Current ESA Forecasted Date ⁴	Delta ⁵ IPS BL to Forecast	Notes
							that the Aug. 1, 2017 IPS has this data and was used for the Approved Baseline Dates
CS179: Systems Package 1 - Facilities Systems							
NTP	Facilities Systems Package 1 NTP	3/31/14A	3/31/14A	N/A	3/31/14A	-	Approved baseline in Oct. 1, 2016 IPS.
1	C05 TPSS Room Ready for CS084 Work at Vernon Blvd. Vent Facility	10/16/15	12/30/16	2/15/17	2/1/18	839	
3	Completion of Multiple Rooms (CIR, Sig. Reactor, Interlocking 1D, TPSS C06 and C07)*	10/13/16	12/31/16	5/22/17	2/1/18	476	
4A	C04 TPSS Room (Level P1) Ready for CS084 Work at 2nd Ave. Vent Facility	5/5/16	2/1/17	2/1/17	2/16/18	652	
5	GCT 6 CIR Ready for CS086 (orig CS086) Installation	10/17/16	4/14/17	4/30/17	2/1/18	472	
6	B10 Permanent Power Energized (Precedes Energization of B05, B06, B08, B09, B11 & B13)	6/24/16	4/28/17	4/22/17	2/1/18	587	
7	GCT 5 CIR Ready for CS086 (orig CS086) Installation	2/17/17	5/27/17	4/30/17	2/1/18	349	
8	GCT 4 CIR Ready for CS086 (orig CS086) Installation	5/2/17	6/27/17	4/30/17	2/1/18	275	
9	C01 & C02 TPSS Room Ready for CS084 at Tail Tracks	8/7/17	6/8/17	6/8/17	2/2/18	179	
10	GCT 3 CIR Ready for CS086 (orig CS086) Installation	11/6/17	9/6/17	9/6/17	2/1/18	87	
11	C03 TPSS Room Ready for CS084 at 55th St. Vent Facility	2/20/18	2/27/18	3/25/18	7/13/18	143	
12A	Integrated System Testing Start (TOC & All Permanent Power Complete)	5/2/18	12/8/18	9/1/18	1/31/19	274	
12B-1	Complete IST of All Systems Equip Installed by CM007	10/22/19	7/1/20	3/23/20	1/19/21	455	
12B-2	Complete IST of All Systems Equip Installed by CM014A	7/24/19	7/1/20	3/23/20	1/19/21	545	
12B-3	Complete IST of All Systems Equip Installed by CM014B	7/24/19	7/1/20	3/23/20	1/19/21	545	
13	Substantial Completion Including Completion of IST	12/9/19	7/1/20	7/1/20	1/19/21	407	
CS084: Tunnel Systems Package 4 - Traction Power Systems							
NTP	CS084 NTP	9/5/14	10/29/14A	N/A	10/29/14A	54	Contract approved baseline in the Jan 1, 2016 IPS.
1	Energize Traction Power Substation C08	5/26/17		5/6/18	12/17/19	935	
2	Energize Traction Power Substation C04 and C05	6/20/18	12/14/18	10/3/18	1/28/20	587	
3	Energize Traction Power Substation C06 and C07	10/2/18	3/2/19	3/2/19	3/13/20	528	
4	Energize Traction Power Substation C01 and C02	10/30/18	1/30/19	2/5/19	12/31/19	427	
5	Energize Traction Power Substation C03	12/28/18	5/16/19	5/16/19	12/12/19	349	
6	Complete Local testing of all substation	1/11/19	7/30/19	7/30/19	7/8/20	544	
7	Substantial completion & Final Completion	10/21/19	11/25/19	12/2/19	9/29/20	344	

