PMOC COMPREHENSIVE MONTHLY REPORT

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

Report Period December 1 to December 31, 2017

PMOC Contract No. DTFT60D1400017

Task Order No. 0002, Project No. DC-27-5287, Work Order No.5

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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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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 74.0% actual versus 78.0% as-planned.

Construction Status: The Construction Status is 74.1% actual versus 79.1% as-planned.

Contracts Awarded/ Completed: None

Construction Progress Issues: CM014B, CS084, VS086, CH061A (All Continuing)

Program Funding: Additional funding for forecast project overruns will not be available until 2020-2024 Capital Planning Cycle. MTACC evaluating interim budget solutions; results now anticipated by March 31, 2018.

[redacted]

Risk Management: 8 major risks remain.

Harold Interlocking: Completed 6th of 6 signal pre-cutover testing weekends during November 2017; 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; Amtrak – Continuing Force Account availability issues; MTACC - Change Order processing issues.

Construction Safety: 0.0 - Lost Time and 0.0 - Recordable Injuries during November 2017.

ELPEP Compliance: No issues.

Project Management Plan: No issues.

All Project Sponsor cost and schedule data included in this report is based on the status date of November 1, 2017, that corresponds to MTACC's "East Side Access October 2017 Progress Report" and is referenced as ESA October 2017 Progress Report in this PMOC Report.

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.

Monitoring Report

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 4th Quarter 2017

a. Engineering/Design Progress

In the ESA October 2017 Monthly Progress Report, the PMT reported that the overall Engineering effort is 98.9% complete compared to planned completion of 100%. The ESA October 2017 Total Cost Report shows that 97.5% of the overall EIS and Engineering budget, including 97.6% of the Design budget, have been invoiced.

b. New Contract Procurements

No new contracts were awarded for the ESA project during 4Q2017.

Contract CS086, Systems Package 2 - Tunnel Systems, was advertised on August 10, 2017, and a single proposal was received on October 31, 2017. Negotiations are continuing.

Contract CH057D, Harold Track Work, was advertised on November 30, 2017.

c. Construction Progress

In the ESA October 2017 Monthly Progress Report, MTACC reported that total construction progress reached 74.1% complete compared with planned progress of 79.1%. The October 2017 Total Cost Report shows that 74.1% of the construction cost has been invoiced.

d. Continuing and Unresolved Issues

Potential Funding Constraints through 2020

[redacted] At present, the PMT has committed to the MTA board to complete the cost plan late in the first quarter of 2018, which will reveal how funding for the ESA project would be drawn down through the end of the current 2015–2019 Capital Plan. [redacted]

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 and 2017, but not totally eliminated. This situation continues to be a challenge for MTACC.

Amtrak 2017 Accelerated New York Penn Station Track Work: May-August 2017

The primary impact of Amtrak's NYPS track work was the delay of the 2017 priority track outages from the summer until October/November 2017, which proved to be moderate. All the rescheduled priority weekend outages took place and all the planned work was completed with minimal impact on Harold ESA work.

Forecast Force Account and OCIP 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.

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) Lines1, 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 now apparently 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 planned May 2018 LIRR CIL cutovers should FRA not grant LIRR's waiver request to postpone the December 31, 2018, deadline for PTC operation. LIRR was not able to complete the PTC design in 4Q2017, as earlier projected, and design completion is now expected in 1Q2108. 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 is needed.

Manthattan/Systems Performance Risk: [redacted] The forecast substantial completion dates for the aforementioned contracts extends from March 2020 to November 2020, or 26 to 35 months from now. [redacted]

e. New Cost and Schedule Issues

The PMT did not complete the cost forecast update for the ESA project to address various cost issues – those that have occurred and those anticipated to occur in the future – previously planned for the fourth quarter of 2017. 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 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.

b. Real Estate Acquisition

In the ESA October 2017 Monthly Progress Report, ESA reported that it notified the building owner of the proposed 48th St. Entrance that construction of the entrance would be deferred. Additionally, ESA reported that it continued to finalize the Sunnyside Yard and Queens property leases that it needs to establish with Amtrak for the Mid-Day Storage Yard construction and permanent right of way easements.

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 ESA October 2017 Total Cost Report shows that total procurement for the ESA Program is 88.4% complete, with $8.99 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. Remaining procurements originally scheduled for 2016 include:

- CM015, 48th Street Entrance
- CS086, Systems Package 2 - Tunnel Systems
- CH057D Harold Track Work

e. Railroad Force Account (Support and Construction)

During December 2017, LIRR Signal personnel continued "pre-cutover" activities and tests at the new "H1", "H2", "H5", "H6", and Location 30 Central Instrument Locations (CILs) in preparation for the May 2018 cutover of those CILs. LIRR Traction Power personnel continued installation of traction power cables to put the new G02 Substation in service and completed the last phase of the permanent signal power separation from Amtrak. Amtrak Electric Traction personnel completed demolition of catenary facilities so that the CQ033 contractor could begin demolition of the Montauk Cutoff viaduct and began construction of new catenary for the "PW2 Overrun". Amtrak Signal personnel placed the Central Instrument House (CIH) for new Loop Interlocking.

f. Third-Party Construction and Procurement

Manhattan:

Contract CM006 Manhattan North Structures: During 4Q2017, the CM006 contractor's (Manhattan North Structures) continued focus on the close-out process – post construction phase for this contract. The contractor's activities included: remaining base contract work, punchlist work, and NCR work resolution.

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 4Q2017, the CM007 contractor installed precast concrete beams, floor panels, platform walls and slabs. 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. Accordingly, the PMOC will no longer report on this CM014A contract.

Contract CM014B GCT Concourse & Facilities Fit-Out: Substantial Completion is being further extended to March 4, 2020, from the original August 18, 2018. Structural steel work is now the primary critical path, and is proceeding very slowly. The Biltmore Room construction is now the secondary critical path. Through December 31, 2017, structural steel progress was approximately 21% complete by piece and 25% complete by weight.

Contract VM014 Vertical Circulation Elements: During 4Q2017, fabrication was completed on the following VCE (Vertical Circulation elements): Elevators #3 and #4 (Shaft 4 Elevators); Elevator #17 (TMC/SMO Elevator); Escalator #1 (Biltmore Room Escalator).

Queens:

Contract CQ032 Plaza Substation and Queens Structures: During 4Q2017, the CQ032 contractor continued the close-out process for this contract. The contractor activities included: punchlist work, as-built documentation, and NCR work resolution.

Contract CQ033 Mid-Day Storage Yard Facility: The CQ033 contractor continued the following activities: Yard Lighting poles installation, demolition, and civil site work.

Harold Interlocking:

Contract CH061A – Track A Cut and Cover Structure: During December 2017, the CH061A contractor continued to place waterproofing, re-bar, and sidewall and invert concrete at various locations in the Track A Cut and Cover section and installed 3 of the 5 catenary poles necessary to install catenary wires over the LIRR Port Washington #2 Track, known as the "PW2 Overrun".

Systems:

Contract CS179 – Systems Facilities Package No. 1: During 4Q2017, the CS179 contractor continued installation of conduit, cable, fire stopping, fire standpipe, lighting, etc. in the tunnels and at the various facilities. 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 that have potential cost and schedule impacts remain as open items.

Contract CS084 Traction Power Systems Package 4: The contractor continues to cite numerous conditions in the various substation facilities that prevent it from accessing the locations to begin

work. During 4Q2017, 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 and the installation of traction power cable remain as open items.

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 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 is up to 24 months, dependent upon which car builder is ultimately selected.

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 3Q2017 Operational Readiness 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).

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	September 2001	September 2001(A)	September 2001(A)	September 2001
Construction Complete	December 2013	December 2022 (F)	September 2023(F)**	December 2023
Revenue Service	December 2013	December 2022 (F)	September 2023 (F)	December 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 October 2017.

Table 2: Project Budget/Cost Table

(Cost shown in millions)

	FFGA			MTA Current Baseline Budget			Expenditures	
	Original FFGA	Amended FFGA	Pct. of FFGA	Obligated	CBB	Pct. of CBB	Expend-itures	Pct. of CBB
Grand Total	7,386.0	12,038.0	100.00%	4,724.0	11,214.0	100.00%	7,951.4	70.91%
Financing Cost	1,036.0		14.03%	617.0	1,036.0	9.24%	617.6	59.61%
		1,116.0	9.27%					
Total Project Cost	6,350.0		85.97%	4,107.0	10,178.0	90.76%	7,333.8	72.06%
		10,922.0	90.73%					
Federal Share	2,683.0		36.33%	1,148.0	2,699.0	24.07%	2,528.8	93.69%
		2,683.0	22.29%					
5309 New Starts share	2,632.0		35.63%	1,098.0	2,437.0	21.73%	2,266.7	93.01%
		2,632.0	21.86%					
Non New Starts share	51.0		0.69%	50.0	67.0	0.60%	66.7	99.55%
		51.0	0.42%					
ARRA	0.0	0.0	0.00%	0.0	195.0	1.74%	195.4	100.21%
Local Share	3,667.0		49.65%	2,959.0	7,479.0	66.69%	4,805.0	64.25%
		8,239.0	68.44%					

k. Project Risk

The PMOC notes that the project's risk exposure to completion of the remaining work in Harold Interlocking continued to remain high because of new issues that arose during 2017 and delays completing the predecessor activities to the CIL pre-testing phase. The PMOC is concerned about this situation because the Harold work is on the ESA program's critical path. The PMOC notes that completion of the Harold work planned during 2017 and 2018 is critical for the overall ESA program schedule performance. [redacted]

l. FTA Quarterly Review Meeting

- The FTA Quarterly Review Meeting for East Side Access and Second Avenue Subway (Phase 1) was held on October 26, 2017. Highlights of the ESA discussion include: The MTACC President's summarized 6-point management plan to reduce future risks:
  1. Shift the focus to the unique needs of finish and system construction, especially contracts and systems integration.
  2. Develop a new approach to proactively managing the schedule.
  3. Re-organize to empower project management to set contract priorities.
  4. Increase the authority and accountability of the PM/CM Team.

5. Reform change order process to significantly improve processing time.
6. Integrate LIRR engineering and operations personnel with the project team now to facilitate and accelerate the turnover of facilities to LIRR.

- To optimize program execution, ESA will initiate specific management improvements:
  - More aggressive and forward-looking schedule.
  - Project Management Organization (PMO) that can better handle critical issues.
  - Set priorities differently to expedite construction contract change orders.
  - Greater LIRR active participation ("in the room" with ESA GEC and CMs).
- Regarding Positive Train Control in Harold Interlocking:
  - Requests for PTC waiver submitted by LIRR to FRA in Oct. and Dec. 2017.
  - Current ESA Harold schedule is based on waiver approval.
  - Harold work planned for 2018 will be delayed if waiver is denied.

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 recently 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 this in 2017.
- [redacted]
- **Schedule Management Plan (SMP)**: The ESA project should continue to make additional improvements in the following areas: Integrated Project Schedule (IPS) Updating, Forecasting, [redacted] 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, [redacted] 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. Management focus on these issues has resulted in some improvements, but PMOC notes that these issues have continued through 4Q2017. The new MTACC president is planning to make 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.

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 design for CM015, and CS086; and ongoing challenges in the 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

[redacted]

b) Cost

MTACC re-baselined the ESA program budget in June 2014 with a value of $10.177 billion (excluding Rolling Stock Reserve). [redacted]

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

During the 3Q2017 Operational Readiness meeting, MTACC indicated that its managerial focus shifted from Security Certifications to the "management" of the Safety Certification process. A

status of both certification processes will be presented at the 4Q2017 Operational Readiness briefing in January 2018.

b) Project Construction Safety Performance

Through November 2017, 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 CY2017 project wide injury ratio of 0.17 versus 1.70 (2017 BLS average) lost time accidents (LTA) per 200,000 work hours. The ESA recordable injury ratio for CY2017 through November 2017 was 0.43 versus 2.80 (2017 BLS average).

c) Security

The ESA PMT did not report any significant security issues in its ESA October 2017 Progress Report.

1.6 Project Quality

Quarterly Quality Oversights (QQOs): The 3Q2017 QQO was performed in December 2017. Final Reports are being issued, and the contractors are being advised of their respective audit results and findings prior to formal issuance of the reports. The reports follow the Quality Audit format established in 1Q2017, which combines the QQO element-based approach with a task and process-based approach.

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

Table 3.1 – 3Q2017 Quality Audit Results

Contract	Overall Score	Product	Score	Process	Score
CH057	89%	§05650 Track	93%	§01450	87%
CH057A	87%	§03300 CIP Concrete	92%	§01450	84%
CS179	74%	§13916 Fire Sprinkler	71%	§01450	82%
CH061A	87%	§02269 Soldier Piles/Lagging	94%	§01450	85%
CM014B	95%	§05120 Structural Steel	100%	§01450	93%
CM007	92%	§03361 PAC	94%	§01450	91%
CM006	88%	§03300 CIP Concrete	87%	§01450	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 December 2017 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 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, operations or construction issues.

During 4Q2017, several key ESA issues involving LIRR continued to challenge the project:

- The Qualification Testing (QT) for the High Attenuation Resilient Tie Block fastener system is expected to start in February 2018. High Attenuation Direct Fixation Fastener QT continued through December 2017. QT of Special Trackwork RTB is expected to start in March 2018.
- 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 4 of these systems.
- 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. Additionally, the ESA-GEC is awaiting

completion of LIRR's design for PTC to incorporate it into the CS179, VS084, and CS084 contracts.

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 (1Q2018)
- Completing all CIL pre-cutover activities (by May 2018)
- Completing cutovers for the remaining 5 CILS (May 2018)
- Completing all Harold NE Quadrant trackwork (June/July 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 the 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 December 2017, although the effects of Amtrak's lack of support have been somewhat mitigated, it 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 MTTACC'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 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. [redacted] Cost overruns are related to Harold Force Account work (expected to be $246 million total not including any 3rd Party extended overhead costs; $111million of total for FFGA scope alone); OCIP cost overrun ($191 million); Owner Initiated Changes (wireless cellular/WIFI, digital advertising, etc.); leak remediation on Contract CM014B; and, other forecast funding needs. 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 October 31, 2017, remained at $2.683 billion, as indicated in Table 2 in the Executive Summary.

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 and the PMOC is presently reviewing it.

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 ESA October 2017 Monthly Progress Report, the PMT reported the overall Engineering effort as 98.9% complete versus 100% planned. The ESA October 2017 Total Cost Report shows that 97.5% of the overall EIS and Engineering budget, and 97.6% of the Design budget, have been invoiced.

Status of Construction Packages Advertised:

Contract CS086, Systems Package 2 - Tunnel Systems, was advertised on August 10, 2017, and will be negotiated using the RFP method. A single proposal was received on October 31, 2017. Negotiations with the proposer continued through December 2017. The January 2, 2018, NTP will not be met because the MTA board has not yet approved the contract award.

Contract CH057D, Harold Track Work, was advertised on November 30, 2017. Bids due date has been postponed one week to February 14, 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 December 2017. GEC contract modification for design of alternate 47th Street Entrance is awaiting final MTACC approval.

Contract CH058A, Harold Structures – Part 3A, B/C Approach will include construction of the Tunnel B/C Approach Structure. The ESA PMT continues to await NYCDOT comments about the design to underpin the 39th St. overhead bridge. The 100% design package was not submitted on December 15, 2017, as previously forecast, and is now expected to be submitted by January 31, 2018. The bid advertisement date has been pushed back to February 22, 2018.

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. To date, however, none have been formally agreed upon. The design package for FQA33B remains on hold.

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.

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 new forecast for completion of the PTC design is March 31, 2018. 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 has delayed both the GEC's design changes and the subsequent contract modifications for the above contracts, however.

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

Contract CS179, Systems Facilities Package No.1

The CS179 contractor continues to work on the completion of the various contract required systems; a process that as of the end of December 2017 is 19 months late. Additionally, the LIRR has formally approved only four of the ten Control System Final Designs (FDs) as of the end of December 2017; and design changes on one of the remaining six Control System designs have the potential to impact designs completed but not yet approved. **[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 SCADA issues.

Contract VS086, Systems Package 3 – Signal Equipment Procurement

Unresolved design decisions by the MTA continue to delay the timely progression of the contract work. A major equipment issue has caused a significant, and yet undetermined, delay in the fabrication, testing, and delivery of Plaza Interlocking. 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.

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. [redacted] 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 make this happen. 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 any potential impacts on 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 88.4% complete, with $8.99 billion awarded of the $10.17 billion current project budget.

Status: The status of the current active procurements includes:

- CM015, 48th Street Entrance – In June 2017, the ESA-PMT advised that all design work on this package had been suspended. Total bid advertisement delay is 16 months.
- CS086, Systems Package 2-Tunnel Systems – Advertised on August 10, 2017, one single proposal submitted on October 31, 2017. Total bid advertisement delay is 16 months. Contract negotiations continued through December 2017.
- CH057D, Harold Track Work, was advertised on November 28, 2017, and bids are now due on February 14, 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 its October 2017 Monthly Progress Report that the total construction progress reached 74.0% complete vs.78.03% planned. Please see Appendix J for the current budget, cost, and schedule statuses of each of the contract and force account construction packages listed in the section below. The percentage of work complete is calculated from invoiced costs divided by current contract award, as shown throughout this report.

Manhattan Contracts

Costs and substantial completion dates are tabulated below for active Manhattan contracts. Additional cost information can be found in the appendix.

	Cur Budget	Appr'd Contract	Rem Budget	Invoice	EAC	Planned Comp	Actual Comp	Cur BL SC	Forecast SC	Notes
CM006	361.6	350.2	11.4	346.0	355.1	100.0%	98.8%	6/1/17	11/30/17	
	nc	nc	nc	+0.1	(-2.3)	nc	nc	nc	+29.0	
	361.6	350.2	11.4	346.1	352.8	100.0%	98.8%	6/1/17	12/29/17	
CM007	712.3	663.4	48.9	160.9	707.1	32.4%	24.2%	1/28/20	6/4/20	
	nc	nc	nc	+25.6	(-4.7)	2.7%	3.9%	nc	nc	
	712.3	663.4	48.9	186.5	702.4	35.1%	28.1%	1/28/20	6/4/20	
CM014A	61.1	60.5	0.6	58.5	58.1	100.0%	96.6%	9/7/15	11/1/15	3
	nc	nc	nc	+0.1	nc	nc	0.2%	nc	nc	
	61.1	60.5	0.6	58.6	58.1	100.0%	96.8%	9/7/15	11/1/15	
CM014B	463.6	443.5	20.1	195.9	488.6	77.2%	44.2%	8/18/18	3/4/20	1
	nc	+0.4	(-0.4)	+6.0	+17.4	2.1%	1.3%	nc	nc	
	463.6	443.9	19.7	201.9	506.0	79.3%	45.5%	8/18/18	3/4/20	
VM014	46.1	34.2	11.9	18.8	45.5	NA	54.9%	10/25/19	6/3/19	2
	nc	nc	nc	+1.4	(-0.5)		4.0%	nc	+501.0	
	46.1	34.2	11.9	20.2	45.0		58.9%	10/25/19	10/16/20	

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 Awards for Force Account work are made on an annual basis. Actual Cumulative % Complete based on Total Budget Value, not Approved Contract.
3. The substantial completion date was established but was not declared.

CM006 – Manhattan North Structures

Construction Progress: During December 2017, the CM006 contractor continued to complete remaining base contract work elements, punchlist work items, and completion of NCR necessary for SC. SC was not achieved in December 2017.

Observations/Analysis: As reported previously, the contractor and ESA continued to work well together.

Concerns and Recommendations: The contractor and ESA must remain diligent to complete contract requirements for substantial completion and contract close-out.

CM007 - GCT Station Caverns and Track

Construction Progress: During December 2017, duct bench, stairway, CMU wall, and concrete end wall construction and electrical conduit and HVAC piping installation continued in various locations in both the East- and Westbound Cavern Back of House (BOH) areas.

Cross Passageways #1, 2, 4 & 5 & Access Tunnel #3: Continued PAC wall construction. CMU wall installation at Access Tunnel #1 was completed.

East & West Caverns: Lower level platform precast wall and slab construction and installation of under platform conduit, ductwork, and piping continued. Installation of precast elements for the smoke plenum West Cavern began.

Track: In Queens, installation of the Direct Fixation Fastener Track (DFF) continued on Track WB1 in the 63rd St. Tunnel and Direct Fixation Track on Tie Blocks (RTB) continued in Tunnels A, B/C, and D.

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

Concerns and Recommendations: The PMOC remains concerned that continued delays in track submittals for the RTB Special Trackwork assembly will continue to impact Milestone #4 - Track & 3rd Rail Complete. The PMOC recommends that the ESA PMT complete its review of the draft recovery plan schedule update submitted by the contractor as quickly as possible.

CM014A – GCT Concourse & Facilities Fit-Out

Status: The scope of work for this contract has been completed, although limited punch list work continues without declaration of a Substantial Completion date.

CM014B – GCT Concourse & Facilities Fit-Out

Construction Progress:

Concourse (Madison Yard)

Installation of overhead conduit, electric door boxes, communication racks, air handling units, and FCUs continued. Installation of AHUs & FCUs continues throughout. Painting of block walls and columns continues throughout Zones 1-4.

Wellways: In Wellways #1 and #2, escalator structural splicing and Machine Room work continued.

Biltmore Connection: The first track outage to begin Biltmore Connection construction began during December 2017.

Shaft #4: Installation of Stair #23 continues.

Elevator T-01: Installation of Elevator #14 continues.

47thStreet 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.

48th Street Entrance: Installation of Fire Stand Pipe (FSP) nears completion.

50th Street Vent Building: Installation of outlet wires, pull boxes, and conduit for HVAC Equipment 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, is also impacting the CS179 contractor, who can't pull overhead wiring until overhead conduit is installed.

Concerns and Recommendations: The PMOC continues to be concerned that the slow change order process will result in further delay to the Substantial Completion date.

VM014 –Vertical Circulation Elements (Escalators & Elevators)

Construction Progress: During 4Q2017, fabrication was completed on the following VCE (Vertical Circulation elements): Elevators #3 and #4 (Shaft 4 Elevators); Elevator #17 (TMC/SMO Elevator); Escalator #1 (Biltmore Room Escalator).

Observations/Analysis: The PMOC has observed that issues involving the VM014 contract can have a negative impact on the CM014B contract, most notably, VM014's cash flow issues have caused some delays to the schedule for the CM014B contract.

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 impact not only the fabrication, but also the schedule.

Queens Third-Party Contracts

Costs and substantial completion dates are tabulated below for active Queens contracts. Additional cost information can be found in the appendix.

