PMOC COMPREHENSIVE MONTHLY REPORT

East Side Access (MTACC-ESA) Project

Metropolitan Transportation Authority
New York, New York

Report Period June 1 to June 30, 2018

PMOC Contract No. DTFT60D1400017

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

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

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EXECUTIVE SUMMARY

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

Overall Program Status:	The current Overall Program is 77.7% actual versus 82.1% as-planned (based on invoice cost).
Construction Status:	The Construction Status is 78.3% actual versus 83.2% as-planned (based on invoice cost).
Contracts Awarded/ Completed:	MTA Board approved MTACC recommendation for award of CS086
Construction Issues:	CM014B, CS084, VS086 (all continuing).
Program Funding:	MTACC obtained additional funding for the ESA program in Budget Amendment No. 3 to the 2015–2019 Capital Plan to maintain the program through December 2020.
Program Cost and Budget:	(b)(4) [redacted]
Risk Management:	10 major risks remain.
Harold Interlocking:	LIRR completed cutovers of H4, H5, H6, and Location 30 Central Instrument Locations (CILs) during June 2018 and permanent cutover and realignment of Main Line #4 Track (ML4).
Key Stakeholder Issues:	LIRR – Late completion of Positive Train Control design, late final approval of all CS179 final designs for 10 control and 19 non-control systems; CS084 issues; Amtrak – Continuing Force Account availability issues; MTACC - Change Order processing issues.
Construction Safety:	0.93 - Lost Time and 1.85 - Recordable Injuries during May 2018.
ELPEP Compliance:	(b)(4) [redacted]
Project Management Plan:	MTACC to update PMP and Sub-plans to reflect major management, organizational and process changes project-wide.
Buy America:	Three CS179 Issues – Small Split HVAC units (waiver requested); Video Display Panels (waiver request in preparation); PA Speakers (waiver request in preparation).

All Project Sponsor cost and schedule data included in this report is based on the MTACC East Side Access Monthly Progress Report, April 2018 referenced in this report as the ESA April 2018 MPR, which has a cost and schedule data date of May 1, 2018. Unless otherwise noted, all progress percentages in this report are based on invoiced costs and not actual construction.

REPORT FORMAT AND FOCUS

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

QUARTERLY SUMMARY

1. PROJECT DESCRIPTION

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

2. CHANGES DURING 2nd Quarter 2018

a. Engineering/Design Progress

In the ESA April 2018 MPR, the PMT reported that the overall Engineering effort is 98.5% complete compared to planned completion of 100%. The ESA April 2018 Total Cost Report shows that 98.6% of the overall EIS and Engineering budget, including 98.8% of the design budget, has been invoiced.

b. New Contract Procurements

New contract procurement during 2Q2018 is as follows:

Contract CS086 Tunnel Systems Package 2 – Signal Installation: At the June 2018 MTA Board meeting, MTA approved MTACC's recommendation to award this contract.

Contract CH057D, Harold Trackwork: Award/NTP for this contract was issued on April 12, 2018.

Contract CH058A Harold Structures Part 3A, B/C Approach Structure, was advertised on May 8, 2018.

c. Construction Progress

In the ESA April 2018 MPR, MTACC reported that total construction progress reached 78.3% complete compared with planned progress of 83.2%. The April 2018 Total Cost Report shows that 78.3% of the total construction cost has been invoiced.

d. Continuing and Unresolved Issues

Potential Funding Constraints through 2020: MTACC received the approval that they requested to fund the ESA program through December 2020. This issue is closed now that 2015–2019 Capital Plan Budget Amendment No. 3 has been approved.

Harold Re-Sequencing Plan ("ESA First"): During 2016, the "ESA First" Harold Re-sequencing Plan was adjusted to accommodate railroad force account constraints. The impacts caused by insufficient Amtrak support were reduced during 2016, 2017, and through the first two quarters of 2018, but not totally eliminated, by ESA frequent program re-planning and re-sequencing. This situation continues to be a challenge for MTACC.

Forecast Force Account, OCIP, and Professional Services Cost Overruns (Resolved): With MTA Board approval of the revised ESA Estimate-at-Completion in April 2018, the PMOC's earlier concerns have been resolved with regard to the projected Amtrak and LIRR Force Account cost

overruns, the additional OCIP costs, and the cost to extend the current PM/CM, GEC, and CCM professional services contracts.

Amtrak Preparation for Extended East River Tunnel Outages: The PMOC has continuing concerns regarding the impact to the ESA Harold work due to the Amtrak program to harden East River Tunnel (ERT) Lines 1, 3, and 4 in preparation for extended outages for ERT Lines 1 and 2 to complete Hurricane Sandy damage-related reconstruction work. This work was originally planned for 2019 starting with Line 2, and has now been rescheduled for 2025. Amtrak has provided no details regarding how this change might affect the remaining predecessor hardening work for ERT Lines 1 and 4. Hardening of ERT Line 3 was completed in 2017. The risk remains that reliability issues might require Amtrak to make emergency repairs on either Line 1, 2, or 4 at any time between now and 2025.

LIRR Positive Train Control (PTC): There are two potentially significant impacts of PTC implementation: 1) design changes to active Contracts CS179 and VS086 and pending Contract CS086; and, 2) potential delay to the remaining ESA Harold work should FRA not grant LIRR's waiver request to postpone the December 31, 2018, deadline for PTC operation in Harold Interlocking. LIRR was not able to complete the PTC design in 1Q2018, as earlier projected, and the design is now not expected to be completed until the end of 2018. LIRR must provide, by August 2, 2018, an acceptable response to the FRA's letter of May 2, 2018, regarding requirements for completion of specific elements of PTC. 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, especially by the GEC, but increased attention to this issue continues to be needed. The PMOC notes that, based on the original baseline schedule, full CS179 design completion has been delayed over two years.

Manhattan/Systems Performance Risk: The PMOC remains concerned that delays in completing the Manhattan/Systems work may continue to impact the completion of the overall ESA program and the start of revenue service. The Manhattan/Systems schedule path has become the ESA program primary critical path. This significant change first appeared in the April 1, 2018 Alternate IPS update, which showed that the completion of Manhattan/Systems work path lost three months during the first quarter of 2018. The PMOC notes that progress on both the CM014B and CS084 contracts is significantly behind schedule and award of CS086 is over 1 year late based on earlier forecasts.

Advancement of the MTACC Plan for Incremental Integrated Systems Testing: (New): Due to increasing schedule pressure, MTACC has decided to implement its testing approach known as Incremental IST that provides for early start of portions of the IST program prior to final completion of all systems installation work and the associated local testing. The original IST plan provided a duration of between 15 and 22 months subsequent to completion of all systems installation work and local testing. The PMOC notes that the Incremental IST is now scheduled to start in April 2019. However, the technical discussions about Incremental IST involving MTACC, LIRR, the CS179 general contractor, and its electrical and systems integrator subcontractors are not progressing sufficiently to support the timely completion and approval of the required contract modifications for Contracts CS179, CS084, CS086, and VS086.

e. New Cost and Schedule Issues

In the second quarter of 2018, the MTACC completed a cost and schedule forecast reassessment for the ESA program. MTACC obtained approval of a Capital Program Budget Amendment to fund the program through December 2020 based on the reassessment forecast. Going forward, the MTACC will submit a 2020–2024 Capital Plan budget to obtain a total of approximately $956 million in local funding to complete the ESA program.

MTACC developed a new methodology for preparing the IPS schedule while conducting the schedule reassessment. IPS update 105 (data date May 1, 2018) uses the new methodology and forecasts the Target RSD date as February 22, 2022, a loss of 8.9 months during the second quarter (IPS 102, February 1, 2018 IPS). Changes to the schedule during this period included additional time for LIRR RSD preparations, additional time Issue Contingencies, and a new plan for Incremental IST. In addition to the delay to the Target RSD, the primary critical path shifted to run through Manhattan/Systems work path rather than through Harold Interlocking work path.

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, the CS084 Traction Power contractors and the amount of time required to respond to RFIs and field change requests on all of these contracts. Additionally, the time to process and approve contract modifications program-wide is excessive and needs to be improved to minimize cost and schedule impacts. The PMOC notes that MTACC acknowledges these problems and is currently implementing organizational and process changes designed to correct the issues and to prevent their recurrence.

b. Real Estate Acquisition

In its April 2018 Monthly Progress Report, ESA reported that MTA Real Estate continues to finalize costs associated with the close out of work at 415 Madison Avenue for the 48th Street Entrance and has begun to assess implications of the demolition and reconstruction of a larger building for JP Morgan at 270 Park Avenue.

c. Engineering/Design

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

Additionally, LIRR delayed reviews of designs on the CS179 Facilities Systems, VS086 Signal Equipment Procurement, and CS084 Traction Power Systems contracts. Project-wide, late MTACC responses to RFIs and Change Requests and MTACC's long processing durations for Contract Modifications are not supporting the construction schedules. The PMOC notes that MTACC recognizes these problems and is currently implementing organizational and process changes designed to correct the issues and to prevent their recurrence.

d. Procurement

The April 2018 MPR shows that total procurement for the ESA Program is 89.0% complete, with $9.06 billion awarded of the $10.17 billion current project budget. MTACC awarded a contract for CH057D, Harold Trackwork Part 3, for $9.2 million in the second quarter of 2018.

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

- CS086 Tunnel Systems Package 2 – Signal Installation, MTA approved award in June 2018.
- CH057D Harold Trackwork; award and NTP were issued on April 12, 2018.
- CH058A Harold Structures Part 3A, Tunnel B/C Approach Structure; contract was advertised on May 8, 2018.

e. Railroad Force Account (Support and Construction)

During June 2018, LIRR Signal personnel concluded "pre-cutover" testing of all new CILs in Harold Interlocking and completed the cutovers of "H4", "H5", "H6", and Location 30 CILs. LIRR Track personnel made the final cuts and throws to place LIRR Main Line #4 (ML4) in service on its permanent alignment for the new Harold Rev. 14-4M track configuration. LIRR 3rd Rail personnel made 3rd rail modifications associated with the signal cutovers and the track realignment and continued to pull and terminate cables into the new G02 Substation. Amtrak C&S personnel completed signal modifications on its New Haven Tracks east of Harold so that its signal system would be compatible with the new Harold signal system and supported the LIRR cutover activities. Although Amtrak Electric Traction (ET) support of ESA construction remained limited, ET personnel continued preliminary work for the construction of catenary over the Eastward LIRR Passenger Track ("PW2 Overrun") when possible and did miscellaneous catenary work in support of various other ESA project requirements.

f. Third-Party Construction and Procurement

Manhattan

Contract CM006 Manhattan North Structures: During 2Q2018, the CM006 contractor (Manhattan North Structures) continued to progress activity toward achieving Substantial Completion (SC).