Mile-stone	Activity Description	IPS Baseline Date ¹ June 2014	Appr Cont Baseline Date ²	Current Contract Date ³	Current ESA Forecasted Date ⁴	Delta ⁵ IPS BL to Forecast	Notes
VQ033: Mid-Day Storage Yard CIL Procurement							
NTP	Notice To Proceed (NTP) Actual 1/15/16 by JPS	N/A	1/15/16A	N/A	1/15/16A	-	Contract not in the June 2014 Re-baseline IPS.
1	Mid-3 CIL (NTP+549d)*	N/A	7/21/17	7/20/17	5/1/19	649	Approved baseline in May 1, 2016 IPS.
2	Mid-6 CIL (NTP+855d)*	N/A	5/23/18	5/23/18	7/29/19	432	Delta measured against Approved Contract Baseline Date for all milestones.
3	Mid-8 CIL (NTP+1158d)*	N/A	11/22/18	11/22/18	8/28/19	279	
SC	Substantial Completion (NTP+1216d)	N/A	5/19/19	5/19/19	2/28/20	285	
VS086: Systems Package 3 - Tunnel Signal Equipment							
NTP	VS086 NTP	7/7/14	9/30/14A	N/A	9/30/14A	85	Approved baseline in Dec. 1, 2016 IPS.
1	Furnish Catalog Cuts for Tunnel Sig. Equip and CIR Layouts (NTP+300CD)	5/6/15	6/5/17	5/8/17	1/17/18A	987	
2	Complete and Provide Final Design for Entire Tunnel Signal System (NTP+420CD)	9/5/15	9/19/17	7/7/17	5/16/18	984	1 month delay
3	Furnish Tunnel Signal Equip. & Hardware for Plaza CIR (NTP+582CD)	2/18/16	6/29/17	4/28/17	6/20/18	853	2.5 month delay
4	Furnish Tunnel Signal Equip. & Hardware for GCT5 & GCT6 CIRs (NTP+650CD)	4/26/16	1/9/18	11/13/17	10/19/18	906	2.5 month delay
5	Furnish Tunnel Signal Equip. & Hardware for GCT3 & GCT4 CIRs (NTP+730CD)	7/17/16	6/5/18	3/16/18	2/22/19	950	2.5 month delay
SC	Substantial Completion (NTP+1840CD)	12/9/19	10/14/19	10/14/19	10/14/19	-56	

Notes:

- General - Contract Milestones shown are current, and may not have been in the June 2014 Rebaseline IPS; An "A" after a date indicates an actualized date.
- 1 IPS Baseline Date - June 2014 IPS Update, data date July 1, 2014, referred to as the "2014 Re-Baseline"
 - 2 Approved Contract Baseline Schedule - Refers to the IPS Update in which the Contractor's Approved CPM Baseline schedule was incorporated into the IPS
 - 3 Current Contract Date - Contract dates adjusted for modifications, etc. are from tables in the ESA IPS Reports.
 - 4 Current ESA Forecast Date - Date shown in current IPS Monthly Update (data date November 1, 2017).
 - 5 Delta - Difference between Current ESA Forecast Date and a baseline Date. The baseline will typically be the IPS Baseline Date (June 2014), unless otherwise noted. A positive number represents a delay and a negative number represents a savings.