	Cur Budget	Appr'd Contract	Rem Budget	Invoice Cost	EAC	Planned Comp	Actual Comp	Cur BL SC	Forecast SC	Notes
CQ032	263.9	262.4	1.5	260.6	263.7	100.0%	99.3%	9/6/16	11/30/17	
	nc	nc	nc	nc	nc	nc	nc	nc	+29.0	
	263.9	262.4	1.5	260.6	263.7	100.0%	99.3%	9/6/16	12/29/17	
CQ033	308.0	291.7	16.3	18.7	308.0	NA	6.4%	8/10/20	8/10/20	
	nc	nc	nc	+11.1	nc		3.8%	nc	nc	
	308.0	291.7	16.3	29.8	308.0		10.2%	8/10/20	8/10/20	

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

CQ032 Contract – Plaza Substation and Queens Structures

Construction Progress: During December 2017, the CQ032 contractor continued punch list work, preparation of as-built information, O&M Manuals, training, NCR resolution, etc. necessary for SC. SC was not achieved in December 2017.

Observations/Analysis: ESA reported that SC is also contingent on contractor compilation of a summary of all open commercial items.

Concerns and Recommendations: The contractor and ESA must remain diligent to complete contract requirements for substantial completion and contract close-out.

CQ033 – Mid-Day Storage Yard Facility:

Construction Progress: During December 2017, the CQ033 contractor continued traction power duct bank work, continued Yard Lighting pole installation, continued sanitary sewer installation,

clearing and grubbing, and demo of the Montauk Cutoff approach structure. Car Appearance Maintenance Work Platform (CAM) installation also started this month.

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

Concerns and Recommendations: The project continued to forecast impact to Access Restraints #1 and #2. The PMOC recommends ESA management explore options to initiate Amtrak work so that these restraints can be lifted.

Systems Contracts

Costs and substantial completion dates are tabulated below for active Systems contracts. Additional cost information can be found in the appendix.

	Cur Budget	Appr'd Contract	Rem Budget	Invoice	EAC	Planned Comp	Actual Comp	Cur BL SC	Forecast SC	Notes
CS179	606.9	550.7	56.2	339.5	605.4	62.2%	61.7%	7/1/20	11/30/20	
	nc	+1.2	(-1.2)	+13.5	(-1.2)	1.9%	2.3%	nc	nc	
	606.9	551.9	55.0	353.0	604.2	64.1%	64.0%	7/1/20	11/30/20	
CS084	79.7	73.0	6.7	11.4	79.7	71.3%	15.6%	12/2/19	8/26/20	
	nc	nc	nc	(-0.3)	nc	0.3%	(0.4%)	nc	(-22.0)	
	79.7	73.0	6.7	11.1	79.7	71.6%	15.2%	12/2/19	8/4/20	
VS086	21.8	19.9	1.9	5.9	22.1	NA	29.4%	10/14/19	10/14/19	
	nc	nc	nc	+0.7	(-0.2)		3.7%	nc	nc	
	21.8	19.9	1.9	6.6	21.9		33.1%	10/14/19	10/14/19	
VH051	30.2	29.5	0.7	28.8	30.2	NA	97.6%	4/30/15	8/20/18	
	nc	nc	nc	nc	nc		nc	nc	(-92.0)	
	30.2	29.5	0.7	28.8	30.2		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.

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 remains as a serious issue and contributes to delay change orders needed to progress work and to design control and non-control systems. Final designs for several of the control systems are not yet complete; and, the contractor perceives that LIRR-directed changes will impact completed FDs of several systems. Progress on non-control systems design is also delayed, partially due to open issues. The contractor reiterates that open issues are delaying the schedule and that further delays could jeopardize contract completion. 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: The contractor continued work on conduit, cable, fire stopping, fire standpipe, lighting, and etc. in the tunnels and substation facilities. As noted in previous PMOC reports, numerous water infiltration issues have severely impacted progress. Infiltration remediation at the C05 (Vernon) substation is still incomplete. There remain a number of SWOs (due to: water infiltration, site conditions, scope transfers, etc.) which are impacting progress. The

contractor continues to procure equipment and fabricate racks based on designs that, in many cases, have not been formally approved by the LIRR.

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. Lastly, the PMOC remains concerned about late completion of design reviews and approvals.

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.

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

Construction Progress: During 4Q2017, equipment installation in C05 was limited due to a SWO (TPSS floor) and obstructions (other contractor's equipment installation). As previously reported, the contractor rejected areas turned over by other contracts and provided MTACC with a list perceived deficiencies. Through December 2017, many of the deficiencies have not been addressed and work is on hold in those areas. The extra L3 Electrical Service work was completed in 4Q2017 and turned over to the LIRR. The issue affecting cable installation, from C08 to the tracks, remains open and can potentially impact the schedule. A new significant issue is coordination of C01/C02 substation equipment deliveries with tail track installation.

Concerns and Recommendations: The PMOC supports all PMT efforts in working with LIRR to expedite design reviews and approvals to avoid delaying construction. At contract meetings, the PMOC has inquired about verification of manhole and conduit systems at CS084 substation locations so to avoid a repeat of the issue that exists at C08. It appears that these manhole and conduit systems have yet to be surveyed.

VS086 Systems Package 3 – Tunnel Signal Procurement

Design Progress: The contractor maintains that lack of timely responses from MTA to submittals and inquiries continues to cause day-to-day delays. The contractor also maintains that the completion of Plaza Interlocking is critical but equipment fabrication, testing, and delivery is being delayed until a determination is made about Low-Smoke-Zero-Halogen (LSZH) signal case wiring. 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 and might require changes to completed designs.

Concerns and Recommendations: The PMOC remains concerned about the number of unresolved items with potential 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 construction.

Harold Interlocking Contracts

Costs and substantial completion dates are tabulated below for active Harold contracts. Additional cost information can be found in the appendix.

	Cur Budget	Appr'd Contract	Rem Budget	Invoice Cost	EAC	Planned Comp	Actual Comp	Cur BL SC	Forecast SC	Notes
CH061A	42.0	34.3	7.7	8.6	37.9	58.0%	25.0%	5/28/18	5/28/18	
	nc	nc	nc	+3.6	+0.1	5.2%	10.5%	nc	nc	
	42.0	34.3	7.7	12.2	38.0	63.2%	35.5%	5/28/18	5/28/18	
VH051A	30.2	29.5	0.7	28.8	30.2	NA	97.6%	4/30/15	8/20/18	
	nc	nc	nc	nc	nc		nc	nc	(-92.0)	
	30.2	29.5	0.7	28.8	30.2		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.

CH061A – Track A Cut and Cover Structure:

Construction Progress: During December 2017, the contractor continued excavation throughout the Tunnel A open cut and cover section, placement of concrete inverts at work locations #5, #6, and #7, and installations of catenary poles at the PW2 Overrun and Montauk Cut Off work sites.

Observations/Analysis: The PMOC observes that the MTACC project staff and the CH061A contractor continue to work very well together and have been able to successfully overcome all construction challenges to date.

Concerns and Recommendations: After the initial delay with the underpinning of 39th St. overhead bridge, CH061A 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 contracts. Additional cost information can be found in the appendix.

	Cur Budget	Appr'd Contract	Rem Budget	Invoice Cost	EAC	Planned Comp	Actual Comp	Cur BL SC	Forecast SC	Notes
FHA01	18.8	18.8	--	18.6	18.8	100.0%	98.9%	2/4/16	7/7/18	1,2
	nc	nc	nc	nc	nc	nc	nc	nc	(-203.0)	
	18.8	18.8	--	18.6	18.8	100.0%	98.9%	2/4/16	12/16/17	
FHA02	60.2	60.2	--	54.0	66.4	93.4%	89.7%	8/15/17	7/7/18	1,2
	nc	nc	nc	nc	nc	6.6%	0.5%	nc	+232.0	
	60.2	60.2	--	54.0	66.4	100.0%	90.2%	8/15/17	2/24/19	
FHL01	24.4	24.4	--	24.4	24.4	100.0%	100.0%	4/9/15	4/18/18	1,2
	nc	nc	nc	nc	nc	nc	nc	nc	+50.0	
	24.4	24.4	--	24.4	24.4	100.0%	100.0%	4/9/15	6/7/18	
FHL02	96.6	84.6	12.0	88.6	96.6	100.0%	91.8%	11/25/16	8/26/20	1,2
	nc	+12.0	(-12.0)	+2.6	nc	nc	2.7%	nc	(-7.0)	
	96.6	96.6	--	91.2	96.6	100.0%	94.5%	11/25/16	8/19/20	

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 Awards for Force Account work are made on an annual basis. Actual Cumulative % Complete based on Total Budget Value, not Approved Contract.

Harold Stage I Amtrak F/A (FHA01)

Construction Progress: Amtrak did not perform any significant FHA01 construction during December 2017.

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

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

Harold Early Stage 2 Amtrak F/A (FHA02)

Construction Progress: During December 2017, Amtrak Electric Traction personnel began catenary modifications necessary to install overhead catenary wires over the LIRR Port Washington #2 Track, known as the "PW2 Overrun".

Observations/Analysis: Although the overall ESA program is behind schedule, Amtrak's direct construction support of ESA activities continues on schedule with whatever activity is the priority at a particular time. The PMOC believes that Amtrak's support for its direct work in support of the ESA Program has been adequate, although at times very trying to ESA management.

Concerns/Recommendations: The PMOC has no concerns about or recommendations for Amtrak's support of its direct construction work for ESA at this time.

Loop Interlocking CIL Amtrak FQA65

Construction Progress: During December 2017, Amtrak C&S personnel placed the Central Instrument House (CIH) for new "Loop" Interlocking.

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 resources.

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

Harold Stage 1 LIRR F/A (FHL01)

Construction Progress: During December 2017, LIRR 3rd Rail personnel continued installation of traction power cables between various track and turnout locations and the new G02 Substation in preparation for cutover of the new substation during 1Q2018.

Observations/Analysis: The PMOC notes that the new G02 Substation must be in service before the existing G02 Substation, which is in the footprint of the future B/C Tunnel construction, can be de-commissioned and demolished. The B/C Tunnel is a critical component of LIRR RSD service into GCT, so any delay to its construction may have a corresponding negative impact on RSD. The PMOC notes that, LIRR 3rd Rail personnel have made great strides with installation of conduit and traction power cables during 4Q2017 and the cutover for the new substation appears to be on schedule for mid-1Q2018.

Concerns and Recommendations: The PMOC remains concerned that G02 Substation construction remains behind schedule, but is encouraged that LIRR has increased its workforce to complete construction. The PMOC recommends that LIRR continue to supply this same level of 3rd Rail personnel until the new substation is placed in service.

Harold Early Stage 2 LIRR F/A (FHL02)

Construction Progress: During December 2017, LIRR Signal personnel continued to install signal conduits, megger, terminate signal cables, and install snow melter equipment at "H1", "H2", and Location 30 CILs, and continued "pre-testing" and FRA test procedures at the "H1", "H2", "H5", "H6", and Location 30 CILs. Signal personnel successfully completed the six "pre-cutover" weekend signal tests scheduled during 4Q2017 and also continued to make signal circuit revisions at the "H5", "H6", and Woodside CILs.

Observations/Analysis: The PMOC notes that LIRR successfully completed the 6 "pre-cutover" weekend tests so critical to the May 2018 cutover during 4Q2017. There are an additional 6 "pre-cutover" weekends scheduled for late 1Q2018 and early 2Q2018 that will need to be conducted prior to the actual cutover weekend, scheduled for May 18-20. The PMOC believes that LIRR signal personnel gained considerable insight and confidence during these "pre-cutover" tests and that they will be completely able to perform the actual cutovers.

Concerns and Recommendations: LIRR's performance during the "pre-cutover" weekends has greatly eased the PMOC's concerns about its capabilities. The PMOC recommends that LIRR continue to progress its signal work prior to the cutover in exactly the same fashion as it has for the past several months.

2.4 Operational Readiness

Status: To provide the FTA with the most current information concerning Operational Readiness, for which meetings are held on a quarterly basis which does not correspond with the PMOC's quarterly reports. Consequently, the PMOC will defer its report on this issue until the months in which the scheduled meetings are conducted. In this case, since the next meeting is scheduled for

January 23, 2018, the PMOC will report on Operational Readiness issues in its January 2018 Monthly Report.

2.5 Vehicles

Status: LIRR will procure the new M-9A vehicles using a two-step RFP process. The first step will be a solicitation to determine vendors' "Qualifications" to participate in the procurement. This will be followed by "Cost/Technical" proposals submitted by those vendors that are determined to be qualified during the first step. The "Qualifications" portion of the RFP was solicited in late November 2017, which puts the M-9A vehicle delivery schedule up to 24 months late (dependent upon which vendor is ultimately selected), based on the latest LIRR Vehicle Procurement Schedule available to the PMOC (October 2017).

Observations/Analysis: Based on the October 2017 LIRR Vehicle Procurement Schedule, the only way in which the LIRR will have sufficient new vehicles to begin ESA service into GCT by the ESA RSD date will be if the present M-9 vendor is also awarded the M-9A contract.

Concerns and Recommendations: The PMOC is encouraged that the LIRR has begun the M-9A vehicle procurement process, although it will remain concerned until the contract is awarded and vehicle deliveries begin. The PMOC recommends that LIRR conclude its RFP process as quickly as possible and thereafter monitor the vendors' manufacture and delivery of the vehicles very closely.

2.6 Property Acquisition and Real Estate

Status: 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 October 2017 Progress Report indicates that Community Relations outreach for the month included leadership in coordinating meetings and briefings on how CM014B construction of the Biltmore Room in existing Grand Central Terminal (GCT) would impact the travelling public and communication with surrounding communities as CQ033 began demolition of the Montauk Cutoff viaduct in Queens.

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.

3.1 PMP Sub-Plans

Status: In September 2017, MTACC issued an update to its Technical Capacity and Capability Plan. The PMOC is currently reviewing this plan.

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 updated the Risk Management Plan during 4Q2017 which the PMOC continues to review.

Observations: MTACC is using the revised Project Management Plan, Cost Management and Schedule Management Plan.

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.

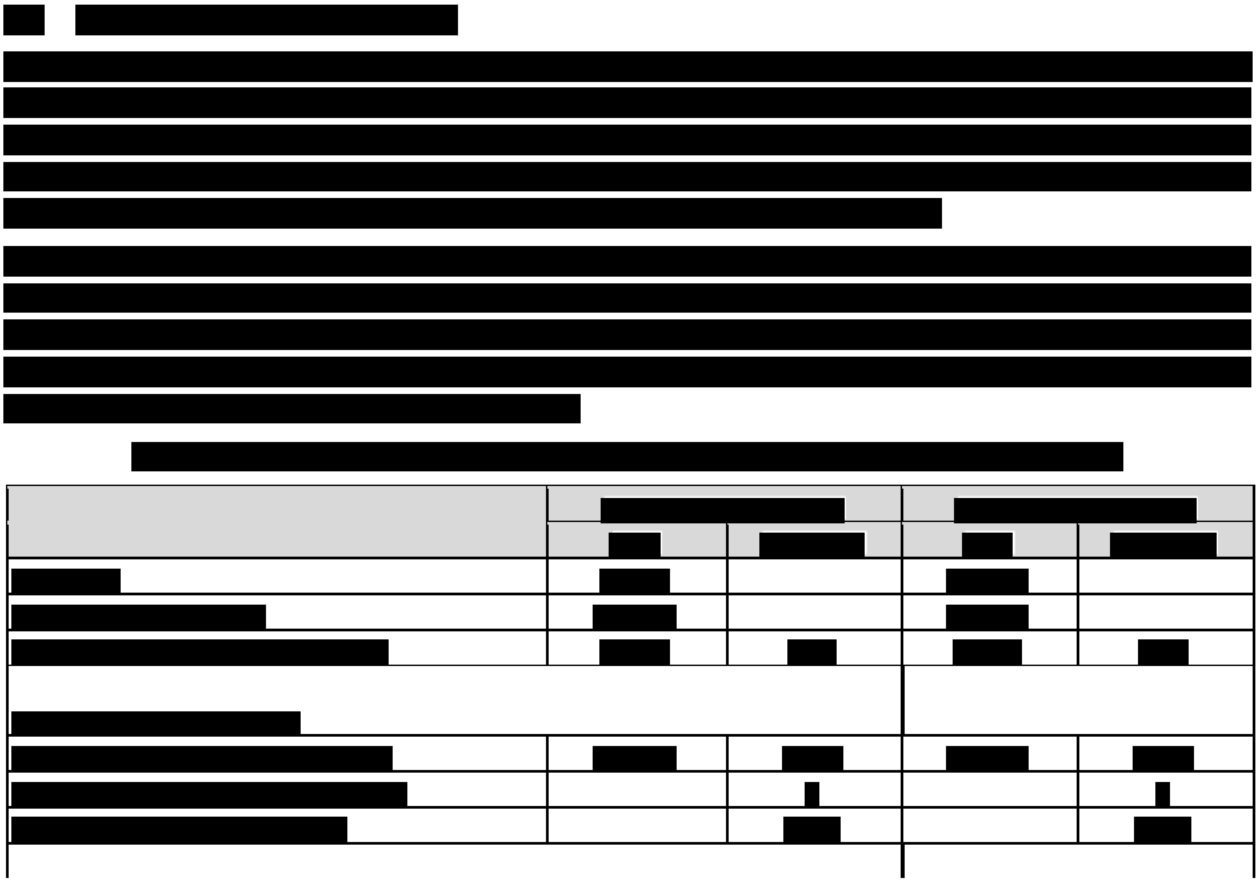
3.2 Project Procedures

Status: The revised CMP and SMP may require updates to referenced Project Procedures.

Observations: None

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

4.0 PROJECT SCHEDULE



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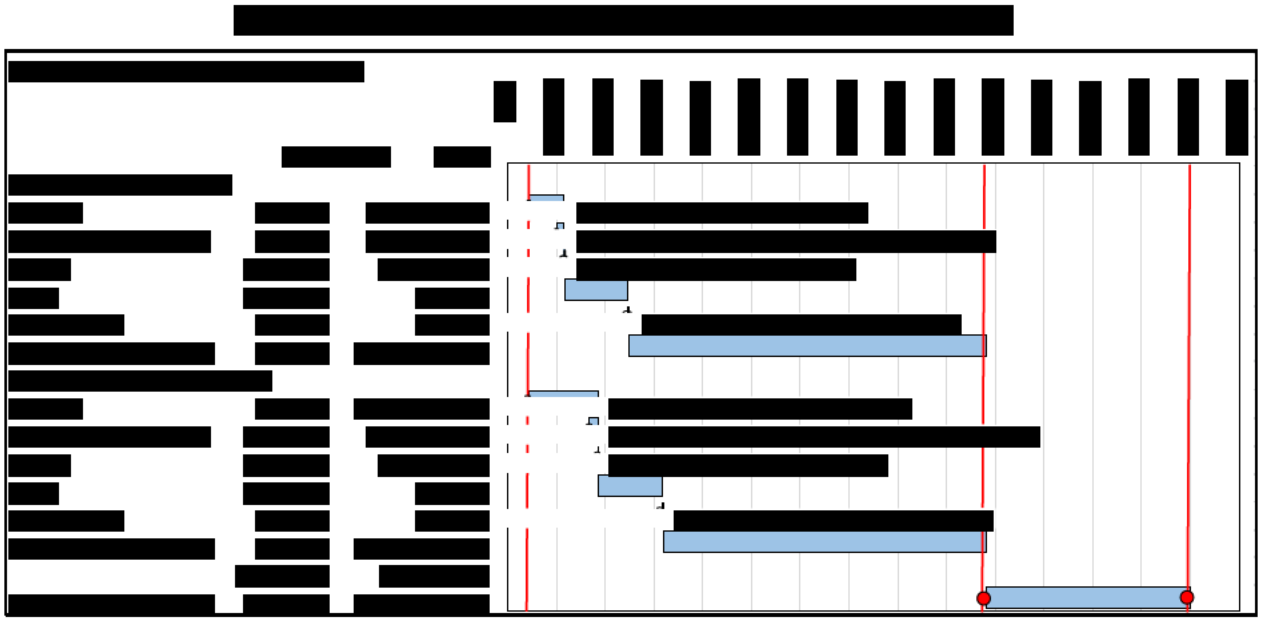


4.2 Primary Critical Path

Table 4.2 summarizes the work that comprises the ESA Program Critical Path, as reported by the PMT in the October 2017 IPS Report.

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	160	21-May-18	28-Oct-18
FHL04	Harold Signals and Catenary			28-Oct-18
FHL02	Decommission Harold CIL	28	29-Oct-18	26-Nov-18
CH058	B/C Approach Structure	634	26-Nov-18	21-Aug-20
FHL04	Harold Testing and Cutovers	49	24-Aug-20	12-Oct-20
LIRR Staff Training and LIRR Final 3 Months Period		119	15-Oct-20	11-Feb-21
Target Revenue Service Date				**12-Feb-21**
[redacted]		[redacted]	[redacted]	[redacted]
Late Revenue Service Date				**13-Dec-22**

The PMT reported that necessary Harold Interlocking CIL pre-cutover work and testing, scheduled for 4Q2017, completed successfully. The critical path analysis shows that the remaining Harold CIL cutover pre-testing will control the Program Critical Path until May 2018. Table 4.3 lists activities that comprise this section of the critical path along with IPS dates and durations from the August 1, 2017 and November 1, 2017 schedules. While there was slippage in the initial activity finish date, the schedule has held the overall completion dates. [redacted]

[redacted]

Act Id	Description	IPS 96 – Aug. 1, 2017			IPS 99 – Nov. 1, 2017		
		Dur	Start	Finish	Dur	Start	Finish
FHL02...							
CSR1240	H5/H6/30 South Pre-Cutover Testing	50	14-Aug-17	23-Oct-17	22	3-Jul-17A	1-Dec-17
CSR1270	H1/H2/30 North Pre-Cutover Testing	80	24-Oct-17	15-Feb-18	48	7-Jul-17A	9-Feb-18
CSR1280	Days Lost/Weekend Work	50	16-Feb-18	26-Apr-18			
[redacted]		[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
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 longest path through Manhattan / Systems work lost two months during 4Q2017, and shifted almost entirely to a different scope of work in the process. The current critical path runs through CM007 construction of smoke plenums, platforms, and conduit installation in the caverns; then through CS179 equipment installation, wire pulling and testing in the caverns; and, finishes with completion of CS179 Integrated Systems testing on November 30, 2020. At the end of 3Q2017, the critical path had run through: CM007 track and switch installation; CS086 signal and cable installation and testing; and, finally, IST ending on October 1, 2020. Although the path completion

date lost two months there was no impact to the program due to a similar duration loss on the primary critical path. The PMOC is concerned that further delays to the procurement and prosecution of CS086 could result in it appearing on and delaying this critical path.