Contract CM007 GCT Station Caverns and Track: The CM007 contractor continued construction of the North and South Back of House (BOH) facilities at both the East and West Caverns. In both the East and West Caverns during 2Q2018, the CM007 contractor continued work at mezzanine and platform levels and completed smoke plenum precast installation. Qualification testing of direct fixation track components and trackwork construction continued.

Contract CM014A GCT Concourse & Facilities Fit-Out: This contract achieved Substantial Completion on May 23, 2018.

Contract CM014B GCT Concourse & Facilities Fit-Out: In Wellways #1 and #2, the scaffolding is being re-installed so that the CM014B contractor can begin finished ceiling panel installation and the escalators are undergoing inspections. In Wellways #3 and #4, rigging for installation of escalators is underway. Through June 24, 2018, the concourse structural steel erection was 67% complete by piece and 62% by weight. The steel/metal deck work is now the secondary critical path for the contract and is moving very slowly.

Contract VM014 Vertical Circulation Elements: In conjunction with the CM014B contract, VM014 has completed fabrication of all 22 escalators. 14 of the 16 elevators have completed fabrication.

Queens

Contract CQ032 Plaza Substation and Queens Structures: During 2Q2018, the CQ032 contractor continued to progress activity toward achieving Substantial Completion (SC).

Contract CQ033 Mid-Day Storage Yard Facility: The CQ033 contractor continued the following activities during 2Q2018: yard and street utilities, yard lighting installation, ductbank construction, personnel access bridge foundation and car appearance maintenance platform construction, and completed demolition of the Montauk Cut-off Structure.

Harold Interlocking

Contract CH057D – Harold Track Work Part 3: The CH057D contract was awarded and NTP was issued on April 12, 2018. During June 2018, the CH057D contractor continued to mobilize for its Northeast Quadrant (NEQ) trackwork for which it will install 6 turnouts and begin construction of the Westbound Bypass Track. Additionally, the contractor continued to inventory turnout material and excavate test pits in the NEQ work area to locate subterranean utilities.

Contract CH061A – Track A Cut and Cover Structure: During June 2018, the CH061A contractor completed all "Critical Remaining Work" on the Tunnel A Structure, although ESA deferred declaration of Substantial Completion until August 16, 2018. The Critical Remaining Work included all sidewall and roof concrete placement that would require Amtrak Electric Traction protection to complete.

Systems

Contract CS179 – Systems Facilities Package No. 1: During 2Q2018, the CS179 contractor continued installation of conduit, cable, fire stopping, fire standpipe, lighting, etc., in the tunnels and at the various facilities where access was obtainable. Water infiltration, Buy America, and access restraint issues must still be remedied. The completion of Final Designs (FD) for all 10 Control Systems, which was scheduled for completion 26 months ago, has not occurred yet; and, the completion of FD for all 19 Non-Control Systems is also delayed. Additionally, the contractor contends that a significant number of Notice of Change (NOC) submissions, with potential for cost and design impacts, remain as open items that are already impacting work progress. Previously noted Buy/Ship America issues that could impact design and construction completion also remain unresolved.

Contract CS084 Traction Power Systems Package 4: The contractor continues to cite numerous conditions in the various substation facilities that prevent it from beginning work in those locations (See Appendix L for details). During 2Q2018, installation work in the Vernon (C05) substation occurred, but was partially limited 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. While some minor SCADA-related issues remain, there are major issues related to the delivery of equipment, the installation of traction power cables, and incomplete work by other ESA contractors that remain as open items and pose significant concerns regarding the timely completion of this contract. Preparations for the fabrication of the C08 pre-fabricated substation began in June 2018. The identification of the cause of the failure of a second transformer during hi-pot testing and the implementation of a change in the fabrication process raised questions regarding the long-term viability of transformers built before the modified fabrication process was implemented.

Contract VS086, Systems Package 3 – Signal Equipment Procurement: The timeliness of decisions by the LIRR on design questions and the implementation of specific equipment continue to be concerns and impediments to the efficient progression of the work. To preclude some further delay to the completion of designs, MTACC advised that, in the absence of decisions from the

LIRR on two critical open design issues, the contractor will proceed with the design using the TRU-III track circuit equipment and will provide signal heads using incandescent bulbs rather than Light Emitting Diodes (LEDs). A third design issue, the use of the ATT-20 track circuit equipment, will also be incorporated into the design, but not until MTACC develops and issues a contract modification. The lack of progress on contract modifications continues to negatively impact contract progress.

g. Vehicles

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

h. Commissioning and Start-Up

Discussion in this report related to the commissioning and startup of the ESA revenue service is based on information obtained during the most recent Operational Readiness briefing which was held on April 19, 2018, and subsequent meetings with LIRR personnel. Commissioning of the work and startup of ESA service is dictated by an ESA Rail Activation Plan (RAP) being developed by the ESA Operational Readiness Group; a group consisting of 11 Task Working Groups (TWGs).

i. Project Schedule

The IPS 105 (data date May 1, 2018) update shows that the Target RSD forecast date – February 21, 2022 – remains unchanged from the IPS 104 (data date April 1, 2018) update, with the primary critical path running through Manhattan/Systems work. During the second quarter of 2018 (beginning with IPS 102; February 1, 2018), the critical path shifted from the Harold Interlocking work path to the Manhattan/Systems work path and lost approximately 3 months. During the second quarter, approximately 1 week was lost on the second critical path through Harold Interlocking work, and approximately 2 months were gained on the third critical path through Queens work.

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

Table 1: Summary of Critical Dates

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

Notes: * Project Sponsor forecast Revenue Operations Date per presentation to the MTA CPOC, June 2014.
** Source – PMOC 2014 schedule trending analysis representing a medium degree of mitigation.
*** Source – Amended FFGA, August 2016

j. Project Cost

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

Table 2: Project Budget/Cost Table

(Cost shown in millions)

	FFGA			MTA Current Budget			Expenditures April 2018	
	Original FFGA	Amended FFGA	Pct. of FFGA	Obligated	CBB	Pct. of CBB	Expenditures	Pct. of CBB
Grand Total	7,386.0	12,038.5	100.0%	9,872.9	11,214.0	100.0%	8,335.9	74.3%
Financing Cost	1,036.0		14.0%	617.6	1,036.0	9.2%	617.6	59.6%
		1,116.5	9.3%					
Total Project Cost	6,350.0		86.0%	9,255.3	10,177.8	90.8%	7,718.3	75.8%
		10,922.0	90.7%					
Total Federal Share	2,683.0		36.3%	2,698.8	2,698.8	24.1%	2,698.1	100.0%
		2,698.8	22.4%					
5309 New Starts share	2,632.0		35.6%	2,436.7	2,436.7	21.7%	2,436.1	100.0%
		2,632.1	21.9%					
Non New Starts share	51.0		0.7%	66.6	66.6	0.6%	66.6	100.0%
		66.6	0.6%					
ARRA	0.0	195.4	1.6%	195.4	195.4	1.7%	195.4	100.0%
Local Share	3,667.0		49.6%	6,556.5	7,479.0	66.7%	5,020.2	67.1%
		8,223.2	68.3%					

k. Project Risk

With the MTA approval of MTACC's revised EAC and new Alternate Integrated Project Schedule in April 2018, the ESA risk profile has changed significantly. The Manhattan/Systems program schedule path has become the ESA Program Schedule critical path. The ESA Program Schedule critical path major risks include: the Incremental IST plan and schedule that will need to be finalized and agreed to by the MTACC, LIRR, CS179, and other affected contractors and inadequate progress on the Contract CM014B and CS084 work. This work path has lost approximately one month since IPS 104 (April 1, 2018) and a total of three months since IPS 102 (February 1, 2018). The PMOC remains concerned about the continued erosion of programmatic float, which decreased from 564 CDs (18.5 months) in IPS 102 at the beginning of the second quarter of 2018 to 292 CDs (9.6 months) in IPS 105 at the end of the second quarter.

MONTHLY UPDATE

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

ELPEP COMPLIANCE SUMMARY

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

- **Technical Capacity and Capability (TCC):** MTACC has previously indicated that it will review the TCC Plan and propose revisions, if required, to reflect the current status of the Program. MTACC submitted an updated TCC Plan in 3Q2017. In April

2018, FTA advised MTACC to incorporate its current updates and then commence with a subsequent revision that addresses management changes resulting from the MTACC Six-Point Plan for ESA.

- **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 Harold Interlocking.
- **Project Management Plan:** MTACC is using the current version of the PMP, Rev. 10, that the PMOC reviewed and the FTA accepted earlier in 2017.
- **Cost/Schedule Contingency**: MTACC has reached agreement with the FTA and the PMOC on the ELPEP minimum cost and schedule contingency hold points, levels, and drawdowns. MTACC continues to report the actual cost and schedule contingency levels against the ELPEP minimums in its quarterly reports to the FTA. Schedule and Cost Contingency status, use, and trending are discussed, respectively, in report Sections 4.0 and 5.0. (b)(4) [redacted]

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.

- **Schedule Management Plan (SMP)**: The ESA project should continue to make additional improvements in the following areas: Integrated Project Schedule (IPS) Updating, Forecasting, and Schedule Contingency Management against a current baseline schedule. MTACC is using Rev. 2 of the SMP dated September 2016.
- **Cost Management Plan (CMP)**: The ESA project should continue to make additional improvements in the following areas: Project Level EAC Forecasting, Project Level EAC Forecast Validation, and MTACC Cost Contingency Management and Secondary Mitigation. MTACC is using Rev. 2 of the CMP dated October 2016.
- **Risk Management Plan:** ESA submitted the updated Risk Management Plan in 4Q2017. In April 2018, the FTA advised MTACC to incorporate its current updates and then commence with a subsequent revision that addresses any changes resulting from the MTACC Six-Point Plan for ESA.
- **Project Quality Manual:** ESA submitted the updated Project Quality Manual in February 2018. In April 2018, FTA advised MTACC to incorporate its current updates and then commence with a subsequent revision that addresses any changes resulting from the MTACC Six-Point Plan for ESA.

The PMOC anticipates the need for the ESA-PMT to update the Project, Cost, and Schedule Management Plans, as well as other PMP Sub-plans as required, to document changes called for by the incorporation of the MTACC Six-Point Plan for ESA to reduce potential programmatic risks. MTACC has forecast completion of the draft updates during 3Q2018.

Revisions to the ELPEP Document: MTACC submitted an updated ELPEP with suggested revisions in 3Q2017. In April 2018, FTA advised MTACC to re-evaluate its proposed updates in consideration of the changes resulting from implementation of the MTACC Six-Point Plan for ESA.