APPENDIX L – CS084 - TRACTION POWER SYSTEMS PACKAGE 4 – QUARTERLY SCHEDULE METRICS

Major Electrical Equipment *3	Approve Submittals			Approve Layout Drawings			Fabricate			Start Factory Witness Test (FAT)			Delivery to ESA Site			General: Submittal / Fabricate inc. SCADA Controls & Screens.
	Base-line *4	Current Update *1	Delta (mths) *2	Base-line *4	Current Update *1	Delta (mths) *2	Base-line *4	Current Update *1	Delta (mths) *2	Base-line *4	Current Update *1	Delta (mths) *2	Base-line *4	Current Update *1	Delta (mths) *2	
CO1 Tail Tracks 38 th St	2/16/16	4/6/18	24	1/18/17	11/7/17	0	9/13/16	8/28/18	27	2/23/17	9/20/18	21	2/9/18	8/8/18	37	
CO2 Tail Tracks 38 th St	2/16/16	4/24/18	-53	5/24/16	11/7/17	-63	9/13/16	9/24/18	-5	2/20/17	10/11/18	-3	2/9/18	9/14/18	42	Sub inc. EO DC Switches Ctrl Cab, Main PLC, Rect PLC
CO3 55 th Street	2/23/16	7/13/18	18	6/1/16	12/6/17	-123	9/13/16	12/4/18	16	3/13/17	12/27/18	19	8/2/18	3/12/18	329	
CO4 2 nd Avenue	2/18/16	1/12/18	-37	11/21/16	8/7/17A	0	9/13/16	3/23/18	-21	10/5/16	4/16/18	-21	3/13/17	12/28/17	106	Sub inc. Bus Duct 38kV Tie. Fab inc. DC Feed, Main PLC
CO5 Vernon	2/18/16	8/18/17A	27	5/26/16	6/7/17A	0	9/13/16	11/15/17	-34	10/5/16	8/28/17A	66	11/8/16	12/14/17	-30	Sub inc. EO DC Switches Ctrl Cab, all other equip appr
CO6 QP Main	2/18/16	1/12/18	-35	5/26/16	8/7/17A	137	9/30/16	5/18/18	-45	11/21/16	6/15/18	-49	6/13/17	4/27/18	21	Sub inc. Bus Duct 12KA Pos, 18KA Neg 1 and 2 Fab inc. DC Switchgear
CO7 QP Yard	2/18/16	2/5/18	-31	5/26/16	11/7/17	-63	9/13/16	5/25/18	60	1/12/17	6/26/18	-92	8/17/17	4/27/18	-14	Sub inc. Bus Duct (Various). Fab inc. DC Switchgear Del excludes SCADA Controls & Screens
CO8 43 rd St Pre-fab Bldg	1/21/16	1/26/18	-66	5/12/16	8/16/17A	20	9/12/16	7/9/18	-102	10/25/16	10/24/18	-99	12/6/16	11/28/18	-114	Fab inc. pre-fab enclosure Del inc. pre-fab enclosure.

- *Notes:
- 1 - Current Update = Contractor's Monthly CPM Schedule Update 23 with Data Date 11/1/17.
 - 2 - Delta = Change from the contractor previous quarter CPM Schedule update 20, data date 8/1/17, in calendar days. Positive values represent improved planned dates; negative values represent slippage in planned dates.
 - 3 - Major Electrical Equipment = There are many components included in this category. The dates shown in this table for Submittals, Fabricate, FAT, and Delivery are the latest date for all Major Electrical Equipment at each substation and includes the SCADA Controls & Screens. The comments column notes which Equipment is controlling that date.
 - 4 - The Baseline date refers to the Contractor's approved CS084 Baseline CPM Schedule, with data date 10/29/14.
 - 5 - The dates indicated in Appendix L are from ESA Reports. It is the PMOC's experience based on information it receives in progress meetings that the dates shown could represent the start of the activity but not necessarily the completion.