Sub Program Longest Path – Queens

The finish date for the longest path through Queens work remains on August 10, 2020, although the path is now comprised of different work elements. The current critical path runs through CH061A catenary work (ending in January 2018); then through CQ033 track, signals, and power systems construction; and, ending on August 10, 2020 with CQ033 Midday Storage Yard testing. At the end of the 3Q2017, the Queens critical path did not include the CH061A catenary work.

[redacted]

4.3 90-Day Look-Ahead of Important Activities

Appendix F shows a 90-day Look-Ahead, which 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 in the next two quarters 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, and a third – CS086 – is on a near critical path.

TABLE 4.4 – Upcoming Contract Procurement Milestones

Contract Description	Advertise Date	Bid Date	NTP	Project Period	Substantial Completion
CS086 Systems Package 2 Signal Installation	8/10/17A	10/31/17A	1/2/18	33 Months	9/30/20
CH057D Harold Track work	11/30/17	2/7/18	3/16/18	15 Months	6/7/19
CH058A B/C Tunnel	1/16/18	4/17/18	6/18/18	27 Months	9/25/20
CM015 48th St. Entrance	TBD	TBD	TBD	TBD	TBD

The procurement of CS086, Tunnel Systems Package 2 – Signal Installation, is being negotiated based on the RFP received on October 31, 2017 from a single proposer. The PMT reported at the December Cost and Schedule Meeting (January 12, 2018) that NPT date has slipped and is unlikely to occur before the March 2018 MTA board meeting. The PMOC is concerned that delays to CS086 could impact to the completion of Integrated Systems Testing.

The procurement dates for CH057D, Harold Track work, and CH058A, Harold Structures – B/C Approach, have held steady during 4Q2017. Timely procurement of these contracts is important for maintaining the ESA project schedule because they both are on the primary critical path.

The procurement of CM015, 48th Street Entrance, is on hold and design work remained suspended through December 2017. The PMOC notes that PMT is developing alternative access at 47th Street and CM015 will not be critical to ESA program completion. Final disposition for CM015 will be determined through negotiations between MTA and the building owner, which the PMT will provide when the negotiations are complete.

PMOC Observations, Analysis, and Concerns

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

1. Progress on CS084, Tunnel Systems Package 4 – Traction Power, is slow and is currently reported at 15% complete vs. 72% planned. The PMOC observes that much of the work has had day-for-day delays in each IPS update period. 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.
2. Concerns continue regarding the delays procuring CS086, Tunnel Systems Package 2 – Signal Installation. The project duration was decreased previously to compensate for these delays, which will impact the primary critical path and completion of CS179 Integrated Systems Testing. With the award of CS086 potentially delayed until February 2018, the PMOC is further concerned that the delays will continue to impact the Program schedule.
3. The revised planning effort for CH058A, B/C Tunnel Approach, is on the program critical path and may impact the Program schedule. The PMOC recommends that ESA describe major changes planned and any impacts to Program milestones or interfaces with other contracts.
4. Concerns continue about the (ESA secondary) critical path through Manhattan/Systems work **[Ref: ESA-128-Sep17]**, which lost two months during the 4Q2017. [redacted]

[redacted]

5.0 PROJECT COST

5.1 Budget/Cost

The PMT reported in the October 2017 Monthly Progress Report that total project progress was 74.0% compared with planned progress of 78.0% 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. [redacted]

Table 5.1: Comparison of Standard Cost Categories: FFGA vs. CBB

(Cost shown in millions)

Standard Cost Category	FFGA	June 2014 Project Budget	Amended FFGA	Aug 2017 CBB	Sep 2017 CBB	Oct 2017 CBB	CBB / FFGA Variance	CBB / Amended FFGA Variance
10 - Guideway & Track Elements	1,988.7	3,405.5	3,353.4	3,506.6	3,509.5	3,509.5	76.47%	4.65%
20 - Stations, Stops, Terminals, Intermodal	1,168.7	2,238.2	2,326.8	2,326.5	2,328.2	2,328.2	99.22%	0.06%
30 - Support Facilities (Yards, Shops, Admin)	356.3	474.2	450.8	509.7	513.0	513.0	43.98%	13.80%
40 - Site Work and Special Conditions	205.1	610.6	562.5	568.2	560.9	560.9	173.48%	-0.27%
50 - Systems	619.3	605.6	627.7	587.3	586.7	586.7	-5.26%	-6.52%
60 - ROW, Land, Existing Improvements	165.3	219.4	192.2	215.4	215.4	215.4	30.31%	12.04%
70 - Vehicles	494.0	209.9	879.5	209.9	209.9	209.9	-57.50%	-76.13%
80 - Professional Services	1,184.0	1,975.4	1,809.0	2,015.7	2,015.7	2,015.7	70.25%	11.43%
[redacted]								
[redacted]								
100 - Financing Cost	1,036.1	1,036.1	1,116.5	1,036.1	1,036.1	1,036.1	0.00%	-7.20%
[redacted]								

The PMT is working on a comprehensive review and update of the ESA program budget, which is anticipated to be complete by the end of March 2018. [redacted]

As previously reported, cost information released by 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); $245 million in additional F/A funds would be needed to complete the full Harold 14-4M alignment, including the Regional Investment scope; an additional $191 million would be needed to fund the OCIP insurance program through February 2022.

The budget review would 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.

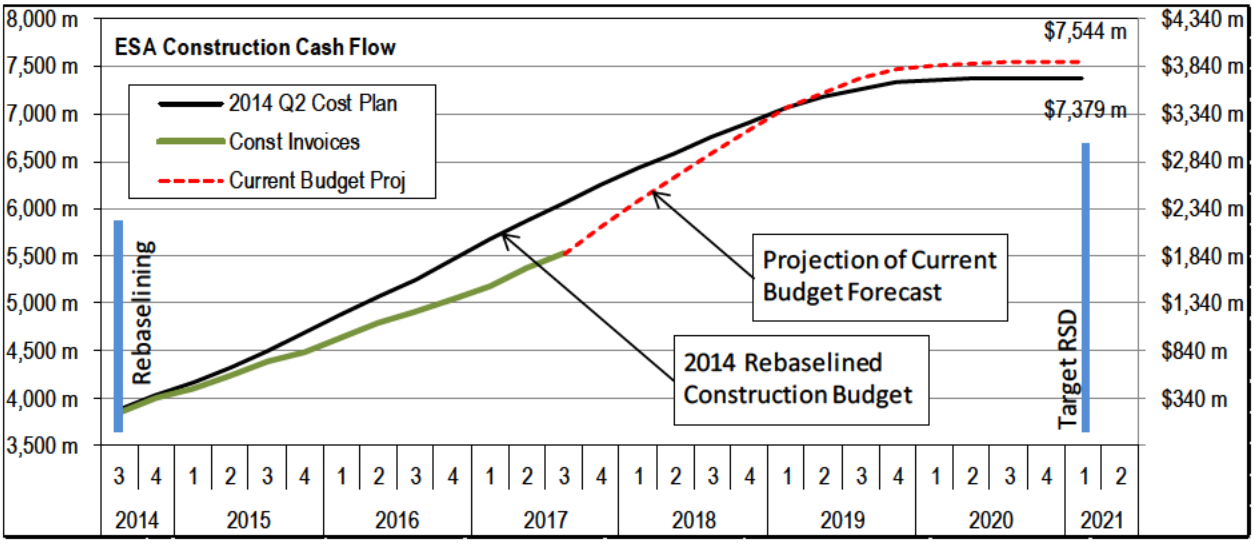
Concerns and Recommendations: Until the PMT completes their cost forecasting exercise and addresses any resulting timing or funding impacts the project will be open to potential cost risks. [redacted]

[redacted] The PMOC is concerned about all potential impacts to the program budget and target Revenue Service Date. Specific impacts will not be known until the PMT review is complete, the details of which are expected late in 1Q2018.

5.2 Project Cost Management and Control

The ESA October 2017 Monthly Progress Report also shows that construction progress – based on invoiced construction costs – reached 74.1% of the CBB compared with planned progress of 79.1%. (Details of active contract budgets and expenditures are in Appendix J). Cost trends have remained consistent since the re-baselining with actual expenditures below and the plan making the completion of construction to support the start of revenue service in the first 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 3Q2017 are plotted on the chart to monitor progress on this plan. The chart reveals a slight improvement to the divergence between planned and actual construction spending, with the current trend tracking the planned spending rate, although spending is approximately $500 million low. The PMOC's simple cost projection – modeled on the 2014 Rebaseline using the current construction budget – shows that a significant increase in production is required over the next year. [redacted]

The PMOC is concerned that 1) continued inability to achieve the construction spending as planned and 2) increasing budgets may impact the timely achievement of the Target Revenue Service Date. 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	October 2017			
		Current Budget	Actual Awards	Invoice to Date	Inv. Pct. of Budget
Construction Subtotal	**7,379.3**	**7,543.6**	**6,975.9**	**5,407.1**	**71.68%**
Soft Costs Subtotal	**2,798.5**	**2,634.2**	**2,016.7**	**1,926.7**	**73.14%**
Engineering	720.6	735.9	734.2	713.7	96.98%
OCIP	282.6	307.6	300.8	300.4	97.64%
Project Mgmt.	972.2	972.2	859.8	795.3	81.80%
Real Estate	182.1	178.0	119.2	117.3	65.90%
Rolling Stock	202.0	202.0	2.7	--	0.00%
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]

5.3 Change Orders

Table 5.4 lists the contract modifications with magnitudes greater than $100,000 which were executed during August, September and October 2017. 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
	August 2017	
CH057	EO Switch Pads and Equipment (mod. 24)	970,558
CH057	MM4 Running Rail (mod. 29)	160,794
CM007	Deletion of Antenna Conduit (mod. 18)	(635,405)
CS084	Layer 3 Switches (mod. 6)	106,000
CH051A	Excusable Time Extension and 30 Location CIL Extra Lift (mod. 16)	140,897
GEC	Revisions to CQ033, VQ033 and FQL33A (mod. 142)	1,819,778
	September 2017	
CH057	Credit for Small Parts Steel Installation (mod. 17)	(222,746)
CM007	PAC Finish Credit (mod. 22)	(196,780)
CM014B	MNR Reframe Existing Escalators ES-01, ES-02 (mod. 62)	385,000
CM014B	BIM Duct Clashes with Existing Elements (mod. 85)	884,000
CS179	GCT6 PA and 2-Way Radio System Equipment & Conduit (mod. 55)	125,000
CS179	Differing Site Conditions - 55th Street Equipment Pads (mod. 59)	101,203
GEC	CH057D Repackaging (mod. 127)	2,004,800
	October 2017	
CQ033	Material Relocation (mod. 2)	103,500
CH053	Communication Duct bank Changes (mod. 168)	117,000
CM014B	335 Madison Avenue Wall Demolition (mod. 95)	265,000
CS179	55th Street Hoist Scope Transfer (mod. 40)	261,298
CS179	CTC Related Changes (mod. 43)	665,987
CS179	Vernon TPSS Modifications (mod. 47)	194,500

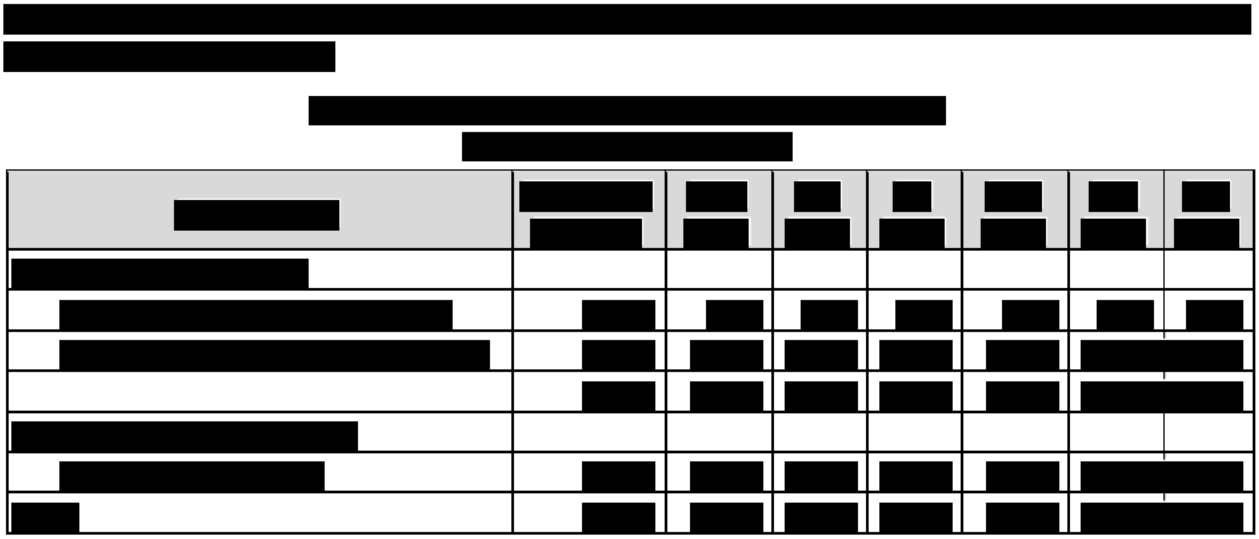
5.4 Project Funding

In early 2017, MTACC indicated it would request amendments to the MTA Capital Plans (both 2010–2014 and 2015–2019) to fund anticipated cost overruns. In July 2017, MTACC set aside that plan and decided to use existing funds until the 2020–2024 Capital Plan is in place. [redacted] 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 $2,529 billion was expended through November 1, 2017.

Local Funding: The budget for Local Funding is $7,479 billion, of which $4.805 billion was expended through October 2017. Separately, financing costs are funded by local sources. $618 million has been expended for financing costs through November 1, 2017.

[redacted]



Concerns and Recommendations:

The extent of potential impacts will be analyzed when the PMT completes the forecast and re-plans the project expenditures through 2020. The PMOC anticipates receiving the plan in 1Q2018 and evaluating the new budget and with the 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, but Amtrak has apparently postponed it until 2025. Amtrak has not provided any further details concerning this postponement.

Amtrak 2017 Accelerated New York Penn Station Track Work

A new risk emerged during 2Q2017 involving Amtrak's ability to provide sufficient force account resources and track outages to support the planned ESA work in the Harold Interlocking based on Amtrak plans to advance and accelerate their Penn Station Track Work Program. The risk is now resolved with minimal impact to the ESA work in Harold. Therefore, PMOC Concern and Recommendation ESA-126-Jun17 will be closed.

Positive Train Control Risk

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.

Capital Funding Risk

During 2Q2017, a major new risk developed based on the decision that there will be no stand-alone ESA amendment to the 2015-2019 Capital Plan for additional funding to cover forecast cost overruns. The PMOC is concerned that the potential funding constraint may significantly impact the program budget and schedule as well as the target Revenue Service Date. The specific cost, budget, and 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 1Q2018. **[Ref: ESA-127-Jun17]**

ESA Vehicle Risk

The PMOC remains concerned about schedule slippage of the LIRR vehicle procurement program than can potentially impact delivery of the vehicles, and, hence, the MTACC's Revenue Service Date. The PMOC notes, however, that if MTA can resolve the vehicle procurement delays before the end of 2017, it is expected that it will still be able to meet the vehicle requirements for the amended FFGA Revenue Operations Date of December 2023.

Manhattan/Systems Performance Risk

The primary PMOC concern is that [redacted] the forecast substantial completion dates for the Contracts CM007, CM014B, CS179, CS084, and future CS086 extend from March 2020 to November 2020, 26 to 35 months from now. The PMOC believes that it is likely that Manhattan/Systems schedule path will become critical in the near future based on the following **[Ref: ESA-128-Sep17]**:

- Contract CS084 is reported at only 15.2% complete (actual) vs. planned 71.6%.
- Contract CM014B is reported at only 45.5% complete (actual) vs. planned 79.3%.
- 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 start to accumulate, 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. He conducted a

Contract CM014B Risk Refresh workshop in February 2017 and a comprehensive Risk Review for the remaining ESA work in the Harold Interlocking during April 2017 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;
   [redacted]
   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 the FRA for a waiver to from FRA to extend installation beyond the deadline based on the interlocking's status as an active

2. construction area. LIRR submitted a revised waiver request to the FRA on December 22, 2017, and is awaiting a response.

3. 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.

4. 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.

5. 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.

6. 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;
- 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; and
- LIRR formally requested a waiver for PTC implementation from the FRA.

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

Number/ Date Initiated	Section	Issues/Recommendations	Criticality
ESA-124-Jun16	6.3-Risk Mitigations	Continued issues with insufficient Amtrak FA support of third-party contractors and lack of required track outages. Current Status: During 4Q2017, ESA continued to experience insufficient Amtrak Track Foremen and Electric Traction Force Account personnel to support its 3rd Party contractor, CH061A. Although the situation improved during the quarter, it has not been eliminated and continues to be a risk for ESA. Recommendation: 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.	1
ESA-125-Sep16	2.1 Engineering/ Design and CPS	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. Current Status: 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. Recommendation: 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.	1
ESA-126 Jun 17-	6.0 Risk Management	Issue: A potential new risk emerged during April 2017 involving Amtrak's ability to provide sufficient force account resources to support the planned ESA work in the Harold Interlocking based on Amtrak plans to advance and accelerate a project for extensive reconstruction of the NEC tract turnout area between New York Penn Station and the existing Amtrak Hudson River tunnels. This new risk has been realized based on ESA	1

		reporting that the Amtrak force account resource availability for the ESA Harold Interlocking work dropped noticeably during May 2017 and dwindled even further in June 2017. PMOC is not certain how Amtrak plans to balance this new need with the standing commitment to the Moynihan Station project. The PMOC is quite concerned that this new development will further jeopardize MTACC-ESA efforts to complete the critical remaining work in Harold Interlocking. Current Status: The Amtrak work involved was completed in early September 2017. The primary impact was the delay of the 2017 priority weekend track outages for LIRR signal work in Harold Interlocking from July-August-September 2017 to October-November 2017, when the outages occurred and all planned work was completed, thus resolving the risk. Recommendation: **With completion of the work planned during the 2017 priority weekend track outages, this issue will be closed.**	1
ESA-127-Jun17	6.0 Risk Management	During 2Q2017, it was decided that there will be no stand-alone ESA amendment to the 2015-2019 Capital Plan. This presents a new risk of funding constraint that may significantly impact the project. The PMOC is concerned about the potentially significant impacts to the program cost, budget, and schedule, as well as the target Revenue Service Date. Current Status: ESA is currently re-evaluating the current program costs, budget, and schedule and has been doing so since May 2017. Details are not now expected until March 2018. Recommendation: 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.	1
ESA-128-Sep17	4.0 Project Schedule	Issue: [redacted] The work remaining in these contracts is currently forecast to be completed in the timeframe from July 2019 to July 2020. [redacted] This will place additional schedule pressure on the ESA target RSD of February 2021.	1

		Current Status: 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. Recommendation: MTACC/ESA should focus on managing the coordination between these three contracts to minimize any further delays and to maximize available schedule recovery opportunities.

8.0 SPONSOR'S ACTIONS FROM QUARTERLY AND MONTHLY MEETINGS

Priority in Criticality column 1 – Critical 2 – Near Critical

Number with Date Initiated	Section	Sponsor Actions	Criticality	Projected Resolution Date
ESA-A46-Dec12	Section 4.2	The ESA PMT agreed at a meeting held with FTA/PMOC on July 30, 2012, to develop a set of critical metrics jointly with the FTA/PMOC and MTA IEC that would be used as an early indicator of issues that need to be addressed by senior management. The need to do this was reiterated at the November 8, 2012, ESA/SAS mini-quarterly meeting. Critical metrics cannot be properly updated until approved baseline schedules are fully incorporated into their respective IPSs. At present, ESA has incorporated the latest Harold Re-Sequencing, developed in 2Q2016, into the IPS schedule. MTACC needs to check the schedule baseline related to the activity ID numbering so that an accurate comparison can be completed between the July 2014 baseline and the current monthly IPS updates. MTACC started this effort in 2015, but these issues have not been satisfactorily resolved and the PMOC is now using its own performance metrics. Current Status: The PMOC has independently developed cost and schedule performance metrics that are compared with the MTACC June 2014 cost and schedule baselines as well as the amended FFGA Baseline Cost Estimate and the Baseline Schedule. The PMOC notes that the MTACC baselines and FFGA baselines differ and therefore the PMOC will monitor project performance against both baselines. **Accordingly, this issue will now be closed.**	2	12/31/17
ESA-A47-Dec17	Section 5.1	Earlier in 2017, the MTACC indicated it would request amendments to the MTA Capital Plans (both 2010–2014 and 2015–2019) to fund anticipated cost overruns. In July 2017, MTACC set aside that plan and decided to use existing funds until the 2020–2024 Capital Plan is in place. [redacted]	2	03/31/18

Number with Date Initiated	Section	Sponsor Actions	Criticality	Projected Resolution Date
		[redacted] 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 forecast completion of the revised funding plan by August 2017, then by end of remaining two quarters in 2017 and is now forecasting plan completion by March 31, 2018.		