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, however, has observed continuing problems in the following areas:

- 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 has not been adequate to meet the program schedule needs.
- ESA-PMT has not effectively coordinated many of the Manhattan/Systems contractors' activities to avoid conflicts and delays.
- GEC's responsiveness to RFIs and Field Change Requests on contracts has often been slow and this has impacted construction progress.
- Processing and approval of construction contract modifications is taking too long and this creates cost and schedule impacts.

Management focus on all of these issues has resulted in some improvements, but the PMOC notes that these issues have continued through 2Q2018. The MTACC president, working with the ESA-PMT, has made 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. The transition to the new ESA project organization and operation continued through 2Q2018.

b. Staffing

The PMOC has no specific concerns or recommendations about the Sponsor's staffing at this time other than to note that inadequate staffing is likely one contributing factor to the issues discussed above in Section a.) Organization above, and may become an issue when the CS086 and CH058A contracts are awarded. 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 the staffing adjustments established in the MTACC President's Six-Point Plan for the ESA Program. To this end, selected re-assignments and new hiring in support of the staffing adjustments continued through 2Q2018.

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 re-planned budget ($10,177 million) and schedule (December 2022 RSD [public forecast]) were presented to the MTA CPOC in June 2014 and approved. The PMOC notes that, since that time, ESA has been dealing with schedule performance set-backs primarily in the following areas: earlier funding issues that delayed award of contracts and systems contract options; poor performance by the CM006 and CM014B contractors; insufficient progress of work on Contracts

CS179, CS084, and VS086; late award and NTP for Contracts CM007 and CQ033; significant delays to completion of designs for CM015 and CS086; and ongoing challenges in Harold Interlocking work caused by continued lack of adequate railroad force account support. As a result, MTACC and the ESA-PMT completed a full review of the ESA program in April 2018 which concluded that the following revisions, as a fourth "re-plan", were needed: a revised EAC of $11,133 million (without financing) and a revised target RSD of February 2022, with an unchanged "late" RSD of December 2022.

b. PMP

MTACC is using Revision 10.0 to the East Side Access Project Management Plan, dated June 2016, which was accepted by the FTA in early 2017. MTACC plans to update the PMP during 3Q2018 to reflect the recent changes in the ESA project organization and operation.

1.3 Project Controls

a. Schedule

(b)(4) [redacted]

b. Cost

In June 2014 the MTACC re-baselined the ESA program to a budget of $10,177 million (excluding financing costs and Rolling Stock Reserve). In April 2018 the MTACC completed a review of the ESA program due to anticipated cost increases. They determined that the ESA program estimate-at-completion has increased to $11,133 million, which is approximately $956 million above the June 2014 budget. The PMOC notes that the revised EAC exceeds the amended FFGA Baseline Cost Estimate (BCE) of $10,922 million by approximately $211 million, an increase of 1.9%. MTACC continues to comply with the minimum cost contingency hold point values that they agreed to with the FTA/PMOC, and to report on the contingency drawdowns in their Quarterly Progress Reports to the FTA. (b)(4) [redacted]

1.4 Federal Requirements

a. FFGA

In June 2014, MTACC forecast the ESA program budget at $10,177 million (excluding the Rolling Stock Reserve and finance costs) and scheduled RSD on December 2022. This was incorporated into a FFGA amendment that was approved by the FTA on August 2, 2016. The FFGA amendment incorporated the changes in the Baseline Cost Estimate and Revenue Service Date that occurred from December 2006 (when the original FFGA was signed) through June 2014 and set the budget at $10,922 million and set the FFGA Revenue Operation Date in December 2023. ESA-PMT completed a full review of the ESA program and issued the results in April 2018, which included:

a revised EAC of $11,133 million and a revised target RSD of February 2022, with an unchanged "late" RSD of December 2022. The PMOC notes that this new EAC exceeds the amended FFGA BCE by $211 million, but still forecasts the Revenue Operations Date by December 2022, 12 months earlier than the amended FFGA operations date of December 2023.

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 1Q2018, MTACC continued to catch up on the Safety and Security Certification processes; with several more design and construction contracts reviewed, and safety and security elements identified for future validation upon completion of design and construction phases of the contracts. The Safety and Security Task Working Group (TWG) has developed a draft LIRR ESA Emergency Action Plan that is under review by the ESA stakeholders. Construction Safety Certifications for eight contracts that have reached Substantial Completion are complete and uploaded into document control. The table below summarizes the status of the Design Security Certifications as of the April 19, 2018, 1Q2018 Operational Readiness Briefing.

ESA Design Security Certification Summary Update	Number
Design Security Certification Complete	11
GEC to Submit Security Certification Package to LIRR	4
GEC to Present Package to LIRR (Pre-Meeting)	10
Zero Certifiable Elements in Security Package	20
Total	45

b. Project Construction Safety Performance

Through May 2018, ESA project safety statistics for lost time accident and OSHA recordable injuries on active construction contracts continued to trend below the Bureau of Labor Statistics (BLS) national average with a CY2018 project wide ratio of 0.62 versus 1.70 (2018 BLS average) lost time accidents per 200,000 work hours. The ESA recordable ratio for CY2018 through May 2018 was 1.04 versus 2.8 (2018 BLS average).

c. Security

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

1.6 Project Quality

Quarterly Quality Oversights (QQOs): The 1Q2018 QQO Audit was conducted during the second quarter of 2018. Final Reports were issued and the contractors advised of audit results and findings prior to formal issuance of the reports.

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

Table 3.1 – 1Q2018 Quality Audit Results

Contract	Overall Score
CS179	87%
CM014B	80%
CM007	82%

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 June 2018 contractor NCR logs. The total number of NCRs for each contract are tabulated to show closed NCRs, NCRs open for less than 90 days, and NCRs open for over 90 days. The table includes data for the most active construction contracts over the past four quarters.

1.7 Stakeholder Management

a. Railroads

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

Long Island Rail Road

As the agency that will operate the new ESA facilities, LIRR is the primary project stakeholder. The project is now in the next phase of construction to complete the GCT station facility, install all the trackwork and systems, and complete the testing, start-up, and commissioning. LIRR's level of direct involvement with the ESA project has increased and will continue to do so through commencement of revenue service. LIRR will need to commit the resources and management availability to work with MTACC in support of the ESA project needs and to provide timely decisions when requested in response to design, construction, or operational issues.

During 2Q2018, several key ESA issues involving LIRR continued to challenge the project:

- The Qualification Testing (QT) for the High Attenuation Resilient Tie Block (HARTB) fastener system started, and testing of both the HARTB and STDFF assemblies is ongoing. QT for all other direct fixation assemblies has been completed.
- Review and concurrence by LIRR of the final designs for the 10 control systems (Contract CS179) has progressed much slower than scheduled. LIRR has formally signed-off on only 7 of these systems. As of the end of 2Q2018, the completion and approval of all 10 Control System final designs is 26 months late.
- Review and approval of the contractor submittals for the Traction Power System (Contract CS084) has progressed much slower than scheduled. However, TPSS component fabrication is underway, with some equipment completed and placed in storage until the substation rooms are ready for installation of the equipment.

- LIRR's decisions regarding use of LED signal lighting and specialized track circuits provided by the Signal Equipment Procurement contract (Contract VS086) remain unresolved.
- However, MTACC instructed the contractor to move forward with the designs as if the specialized track circuits were approved and to provide signal heads utilizing incandescent bulbs in lieu of the LEDs.
- Concerning approval of track circuit technology and testing under Contract VS086, MTACC has advised that it has told the contractor to progress signal circuit designs for the TRUIII and ATT-20 track circuit equipment as if they are approved. LIRR has not approved the TRUIII track circuit equipment yet, however.
- 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 in October 2017 and a subsequent revision to the FRA in December 2017; which, based on Harold Interlocking's continuing status as an active construction area, requested an exemption from the FRA requirement to implement PTC in Harold Interlocking by December 31, 2018. LIRR received the FRA's response on May 2, 2018. LIRR is now required to submit to the FRA, within 90 days on August 2, 2018, the revised PTC Implementation Plan with LIRR's proposed alternate schedule. The PMOC notes that LIRR's final PTC design was not completed by March 31, 2018, as previously forecast, and is now not expected to be completed until the end of 2018.
- Planned 2018 LIRR direct work will be significantly greater than during previous years, will require a substantial commitment of LIRR Force Account personnel, and will include:
  - Placing the new GO2 Substation into service (planned 1Q2018; now 4Q2018).
  - Completing all CIL pre-cutover activities in June 2018. Accomplished.
  - Completing cutovers for the remaining 5 CILs (planned May 2018; now July 2018).
  - Completing all Harold NE Quadrant trackwork (planned June/July 2018; now August 2018).
  - Completing all Harold SE Quadrant trackwork (planned September 2018).
  - Completing all track/signal/3rd rail/catenary modifications in preparation for the Tunnel B/C Approach Structure work (planned for 3Q and 4Q2018).

Amtrak

As the agency that jointly, with LIRR, operates and maintains Harold Interlocking in Long Island City, Queens, Amtrak is a key project stakeholder. Based on Amtrak's continued inability to provide sufficient force account support, especially Electric Traction (ET) personnel, ESA has significantly revised the Harold construction schedule twice since 2014. As a result, the ESA PMT produced the "ESA First" construction schedule which re-prioritized work elements in Harold to operate new LIRR service into GCT and delayed some of the FRA-funded work not required to operate into GCT. Through June 2018, although the effects of Amtrak's lack of support have been somewhat mitigated, this still remains a significant challenge for MTACC.

In 2016, Amtrak announced plans to reconstruct its East River Tunnels (ERT) Line 1 and Line 2 that were damaged by Superstorm Sandy in 2012. Amtrak had originally announced that this work would begin in 2019, but it was later postponed until 2025. This work does, however, remain a potential risk based on both the necessary predecessor work to harden ERT Lines 1 and 4 in preparation for the extended tunnel outages for ERT Lines 1 and 2. Operational reliability issues as well might require Amtrak to make emergency repairs on either Lines 1, 2, or 4 at any time between now and 2025.

The PMOC recognizes MTACC's efforts to actively engage Amtrak to develop some specific mitigations for certain risks and to proactively deal with these issues as they arise. The PMOC also recognizes MTACC's engagement of a consultant to develop a resource loaded schedule for all regional force account commitments, including Amtrak and LIRR, to assist in short- and long-term resource allocation decisions that has clearly demonstrated its usefulness enabling ESA to better execute planned work on a week to week basis. Continued force account resource shortcomings, however, will continue to challenge the current Harold schedule that has been subject to changes and delays outside of MTACC's direct control. The PMOC recommends that the PMT continue to actively engage executive management in MTACC and the MTA to assist with resolution of such problems.