Major Electrical Equipment *3	Install Elec Equip & All Other Items *5			ConEd Insp / Test Rpts			Local Testing *7			Energize / Place in Serv (CS084 Milestones)			Integrated Testing *6			General: Install Complete date = Terminate Ground Cable
	Installation Complete			Work Complete			Testing Complete			Work Complete			Testing Complete			
	Base-line *4	Current Update *1	Delta (mths) *2	Base-line *4	Current Update *1	Delta (mths) *2	Base-line *4	Current Update *1	Delta (mths) *2	Base-line *4	Current Update *1	Delta (mths) *2	Base-line *4	Current Update *1	Delta (mths) *2	
CO1 Tail Tracks 38 th St	11/6/18	7/16/19	29	12/27/18	9/5/19	22	1/21/19	9/26/19	22	2/4/19	10/10/19	22	12/2/19	8/4/20	-98	158 Ea.
CO2 Tail Tracks 38 th St	11/14/18	8/14/19	-5	12/24/18	9/27/19	-3	1/22/19	10/18/19	-3	2/5/19	11/1/19	-3	12/2/19	8/4/20	-98	158 Ea.
CO3 55 th Street	3/1/19	8/26/19	17	N/A	N/A	N/A	5/6/19	10/30/19	16	5/16/19	11/11/19	-3	12/2/19	8/4/20	-98	50 Ea.
CO4 2 nd Avenue	4/27/18	7/8/19	-24	7/6/18	10/7/19	-45	8/7/18	10/15/19	-21	8/21/18	10/29/19	-21	12/2/19	8/4/20	-98	65 Ea.
CO5 Vernon	6/8/18	7/9/19	1	N/A	N/A	N/A	9/19/18	10/18/19	1	10/3/18	11/1/19	1	12/2/19	8/4/20	-98	60 Ea.
CO6 QP Main	9/10/18	8/12/19	17	N/A	N/A	N/A	1/3/19	12/4/19	19	1/17/19	12/18/19	21	12/2/19	8/4/20	-98	Install inc. Ground Cable - 1,207 LF.
CO7 QP Yard	10/22/18	9/5/19	-65	N/A	N/A	N/A	2/15/19	12/31/19	-67	3/1/19	1/15/20	-68	12/2/19	8/4/20	-98	Install inc. Ground Cable - 773 LF.
CO8 43 rd St Pre-fab Bldg	9/12/17	10/2/19	-100	12/8/17	8/22/19	-100	2/1/18	10/4/19	-70	2/15/18	10/18/19	-99	12/2/19	8/4/20	-98	Install inc. Security Fence & Gates.

*Notes:

1 - Current Update = Contractor's Monthly CPM Schedule Update 23 with Data Date 11/1/17.

2 - Delta = Change from the contractor previous quarter CPM Schedule update 20, data date 8/1/17, in calendar days. Positive values represent improved planned dates; negative values represent slippage in planned dates.

3 - Major Electrical Equipment = There are many components included in this category. The dates shown in this table for Submittals, Fabricate, FAT, and Delivery are the latest date for all Major Electrical Equipment at each substation and includes the SCADA Controls & Screens. The comments column notes which Equipment is controlling that date.

4 - The Baseline date refers to the Contractor's approved CS084 Baseline CPM Schedule, with data date 10/29/14.

5 - Work includes installation of major Electrical Equipment and all other components in the TPSS, including conduit, cable tray, cabinets, panels, bus duct, and the pulling and termination of cables. Includes cable from TPSS to track.

6 - Work includes five System-Wide tests in the CS084 Contractor's CPM Schedule: Train Acceleration Test; Short Circuit Verification Test; Load Capacity Verification Test; Third Rail and High Tension EO Switch Test; and Emergency Trip Verification Test. The date shown represents the last test - the Emergency Trip Verification Test - and aligns with Contract Milestone No. 7 (Substantial Completion).

7 - This represents the completion of Field Acceptance Tests, typically the last testing shown at each substation. It should be noted that CO8 has a later activity, entitled "Finalize Local Testing," which occurs as the last activity, after energization - which is not tracked in this table

APPENDIX M – NCR Aging Summary

Table M – NCR Aging Summary

Contract	Criteria	2Q 2017	3Q 2017	4Q 2017	1Q2018
CM007	< 90 days Open	17	37	17	11
	> 90 days Open	2	19	41	41
	Total Open	19	37	58	52
	Total Closed	3	12	34	46
	Total NCRs	22	49	92	98
CM014B	< 90 days Open	3	8	7	7
	> 90 days Open	5	6	--	4
	Total Open	8	8	7	11
	Total Closed	22	24	32	34
	Total NCRs	30	32	39	45
CQ032	< 90 days Open	--	13	6	6
	> 90 days Open	15	67	10	8
	Total Open	15	13	16	14
	Total Closed	96	102	106	106
	Total NCRs	110	115	122	122
CH053	< 90 days Open	--	--	--	0
	> 90 days Open	--	82	1	0
	Total Open	--	--	--	0
	Total Closed	94	94	91	91
	Total NCRs	94	94	91	91
CH057	< 90 days Open	--	3	--	0
	> 90 days Open	6	14	3	0
	Total Open	6	3	3	0
	Total Closed	18	23	23	26
	Total NCRs	24	26	26	26
CH057A	< 90 days Open	1	3	--	0
	> 90 days Open	2	2	2	2
	Total Open	3	3	2	2
	Total Closed	16	16	16	17
	Total NCRs	19	19	19	19
CS179	< 90 days Open	3	16	8	5
	> 90 days Open	12	12	8	12
	Total Open	15	16	16	17
	Total Closed	24	28	37	37
	Total NCRs	39	44	53	54
CS084	< 90 days Open	--	--	1	1
	> 90 days Open	--	--	--	0
	Total Open	--	--	1	1
	Total Closed	--	--	4	4
	Total NCRs	--	--	5	5
CQ033	<90 days Open	--	--	--	0
	>90 days Open	--	--	--	2
	Total Open	--	--	--	2
	Total Closed	--	--	--	0
	Total NCRs	--	--	--	2