APPENDIX A - LIST OF ACRONYMS

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

APPENDIX B - PROJECT OVERVIEW AND MAP

Project Overview and Map – East Side Access

East Side Access Project Map

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

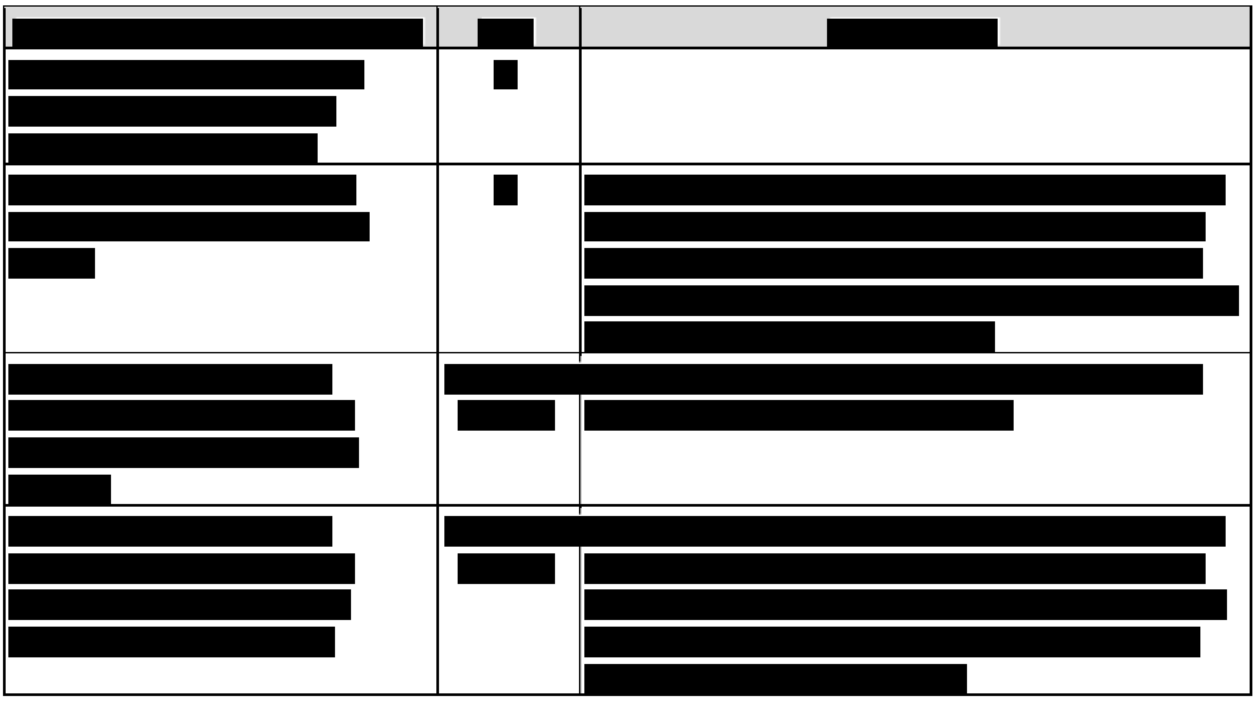
$4,300 million	Total Project Cost ($YOE) at Approval Entry to PE
$4,350 million	Total Project Cost ($YOE) at Approval Entry to FD
$7,386 million	Total Project Cost ($YOE) at FFGA signed
$11,936.0 million	Total Project Cost ($YOE) at Revenue Operations
$11,972.1 million	Total Project Cost ($YOE) as of October 31, 2017, including $1,036.1 million in Finance Charges & Regional Investment Program
7,527.8 million	Amount of Expenditures as of October 31, 2017, based on the Total Project Budget of $10,177.8 million
84.8%	Percent Complete, based on the Re-plan budget of $10,177.8 million and invoices in the October 2017 report
[redacted]	[redacted]
74.1%	Construction Percent Complete vs.79.1% planned
74.0%	Overall Project Percent Complete vs. 78.0% planned

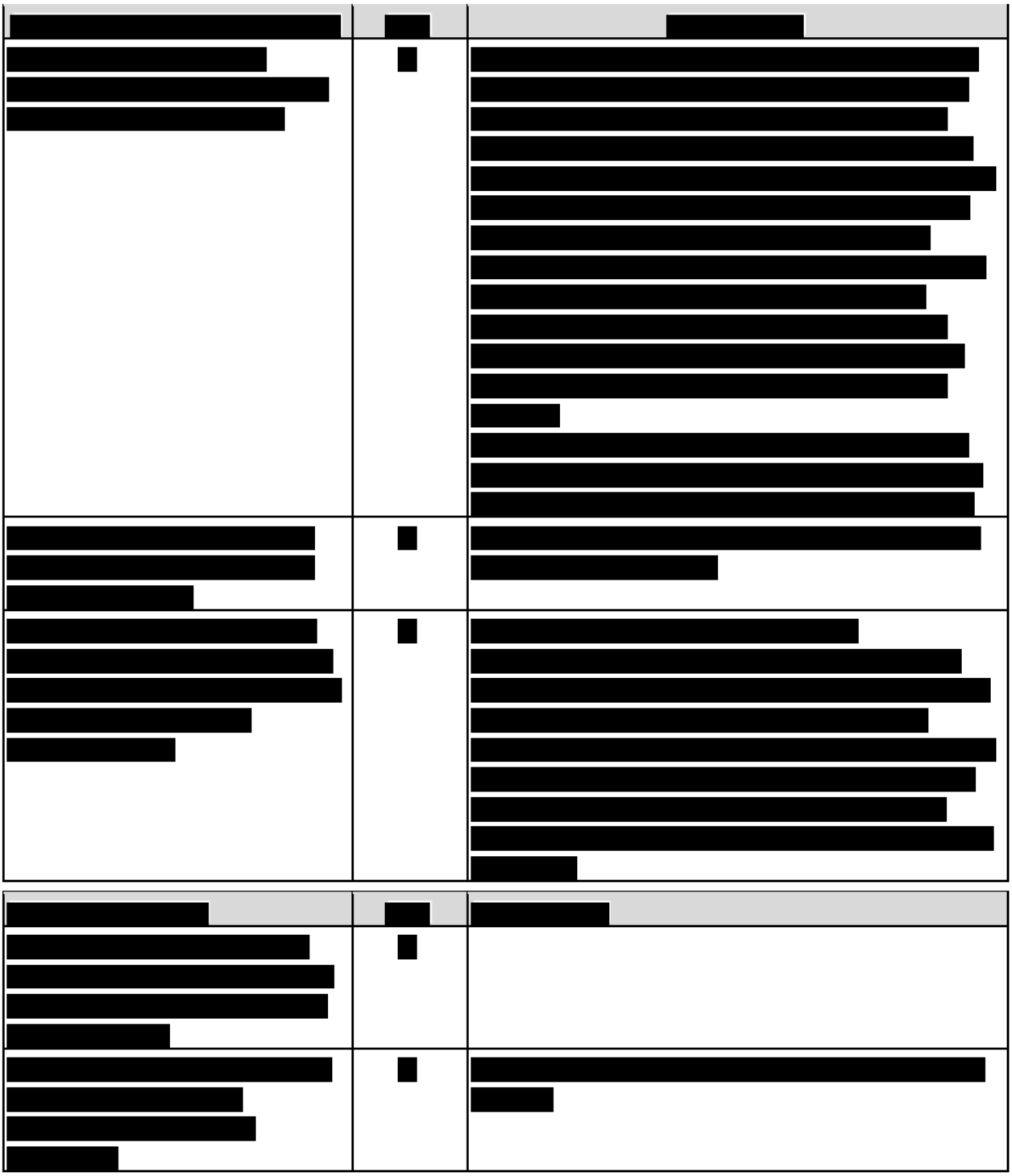
APPENDIX C – LESSONS LEARNED

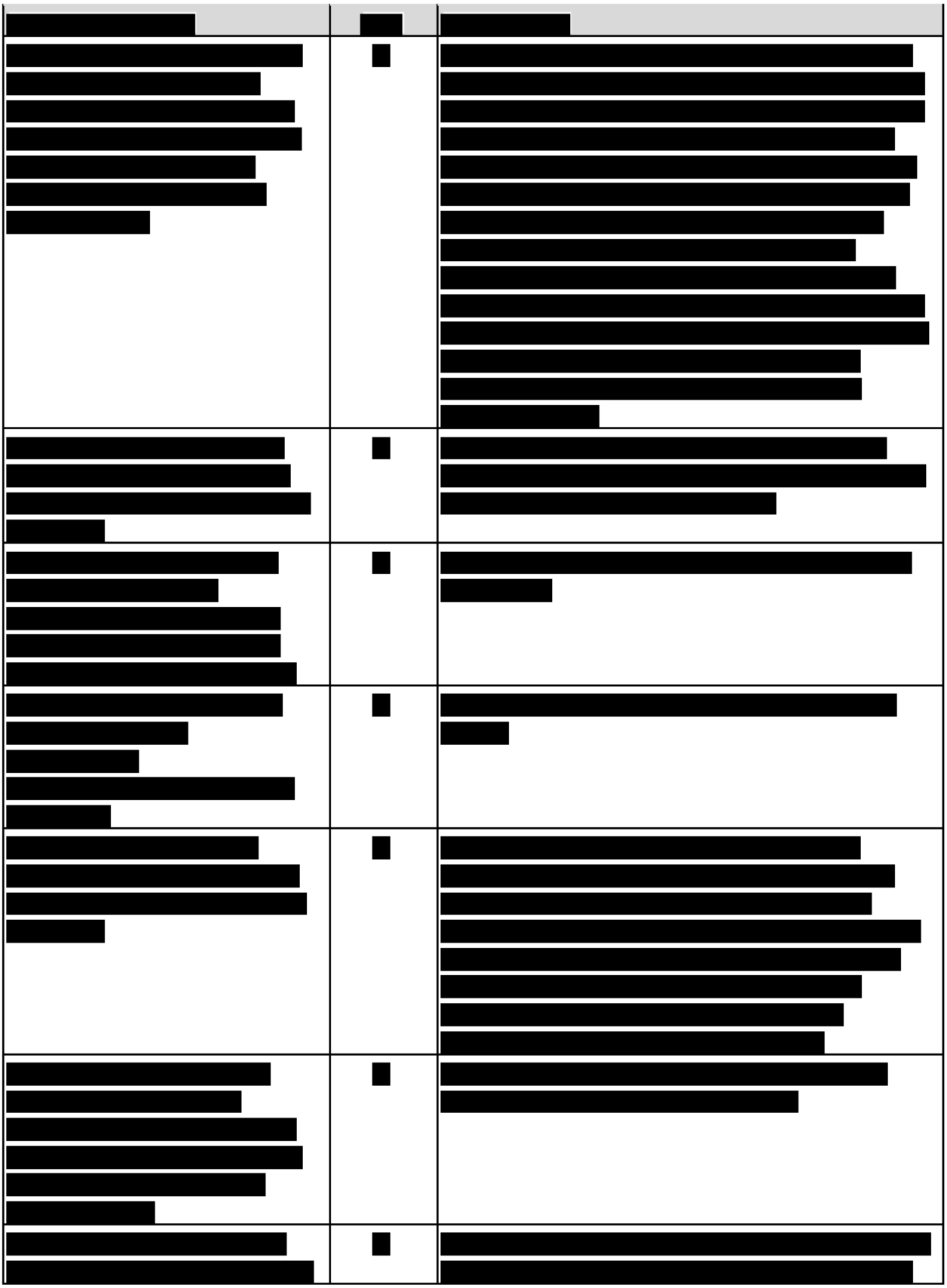
No.	Date	Phase	Category	Subject	Lessons Learned
1	Dec-12	Construction	Construction	Muck Handling	See below
	Lessons Learned: During cavern excavation, the CM019 contractor became muck-bound, which caused a project delay of several months. The PMOC recommended that the contractor make extraordinary effort 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 let.				
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.				

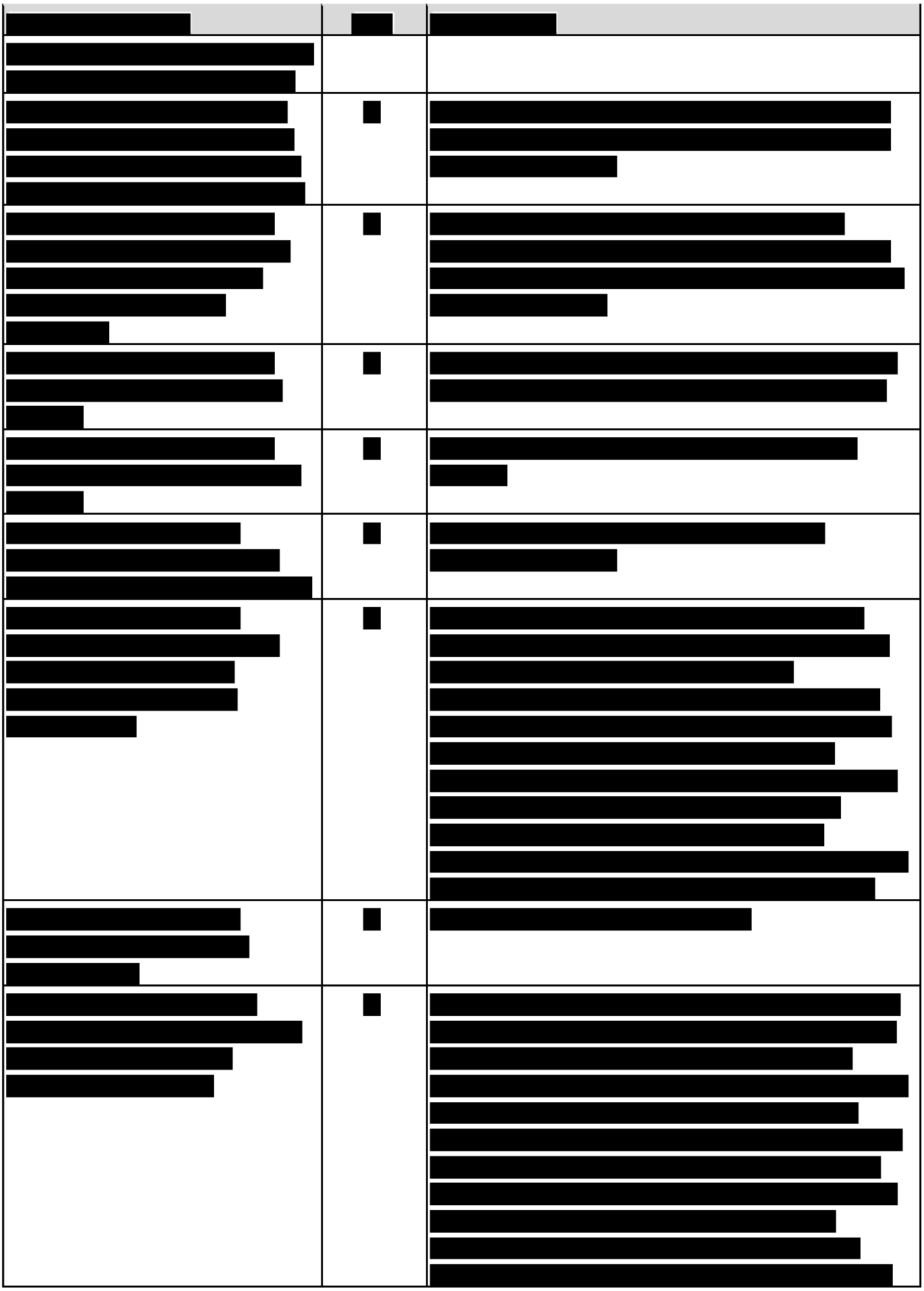
No.	Date	Phase	Category	Subject	Lessons Learned
6	June-13	Administration	Quality	Submittals	See below
	Lessons Learned: Identification and resolution of quality issues (e.g. As-Built drawings, NCRs, etc.) must be managed on a daily basis to avoid creation of a backlog. Lesson learned is for the owner to have a well-trained staff with a consistent, coordinated approach (including appropriate pre-approved corrective action) when obtaining contractually required documents from contractors.				
7	June-13	Contract Specs/ Construction	Construction	Pneumatically Applied Concrete (PAC)/ Shotcrete	See below
	Lessons Learned: Mismanagement of PAC/Shotcrete application has many different aspects which could adversely affect a project. Lesson learned is that all 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.				
8	June-13	Procurement/ Construction	Procurement	Qualified Personnel	See below
	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 do more harm than good. The owner should ensure that it is getting the contractor's best personnel when excavating a tunnel or cavern.				
9	June-13	Scheduling	Construction	TBM Production	See below
	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 estimates can have a large negative impact on project schedule.				

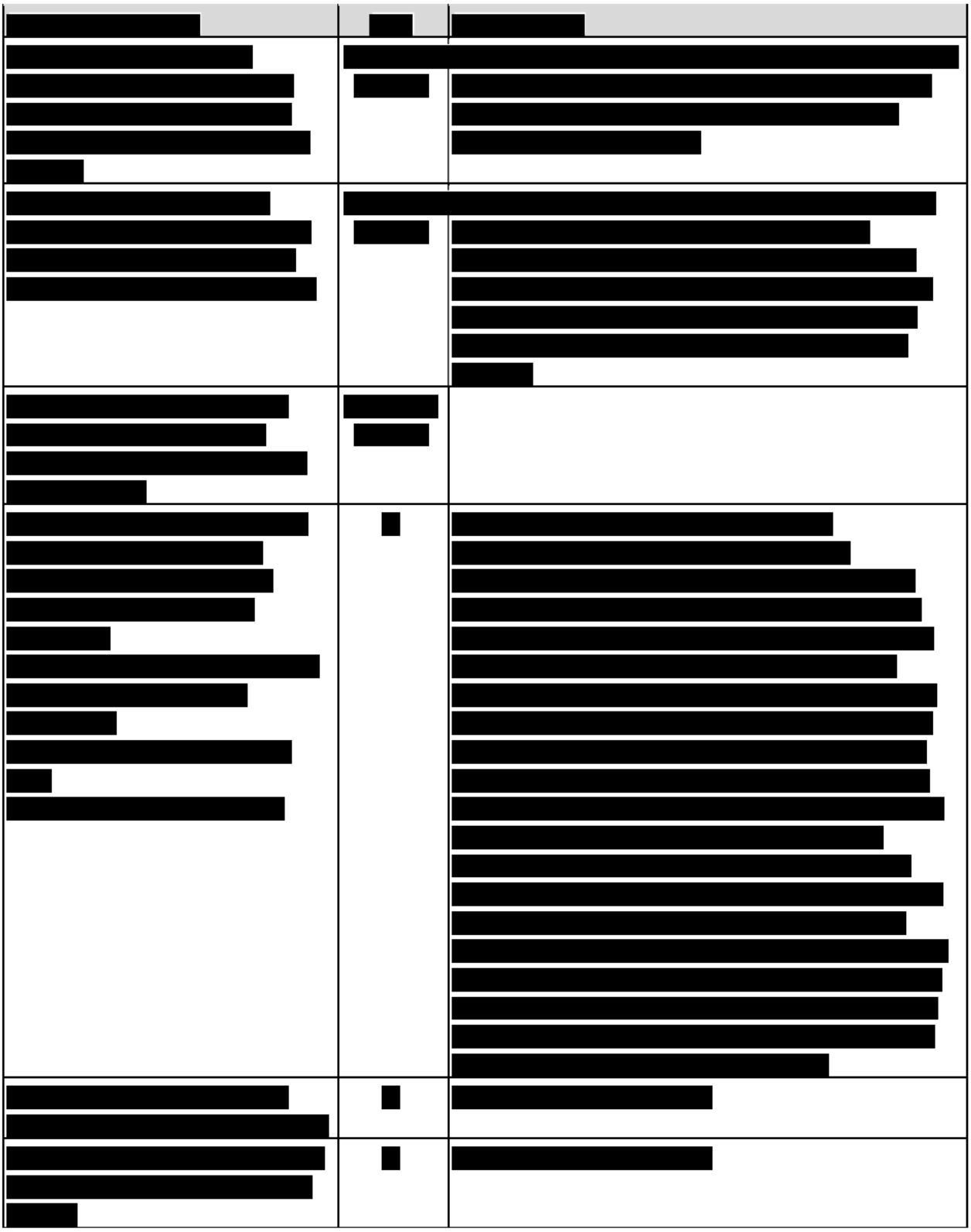
[redacted]











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

APPENDIX F - SCHEDULE ANALYSIS TABLES

Table F: 90 Day Look-Ahead Schedule – IPS 99 November 1, 2017 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-Nov-17
CH053-6110	CH053 Handover GO2 Substation to LIRR		8-Dec-17
CH053FC	CH053 – Final Completion		8-Dec-17
CH057: Harold Structure - Part 2/3 Loop Box Approach, & EBRR West Approach & Tunnel			
CH057-3370	Construct "D" Pit (Incl TBM Recovery) - For Cutover New Main Line 4	14-Dec-15A	30-May-17A
CH057-54661	Complete Option 1		5-Jan-18
CH057-M008	Final Completion		5-Jan-18
CH057A - Westbound Bypass Structure (exclude Slab)			
CH057A-5190	CH057A Milestone 3 – Substantial Completion		17-Nov-17
CH057A-5590	CH057A Milestone 4 – Final Completion		15-Feb-18
CH061A: Tunnel A			
CH061A-55341	Intermediate Milestone #2 – Pole Completion for CQ033 Area 2		7-Dec-17
CH061A-55351	MS#1 – Port Wash 2 Overrun Catenary Structures		7-Dec-17
CH061A-8280	Fabricate Catenary Structures	7-Nov-17	23-Jan-18
CH058A: Harold Structures - B/C Structure/ Catenary Structure			
CH058A-0020	Develop/Finalize 100% Design Documents - CH058A	22-Jun-16A	1-Dec-17
CH058B: Harold Structures - Eastbound Reroute Structure			
CH058-3090	CH058 60% - 100% Design Documentation	20-Jul-10A	31-Jan-18
FHL01: Harold Stage 1 - LIRR F/A			
FHL01-1150	Complete Trough H2 to H3 (Track A)		1-Nov-17
FHL01-1340	Energize GO2 Substation (CH053-Milestone #3)		8-Dec-17
FHL02: Harold Stage 2 - LIRR F/A			
FHL02-SI5010	Install Remaining Conduit and Pull boxes in H5-CIL Location	31-Jan-17A	9-Nov-17
FHL02-7800	EO Control Complete		21-Nov-17
FHL02-CSR1240	H5/H6/30 South Pre-Cutover Testing	3-Jul-17A	1-Dec-17
FHL03: Harold Stage 3 - LIRR F/A			
FHL03-1660	Track D Ready for Final IST on Harold		24-Nov-19
FHA01: Harold Stage 1 - Amtrak F/A			
FHA01-1000	ET Catenary: Complete Catenary Work for Stage 1		16-Dec-17
FHA02: Harold Stage 2 - Amtrak F/A: Balance Work			
SUMFHA02-1540	Cutover - ZJ1/ZJ2 (747)		5-Nov-17
FHA02-1060	CH054A - Completed SMUS 1 & 2 / Install New RTU		8-Nov-17
FHA02-4000S	ESA Complete Material Procurement		7-Feb-18
FHA03: Harold Stage 3 - Amtrak F/A			
FHA03-CA3698	ET Catenary – CH061A Complete Port Wash 2 Overrun Catenary Structures		7-Dec-17
VH051A (Part 1): Harold & Point CILs			
VH51C0340	FIAT COMPLETED (w/HTSCS Contract)		30-Dec-17
VH051B (Part 2): Harold Tower SCS			
VH51H0300	As-Built Drawings	01-May-15A	13-Jan-18
VHA03: Procure Materials for Harold Stage 3 - Amtrak F/A			
VHA03	VHA03 -Procure Amtrak Materials - Harold Stage 3	05-May-14A	10-Nov-24