Other Stakeholders

If ESA intends to place the new LIRR G02 Substation in service during 4Q2018, as currently planned, in the near future it must engage Consolidated Edison (ConEd) to provide the commercial power interface at the new substation. Present ESA plans for the CH058A contract include demolition of the existing G02 Substation to make room its construction of the Tunnel B/C structure in Harold Interlocking. The new substation must be cut over and in service before the existing substation can be demolished.

1.8 Local Funding

a. MTA/New York State (Capital Plan)

Potential and forecast cost overruns that had been identified by MTACC were quantified in the cost and schedule reassessment that was completed in April 2018. MTACC obtained approval of a Capital Program Budget Amendment to provide the program with additional local funds through December 2020 based on the reassessment forecast. Going forward, the MTACC will submit a 2020–2024 Capital Plan budget to obtain a total of approximately $956 million in local funding to complete the ESA program. Until the Capital Plan adjustments are incorporated into the ESA program budgets, the PMT will use project contingencies to cover budget gaps, if necessary. The PMOC is concerned about potentially significant impacts that this risk could have on the program budget and schedule as well as the target Revenue Service Date.

b. Other Sources

The total FTA funding commitment for the ESA program is $2,699 million.

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. ESA submitted the updated Risk Management Plan in 4Q2017. In April 2018, the FTA advised MTACC to incorporate its current updates and then commence with a subsequent revision that addresses any changes resulting from the MTACC Six-Point Plan for ESA.

b. Monitoring

The ESA Risk Manager continues to update, track, and issue program level risk updates to the Risk Register on a regular basis. Although a comprehensive risk review for remaining Harold Interlocking work was completed in 2Q2017, the PMOC notes that, as of the April 1, 2018 Alternate IPS update, the Harold schedule path is no longer the ESA Program Critical Path. The PMOC expects that risk monitoring will now focus on activities through the current ESA Program critical path along the Manhattan/Systems schedule path.

c. Mitigation

ESA continues to identify and implement risk mitigation strategies in a number of project areas. The PMOC anticipates that risk mitigation will focus on activities through the current ESA Program critical path along the Manhattan/Systems schedule path.

2.0 PROJECT SCOPE

2.1 Engineering/Design and Construction Phase Services

In the April 2018 MPR, the PMT reported the overall Engineering effort as 98.5% complete versus 100% planned. The ESA April 2018 Total Cost Report shows that 98.6% of the overall EIS and Engineering budget and 98.8% of the design budget have been invoiced.

Status of Construction Packages Advertised

CS086 Tunnel Systems Package 2 – Signal Installation was advertised as an RFP on August 10, 2017. A single proposal was received on October 31, 2017, and negotiations with the proposer were completed in early May 2018. In June 2018, the MTA Board approved MTACC's recommendation to award the contract.

CH057D Harold Trackwork was advertised on November 30, 2017, and four bids were opened on February 20, 2018. Award and NTP were made on April 12, 2018.

CH058A Harold Structures Part 3A, B/C Approach Structure, was advertised on May 8, 2018, with bid opening forecast for July 9, 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 June 2018 and will continue to be suspended until further notice.

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

Contract 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 have been considered by ESA, Amtrak, and LIRR. Amtrak raised five earlier 90% design review issues that had not been satisfactorily resolved and the GEC completed resolution of issues in June 2018. Amtrak design concurrence is now expected in July 2018. The design package for FQA33B that provides a second MDSY exit route remains on hold, pending identification of funding source. The second exit route, however, will not be built under the current ESA program that only includes the single exit provided by FQA33A.

Contract FQL33, LIRR F/A for Mid-Day Storage Yard – LIRR has returned comments on the 100% design package that includes some revisions to the ET work package. The GEC incorporated the LIRR comments and returned a revised submission to LIRR in April 2018. LIRR returned additional comments on May 8, 2018. GEC revised the package and returned to LIRR for final review and approval.

Positive Train Control Design by LIRR

The MOU between MTACC and LIRR for the implementation of Positive Train Control (PTC) on ESA was executed and the Technical Concurrence Document has been agreed upon by MTACC and LIRR.

- LIRR had been expected to complete the PTC design by March 31, 2018, but this was not achieved. MTACC now reports that LIRR will not complete the PTC design until the end of 2018.
- The GEC has prepared initial scoping of design modifications to Contracts CS179, VS086, and CS086, which will provide for the LIRR designed PTC overlay onto the ESA systems primarily by providing systems "infrastructure" including cable raceways, cabinets, and additional rack space. The GEC has provided LIRR with the proposed changes for PTC on these contracts at the various design stages to insure coordination with the LIRR PTC requirements.
- In early October 2017, LIRR formally requested the FRA to waive the requirement to have PTC operational in the Harold Interlocking by December 31, 2018, based on the interlocking's status as an active construction area. LIRR subsequently submitted a revised waiver request to the FRA in late December 2017 and received the FRA's response on May 2, 2018. As a result, LIRR is required to submit to the FRA, within 90 days from the date of the FRA's letter, the revised PTC Implementation Plan with LIRR's proposed alternate schedule.

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

Contract CS179, Systems Facilities Package 1

The CS179 contractor continues to work on the completion of the final designs of the various contract required systems; a process that, as of the end of 2Q2018, is 26 months late. Additionally, the LIRR has formally approved only seven of the ten Control System Final Designs (FDs) as of the end of 2Q2018. Further, the contractor advises that the resolution of a number of NOCs submitted, but still unresolved, could further impact design completion and is already impacting progression of equipment and rack fabrication. **[Ref: ESA-125-Sep16]**

Contract CS084, Traction Power Systems Package 4

The CS084 contractor, while continuing to transmit contractual submittals, also continues to assert that previous delays related to design submittals and access restraints 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 be delayed due to unresolved design issues and access restraints. **[Ref: ESA-125-Sep16]**

Contract VS086, Systems Package 3 – Signal Equipment Procurement

Unresolved design decisions by the MTA continue to delay the timely progression of the contract work. Early in 2Q2018, the contractor indicated that several major open design issues continued to impact its ability to finalize designs. However, in June 2018, MTACC instructed the contractor to move forward with two of the open design issues, despite the lack of decisions from the LIRR on the approval of the design. A third design issue, the use of the ATT-20 track circuit equipment, will also be incorporated into the design but not until MTACC develops and issues a contract modification. The continued absence of an accurate and comprehensive schedule that shows all contemplated contract activities is an impediment to the MTACC's ability to effectively manage this contract. **[Ref: ESA-125-Sep16]**

PMOC Overall Engineering/Design/CPS Observations

The GEC and PMT continue to consistently miss target dates for completion of remaining design activities on the project, with corresponding procurement and construction delays. The result is that schedule float is used during procurement and is not available during construction when it is needed to mitigate future risks. The PMOC notes that the GEC and PMT are challenged to provide adequate Construction Phase Services (CPS) to support the ever increasing project demands that result from needed redesigns, contractor RFIs, and coordination among the contractors for the Manhattan and Systems work.

PMOC Overall Engineering/Design/CPS Concerns and Recommendations

MTACC needs to focus on achieving intermediate milestones in a timely fashion and to work closely with all parties to achieve this. MTACC management needs to more effectively engage outside stakeholders such as building owners, Amtrak, and the LIRR to resolve lingering design issues. The PMOC remains concerned about potential impacts to the CS179, VS086, and CS084 contract schedules that may result from the lack of timely design decisions and the lengthy turn-around time to review and respond to contractor design submittals and contractor inquiries. The PMOC notes the ESA PMT and senior management's increased efforts to resolve issues related to Systems design reviews with GEC and LIRR management. More improvement and continued focus is needed, however. The PMOC anticipates that the new project organization and operation will show process improvements that address these concerns. **[Ref: ESA-125-Sep16]**.

2.2 Procurement

The ESA April 2018 Total Cost Report shows that total procurement for the ESA Program is 89.0% complete, with $9.06 billion awarded of the $10.17 billion current project budget. MTACC awarded a contract for CH057D, Harold Trackwork Part 3, for $9.2 million in 2Q2018.

Status: The statuses of the current active procurements during 2Q2018 include:

- CS086 Tunnel Systems Package 2 – Signal Installation – Advertised on August 10, 2017, a single proposal was received on October 31, 2017, and negotiations with the proposer were completed in early May 2018. In June 2018, the MTA Board approved MTACC's recommendation to award the contract. As of June 30, 2018, however, the contract had not been awarded.
- CH057D Harold Trackwork; award and NTP were issued on April 12, 2018.
- CH058A Harold Structures Part 3A, B/C Approach Structure, contract was advertised on May 8, 2018, with bids due on July 9, 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 over the past two years 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 12.0 and minimize shifting scope for the remainder of the project.

2.3 Construction

The PMT reported in the April 2018 MPR that the total construction progress reached 78.3% complete compared with 83.2% as-planned. Refer to Appendix J for the budget, cost, and schedule status of each contract and force account package discussed below. The percentage of work complete is calculated using invoiced costs and current awards, as shown throughout this report, rather than actual construction.

Manhattan Contracts

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

	Current Budget	Appr'd Contract	Rem Budget	Invoice Cost	EAC	Planned Comp	Invoice Comp	Current BL SC	Forecast SC	Notes
CM006	361.6 nc 361.6	350.2 nc 350.2	11.4 nc 11.4	346.0 nc 346.0	356.0 +3.2 352.8	100.0% nc 100.0%	98.8% nc 98.8%	6/1/17 nc 6/1/17	6/16/18 nc 6/16/18	1
CM007	712.3 nc 712.3	662.4 nc 662.4	49.9 nc 49.9	292.7 +15.0 277.7	735.4 +31.6 703.8	49.3% +3.9% 45.4%	44.2% +2.3% 41.9%	1/28/20 nc 1/28/20	6/26/20 nc 6/26/20	
CM014A	61.1 nc 61.1	60.5 nc 60.5	0.6 nc 0.6	59.1 nc 59.1	60.8 +2.7 58.1	100.0% nc 100.0%	97.6% nc 97.6%	9/7/15 nc 9/7/15	6/18/18 (-12cd) 6/30/18	2
VM014	46.2 nc 46.2	34.9 nc 34.9	11.3 nc 11.3	23.4 nc 23.4	47.4 +2.2 45.2	NA NA NA	66.9% nc 66.9%	10/25/19 nc 10/25/19	10/16/20 +207cd 3/23/20	
CM014B	463.6 nc 463.6	446.8 (-0.9) 447.7	16.9 +1.0 15.9	255.4 +12.3 243.1	533.5 +36.9 496.6	91.3% +5.5% 85.8%	57.2% +2.9% 54.3%	8/18/18 nc 8/18/18	5/18/20 nc 5/18/20	

Notes: For each contract: line 1 = current value; line 2 = period change, nc = no change; and, line 3 = prior value.
1. The substantial completion date was established but not declared.
2. The substantial completion date was declared in May 2018.