APPENDIX N – CONSTRUCTION CONTRACT CHANGE MANAGEMENT

MTACC's ESA Project Management Plan states that a key CM responsibility is for the initiation, processing, negotiation, and resolution of construction change orders, subject to the MTACC change control process. MTACC Procedure No. AD.11 – Construction Contract Modification Approval provides further discussion for approval of changes and modifications to construction contracts. MTACC procedure AD.11, Construction Contract Modification Approval, provides guidance for modifications to construction contracts. Additionally, the PMT updated procedure PCA-036 Rev. 5, Construction Contract Modifications for ESA, on December 18, 2017.

The ESA project executed a total of 23 contract modifications having magnitudes in excess of \$100,000 during the period from November 2017 through January 2018. These modifications had a total net cost of \$38.9 million. The PMOC reviewed the staff summary sheets of select modifications to check compliance with the guidelines. The results of these reviews are provided below.

CM007 had 3 modifications executed during the review period that resulted in an aggregate decrease of \$1.3 million, of which the PMOC reviewed mod. 28, Value Engineering Change Proposal Smoke Plenum, dated January 3, 2018, with a credit value of \$0.793 million. The PMOC observed that the CM followed the project procedures.

CM014B had 3 modifications executed during the review period that resulted in an aggregate increase of \$2.3 million, of which the PMOC reviewed mod. 94, MNR Transformer Rigging Frame, dated November 14, 2017, with a value of \$1.600 million. The PMOC observed that the CM followed the project procedures.

CQ032 had 2 modifications executed during the review period that resulted in an aggregate decrease of \$0.6 million, of which the PMOC reviewed mod. 88, Removal of Installed Support Excavation at the 23rd Street Ventilation Facility, dated December 21, 2017, with a value of \$0.211 million. The PMOC observed that the CM followed the project procedures.

CQ033 had 3 modifications executed during the review period that resulted in an aggregate increase of \$0.4 million, of which the PMOC reviewed mod. 8, B-928W and B-924WA Material Installation, dated December 19, 2017, with a value of \$0.140 million. The PMOC observed that the CM followed the project procedures.

CH057A had 1 modification executed during the review period that resulted in an increase of \$33.0 million, which the PMOC reviewed mod. 32, Deletion of Remaining Scope of Work and Close out of Contract, dated December 13, 2017. The PMOC observed that the CM followed the project procedures.

GEC had 5 modifications executed during the review period that resulted in an aggregate increase of \$5.0 million, of which the PMOC reviewed mod. 149, CQ032 to CS179 Scope Transfers, dated December 18, 2017, with a value of \$0.448 million. The PMOC observed that the CM followed the project procedures.

**APPENDIX O – CM007- DIRECT FIXATION –
QUALIFICATION TESTING & TRACKWORK CONSTRUCTION**

CM007 - Direct Fixation Qualification Testing*
As of March 8, 2018

Direct Fixation Fasteners (DFF)

Direct Fixation Fastener (DFF) Assemblies	Standard DFF	High Attenuation DFF (HADFF)	Special Trackwork DFF (STDFF)
DFF Qualification Testing Status	See Note #1 below	Done	Ongoing, started early March 2018

Note #1: Contractor has elected to use HADFF in locations where Standard DFF was specified.