ACTIVITY ID	ACTIVITY DESCRIPTION	START	FINISH
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-Nov-17
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-Nov-17
CM013A: 55th Street Vent Facility			
CM013A-280	CM13A - MS#3 Final Completion		1-Dec-17
CM004: 245 Park Ave. Entrance & 44th Street Vent Structure			
CM04-C0940	CM004 Contractual Final Completion (ML#2 Date 820 CDs from NTP)		1-Nov-17
CM006: Manhattan North Structures			
CM006-MS2A	CM006 Milestone #2A (55th Street Vent Facility Complete - 702 days from NTP (3/2/16)		9-Nov-17
CM006-SC	CM006 Milestone #2 Substantial Completion)		29-Dec-17
CM007: GCT Caverns			
CM007-CS179-CIA.19A	East Cavern Lower Level – Under Platform Conduits		7-Feb-18
CM007-P4-1420	Independent Lab Performs Offsite Qualification Testing for SWP	27-Nov-17	24-Jan-18
CM014A: GCT Concourse and Facilities Fit Out			
CM014A-1090	Permanent Power Available @ B30		24-Nov-17
CM014B: GCT Concourse and Facilities Fit Out (BL)			
CM014B-AR#04	CM006 Areas – Access to Footprint of CM006 after S.C. (Shaft 4/50th St/52nd St Drop)		29-Dec-17
CM014B-AR#06	Access for Cavern Signage		6-Feb-18
CM014B-44TH-IMS-001	Access Provided to CS179		30-Nov-17
CM014B-8690	Start 46th St. Emergency Exit		30-Nov-17
CM014B-9850	Start 3-Story Building		4-Dec-17
CM014B-8440	Commence Installation of Wellway #1 Escalators		1-Nov-17
CM014B-9330	Commence Installation of Wellway #2 Escalators		9-Nov-17
CM014B-VM014-0060	Delivery EL-10		29-Dec-17
CM014B-VM014-0110	Delivery EL-17		1-Feb-18
CM014B-VM014-0150	Delivery ES-02		6-Dec-17
CM014B-VM014-0290	Delivery ES-44		19-Dec-17
CM014B-VM014 (0280, 0320, 0330)	Delivery of ES-43, ES-47, and ES-48		22-Dec-17
CM014B-VM014 (0180, 0340, 0350)	Delivery of ES-32, ES-49, and ES-50		15-Jan-18
CQ032: Plaza Substation & Queens Structures			
CQ032-MS06	MILESTONE #6 – SUBSTANTIAL COMPLETION		29-Dec-17

ACTIVITY ID	ACTIVITY DESCRIPTION	START	FINISH
FQA65: Loop Interlocking - Amtrak F/A			
FQA65-3010	CH057: Complete Catenary Structure for Loop and T CIHs (65-0) Part 2		1-Nov-17
VQ065A: Loop Interlocking CIL (Amtrak)			
VQ065RI	VQ065 RI - Loop Interlocking	12-Sep-12A	8-May-21
CQ033: Mid-Day Storage Yard Facility (Procurement Status TBD)			
CQ033-1002	AR#2 – CH061A Catenary Poles	16-Jan-18	
CQ033-(MS3, MS2)	MS#3 – RWIC Trailer, and MS#2 – Temporary Construction Fence Along Arch St. Access Route		30-Nov-17
CS084: Tunnel Systems Package 4 – Traction Power Systems			
CS084-AR005	Access Restraint # 5- C01 and CO2 (Tail Tracks) Traction Power Substation		2-Nov-17
CS084-AR002	Access Restraint # 2- C04 (2nd Ave) Traction Power Substation		20-Nov-17
CM007-CO4-1	WB1 Track between GCT5 and GCT6 Completion		17-Jan-18
CM007-CO3-2	WB1 Track between GCT4 and GCT5 Completion		23-Jan-18
CS179: System Package 1 - Facilities Systems			
CIA#008	(CM006 – CS179) – 55th Street Ventilation Facility – Traction Power Substation C03	1-Nov-17	
CIA#011	(CM006 – CS179) – EB4 (Upper) West of GCT-5 to East of GCT-3	1-Nov-17	
CIA#013	(CM006 – CS179) – GCT-3 Rooms	1-Nov-17	
CIA#010	(CM006 – CS179) – WB3 (Upper) West of GCT-5 to East of GCT-3	1-Nov-17	
CIA#015	(CM006 – CS179) – 50th Street Adit	1-Nov-17	
CIA#004	(CM006 – CS179) – GCT-5 Rooms	4-Nov-17	
CIA#014	(CM006 – CS179) – Tracks 301 & 302 & 303 & 304 – GCT-3 to Cavern	1-Nov-17	
CIA#012	(CM006 – CS179) – GCT-3 Crossover, Wyes and Rooms & Cross Passages #2, #4, and #5	2-Nov-17	
CIA#005	(CM006 – CS179) – Cross Flue	4-Nov-17	
CIA#009	(CM006 – CS179) – 55th Street Ventilation Facility	1-Nov-17	
VS086: System Package 3 - Signal Equipment Procurement			
VS086-1005	Prepare/Furnish Signal Equipment Catalog Cuts	12-Dec-14A	2-Jan-18

APPENDIX G – MTA EAST SIDE ACCESS PROJECT – BUY AMERICA STATUS SUMMARY

TABLE G – CONTRACT CS179 (As of December 31, 2017)

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 December 2017, 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 November 1, 2017

Last Activity in IPS ID# String	Scope	IPS Start	IPS Finish	Status
FHA03-CA5182	Install 7,100 LF CA WBY Track	9/13/22	12/13/22	To date, the CH057A contractor has installed 6 of 25 catenary poles in its contract. No new poles have been installed since June 22, 2017.
FHA03-1800	Re-install CAs at three CH057D Turnout locations[1]	7/25/18	8/5/18	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	2/18/16	10/27/18	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	7/7/18	12/13/18	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	3/21/23	1/13/25	CH058B not advertised yet. CH058B to install 10 catenary poles prior to Amtrak installation of CAs.
FHA04-1430 and FHL02.TK.00350	Install CAs 1 Turnout location[2] FHL02	2/4/18	8/9/20	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	9/23/18	8/5/20	LIRR to install turnouts prior to Amtrak installation of CAs. Turnout installation scheduled to begin in September 2018 and be complete by July 2020.
FHA02-CA299	Complete Loop 1A Electrification	2/17/14	4/4/18	Amtrak Loop 1A Track construction partially complete. Amtrak ET will install Catenary wires after track construction is complete.
FHA03-CA4299	Wire Transfer for demolition of Montauk Cutoff Platform	4/17/17	12/1/17	Amtrak completed catenary wire transfers and the CQ033 contractor began demolition of the Montauk Cutoff viaduct during 4Q2017. Since this activity is complete, it will be removed from future reports.
FQA65-1092	Install CAs 14 Turnout locations[4] in Loop and T Interlockings - FQA65	3/12/17	10/30/24	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	12/8/17	4/10/18	Amtrak began catenary construction of PW2 Overrun in June 2017. The CH061A contractor installed 3 of 5 additional catenary poles necessary for PW2 Overrun during 4Q2017.

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

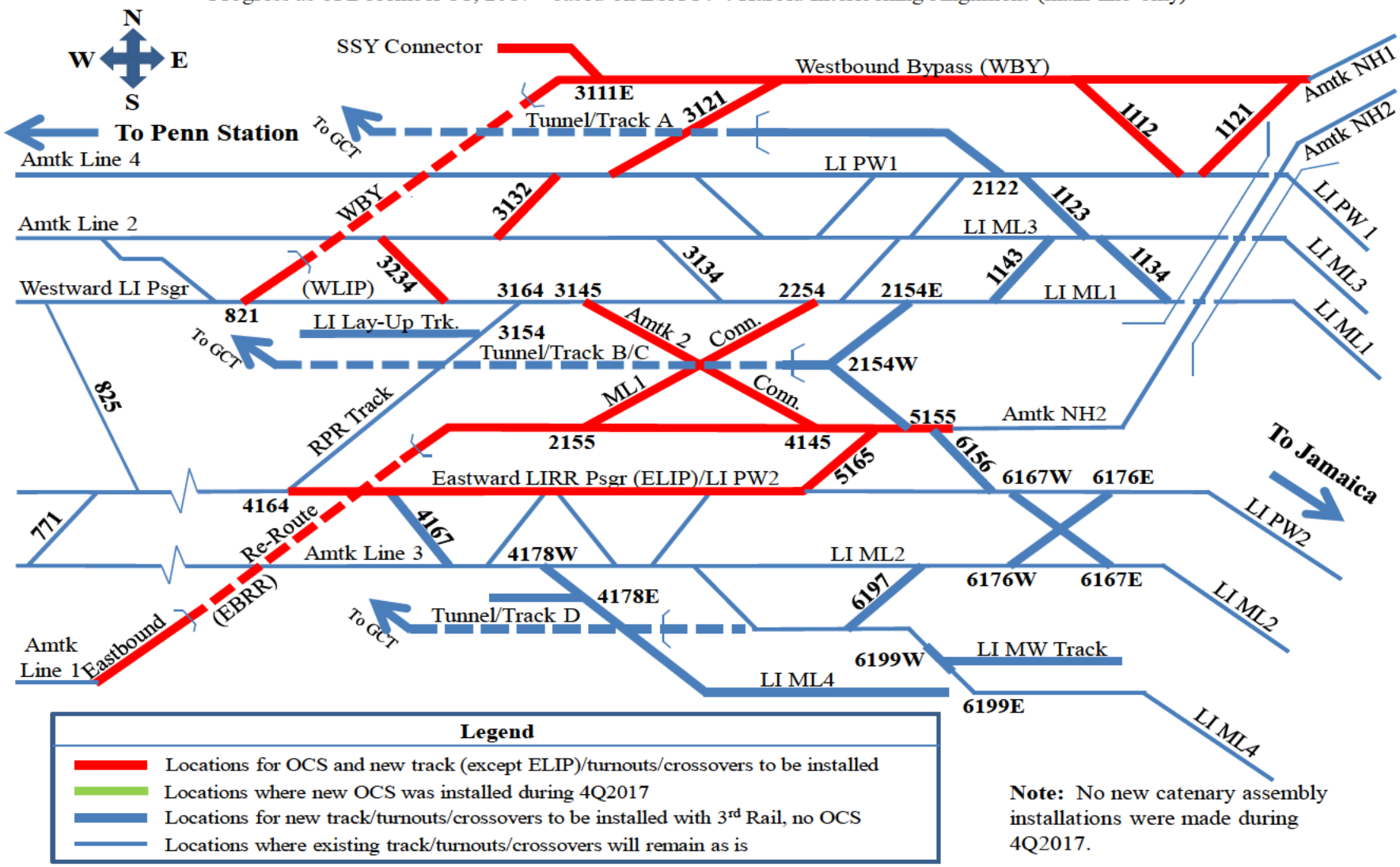
This diagram depicts, along with existing tracks, crossovers, and turnouts that will not be renewed, the present construction status *of* ESA constructed tracks, crossovers, and turnouts that have been or will be installed to make LIRR service into GCT possible. Existing trackage that will not be renewed 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 December 31, 2017 - based on ESA 14-4 Harold Interlocking Alignment (main line only)



Legend

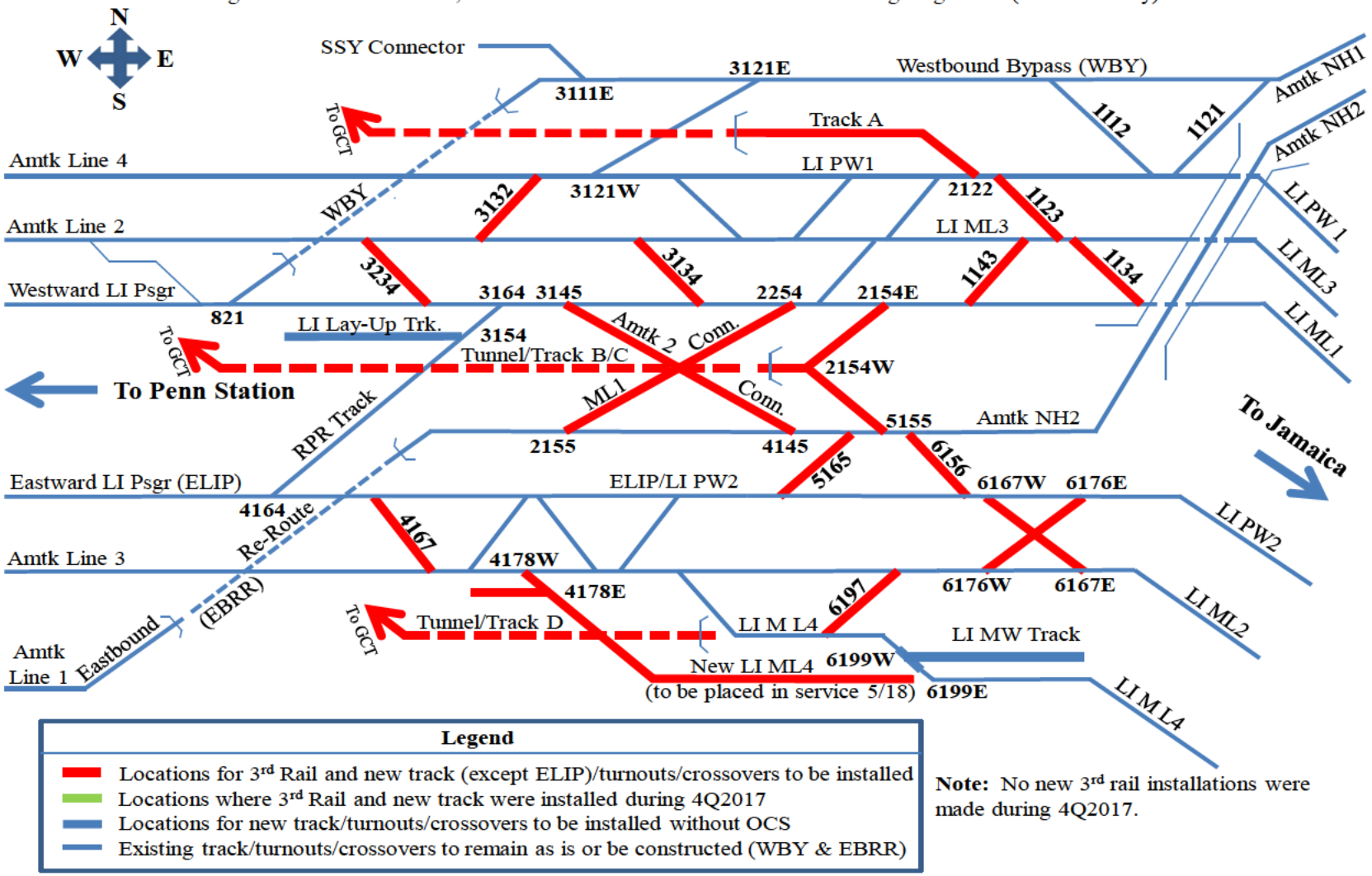
- Locations for OCS and new track (except ELIP)/turnouts/crossovers to be installed
- Locations where new OCS was installed during 4Q2017
- Locations for new track/turnouts/crossovers to be installed with 3rd Rail, no OCS
- Locations where existing track/turnouts/crossovers will remain as is

Note: No new catenary assembly installations were made during 4Q2017.

Appendix I: Harold Progress Monitoring Schematic

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

Progress as of December 31, 2017 - based on ESA 14-4 Harold Interlocking Alignment (main line only)



Legend

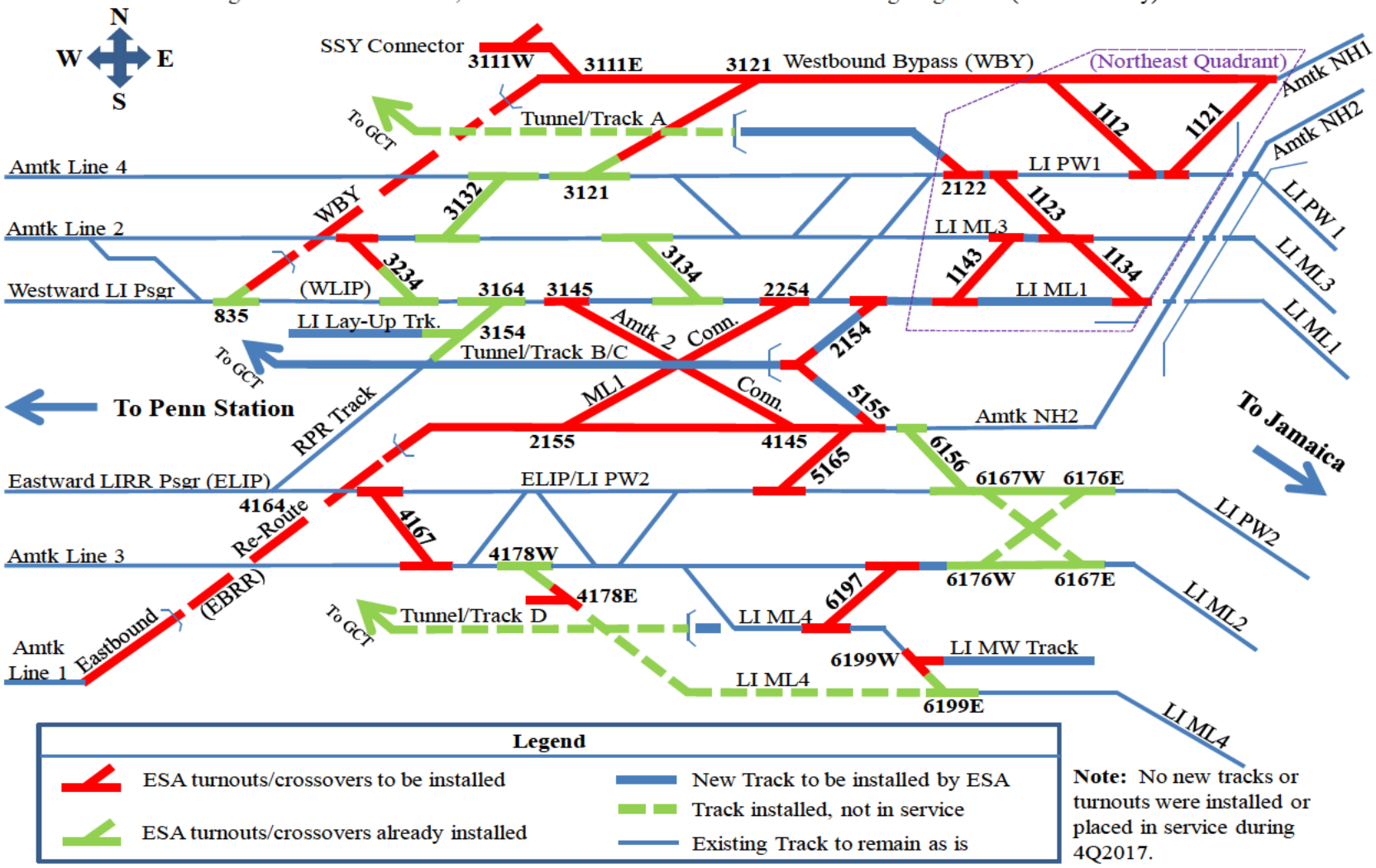
- Locations for 3rd Rail and new track (except ELIP)/turnouts/crossovers to be installed
- Locations where 3rd Rail and new track were installed during 4Q2017
- Locations for new track/turnouts/crossovers to be installed without OCS
- Existing track/turnouts/crossovers to remain as is or be constructed (WBY & EBRR)

Note: No new 3rd rail installations were made during 4Q2017.