CM006 – Manhattan North Structures

Schedule: MTACC is currently projecting MS#3, Substantial Completion (SC), by December 31, 2018, and forecasting MS#4, Final Completion, at March 31, 2019.

Construction Progress: Through June 2018, the CM006 contractor continued to complete minor base contract work, water repairs, and open NCR work necessary for SC. SC was not achieved in the 2Q2018.

Observations/Analysis: ESA reported that SC remains pending contractor completion of all open Non-Conformance Reports (NCRs).

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

CM007 - GCT Station Caverns and Track

Schedule: Milestone #4 (Track & 3rd Rail Work Complete), August 7, 2019, now February 5, 2020, -182 days. The contractor has submitted a recovery schedule and Time Impact Analysis (TIA) for MTACC review.
Milestone #5 (Substations US1 and US2 Complete), June 27, 2018, now December 4, 2018, -160 days.

Milestone #5A (Caverns Ready for Integrated Systems Testing), August 7, 2019, now July 11, 2019.

Milestone #6 (All Caverns and Tunnel Work Complete), December 16, 2019, now February 6, 2020, -52 days.

Milestone #6A (Substantial Completion), January 28, 2020, now June 26, 2020, -150 days.

Construction Progress:

South Back of House, East and West: Continued MEP and CMU installation.

North Back of House, East and West: Continued MEP installation.

East Cavern: Completed Smoke Plenum precast installation and continued ductwork installation. Continued mezzanine level chase waterproofing installation. Began stair stringers and precast slabs installation.

West Cavern: Continued Mezzanine Level Chase waterproofing, framing, and electrical work.

Through June 10, 2018, MTACC reported that precast beams and decks are 83.6% complete. Precast platform walls and deck panels are 50.0% complete.

Track: Continued trackwork construction in the West Tunnels, the Westbound Cavern, and into the Tunnel Track area. Continued qualification testing of Special Trackwork DFF and High Attenuation RTB components. Through June 10, 2018, MTACC reports that Track and Third Rail installation is 26.8% complete.
Observations/Analysis: ESA must complete its review of the contractor's recovery schedule to achieve a revised contract schedule so that a realistic schedule is available to track construction progress.

Concerns and Recommendations: The PMOC remains concerned that delays in track submittals, assemblies testing, and construction have impacted milestones and Substantial Completion, which may also impact follow-on systems contract work.

CM014A – GCT Concourse & Facilities Fit-Out

Status: MTACC reports that the contractor completed its Final Inspection with the CCU (Code Compliance Unit). The final submitted As-Built Documents were approved on May 18, 2018. Substantial Completion was achieved on May 23, 2018. Turnover of all rooms to CM014B was scheduled for June 15, 2018. This did not take place because the required paperwork was not completed by CM014-B. This turnover is expected to be complete in July 2018.

CM014B – GCT Concourse & Facilities Fit-Out

Construction Progress

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

The CCM has reported that all of the milestones for completion of the various communication rooms and closets have been completed. In rooms and closets that have FM200 fire suppression, the rooms/closets have been pressure sealed, but no gas tests have been done because mechanical purge systems are not in place. This includes Milestones #1, #2, #3, #4, and #6. Turnover to CS179 is in progress.

Milestone #5 (44th St. Vent Building) June 4, 2017, then December 29, 2017; then March 2018; now June 2018. The fans have been installed in Shaft #1 by the CS179 contractor. The building storefront installation is complete. CS179 has joint occupancy of the building.

Milestone #5A (Completion of 48th St. Entrance) November 25, 2016 – This milestone is now complete.

Through June 24, 2018 the structural steel erection was 67% complete by piece and 62% by weight. The steel/metal deck work is now the secondary critical path for the contract and is moving very slowly.

Concourse (Madison Yard): Electricians continued with installation of overhead conduit at the B20 Substation and racks/conduit to various zones. Plumbers continue installing sump pumps and sewage ejectors throughout the Concourse. Mechanical work continues with the installation of fan coil units and ductwork. Painting of block walls and columns continues throughout Zones 1-4. Painting of Fire Stand Pipe continues throughout the Concourse. Installation of the marble stone wall finish has begun in the Public Corridor.

Wellways: In Wellway #1, the scaffolding has been re-installed to begin installation of the curved ceiling panels. In Wellway #2, inspection of the escalators (4) is underway. In Wellways #3 and #4, erection of rigging is underway.

Biltmore Connection: Track outages for Biltmore Connection construction are being negatively impacted by the presence of Amtrak summer operations. Fabrication of one of the two escalators has been completed. Intumescent paint is being applied to structural steel. This work continues on the tertiary critical path for the contract.

47thStreet Entrance/Cross Passageway: All work is on hold per a Stop Work Order due to a pending design change of the area. At Elevator #13, a Stop Work Order has been directed because the contractor has uncovered unforeseen conditions. The redesign of this entrance continues and the work is now the primary critical path for this contract.

50th Street Vent Building: The Vent Building continues in full fit-out mode. Work includes fuel oil piping, HVAC pipe testing, and pulling branch and outlet wires. Installation of Elevator #9 continues.

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

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

VM014 –Vertical Circulation Elements (Escalators & Elevators)

Construction Progress: Erection of rigging for escalators is underway at Wellways #3 and #4. Through June 30, 2018, the VM014 CCM has reported the following progress to the PMOC: There are a total of 47 escalators and 22 elevators in the contract, covering both CM014B and CM007. For the 22 escalators in CM014B, all units have completed engineering and fabrication. 11 units have been installed, 8 have installation underway, 2 are in in-contract maintenance, 9 are in contractor control, and 3 are ready for direct project delivery. For the 16 escalators in CM007, all have completed engineering and delivery dates have been coordinated, but there is no completed fabrication. The 9 escalators for the future CM015 contract are on hold, pending an MTA decision on the disposition of the 48th St. Entrance at 415 Madison Ave.

For the 16 elevators in CM014B, 14 have completed engineering and are in fabrication, 1 has been installed and is in in-contract maintenance, 4 have installation underway, 9 have completed fabrication and are ready for direct project delivery, and 2 are pending final engineering and release for fabrication. The 6 elevators in CM007 have completed engineering coordination of delivery dates, but there has been no fabrication.

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

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

Queens Third-Party Contracts

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

	Current Budget	Appr'd Contract	Rem Budget	Invoice Cost	EAC	Planned Comp	Invoice Comp	Current BL SC	Forecast SC	Notes
CQ032	265.4	261.5	4.0	260.6	264.2	100.0%	99.7%	9/6/16	12/31/18	
	nc	nc	nc	+0.3	+1.0	nc	+0.1%	nc	+185cd	
	265.4	261.5	4.0	260.3	263.2	100.0%	99.6%	9/6/16	6/29/18	
CQ033	308.0	294.7	13.3	84.1	345.8	33.2%	28.5%	8/10/20	10/21/20	
	nc	nc	nc	+11.4	+21.4	NA	+3.8%	nc	(-48cd)	
	308.0	294.7	13.3	72.7	324.4	NA	24.7%	8/10/20	12/8/20	

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

CQ032 – Plaza Substation and Queens Structures

Schedule: MTACC is currently projecting MS#6, Substantial Completion (SC), by December 31, 2018, and forecasting MS#7, Final Completion, at March 31, 2019.

Construction Progress: During June 2018, the CQ032 contractor continued to address various open items required to achieve SC including: punch list work, NCRs, documentation, and commercial items. SC was not achieved in 2Q2018.

Observations/Analysis: ESA reported that SC remains pending contractor completion of all open Non-Conformance Reports (NCRs).

Concerns and Recommendations: The PMOC remains concerned with slow progress towards completion.

CQ033 – Mid-Day Storage Yard Facility

Schedule: MTACC reports that Milestones MS#1, MS#2, MS#3, and MS#4 have been achieved. Milestones MS#4A (Start Integrated Testing), MS#5 (YS Track Completion), and MS#6 (Substantial Completion) are impacted by the delay of Access Restraints AR#1 and AR#2. AR#1 requires Amtrak to remove rail located at the west end of the Mid-Day Storage Yard (MDSY). AR#2 requires the installation of new catenary poles and Amtrak wire transfers, and pole locations are obstructed by an Amtrak signal trough. The contractor requires both AR#1 and #2 to install underground duct banks to complete the YS Track, followed by Integrated Testing. MTACC currently forecasts MS#6 Substantial Completion (SC) at September 30, 2020, -51 days.

Construction Progress: During June 2018, the CQ033 contractor continued fire line, water main and storm pipe installation, duct bank construction continued, Car Appearance Maintenance (CAM) platform work continued, Personnel Access Bridge foundation work continued, and catenary structure work continued. The contractor also completed rehabilitation and realignment of the Arch Street Yard Lead Track in June 2018.

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

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

Systems Contracts

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

	Current Budget	Appr'd Contract	Rem Budget	Invoice	EAC	Planned Comp	Invoice Comp	Current BL SC	Forecast SC	Notes
CS179	606.9	565.4	41.5	397.7	645.8	75.2%	70.3%	7/1/20	5/10/21	1
	nc	nc	nc	+4.2	+23.7	+4.3%	+0.7%	nc	+21cd	
	606.9	565.4	41.5	393.5	622.1	70.9%	69.6%	7/1/20	4/19/21	
CS084	79.7	72.9	6.8	13.9	83.2	81.4%	19.0%	12/2/19	12/8/20	1
	nc	nc	nc	+2.0	+3.4	+3.4%	+2.8%	nc	+12cd	
	79.7	72.9	6.8	11.9	79.8	78.0%	16.2%	12/2/19	11/26/20	
VS086	21.8	19.9	1.9	9.1	22.4	NA	45.5%	10/14/19	10/14/19	1
	nc	nc	nc	nc	+0.3	NA	nc	nc	nc	
	21.8	19.9	1.9	9.1	22.1	NA	45.5%	10/14/19	10/14/19	
VH051	30.2	29.5	0.7	29.3	30.2	NA	99.2%	4/30/15	5/20/18	2
	nc	nc	nc	+0.1	+0.1	NA	+0.1%	nc	nc	
	30.2	29.5	0.7	29.2	30.1	NA	99.1%	4/30/15	5/20/18	

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

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

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. When these CILs are placed in service, the PMOC will no longer report on this contract.