Resilient Tie Blocks (RTB)

Resilient Tie Block (RTB) Assemblies	Standard RTB	High Attenuation RTB (HARTB)	Special Trackwork RTB (STRTB)
RTB Qualification Testing Status	Done	Projected to start by mid-March 2018	Done

*As reported at ESA Monthly CM007 Progress Meeting March 8, 2018

CM007 - Direct Fixation Trackwork Construction*

Progress Data from March 11, 2018 ESA Progress Summary: Track & Third Rail, and current IPS

Direct Fixation Fasteners (DFF)

Direct Fixation Fastener (DFF) Assemblies	Standard DFF	High Attenuation DFF (HADFF)	Special Trackwork DFF (STDFF)
DFF Installation Status	Progressing using permanent rail plates	Progressing using permanent rail plates	Not started
Actual Progress	See Note #1 below	31.2%	
Planned Progress	See Note #1 below	47.9%	

Note #1: Contractor has elected to use HADFF in locations where Standard DFF was specified.

Resilient Tie Blocks (RTB)

Resilient Tie Block (RTB) Assemblies	Standard RTB	High Attenuation RTB (HARTB)	Special Trackwork RTB (STRTB)
RTB Installation Status	Progressing	Not started	Not started
Actual Progress	13.2%		
Planned Progress	47.3%		

*As reported at ESA Monthly CM007 Progress Meeting March 8, 2018.

**APPENDIX P – Contract CS084 – Traction Power Substations
Contractor’s Issues by Substation**

C01/C02 (Tail Track)

1. Sloping floor to drain – re-design and CPR required (both delayed)
2. Contractor’s layout drawings still not approved – remain under review
3. Coordination: interferences from CS179 (fire alarms, light fixtures, etc.)
4. Equipment delivery issue still unresolved

C03 (55th Street)

1. Not ready for handover from CS179 – delayed to at least 6/25/18
2. Other coordination issues with CS179

C04 (2nd Avenue)

1. Floor needs to be recessed for installation of epoxy di-electric (C/O to CS179 needed)
2. Coordination: interferences from CS179 (fan, fire alarm control panel, light fixtures, etc.)
3. Handover from CS179 delayed

C05 (Vernon)

1. Delay in resolution of C/O for reactor pads and property line box conduits
2. Removal of PVC duct in concrete conduits (waiting for Con Ed approval)
3. Switch room/Control room relocation required – need CPR
4. Still appears to be a water infiltration issue
5. CPRs needed for various other coordination issues

C06/C07 (Plaza)

1. Missing penetrations in floor and on bench level for bus duct (CQ032 was to provide)
2. Floor needs to be recessed for installation of epoxy di-electric (CS032 requirement)
3. Doorway needs to be enlarged for delivery/installation of reactors (C/O to CS179 needed)
4. Coordination: interferences from CS179 (light fixtures and ductwork)
5. Steel beam that was to be used for lifting equipment during installation is of insufficient size

C08 (43rd Street)

1. Conduit duct banks between C08 vault and tracks (shown on contract drawings as existing) are missing and no schedule established by MTA to provide them – no conduit and manholes means no traction power to the tracks.

APPENDIX Q – Operational Readiness

Rail Activation Plan & Task Working Groups (TWG) – 1Q2018 Status

The Rail Activation Plan (RAP) is being developed through the use of 11 separate Task Working Groups (TWGs) that each focus on specific separate aspects of the RAP.