Appendix I: Harold Progress Monitoring Schematic

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

Progress as of December 31, 2017 - based on ESA 14-4 Harold Interlocking Alignment (main line only)

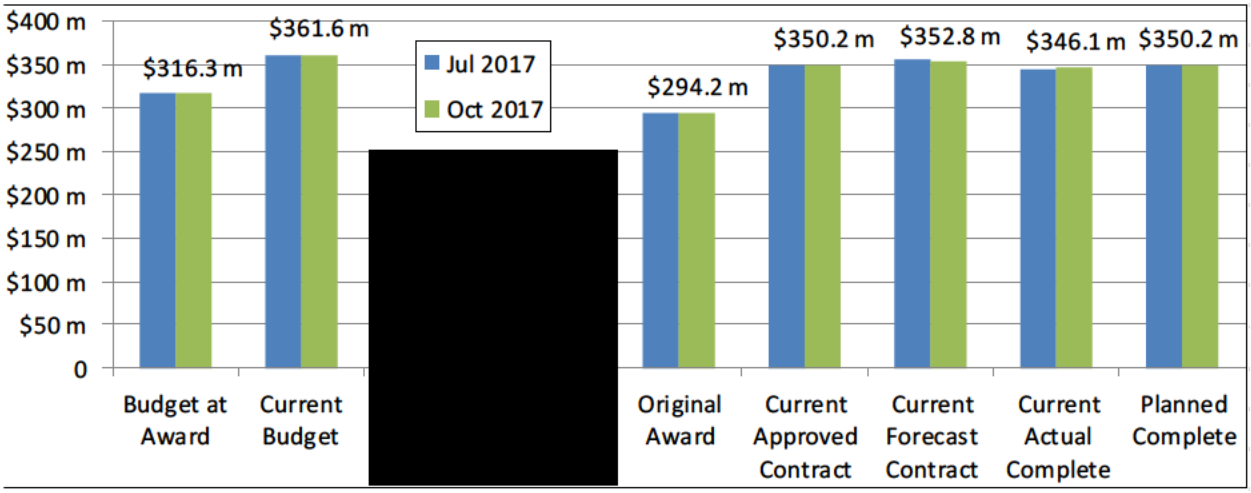


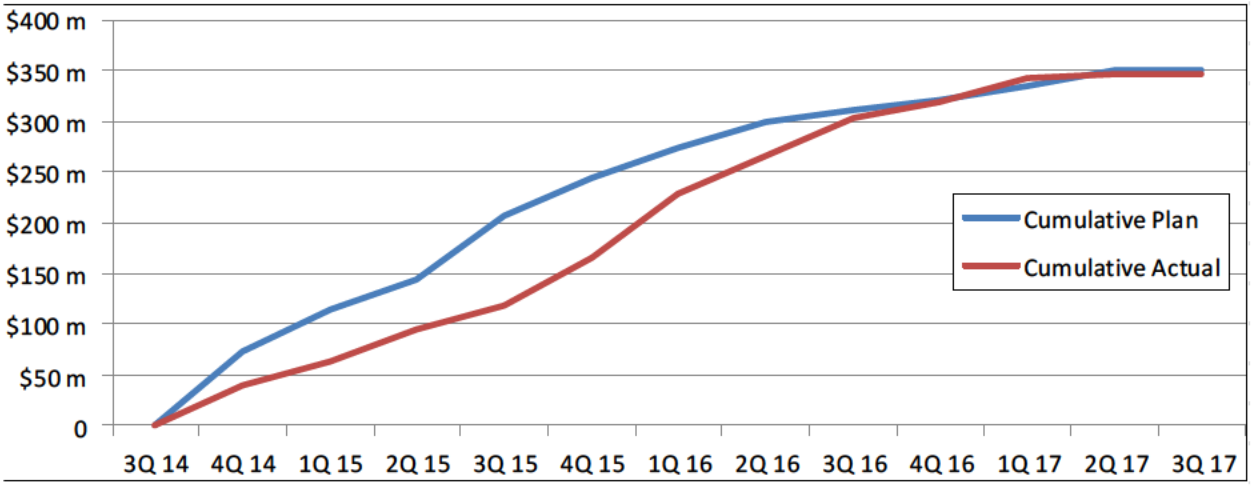
APPENDIX J – COST PERFORMANCE

CM006 Manhattan North Structures Oct 2017

Budget at Award	Current Budget	Change from Original to Current (2-1)	Contract at Award	Current Approved Contract	Change from Original to Current (5-4)	Current Forecast	Change from Current Forecast to Budget at Award (7-1)
$316.3	$361.6	$45.3	$294.2	$350.2	$56.0	$352.8	$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%	98.8%	10.1%	0.8%	1.0%	0.2%	0.40% per month

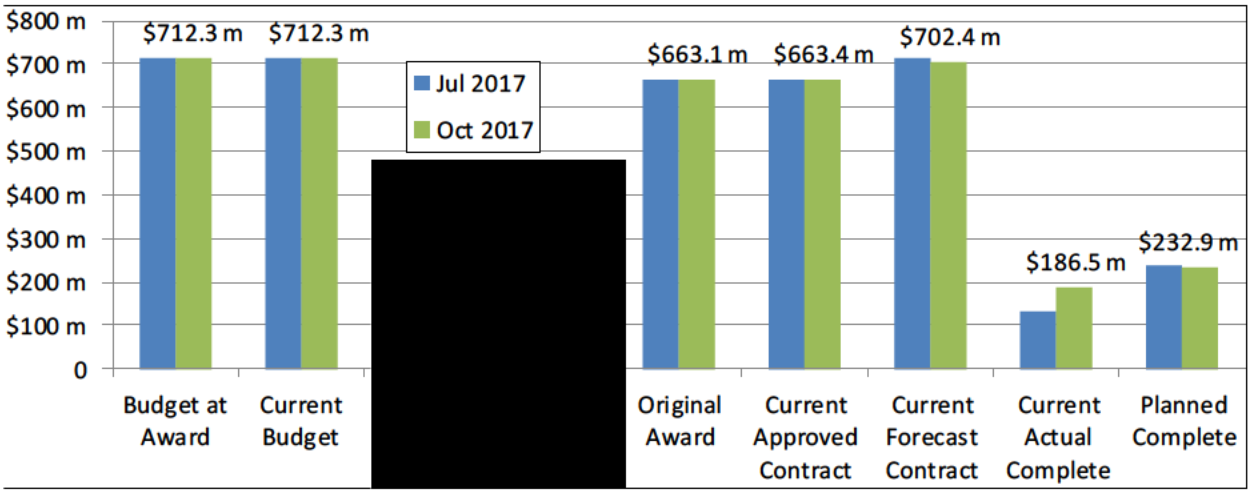


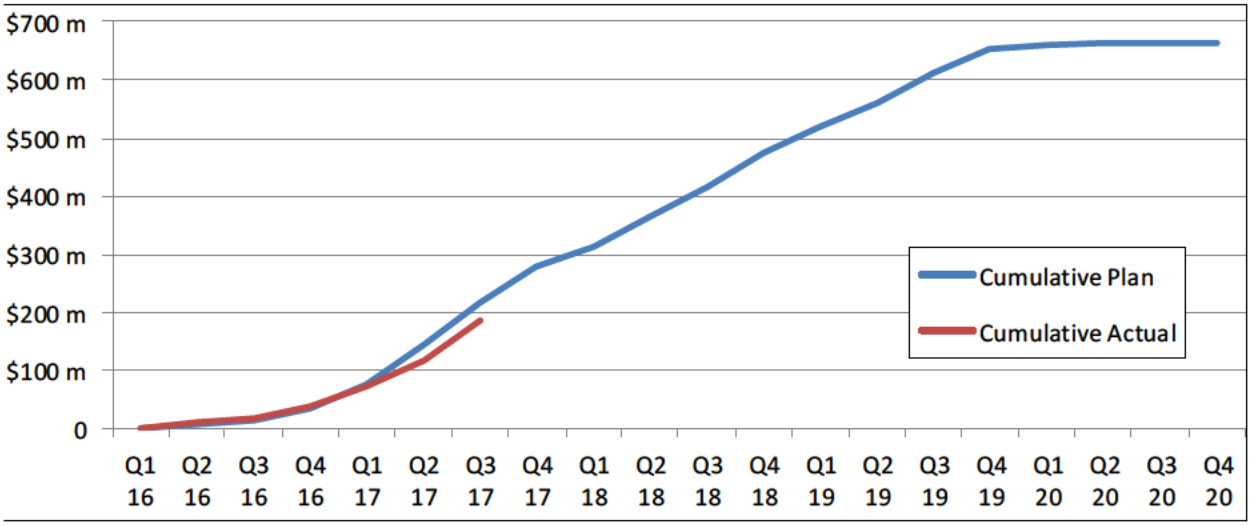


CM007 GCT Caverns Oct 2017

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
		(2-1)			(5-4)		(7-1)
$712.3	$712.3	$0.0	$663.1	$663.4	$0.3	$702.4	($9.9)

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	
35.1%	28.1%	24.8%	2.1%	12.8%	2.1%	2.25% per month

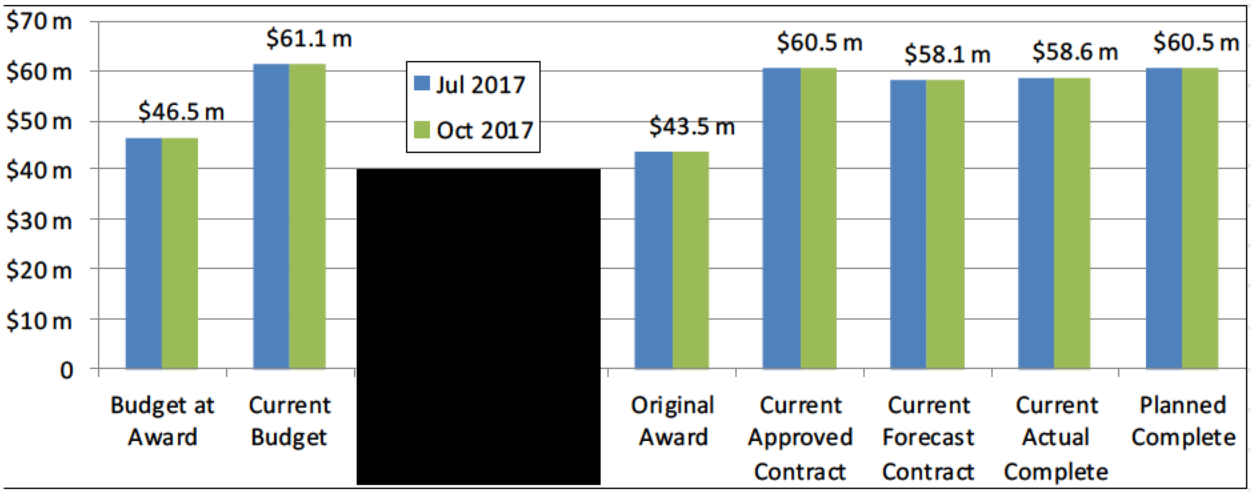


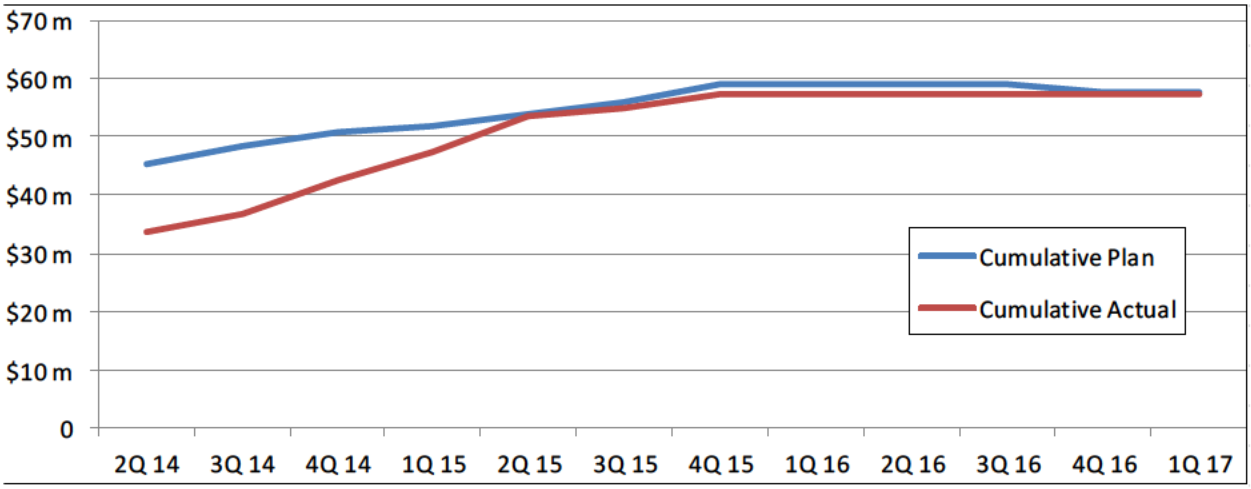


CM014A GCT Concourse & Facilities Fit Out Early Work Oct 2017

Budget at Award	Current Budget	Change from Original to Current (2-1)	Contract at Award	Current Approved Contract	Change from Original to Current (5-4)	Current Forecast	Change from Current Forecast to Budget at Award (7-1)
$46.5	$61.1	$14.6	$43.5	$60.5	$17.0	$58.1	$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	
100.0%	96.8%	-0.2%	0.0%	2.4%	0.4%	N/A per month

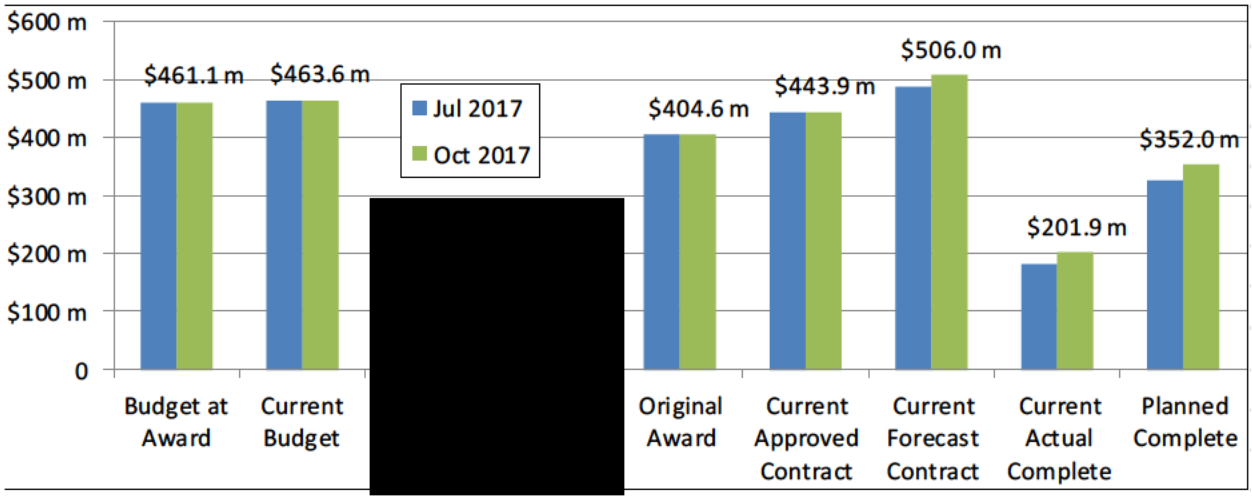


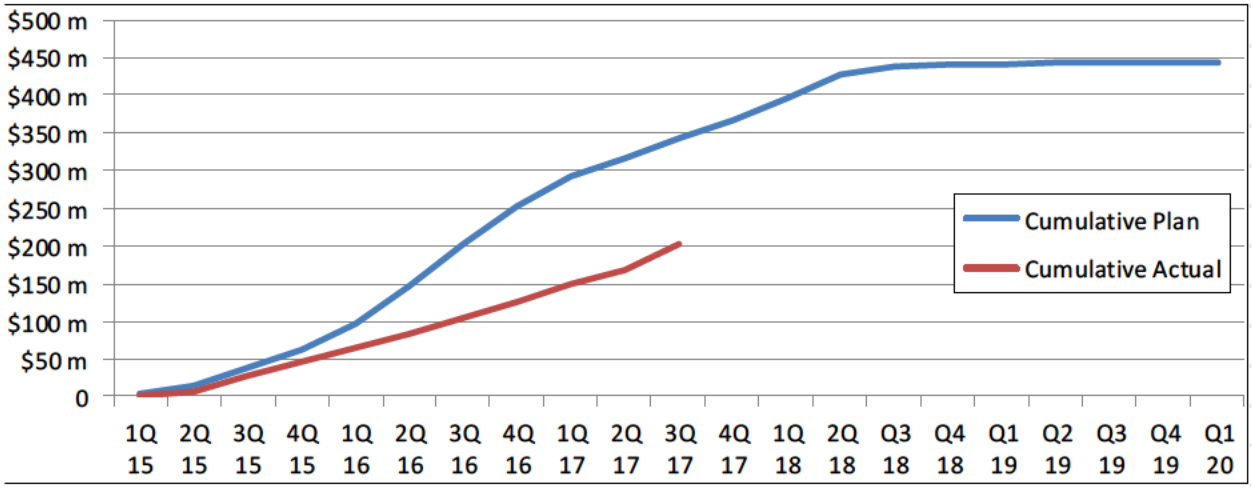


CM014B GCT Concourse & Facilities Fit Out Oct 2017

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
		(2-1)			(5-4)		(7-1)
$461.1	$463.6	$2.5	$404.6	$443.9	$39.3	$506.0	$44.9

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	
79.3%	45.5%	20.0%	1.7%	9.3%	1.6%	1.88% per month

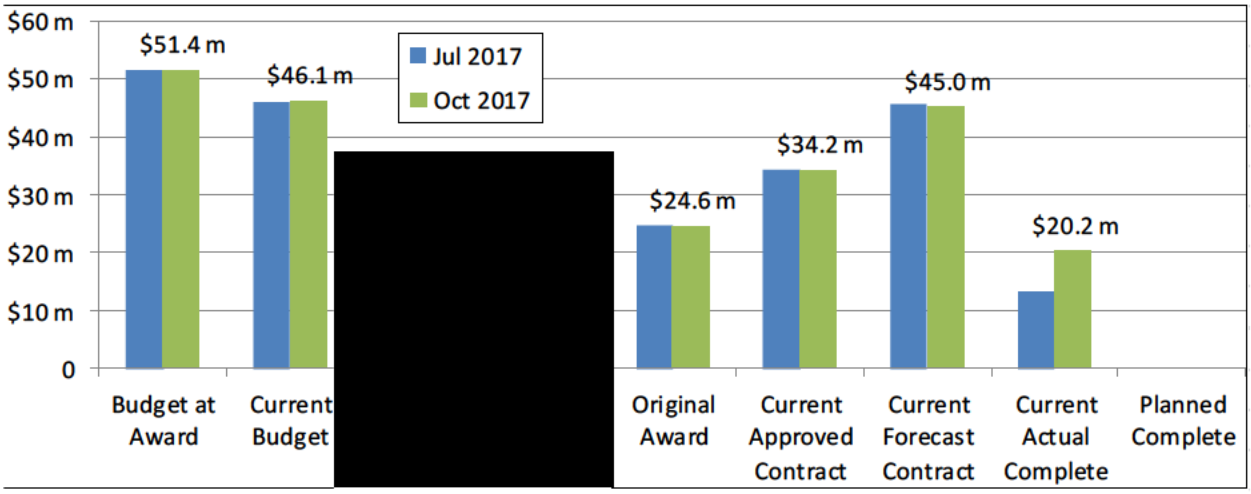




VM014 Vertical Circulation Elements (Escalators & Elevators) Oct 2017

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
		(2-1)			(5-4)		(7-1)
$51.4	$46.1	($5.3)	$24.6	$34.2	$9.6	$45.0	($6.4)

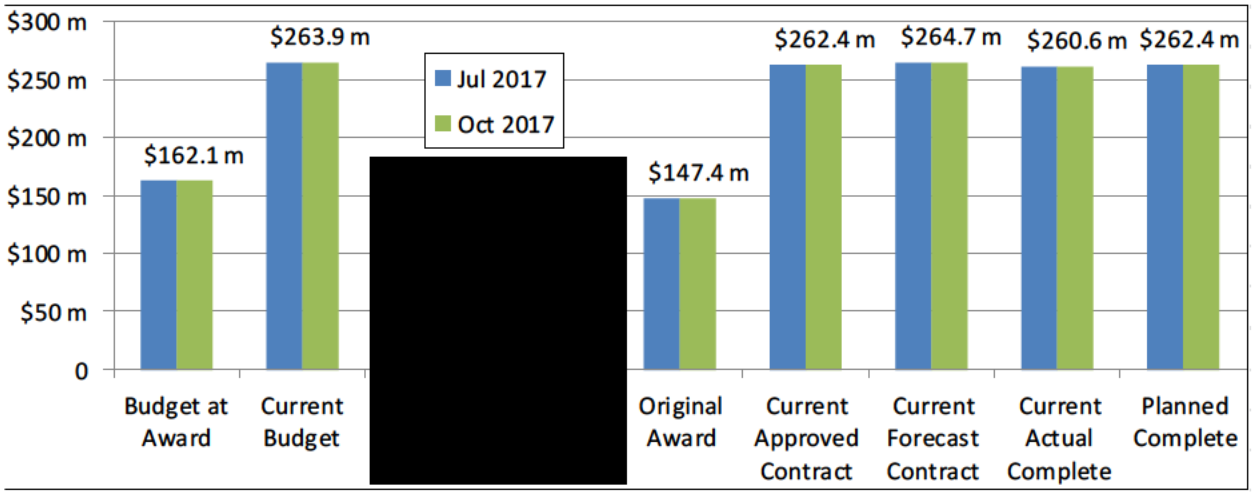
Percent Complete		Actual Prog Last 12 Mths		Actual Prog Last 6 Mths		Average Required Progress to reach forecast SC
Planned	Actual	Total	Avg/Mth	Total	Avg/Mth	
NA	58.9%	25.5%	2.1%	20.1%	3.4%	1.11% per month

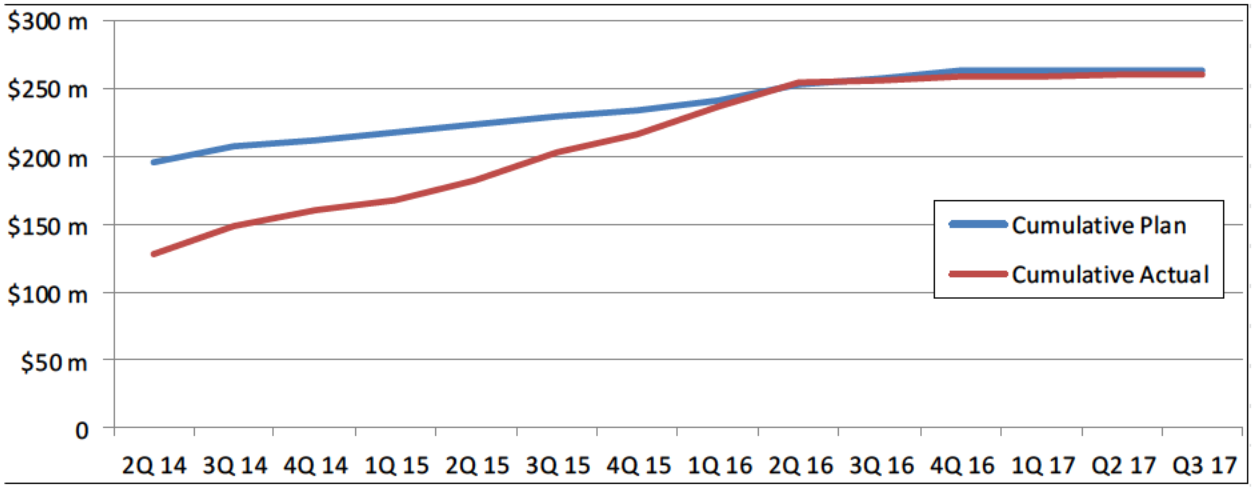


CQ032 Plaza Substation & Queens Structures Oct 2017

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
		(2-1)			(5-4)		(7-1)
$162.1	$263.9	$101.8	$147.4	$262.4	$115.0	$264.7	$102.6

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	
100.0%	99.3%	1.3%	0.1%	0.3%	0.1%	0.23% per month

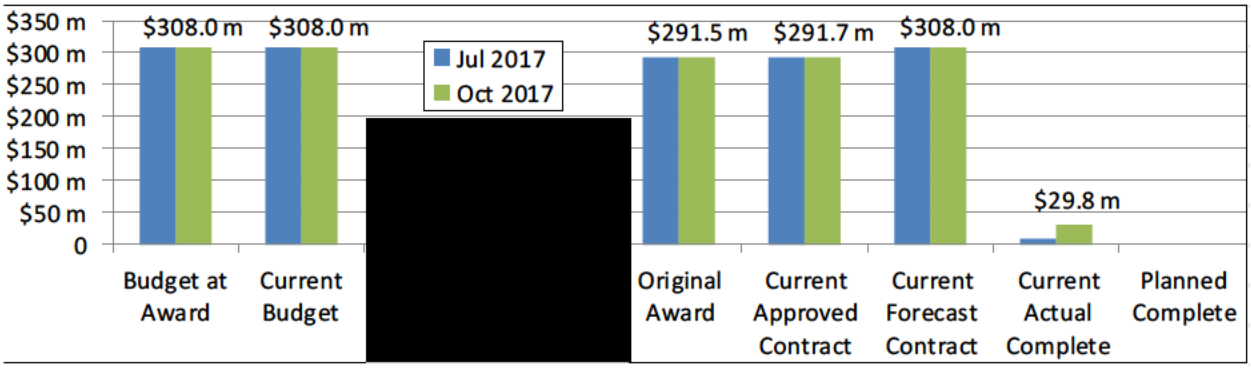




CQ033 Mid-Day Storage Facility Oct 2017

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
		(2-1)			(5-4)		(7-1)
$308.0	$308.0	$0.0	$291.5	$291.7	$0.2	$308.0	$0.0