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

CS179 Systems Package 1 – Facilities Systems

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

Construction Progress: In 2Q2018, the contractor continued work on conduit, cable, fire stopping, fire standpipe, lighting, etc., in the tunnels and substation facilities to which it had access. The resolution of coordination issues with other contractors that are working or have worked in CS179 contract facilities has become an issue impacting the progression of work on multiple contracts. Resolutions will require some design efforts and the processing of multiple contract modifications; a lengthy process. As noted in previous PMOC reports, numerous water infiltration issues significantly impacted progress. The contractor continues to advise MTACC that the numerous SWOs (due to water infiltration, as-built site conditions, scope transfers, etc.) and access restraints are severely impacting the progress of construction work. Water infiltration into various work areas continues to be an issue impacting construction progress. As noted earlier, equipment rack production is now being delayed due to NCOs that remain as open issues.

Incremental Integrated Systems Testing Plan: MTACC has identified the need to implement an Incremental Integrated System Testing (IST) plan in order to meet the schedule requirements for RSD. This approach is different than the IST originally planned by Contract CS179. The new Integrated IST Plan requires an agreement on a revised IST plan and schedule among ESA PMT, LIRR, and the CS179 contractor, as well as associated contract modifications for CS179, CS084, VS086, CS086, and CQ033. Incremental IST is forecast to commence in April 2019. The PMOC notes that progress toward a final, agreed-upon Incremental IST plan and schedule has been slow. **[Ref: ESA-129-Jun18]**

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 an adverse impact on the schedule. Additionally, the PMOC remains concerned about late completion of design reviews and approvals. Further, it should be noted that, despite the appearance in the above table that the contract's Actual progress is essentially the same as the Planned progress, when compared to the contract milestones that were re-established and effective as of April 2016 and planned for completion by the end of June 2018, the actual progress of this contract is significantly behind schedule. Only one of the ten milestones that was scheduled for completion by the end of June 2018 was achieved. The progress percentages presented in the table are based on actual versus projected costs, not physical design or construction efforts. Discussions are underway between the contractor and the MTA regarding the development of a comprehensive test plan, including the Integrated System Testing (IST) of

all the Systems. Presently, IST is forecasted to begin in April 2019. Considering that the Systems final designs are still incomplete and that a comprehensive Integrated Systems Test Plan remains undefined, the PMOC has concerns about MTACC's ability to complete the contract work in time to meet the current forecast ESA Revenue Service Date. MTACC/ESA needs to work with LIRR and the CS179 general contractor, electrical sub-contractor, and systems integration sub-consultant to prioritize the finalization and approval of the Incremental IST plan and schedule.

CS084 Tunnel Systems Package 4 – Traction Power

A comparison of actual and planned completion percentages in the Table above indicates that this contract is significantly behind schedule and has trended behind each month. As noted earlier, the progress data in the Table above is based on costs, not physical progress. Therefore, any lack of access to facilities or non-approval of equipment designs impacting equipment procurement and fabrication contributes to the contractor's inability to expend costs; and, until resolved, will further skew the percentages in the Table relative to the physical progress of work on the contract. The contractor contends that the reasons for the variance from planned progress are due to: 1) delays approving substation designs and equipment; 2) fabrication and procurement cannot be completed without design approval; and, 3) the lack of access to substation rooms precludes construction. As of the end of 2Q2018, the contractor has fabricated a significant amount of equipment and has either delivered it to the work site or to a storage facility until equipment rooms are ready for installations. This progress on the fabrication and delivery of the equipment will eventually provide a significant change to the Planned versus Actual percentages in the above Table.

Design Progress: The contractor continued making submittals and asserts that additional information from the MTA, including some outstanding SCADA information, is required for it to be able to complete its design work and release the last of the equipment designs for fabrication. Some of this missing information is dependent upon resolutions to site obstructions or unfinished work; both involving other ESA contractors and the development and issuance of contract modifications. Continuing delays in finalizing designs is, per the contractor, causing delays in the overall contract schedule.

Construction Progress: During 2Q2018, equipment installations on MTA property were limited due to SWOs and obstructions from other contractor's equipment installations. As previously reported, the contractor rejected areas turned over by other contracts and provided MTACC with a list of its concerns. That list (See Appendix P) is updated each month and discussed at the monthly progress meeting. As of the end of 2Q2018, many of the deficiencies have not been addressed and construction work is on hold in those areas. Major issues affecting cable installations from C08 to the tracks in Harold Interlocking and the coordination of C01/C02 substation equipment deliveries with the tail track installation remain under discussion and can potentially impact the schedule. Other significant issues regarding missing floor penetrations, doorway enlargements, and the re-design of the lifting beam for the transformer installations at the C06/C07 substation location in Plaza Interlocking were previously identified in 1Q2018 and remain open. All three of these issues at the C06/C07 location require contract modifications as well as cost and schedule adjustments to the contract – the extent of which is unknown at this time. As previously reported during 1Q2018, one significant Quality-related issue occurred; that of a failure of a second transformer undergoing hi-pot testing in February 2018. The first transformer failure occurred in April 2017 and quality improvement efforts were undertaken at the transformer manufacturer's facility. The investigation into the root cause of the second transformer failure during hi-pot testing identified the need for a fabrication process modification.

Concerns and Recommendations: The PMOC continues to support all PMT efforts in working with LIRR to expedite design reviews and approvals to avoid delaying construction. At contract

meetings, the PMOC continues to inquire about verification of manhole and conduit systems at CS084 substation locations to avoid a repeat of the issue that exists at C08. It appears that these manhole and conduit systems have yet to be surveyed. MTACC needs to address and resolve the open issues and incorporate any schedule impacts into the contract and overall ESA Project schedule. The need for a process modification for fabrication of the transformers raised questions and concerns from the PMOC and MTA personnel regarding the long-term viability of transformers built before the modified fabrication process was implemented. The LIRR and MTACC continue discussions related to those concerns.

VS086 Systems Package 3 – Tunnel Signal Procurement

Design Progress: The contractor continues to maintain that lack of timely responses from MTA to submittals and inquiries continues to cause delays. As previously reported, LIRR approved the use of an alternate vendor to supply Low-Smoke-Zero-Halogen (LSZH) wire for Plaza Interlocking and the contractor placed the order for the wire. The contractor experienced a delay in the delivery of the LSZH wire, causing a delay in the re-wiring of the Plaza Interlocking signal cases; and, consequently, the Factory Acceptance Testing (FAT) of Plaza Interlocking. The Plaza FAT occurs first and tests the individual equipment items. A Factory Integrated Acceptance Testing (FIAT) is performed after the FAT and tests the interlocking designs and equipment as a composite systems package. The forecasted dates for the Plaza Interlocking FAT and FIAT are undetermined at this time due to the delay in the re-wiring of the Plaza Interlocking signal cases and the delivery and approval of FAT and FIAT test plans. Both LIRR and the contractor are insisting that the contractor who will install and test Plaza Interlocking equipment under the CS086 contract be present at the FAT. As of the end of 2Q2018, the CS086 contract had yet to be awarded; so the ability to coordinate the participation of the CS086 contractor at the FAT is a questionable open item. Further, the VS086 contractor continues to advise MTACC that, if the CS086 contractor does not attend the Plaza Interlocking FAT, the operational integrity of the interlocking once installed in the field would not be guaranteed by the VS086 contractor. Additionally, design data from the CS179 contractor is required to perform the FIAT, and MTACC continues to indicate that this design data is still under development by the CS179 contractor. Consequently, the delivery date for Plaza Interlocking remains unknown. There are two other outstanding issues needing resolution or direction: 1) Positive Train Control design and incorporation, and 2) signal case electrical service modifications. Incorporation of these items will require contract modifications, might require changes to completed designs, and could impact contract cost and schedule.

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

Harold Interlocking Contracts

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

	Current Budget	Appr'd Contract	Rem Budget	Invoice Cost	EAC	Invoice Comp	Actual Comp	Current BL SC	Forecast SC	Notes
CH061A	42.0	34.4	7.5	24.7	40.4	92.0%	71.7%	5/28/18	6/12/18	1
	nc	nc	nc	+2.9	+1.6	+7.5%	+8.5%	nc	(-2cd)	
	42.0	34.4	7.5	21.8	38.8	84.5%	63.2%	5/28/18	6/14/18	

Notes: For each contract: line 1 = current value; line 2 = period change, nc = no change; and, line 3 = prior value.
1.Substantial completion not declared.

CH057D – Harold Trackwork Part 3

Construction Progress: The CH057D contract was awarded and NTP issued on April 12, 2018. The scope of work includes installation of turnouts in the Northeast (NEQ) and Southeast Quadrant (SEQ) designated areas for reconfiguration of LIRR's Harold Interlocking, as well as construction of new track for the Westbound Bypass Track. Turnout installation is scheduled to begin in late July 2018. During June 2018, the contractor completed turnout material inventory in various storage locations and completed test pits in the installation area to locate underground utilities that might hamper installation.

Observations/Analysis: During June 2018, the contractor began to coordinate its NEQ construction plans with LIRR Force Account personnel (contract and Force Account work areas are side-by-side in active railroad territory) and both made considerable progress with their planning activities. The PMOC believes that this was a good start that will be critical to the success of this phase of the project and should be very beneficial to both parties.

Concerns and Recommendations: Although the PMOC has no specific concerns about the CH057D contract at this time, the PMOC recommends that ESA continue to engage both the contractor and LIRR Force Account personnel throughout the planning and construction processes to maintain and enrich the momentum that this effort has generated.

CH061A – Track A Cut and Cover Structure

Construction Progress: During June 2018, the CH061A contractor completed all "Critical Remaining Work" (work that required Amtrak Electric Traction protection) on the Tunnel A Structure, including all sidewall and roof concrete placement, although it did not declare Substantial Completion as anticipated. ESA deferred that until August 16, 2018.

Observations/Analysis: The PMOC notes that the MTACC project staff and the contractor continued to work well together throughout the life of this contract. Completion of the "Critical Remaining Work" in June 2018 was essential in order to keep the rest of the 2018 Harold work, including the CIL cutovers and the Northeast Quadrant trackwork, on schedule and from falling further behind (at the time) the Harold Critical Path.

Concerns and Recommendations: Since the tunnel structural work is complete, the PMOC has no concerns or recommendations at this time.