TWG No.1 – Operational Readiness: Although forecasted for completion by the end of 2017, the Rail Activation Plan (RAP) being developed by TWG No. 1 remains as a work in progress with no finalization date available at this time (Note: the PMOC believes that the very nature of the RAP will cause it to be more of a “living document”, necessitating modifications as conditions and scenarios occurring on the ESA Project are adjusted). During 1Q018, this TWG underwent significant re-structuring so as to more effectively coordinate activities of all the TWGs and provide an increased level of efficiency to the overall development of the RAP. Team leadership was amplified and resources were shifted or relocated to make internal communications more timely and efficient. One particularly important section of the RAP is the Comprehensive System Test Plan (CSTP) that must be followed to progress to ESA revenue service. MTACC indicated that the CSTP was updated in August 2017 and that it would provide a copy to the PMOC; however, that CSTP has yet to be finalized, mainly because the Integrated System Test (IST) Plan being developed under Contract CS179 (required for the CSTP) is still under development. The PMOC continued to request that MTACC provide a schedule that shows the projected dates for completion of the various sections/volumes of the RAP.

TWG No.2 – Train Service and Operations: The PMOC continued to raise a concern with MTACC regarding the status of the ESA Concept of Operations (ConOps); a document that, per MTACC, is the basis for all work being developed and progressed on the ESA Project. The ConOps has not been formally updated since March 2010, despite several significant changes made since then to the ESA project. While MTACC previously agreed that the document needs to be updated to reflect current operating philosophies, no progress has been made on this to date. This TWG continues to develop the ESA Service Disruption Plan, including MNR and NYCT where appropriate. This TWG is also managing the incorporation of civil speed enforcement requirements in the ESA signal design; a protocol that was recently implemented in parts of Harold interlocking

TWG No. 3 – Infrastructure, Systems, and Engineering: One significant responsibility of this TWG is the integration of Federally-mandated Positive Train Control (PTC) for the LIRR. Per the current Federal mandate, PTC needs to be operational by all railroads by December 2018, which poses a significant challenge to the MTA. The GEC is moving forward with development of preliminary PTC designs for incorporation into the various ESA contract documents. This TWG is also involved in the development and implementation of the 250 Hz Tunnel Avoidance Modification. The consultant engaged to design this 250Hz system presented a Preliminary Design Review in February 2018; and, the goal is to complete the design by the end of July 2018

TWG No. 4 – Asset Management: This TWG, which is responsible for developing and implementing procedures for Asset Management, continues to very effectively progress its work; and, interim maintenance on assets from six completed contracts has commenced.

TWG No. 5 – Grand Central Terminal: This TWG is responsible for developing interagency plans for GCT. An RFP for the installation of Wireless/Cellular service in GCT was issued in July 2107; and, while submitted proposals remain under review, no award date has been identified as of the date of this report. This TWG is also monitoring the development and implementation of a Unified Trash Management Plan at Grand Central Terminal. A contract for the design of this Trash Facility on Track 115 in GCT was awarded in 1Q2018; with the goal to begin construction in 2Q2019 and complete the facility in 4Q2020.

TWG No.6 – Staffing and Training: This TWG is responsible for developing Staffing and Training Plans to ensure that the proper resources, skilled personnel, and equipment are available to begin ESA revenue service. The PMOC previously asked to see a schedule for staffing and training that was linked to the overall ESA IPS. In March 2018, the PMOC met with LIRR personnel leading this TWG and received an update on the development of the staffing and training plan – further information on that meeting was discussed in Section 2.4 of this report. At the April 1Q2018 briefing, the TWG reported that a detailed schedule for the staffing and training effort has been developed and will be incorporated into the overall ESA IPS.

TWG No.7 – Safety and Security: The PMOC previously expressed serious concerns regarding the implementation of the certification processes for safety and security elements. MTACC provided extra focus on this and continues to make significant progress in addressing this item. This TWG is also meeting with all ESA stakeholders to develop an LIRR ESA Emergency Action Plan.

TWG No. 8 – Public Information and Marketing: The current focus of this group is on refining dynamic and static signage in the Grand Central Terminal area. MNR currently has an on-going initiative to replace destination information boards in GCT and this TWG is interfacing with MNR to ensure that there are no gaps in providing signage information to ESA customers.

TWG No. 9 – Agreements: This TWG is conducting meetings with LIRR, MNR, and NYCT to discuss strategies related to the 63rd Street Tunnel shared facilities. The TWG is also spearheading the effort to begin discussions on identifying labor issues that may arise in order to implement and maintain the new ESA facilities.