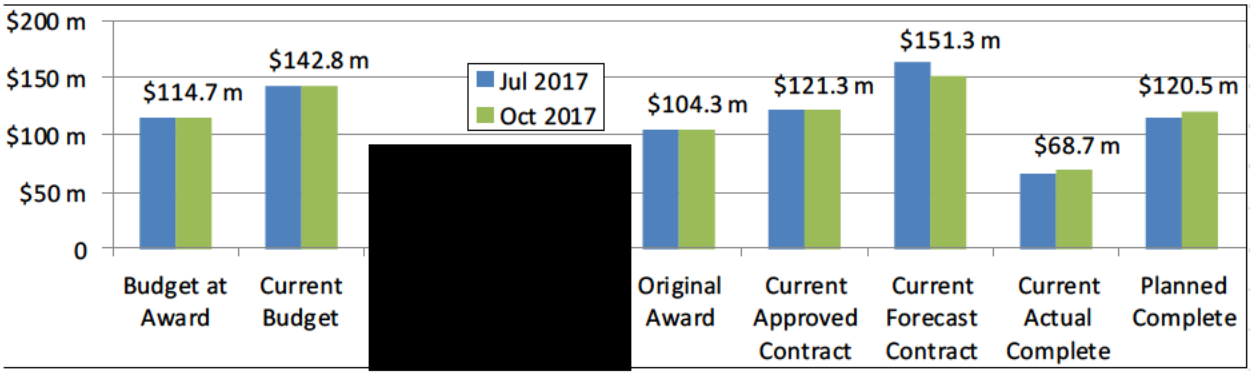
Percent Complete		Actual Prog Last 12 Mths		Actual Prog Last 6 Mths		Average Required Progress to reach forecast SC
Planned	Actual	Total	Avg/Mth	Total	Avg/Mth	
NA	10.2%	NA	NA	NA	NA	2.64% per month



CH057A Harold Structures Part 3 Westbound Bypass Oct 2017

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
		(2-1)			(5-4)		(7-1)
$114.7	$142.8	$28.1	$104.3	$121.3	$17.0	$151.3	$39.8

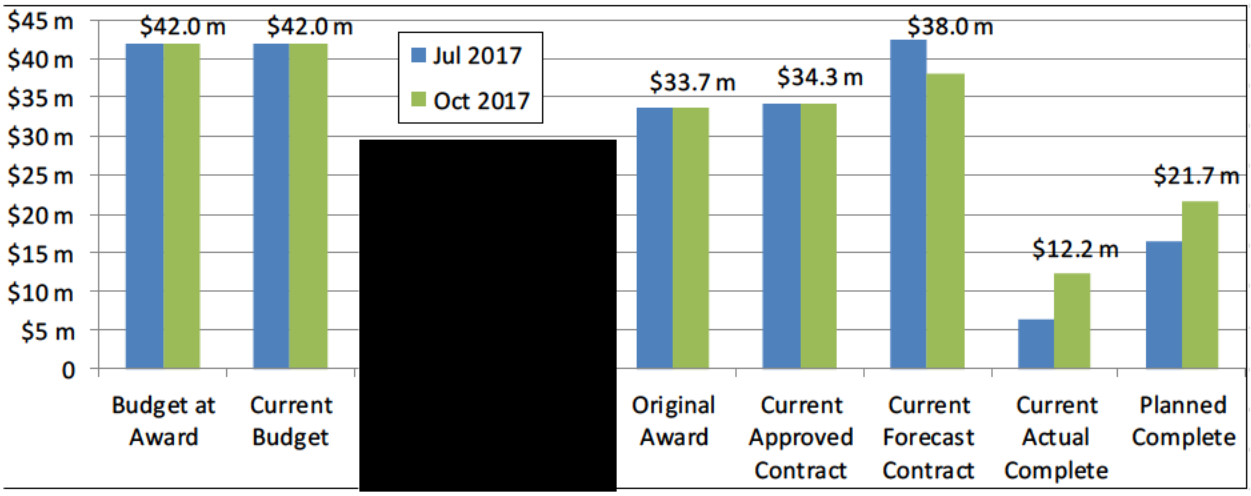
Percent Complete		Actual Prog Last 12 Mths		Actual Prog Last 6 Mths		Average Required Progress to reach forecast SC
Planned	Actual	Total	Avg/Mth	Total	Avg/Mth	
99.3%	56.6%	14.1%	1.2%	3.8%	0.6%	**Contract Terminated**

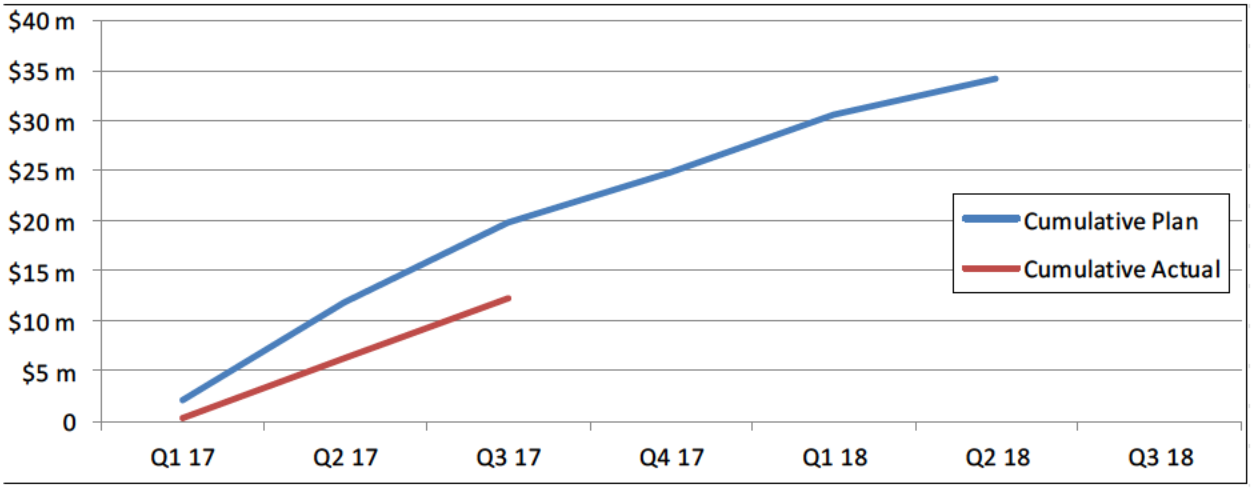


CH061A Track A Cut and Cover Structure Oct 2017

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
		(2-1)			(5-4)		(7-1)
$42.0	$42.0	$0.0	$33.7	$34.3	$0.6	$38.0	($4.0)

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	
63.2%	35.5%	NA	NA	29.6%	4.9%	8.06% per month



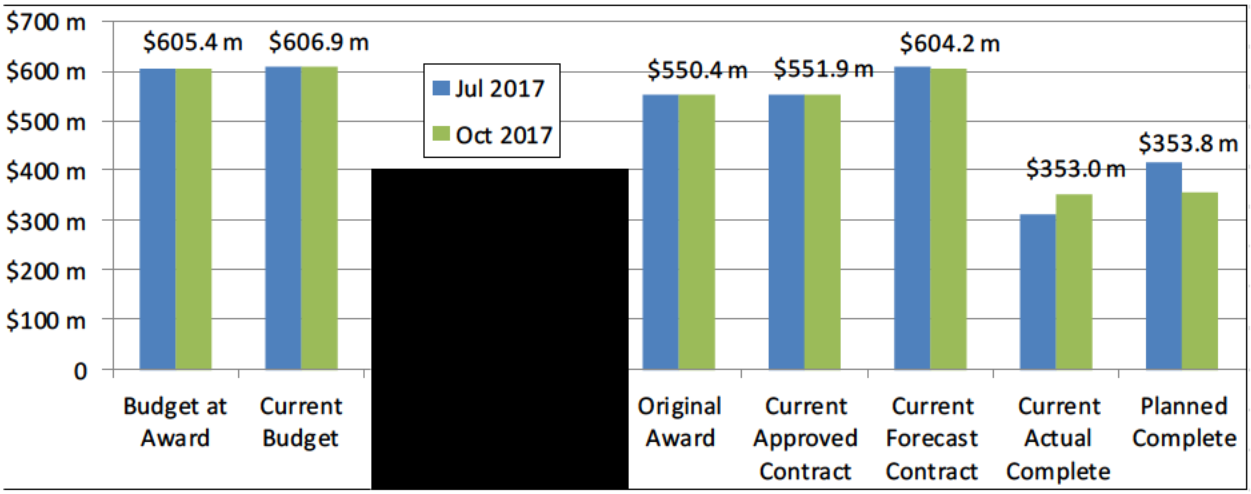


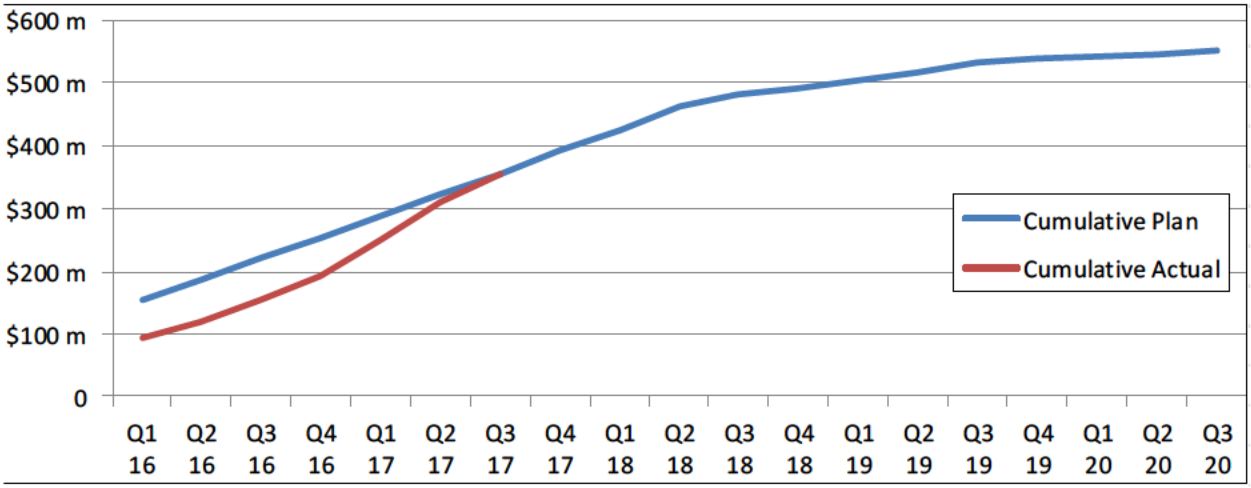
CS179 Systems Package 1 – Facilities Systems Oct 2017

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
		(2-1)			(5-4)		(7-1)
$605.4	$606.9	$1.5	$550.4 **	$551.9	$1.5 (options+mods)	$604.2	($1.2)

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	
64.1%	64.0%	35.7%	3.0%	13.9%	2.3%	0.95% per month

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

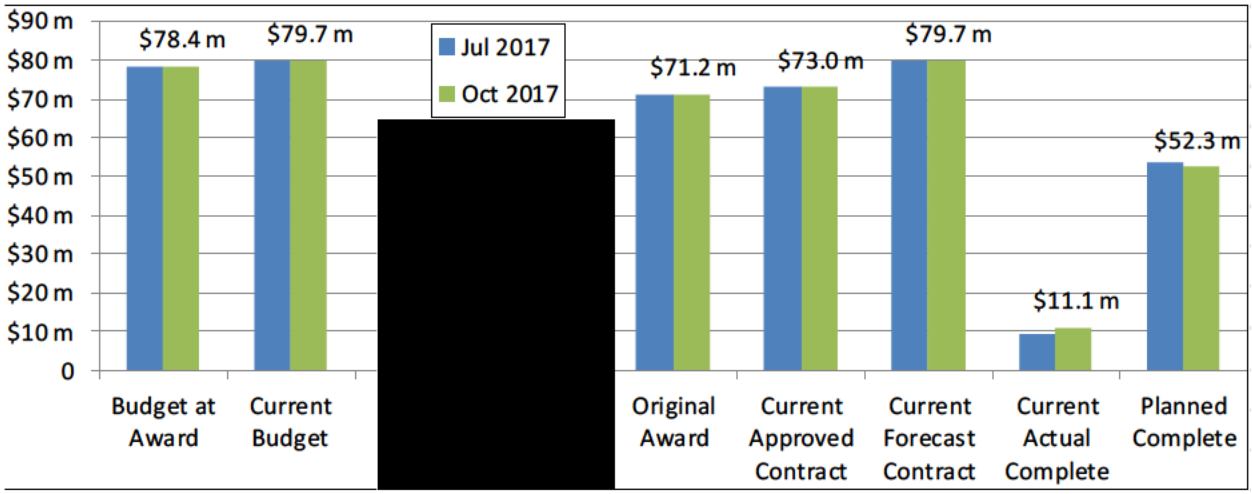


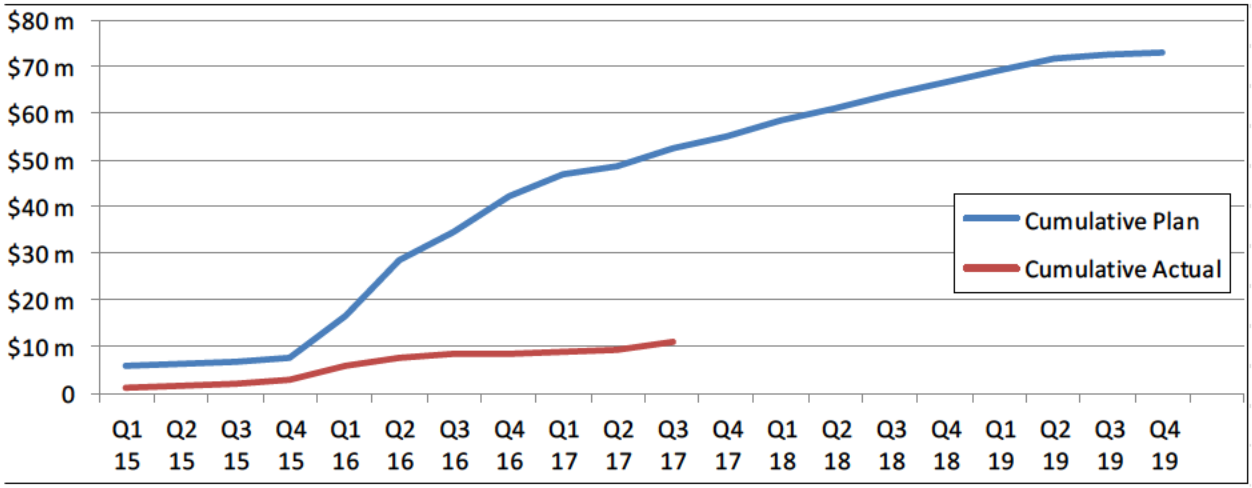


CS084 Tunnel Systems Package 4 – Traction Power Oct 2017

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
		(2-1)			(5-4)		(7-1)
$78.4	$79.7	$1.3	$71.2	$73.0	$1.8	$79.7	$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	
71.6%	15.2%	3.8%	0.3%	3.2%	0.5%	2.49% per month

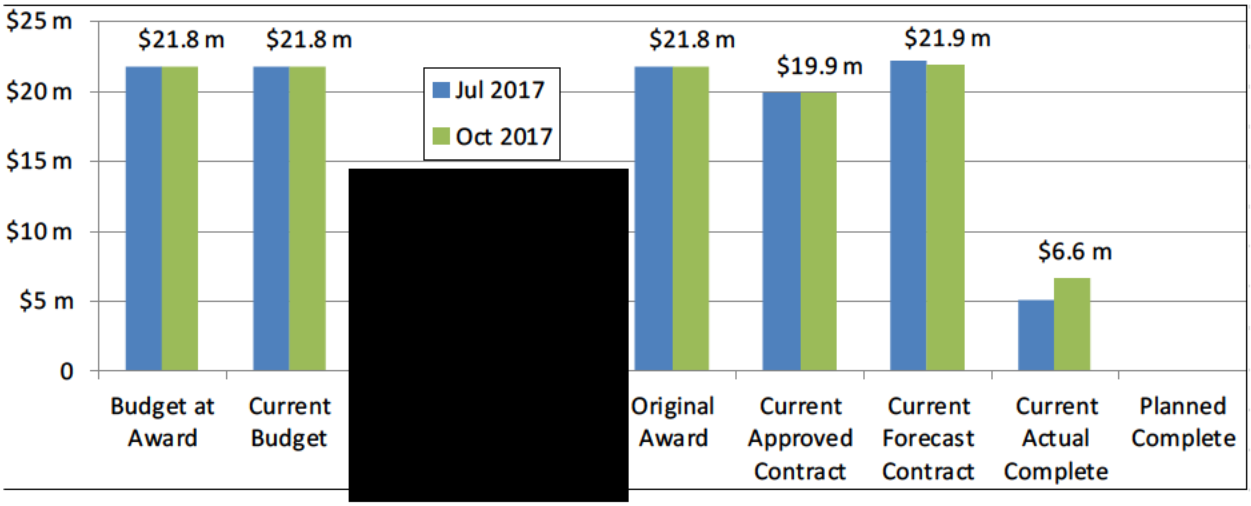


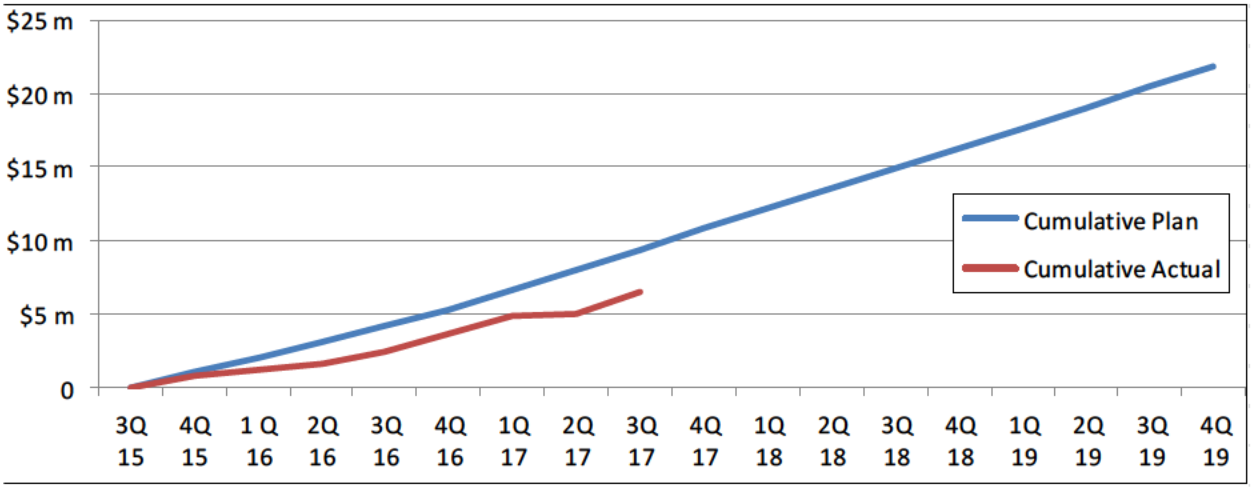


VS086 Systems Package 3 – Signal Equipment Procurement Oct 2017

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
		(2-1)			(5-4)		(7-1)
$21.8	$21.8	$0.0	$21.8	$19.9	($1.9)	$21.9	$0.1

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	
NA	33.1%	19.5%	1.6%	8.6%	1.4%	2.79% per month

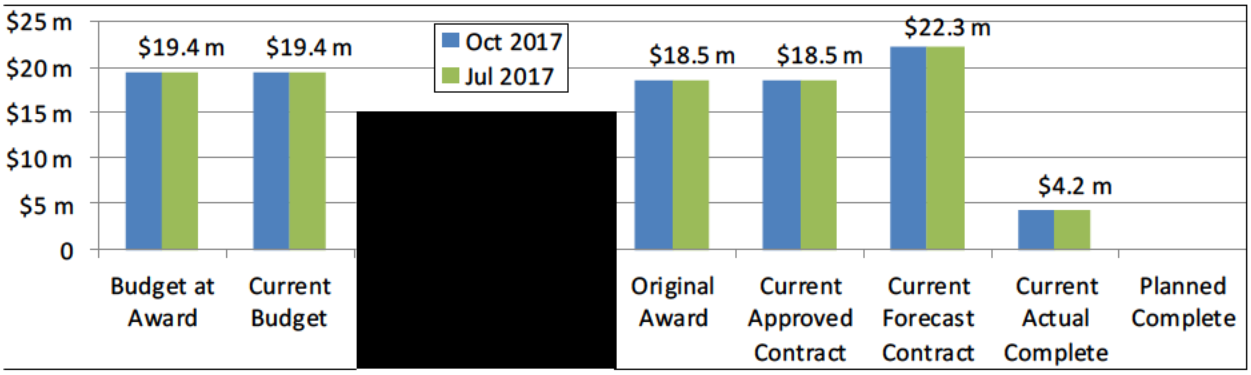




VQ033 Midday Storage Yard CILs Oct 2017

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
		(2-1)			(5-4)		(7-1)
$19.4	$19.4	$0.0	$18.5	$18.5	$0.0	$22.3	$2.9

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	24.0%	13.8%	1.2%	6.5%	1.1%	2.71% per month

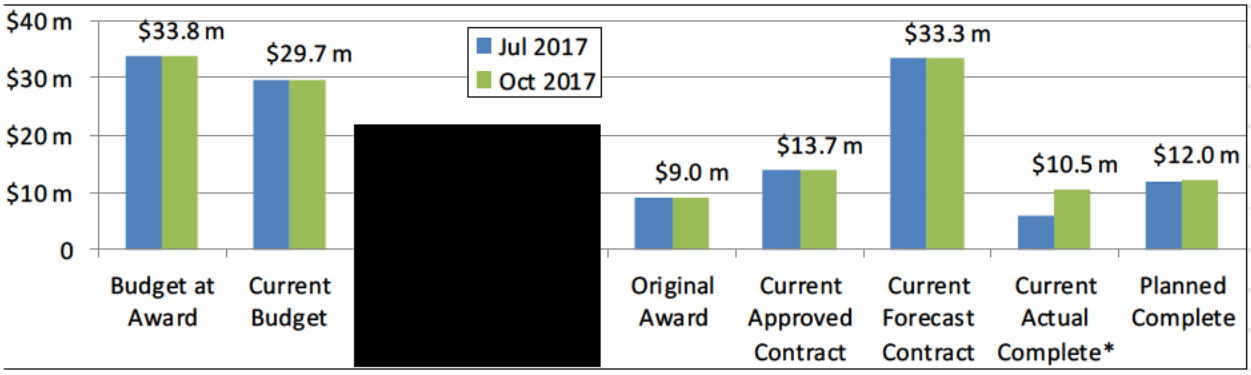


FQA65 Loop Interlocking – Amtrak F/A **Regional Investment** Oct 2017

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
		(2-1)			(5-4)		(7-1)
$33.8	$29.7	($4.1)	$9.0	$13.7	$4.7	$33.3	($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%	35.2%	15.4%	1.3%	16.1%	2.7%	0.68% per month

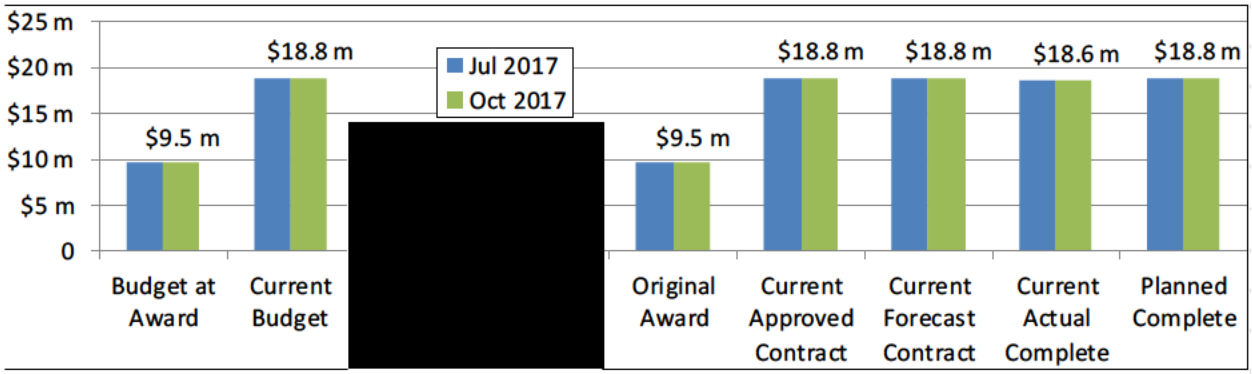
* Current Approved Contract does not include full scope.