Railroad Force Account Contracts

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

	Current Budget	Appr'd Contract	Rem Budget	Invoice Cost	EAC	Invoice Comp	Actual Comp	Current BL SC	Forecast SC	Notes
FHA01	18.8 nc 18.8	18.8 nc 18.8	-- nc --	18.6 nc 18.6	18.8 nc 18.8	100.0% nc 100.0%	99.0% nc 99.0%	2/4/16 nc 2/4/16	9/30/19 nc 9/30/19	1,2
FHA02	60.2 nc 60.2	60.2 nc 60.2	-- nc --	57.4 +1.0 56.4	55.7 (-4.5) 60.2	100.0% nc 100.0%	95.4% +1.6% 93.8%	8/15/17 nc 8/15/17	6/12/19 (-4cd) 6/16/19	1,2
FHL01	27.3 nc 27.3	27.3 nc 27.3	-- nc --	26.6 nc 26.6	36.0 +8.7 27.3	100.0% nc 100.0%	97.4% +0.1% 97.3%	1/31/19 nc 1/31/19	11/18/18 (-74cd) 1/31/19	1,2
FHL02	96.6 nc 96.6	96.6 nc 96.6	-- nc --	96.6 +0.2 96.4	120.2 +23.6 96.6	100.0% nc 100.0%	102.9% +3.0% 99.9%	11/25/16 nc 11/25/16	8/26/20 nc 8/26/20	1,2

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

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

FHA01 Harold Stage 1 – Amtrak F/A

Construction Progress: Amtrak did not perform any significant FHA01 construction during June 2018. The PMOC is not concerned about this because the remaining Stage 1 work is minor and is presently scheduled during the LIRR 2018 CIL cutovers, which will be completed in July 2018.

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

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

FHA02 Harold Early Stage 2 – Amtrak F/A

Construction Progress: During June 2018, Amtrak Electric Traction (ET) personnel continued preliminary construction for the "PW2 Overrun" (Eastward LIRR Passenger/Port Washington #2 Track) catenary installation as well as miscellaneous catenary construction for several other ESA construction activities. Amtrak C&S personnel completed signal modifications on the New Haven tracks east of Harold Interlocking to conform with the new LIRR CIL signal system and supported the cutovers of "H5", "H6", and Location 30.

Observations/Analysis: Although Amtrak was not previously able to support the CIL cutovers and pre-cutover testing in the manner that ESA desired, nonetheless Amtrak's C&S Department ultimately supported the cutovers in a totally adequate fashion. ESA was also able to re-schedule the "PW2 Overrun" ET activity, which had previously been a predecessor to the Northeast Quadrant (NEQ) trackwork, to a concurrent activity with the NEQ track outage without a negative effect on the program schedule.

Concerns/Recommendations: The PMOC recommends that ESA continue to work with Amtrak to prioritize ET work activities and to make whatever adjustments are necessary to keep the ESA program on its current schedule.

FHL01 Harold Stage 1 – LIRR F/A

Construction Progress: During June 2018, LIRR did not perform any significant Stage 1 construction.

Observation/Analysis: The remaining Stage 1 work, LIRR's third rail cable installation into the new G02 Substation, is essentially complete, but the substation cannot be placed in service until ConEd installs the required electrical equipment to supply commercial power to the substation. This activity is presently scheduled for 3Q2018.

Concerns/Recommendations: The PMOC does not have any concerns about the G02 Substation activation at this time, but it does recommend that ESA maintain regular contact with the utility company to ensure that the activation remains on schedule.

FHL02 Harold Early Stage 2 – LIRR F/A

Construction Progress: During June 2018, LIRR signal personnel completed "pre-cutover" test activities and cutover the new Harold Interlocking "H4", "H5", "H6", and Location 30 Central Instrument Locations (CILs). LIRR Track personnel made the final cuts and throws to place new LIRR Main Line #4 Track (ML4) on its permanent alignment for the new Harold Rev. 14-4 track configuration. LIRR 3rd Rail personnel made 3rd rail modifications associated with the CIL cutovers and track realignment.

Observations/Analysis: The cutovers and the track re-alignment were completed as planned with a minimum of operational disruption, thus indicating that LIRR has the inherent capability to perform such activities.

Concerns/Recommendations: The PMOC's previous concern about LIRR's capabilities have been greatly alleviated by its performance during the June 2018 CIL cutovers. A second cutover is scheduled in July 2018 for which the PMOC recommends that the LIRR and ESA continue to focus their respective efforts until all work for that cutover is complete.

2.4 Operational Readiness

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

Observations and Analysis: As noted previously, the structure of the TWGs working on the Operational Readiness Group's Rail Activation Plan (RAP), the document being developed by TWG #1, has been modified to provide more stakeholder input and direction to the process. LIRR managers are now co-leaders of every TWG; and, the TWG leaders will report directly to a newly created senior-level management team comprised of Vice Presidents of MTA stakeholder groups. Prior to this re-configuration, the TWG leaders reported to the OPR Director, who is a consultant and was the leader of TWG No. 1. The intent of the re-configuration of the OPR Group is to streamline and consolidate meetings, empower the TWG leaders, improve internal communications, reallocate resources as may be necessary, and co-locate key OPR personnel at the ESA Headquarters. It was noted by MTACC at the April 2018 OPR briefing that the OPR Group will need more dedicated personnel to focus on the integration of TWG work efforts with the ESA Project IPS. Additionally, MTACC indicated that senior stakeholder managers would be assigned a role in the review, acceptance, and implementation of the various TWG work products. One of the deliverables required as part of the RAP is a Comprehensive Systems Test Plan (CSTP). A draft partial plan was prepared several years ago and was updated in August 2017. Further updates and finalization of the CSTP is dependent on the OPR Group's receipt of an acceptable

IST Plan, which is being developed as part of the CS179 contract. As noted earlier in this report, the CS179 IST Plan is still under discussion, with no forecasted completion date available. The PMOC met separately in 1Q2018 with LIRR representatives to discuss railcar procurement efforts under TWG #11 and the status of the LIRR's Staffing and Training Plan being developed by TWG #6 to support the ESA service operation. Information about the procurement of railcars is noted below in Section 2.5. The LIRR's plan for staffing and training is still a work in progress. The LIRR Staffing and Training Plan has been modified several times during an intense vetting process and will require several more iterations before it can be presented to senior LIRR Management for final approval. LIRR personnel previously reported that some preliminary funding for staffing was approved in LIRR's 2018 Operating Budget.

2.5 Vehicles

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

LIRR will procure the M-9A vehicles for ESA service using a two-step RFP process. The first step, the "Qualifications" portion of the procurement, to determine each prospective vendor's qualifications, was solicited in November 2017. Issuance of the second step, the "Cost/Technical" portion of the RFP, has been deferred (now through June 30, 2018) while LIRR continues to review the "Qualifications" submissions that prospective vendors made. The LIRR has stated that it intends to award the M-9A contract in December 2018, however.

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

The schedule indicates, however, that, if a different car builder is selected as the successful bidder, M-9A vehicle deliveries would not begin until January 2023. This would be after MTACC's late RSD of December 2022, but before the FFGA ROD of December 2023. The schedule also indicates that only 144 M-9A vehicles would be delivered by the FFGA ROD of December 2023 and that the total of 214 vehicles will not be delivered until June 2024. While delivery of the required vehicles would be on time if the present M-9 car builder is chosen as the successful bidder, the PMOC cannot fully analyze or determine the schedule impact associated with the selection of a different car builder until the initial level of LIRR rail service is determined, which has yet to be developed.

Concerns and Recommendations: The PMOC remains concerned about the LIRR M-9A vehicle procurement and that it has lost an additional 3 months since the 1Q2018 PMOC Monthly Report. The PMOC recommends that LIRR conclude its review of the "Qualifications" submittals and enter the "Cost/Technical" phase of the procurement as soon as possible.

2.6 Property Acquisition and Real Estate

Status: In its April 2018 Monthly Progress Report, ESA reported that MTA Real Estate continues to finalize costs associated with the close out of work 415 Madison Avenue for the 48th Street

Entrance and has begun to assess implications of the demolition of the present building and reconstruction of a larger building for JP Morgan at 270 Park Avenue.

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 April 2018 Monthly Progress Report indicates that Community Relations outreach for the month included responses to residual Montauk Cutoff demolition noise and vibration concerns and continued notification to neighboring communities of upcoming ESA construction activities.

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.

Observations: MTACC plans to update several PMP sections for the next revision, including: Risk Management, Procurement, Operational Readiness, and Systems Testing and Startup. MTACC is planning to issue the draft of the next revision to the PMP during 3Q2018.

3.1 PMP Sub-Plans

The PMOC anticipates that the PMT will update many of the PMP Sub-Plans to document changes called for by the implementation of the MTACC President's Six-Point Plan for reducing the ESA programmatic risks.

Status

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

Over the last 3 quarters, MTACC has updated the following PMP Sub-Plans

- Technical Capacity and Capability Plan
- Risk Management Plan
- ESA Project Quality Manual

In April 2018, the FTA advised MTACC to incorporate its current updates and then commence with a subsequent revision that addresses any changes resulting from the MTACC Six-Point Plan for ESA. MTACC is now planning to update the following PMP Sub-Plans during 3Q2018: Technical Capacity and Capability Plan; Schedule Management Plan; Cost Management Plan; Risk Management Plan.

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

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

3.2 Project Procedures

Status: The revised PMP Sub-Plans may require updates to referenced Project Procedures.

Observations: None.

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

4.0 PROJECT SCHEDULE

4.1 Integrated Project Schedule

The schedule information in this report is based on ESA (Alternative) Integrated Project Schedule (IPS) 105 (data date: May 1, 2018) and IPS Progress Report. The forecast for the Target Revenue Service Date (RSD) remained February 22, 2022, during the month, although it slipped by approximately 8.9 months from May 26, 2021, as was reported three months prior in IPS 102 (February 1, 2018). IPS 105 reported that the Public RSD remained unchanged on December 13, 2022, as previously forecast in each month of 2Q2018.

The PMOC notes that, as of IPS 104, April 1, 2018, MTACC has been using a modified scheduling procedure that is identified as the Alternative Integrated Project Schedule. MTACC continues to identify the schedule by the IPS acronym for simplicity and the PMOC will follow this precedent to minimize confusion.

(b)(4) [redacted]

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

Table 4.1: Schedule Contingency as of the May 1, 2018 ESA IPS 105

(b)(4)

The three primary program critical paths in IPS 105 are: 1) Manhattan/Systems work (no float); work in Queens (184 CDs float); and, 3) work in Harold Interlocking (192 CDs float). The Manhattan/Systems path completion date slipped 28 CDs since IPS 104 and reduced the Issue Contingency time by that amount. The Target RSD and Public RSD – February 21, 2022, and December 13, 2022, respectively – remained the same as they were forecast in IPS 104. (b)(4)

The key dates for these paths are summarized in the following chart, which depicts schedule completion dates, floats, and contingencies for the May 1, 2018, and February 1, 2018 IPS schedules. The current critical path is shown by contract in Appendix F, ESA Critical Path Chart.

Chart 1: Comparison of Program Float and Contingency Changes

4.2 Primary Critical Path

MTACC's transition to the new alternative IPS during the second quarter of 2018 includes a fragnet for a framework schedule for the proposed Incremental Integrated Systems Testing. Two additional significant changes made to the IPS were the inclusion of an activity for FRA testing and an activity for contingency time to be used, if needed, to address currently unknown issues.