TWG No. 10 – Finance and Administration: This TWG handles various administrative activities and conducts meetings with the ESA stakeholders to coordinate efforts in the various facilities and identify funding sources. Recent activities include procurement strategy workshops for the Training Simulator and ESA Joint Ticketing & Fare Policy initiatives.

TWG No. 11 – Fleet Readiness: This TWG focuses on the procurement of fleet-oriented equipment (railcars, locomotives, simulators, etc.) necessary for the final implementation and operation of the ESA Service. The procurement efforts for the railcars remain on-hold as of the 1Q2018 Operational Readiness meeting. An update on the railcar procurement is noted below in Section 2.5 – Vehicles. Another procurement effort for the Protect Locomotives is also on-hold, as design specifications related to the tunnel ventilation system and heat exposure ratings need to be modified.

APPENDIX R - ESA CORE ACCOUNTABILITY ITEMS

Table R – ESA Core Accountability Items

Project Status:		Original at FFGA	Amended FFGA	Current *	ELPEP **
Cost	Cost Estimate	\$7.368 B	\$10,922 B	\$10.178 B	\$8.119 B
Contingency	Unallocated /Risk Contingency	(b)(4)			
	Total Contingency (Allocated plus Unallocated)	(b)(4)			
Schedule	RSD	Dec 31, 2013	Dec 31, 2023	Dec. 2022	April 30, 2018
Total Project % Complete		Based on Invoiced Amount		76.0% actual vs. 80.0% (ESA Figure)	
Project Performance Rate since 2014 “Re-Plan”		Based on Earned Value		74.7% (PMOC calculation of construction spending at 4Q2017 planned vs. actual since re-baselining).	
Contracts		Total contracts awarded to date		\$9.03 B	88.8% of total awards
		Total construction contracts awarded to date		\$7.00 B	92.7% of construction awards
Major Issue	Status	Comments			
Project Funding and Budget	In the second quarter of 2017, MTACC determined that they would not pursue an ESA amendment to 2015-19 Capital Plan for additional required funding for forecast cost overruns. This may have a significant impact on the project’s budget, especially the Unallocated Contingency. In 2Q2018, MTACC re-considered 2015-19 Capital Plan amendment.	(b)(4)			
Project Cost	<p>MTACC has identified significant forecast cost overruns:</p> <ul style="list-style-type: none"> ▪ OCIP - \$190 million ▪ Railroad Force Account - \$110 million ▪ OICs for Contract CM014B - \$25 million ▪ PM/CM, CCM, GEC Services – (TBD) <p>Schedule delays due to funding constraints (see above) may result in additional escalation costs. Review of forecast cost overruns based on new funding constraint continued during 1Q2018.</p>	<p>ESA-PMT is continues the evaluation the cost of continued PM/CM, CCM, and GEC Services to the target RSD. The current PMT funding strategy (see above) may delay the completion of current contracts, the award of remaining contracts, and the completion of railroad force account work. The resulting added cost escalation could be significant.</p>			
Project Schedule	(b)(4)	(b)(4)			
Harold Schedule	The schedule for the remaining ESA work in Harold Interlocking has been revised several times since the June 2014 Program Schedule re-baseline; Dec. 2014 (“ESA First”); 2015 (“Harold Re-Sequencing”); and, 1Q2016 schedule adjustment resulting in the Program critical path passing through the Harold work. Primary cause for all the revisions is inadequate railroad force account support due to other higher priority Amtrak projects in the region.	The MTACC PMT has made significant progress in coordinating a regional inter-agency schedule for work to minimize conflicting demands on force account resources. In November 2017, Amtrak rescheduled start of major ERT Line 1 and 2 reconstruction work from 2019 to 2025; no details provided regarding how change might affect predecessor hardening work for ERT Lines 1 and 4 during 2018.			

* Current Budget was approved by MTA CPOC in June 2014.

** 2010 Enterprise Level Project Execution Plan (ELPEP) reflecting medium level of risk mitigation, excluding financing cost of \$1,116 million.