FHA01 Harold Stage 1 – Amtrak F/A Oct 2017

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

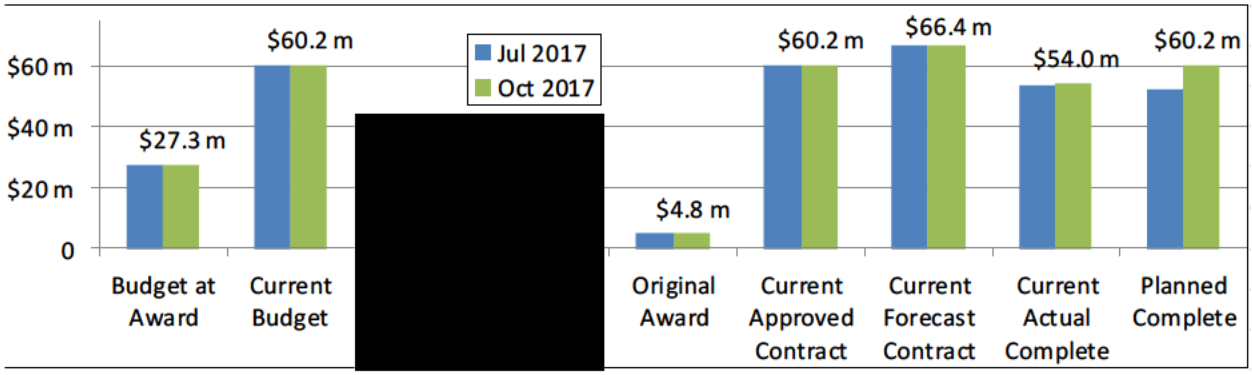
Percent Complete		Actual Prog Last 12 Mths		Actual Prog Last 6 Mths		Average Required Progress to reach forecast SC
Planned	Actual	Total	Avg/Mth	Total	Avg/Mth	
100.0%	98.9%	0.1%	0.0%	0.1%	0.0%	0.37% per month



FHA02 Harold Stage 2 – Amtrak F/A Oct 2017

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

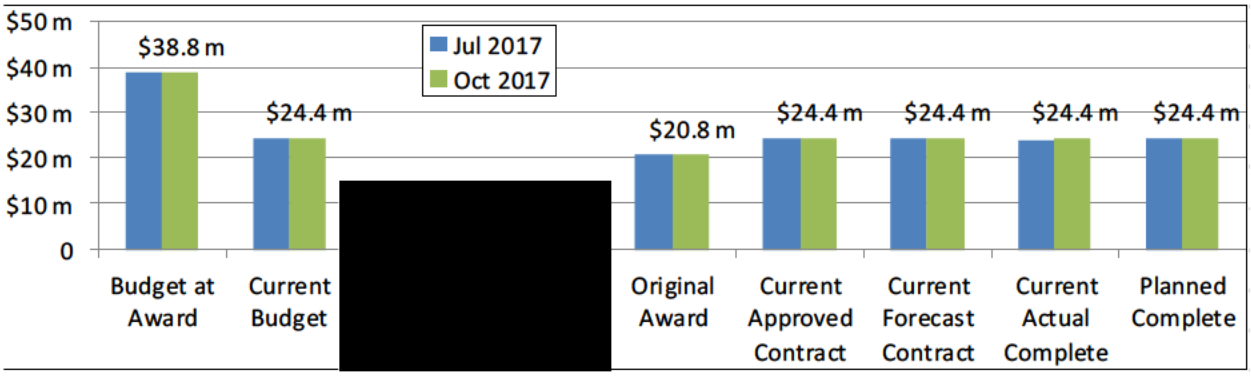
Percent Complete		Actual Prog Last 12 Mths		Actual Prog Last 6 Mths		Average Required Progress to reach forecast SC
Planned	Actual	Total	Avg/Mth	Total	Avg/Mth	
100.0%	90.2%	5.1%	0.4%	2.3%	0.4%	0.58% per month



FHL01 Harold Stage 1 – LIRR F/A Oct 2017

Budget at Award	Current Budget	Change from Original to Current (2-1)	Contract at Award	Current Approved Contract	Change from Original to Current (5-4)	Current Forecast	Change from Current Forecast to Budget at Award (7-1)
$28.8	$24.4	($4.4)	$20.8	$24.4	$3.6	$24.4	($4.4)

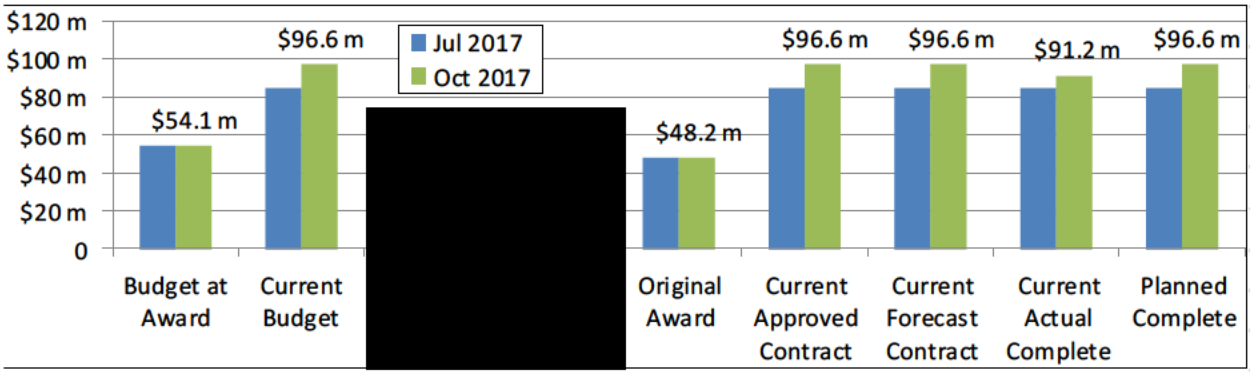
Percent Complete		Actual Prog Last 12 Mths		Actual Prog Last 6 Mths		Average Required Progress to reach forecast SC
Planned	Actual	Total	Avg/Mth	Total	Avg/Mth	
100.0%	100.0%	11.4%	1.0%	1.3%	0.2%	0.00% per month



FHL02 Harold Stage 2 – LIRR F/A Oct 2017

Budget at Award	Current Budget	Change from Original to Current (2-1)	Contract at Award	Current Approved Contract	Change from Original to Current (5-4)	Current Forecast	Change from Current Forecast to Budget at Award (7-1)
$54.1	$96.6	$42.5	$48.2	$96.6	$48.4	$96.6	$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%	94.5%	-1.6%	-0.1%	-4.2%	-0.7%	0.16% per month



APPENDIX K – 3rd PARTY CONTRACT MILESTONE METRICS

As of December 1, 2017 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	-	Contractor is expected to complete remaining contract work by Aug 2017, but not expected to close open NCRs nor submit all required documentation until the end of September 2017.
SC	Substantial Completion	11/30/16	N/A	6/1/17	8/31/17	274	
FC	Final Completion	2/28/17	N/A	8/30/17	11/29/17	274	
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 (excluds STW @ GCT4, GCT6 & Plaza West)	N/A	10/3/19	8/7/19	4/8/20	188	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	8/7/19	0	
6	All Caverns and Tunnel Work Complete	N/A	12/16/19	12/16/19	2/10/20	56	
6A	Substantial Completion	7/19/19	1/28/20	1/28/20	7/17/20	171	
6B	Punchlist Completion	N/A	4/27/20	4/27/20	10/16/20	172	
7	Integrated System Testing Completion	N/A	6/1/20	6/1/20	6/1/20	0	
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	2/26/18	451	
5	44th St Vent Facility Complete	3/3/17	7/2/17	6/4/17	12/17/17	289	
5A	Complete all work at 48th St Entrance	2/15/18	3/20/17	10/2/17	3/26/18	39	
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	1/27/18	93	
8	Substantial Completion	7/24/19	1/21/19	8/18/18	12/24/19	153	
8A	Punchlist Complete	5/17/18	5/21/19	12/16/18	4/22/20	706	
9	Integrated Systems Testing Completed	7/24/19	3/23/20	10/25/19	7/20/20	362	
9A	Ready for Integrated Systems Testing	5/17/18	10/2/18	5/20/18	5/6/19	354	

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	7/1/18	0	Delta is measured against the Approved Baseline Date for this milestone only.
11	Final Completion	10/22/19	3/23/20	8/8/20	1/23/20	93	
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	9/29/17	722	
7	Final Completion	1/7/16	N/A	12/5/16	12/29/17	722	
CQ033: Mid-Day Storage Yard							
NTP	Notice to Proceed	7/4/15	N/A	N/A	4/11/17A	-	This is a newer contract and more data will become available for comparison once the baseline schedule is approved and incorporated into the IPS.
1	Precondition Site Survey	N/A	N/A	6/10/17	9/29/17	111	
2	Temporary Construction Fence Along Arch St. Access Route	N/A	N/A	6/10/17	9/29/17	111	
3	RWIC Trailer	N/A	N/A	7/10/17	6/19/17A	-	
4	Submission of Integrated Test Plan	N/A	N/A	4/11/18	4/11/18	0	
4A	Ready for Integrated Testing MDSY	N/A	N/A	3/11/20	3/11/20	0	
5	YS Track Completion	N/A	N/A	4/11/18	4/11/18	0	
6	Substantial Completion	10/25/18	N/A	8/10/20	8/10/20	655	Delta measured against Current Cont Date for all milestones except 6 and FC.
8	Completion of Plaza Work	N/A	N/A	7/12/18	7/12/18	0	
9	Complete Option 1 - Demo Amtrak Buildings	N/A	N/A	5/27/20	5/27/20	0	
FC	Final Completion	1/23/19	N/A	N/A	11/20/20	667	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	11/30/18	952	
4	Final Completion	7/21/16	N/A	1/28/18	2/28/19	952	
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	11/7/17	61	The Aug. 1, 2017 IPS Report notes that the baseline was approved in July 2017. It is assumed
2	Montauk Cutoff Catenary Structures	N/A	9/11/17	9/11/17	11/9/17	59	
3	Substantial Completion	9/20/17	5/28/18	5/28/18	5/28/18	0	

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
4	Final Completion	N/A	8/27/18	8/27/18	8/27/18	0	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	8/1/17	655	
3	Completion of Multiple Rooms (CIR, Sig. Reactor, Interlocking 1D, TPSS C06 and C07)*	10/13/16	12/31/16	5/22/17	8/1/17	292	
4A	C04 TPSS Room (Level P1) Ready for CS084 Work at 2nd Ave. Vent Facility	5/5/16	2/1/17	2/1/17	9/26/17	509	
5	GCT 6 CIR Ready for CS086 (orig CS086) Installation	10/17/16	4/14/17	4/30/17	8/1/17	288	
6	B10 Permanent Power Energized (Precedes Energization of B05, B06,B08, B09, B11 & B13)	6/24/16	4/28/17	4/22/17	9/13/17	446	
7	GCT 5 CIR Ready for CS086 (orig CS086) Installation	2/17/17	5/27/17	4/30/17	8/1/17	165	
8	GCT 4 CIR Ready for CS086 (orig CS086) Installation	5/2/17	6/27/17	4/30/17	8/1/17	91	
9	C01 & C02 TPSS Room Ready for CS084 at Tail Tracks	8/7/17	6/8/17	6/8/17	8/15/17	8	
10	GCT 3 CIR Ready for CS086 (orig CS086) Installation	11/6/17	9/6/17	9/6/17	6/6/18	212	
11	C03 TPSS Room Ready for CS084 at 55th St. Vent Facility	2/20/18	2/27/18	3/25/18	3/21/18	29	
12A	Integrated System Testing Start (TOC & All Permanent Power Complete)	5/2/18	12/8/18	9/1/18	12/10/18	222	
12B-1	Complete IST of All Systems Equip Installed by CM007	10/22/19	7/1/20	3/23/20	7/20/20	272	
12B-2	Complete IST of All Systems Equip Installed by CM014A	7/24/19	7/1/20	3/23/20	7/20/20	362	
12B-3	Complete IST of All Systems Equip Installed by CM014B	7/24/19	7/1/20	3/23/20	7/20/20	362	
13	Substantial Completion Including Completion of IST	12/9/19	7/1/20	7/1/20	10/1/20	297	
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	5/6/18	7/11/19	776	
2	Energize Traction Power Substation C04 and C05	6/20/18	12/14/18	10/3/18	11/1/19	499	
3	Energize Traction Power Substation C06 and C07	10/2/18	3/2/19	3/2/19	1/8/20	463	
4	Energize Traction Power Substation C01 and C02	10/30/18	1/30/19	2/5/19	11/1/19	367	
5	Energize Traction Power Substation C03	12/28/18	5/16/19	5/16/19	11/27/19	334	
6	Complete Local testing of all substation	1/11/19	7/30/19	7/30/19	6/9/20	515	

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
7	Substantial completion & Final Completion	10/21/19	11/25/19	12/2/19	9/2/20	317	
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	10/9/19	810	Approved baseline in May 1, 2016 IPS.
2	Mid-6 CIL (NTP+855d)*	N/A	5/23/18	5/23/18	6/21/19	394	Delta measured against Approved Contract Baseline Date for all milestones.
3	Mid-8 CIL (NTP+1158d)*	N/A	11/22/18	11/22/18	7/19/19	239	
SC	Substantial Completion (NTP+1216d)	N/A	5/19/19	5/19/19	3/10/20	296	
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	11/2/17	911	
2	Complete and Provide Final Design for Entire Tunnel Signal System (NTP+420CD)	9/5/15	9/19/17	7/7/17	2/22/18	901	
3	Furnish Tunnel Signal Equip. & Hardware for Plaza CIR (NTP+582CD)	2/18/16	6/29/17	4/28/17	12/2/17	653	
4	Furnish Tunnel Signal Equip. & Hardware for GCT5 & GCT6 CIRs (NTP+650CD)	4/26/16	1/9/18	11/13/17	4/19/18	723	
5	Furnish Tunnel Signal Equip. & Hardware for GCT3 & GCT4 CIRs (NTP+730CD)	7/17/16	6/5/18	3/16/18	8/30/18	774	
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 38th 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 38th 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 55th 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 2nd 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 43rd 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			
	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	General: Install Complete date = Terminate Ground Cable
CO1 Tail Tracks 38th 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 38th 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 55th 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 2nd 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 43rd 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	1Q 2017	2Q 2017	3Q 2017	4Q 2017*
CM007	< 90 days Open	7	17	37	17
	> 90 days Open	1	2	19	41
	Total Open	8	19	37	58
	Total Closed	2	3	12	34
	Total NCRs	10	22	49	92
CM014B	< 90 days Open	--	3	8	7
	> 90 days Open	8	5	6	--
	Total Open	8	8	8	7
	Total Closed	18	22	24	32
	Total NCRs	26	30	32	39
CQ032	< 90 days Open	3	--	13	6
	> 90 days Open	5	15	67	10
	Total Open	8	15	13	16
	Total Closed	95	96	102	106
	Total NCRs	103	110	115	122
CH053	< 90 days Open	--	--	--	--
	> 90 days Open	--	--	82	1
	Total Open	--	--	--	--
	Total Closed	91	94	94	91
	Total NCRs	91	94	94	91
CH057	< 90 days Open	6	--	3	--
	> 90 days Open	1	6	14	3
	Total Open	7	6	3	3
	Total Closed	15	18	23	23
	Total NCRs	22	24	26	26
CH057A	< 90 days Open	1	1	3	--
	> 90 days Open	3	2	2	2
	Total Open	4	3	3	2
	Total Closed	13	16	16	16
	Total NCRs	17	19	19	19
CS179	< 90 days Open	--	3	16	8
	> 90 days Open	15	12	12	8
	Total Open	15	15	16	16
	Total Closed	20	24	28	37
	Total NCRs	35	39	44	53
CS084	< 90 days Open	--	--	--	1
	> 90 days Open	--	--	--	--
	Total Open	--	--	--	1
	Total Closed	--	--	--	4
	Total NCRs	--	--	--	5

*Note: 4Q2017 PMOC data is from MTA-ESA NCR Summary for January 2018.

APPENDIX N – CONSTRUCTION CONTRACT CHANGE MANAGEMENT

Data from ESA PCM MODS by Contract August 2017

Chapter 11 – Construction Program of MTACC's ESA Project Management Plan states that a key CM responsibility is for construction change order initiation, processing, negotiation, and resolution, 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.

Contract CM006

Characterization:

Review of the lot of contract modifications show there are nine (9) modifications that exceed $100,000 in value, and one of these is for a credit to the contract. Generally, some of the areas these modifications cover include scope transfers from/to other contracts, electrical upgrades, schedule changes, tunnel alignment issues, and allowance adjustment.

Review:

Modification No. 19 dated 1/15/16 Replenish Allowance Item No. 5 $4, 282,776.00 was selected for review. The MTACC Staff Summary Sheet was provided by ESA. This mod was an Owner Initiated Change (OIC) to increase an allowance item for Remediation of the Existing Structures Work necessary to cover the full scope of work. The PMOC observes that the CM has managed the change process per MTACC procedure.

Contract CM007

Characterization:

Review of the lot of contract modifications show there are four (4) modifications that exceed $100,000 in value, and one of these is for a credit to the contract. Generally, some of the areas these modifications cover include previous work corrections – rebar dowels, pipes, CWR modifications.

Review:

Modification No. 5 dated 4/27/17 Remediation Rebar Dowels Cavern Wall $151,532.40 was selected for review. The MTACC Staff Summary Sheet was provided by ESA. This mod was for the remediation of the Rebar Dowels at the Cavern Walls. The PMOC observes that the CM has managed the change process per MTACC procedure.

Contract CQ032

Characterization:

Review of the lot of contract modifications show there are forty-six (46) modifications that exceed $100,000 in value, and four of these are for credit to the contract. Generally, some of the areas these modifications cover include scope transfers from/to other contracts, existing facilities modification, schedule changes, water infiltration modification, and allowance adjustment.

Review:

Modification No. 79 dated 10/13/16 Water Infiltration Remediation $1,906,959.00 was selected for review. The MTACC Staff Summary Sheet was provided by ESA. This mod was for Water Infiltration Remediation at Plaza Interlocking in locations where the new structure meets existing structures. The PMOC observes that the CM has managed the change process per MTACC procedure.

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

CM007 - Direct Fixation Qualification Testing*

As of December 14, 2017

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	Ongoing, projected to finish end December 2017	Projected to start 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 end December 2017	Ongoing, projected to finish January 2018

*As reported at ESA Monthly CM007 Progress Meeting December 14, 2017

CM007 - Direct Fixation Trackwork Construction*

Progress Data from December 3, 2017 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 temporary rail plates	Progressing using temporary rail plates	Not started
Actual Progress	See Note #1 below	20.3%	
Planned Progress	See Note #1 below	47.6%	

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	5.7%		
Planned Progress	38.8%		

*As reported at ESA Monthly CM007 Progress Meeting December 14, 2017

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APPENDIX P - ESA CORE ACCOUNTABILITY ITEMS

Table P – 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
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
Schedule	RSD	Dec 31, 2013	Dec 31, 2023	December 2022	April 30, 2018
Total Project % Complete		Based on Invoiced Amount		74.0% actual vs. 78.0% (ESA Figure)	
Project Performance Rate since 2014 "Re-Plan"		Based on Earned Value		80.4% (PMOC calculation of construction spending at 3Q2017 planned vs. actual since re-baselining).	
Contracts		Total contracts awarded to date		$8.99 b	88.4% of total awards
		Total construction contracts awarded to date		$6.98 b	92.5% of construction awards

Major Issue	Status	Comments
[redacted]	[redacted]	[redacted]
Project Cost	MTACC has identified significant forecast cost overruns: ▪ OCIP - $190 million ▪ Railroad Force Account - $110 million ▪ OICs for Contract CM014B - $25 million ▪ PM/CM, CCM, GEC Services – (TBD) 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 4Q2017.	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.
[redacted]	[redacted]	[redacted]
Harold Schedule	The schedule for the remaining ESA work in the 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.