The transition to the alternative for IPS 105 resulted in the primary critical path shifting to Manhattan/Systems work and a forecast delay to the Target RSD of 8.9 months, until February 21, 2022. The finish date for the longest path through Manhattan/Systems work in the May 1, 2018 IPS is now April 23, 2021, a slip of 94 calendar days from the February 1, 2018 IPS, and there is no float remaining.

In addition to the primary critical path shifting to Manhattan/Systems work in IPS 105 due to the insertion of the Incremental IST fragnet in the IPS, critical work in Contract CM014B has replaced Contract CM007 on the path. The remaining work now includes CM014B MEP and finishes, followed by CS179 device installation, wire pulling, and testing in the GCT concourse and caverns; and then finishes with completion of CS179 Integrated Systems testing April 2021. From this point, LIRR FRA testing for signals and traction power begins, to be followed by LIRR final testing and previews. This is followed by contingency time to address issue impacts, leading to a Target RSD of February 21, 2022.

Table 4.2 shows the work and contracts that comprise the Manhattan/Systems work path through the Public RSD along with forecast start and finish dates, as reported in the May 1, 2018 IPS.

Table 4.2 – Primary Critical Path

Activity Name	Duration	Start	Finish
CM014B – GCT Concourse and Facilities Fit-Out			
Install MEP conduits, piping, ducts, and devices	505	7-Mar-17	25-Jul-18
Install wall, floor, ceiling, and retail finishes	595	25-Jul-18	11-Mar-20
CS179 – System Package 1 – Facilities Systems			
GCT Concourse wire, terminate, install devices, etc.	224	11-Mar-20	21-Oct-20
IST for BCS systems in GCT Concourse and Caverns	77	21-Oct-20	6-Jan-21
IST for FLS, VCE, security, etc. systems in GCT	107	6-Jan-21	23-Apr-21
Program Activities			
FRA Testing (signal and power) †	112	23-Apr-21	13-Aug-21
LIRR Final Tests and Final Preview ‡	79	13-Aug-21	31-Oct-21
Issue Contingency	(b)(4)		
Target Revenue Service Date			
ESA Program-Level Contingency			
Public Revenue Service Date			**13-Dec-22**

Notes: † Successor to Manhattan/Systems critical path and Queens critical path.
‡ Successor to Harold Interlocking critical path.

Sub Program Longest Path – Queens

The finish date for the Queens longest path – October 21, 2020 – gained 49 calendar days from the February 1, 2018 IPS to the May 1, 2018 IPS. Float increased by 136 CDs to 184 CDs (from 48 CDs) due to the primary critical path shift to Manhattan/Systems work. The catenary work (transferred from CH061A to CQ033) that is in conflict with an existing Amtrak signal trough has been rescheduled so as not to constrain the critical path. The critical path runs through CQ033 track, signals, and power systems construction; and, ending in October 2020, with the conclusion of testing for the Midday Storage Yard. At the completion of the construction, the Queens critical path has 184 CDs of float to the FRA testing activity where the path joins the ESA program critical path (through Manhattan/Systems work).

Sub Program Longest Path – Harold Interlocking

The May 1, 2018 IPS shows that the Harold Interlocking work path is the third program critical path, which is a change that occurred in the March 1, 2018 IPS update. The finish date for the Harold Interlocking longest path – February 2, 2021 – lost 7 calendar days from the February 1, 2018 IPS to the May 1, 2018 IPS. Float increased by 192 CDs to 192 CDs (from 0 CDs) due the primary critical path shift to Manhattan/Systems work. As represented in the May IPS update, the project has progressed as scheduled toward the completion of the CIL cutovers in June and July 2018. After the last CIL cutover in July 2018, the Harold path runs through CH057D and CH058A (to be awarded in July 2018) before completion of the Track B/C Approach Structure and ending in February 2021. At the completion of the construction work, the Harold critical path has 192 CDs of float to the LIRR final testing activity where the path joins the ESA program critical path (through Manhattan/Systems work).

4.3 90-Day Look-Ahead of Important Activities

An ESA program look-ahead schedule is shown in Appendix G, which shows the milestones and significant activities that are forecast for the next 90 days for active contracts. Table 4.3 lists

upcoming procurement milestones that are forecast to occur through August 2018, as reported by the PMT. Contract CS086 is critical to on-time completion of the ESA project.

Table 4.3 – Upcoming Contract Procurement Milestones

Contract Description	Advertise Date	Bid Date	NTP	Project Period	Substantial Completion
CS086 Tunnel Systems Pkg 2 – Signal Installation	8/10/17A	10/31/17A	7/2/18	29 months	12/3/20
CH058A B/C Tunnel	5/4/18A	7/10/18	8/13/18	27 months	11/9/20

Negotiations continued through May 2018 for CS086, Tunnel Systems Package 2 – Signal Installation, for the RFP received on October 31, 2017 from a single proposer. The MTA board approved MTACC's recommendation to award Contract CS086 at the June 2018 meeting, which cleared the way for the July 2018 NTP.

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

PMOC Observations, Analysis, and Concerns

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

1. Concerns continue about the Manhattan/Systems work path, which is the ESA primary critical path. 3 months of ESA Program float was lost over the second quarter of 2018 after the Manhattan/Systems path became the ESA program primary critical path in the April 1, 2018 IPS update. It is likely that the additional float could be consumed until agreements are reached on the incremental IST schedule. **[Ref: ESA-128-Sep17]**
2. (b)(4) [redacted]
3. Concerns regarding schedules continue for CH057D Harold Structures and CH058A B/C Tunnel Approach which are both on the Harold Interlocking critical path. The PMOC recommends that schedules be obtained as soon as possible so that inter-contract milestones and interfaces can be validated.
4. Progress on CS084, Tunnel Systems Package 4 – Traction Power, is slow and is currently reported at 19.0% complete compared with 81.4% as-planned. The PMOC observes that much of the work has had day-for-day delays in each IPS update period. The PMT is working with the contractor to get a realistic schedule; however, the PMOC believes that a revised schedule will incorporate delays in the delivery of equipment that will push out milestone dates. The PMOC recommends that ESA analyze options to recover the schedule, focusing on major electrical equipment submittals and layouts, identifying major issues, and determining corrective measures.
5. Concerns continue for the delays in the procurement of CS086, Tunnel Systems Package 2 – Signal Installation. With the award of CS086 potentially to be awarded in July 2018,

the PMOC is concerned that the delays may eventually impact the Program schedule in spite of the reduced contract duration of 29 months.

5.0 PROJECT COST

5.1 Budget/Cost

The PMT reported in the April 2018 MPR that total project progress was 77.7% compared with planned progress of 82.1% of the $10.178 billion Current Baseline Budget (CBB).

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

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

(Cost shown in millions)

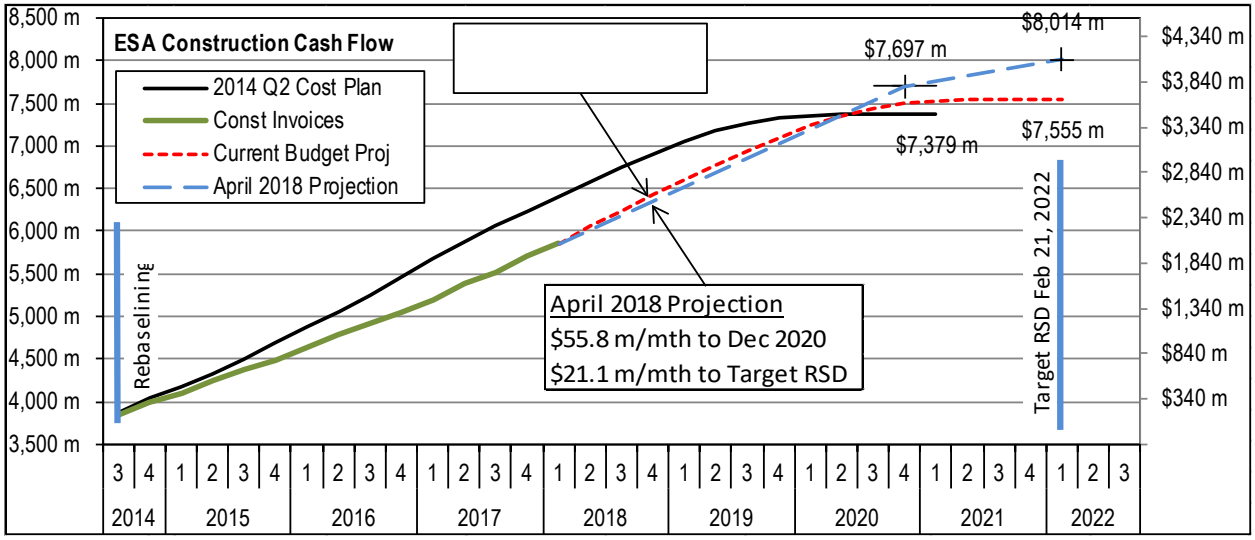
Standard Cost Category	FFGA Dec 2006	June 2014 Project Budget	Amended FFGA	Feb 2018 CBB	Mar 2018 CBB	Apr 2018 CBB	CBB / FFGA Var.	CBB / Amend FFGA Var.
10 Guideway & Track Elements	1,988.7	3,405.5	3,353.4	3,413.0	3,413.0	3,409.1	71.4%	1.7%
20 Stations, Stops, Terminals, Intermodal	1,168.7	2,238.2	2,326.8	2,327.7	2,327.7	2,327.7	99.2%	0.0%
30 Support Facilities (Yards, Shops, Admin)	356.3	474.2	450.8	513.1	516.0	516.0	44.8%	14.5%
40 Site Work and Special Conditions	205.1	610.6	562.5	560.7	560.7	560.7	173.4%	-0.3%
50 Systems	619.3	605.6	627.7	692.6	692.6	692.6	11.8%	10.3%
60 ROW, Land, Existing Improvements	165.3	219.4	192.2	215.4	215.4	215.4	30.3%	12.0%
70 Vehicles	494.0	209.9	879.5	209.9	209.9	209.9	-57.5%	-76.1%
80 Professional Services	1,184.0	1,975.4	1,809.0	2,019.3	2,019.3	2,019.3	70.6%	11.6%
90 Unallocated Contingency	(b)(4)							
Subtotal								
100 Financing Cost								
Total								

On April 23, 2018, MTACC announced the results of its review of the ESA program. Specifically, the project team is forecasting that the program cost is now $11,133 million, an increase of $956 million above the June 2014 budget of $10,178 million. The PMOC notes that the revised EAC, $11,133 million (excluding finance costs), exceeds the amended FFGA Baseline Cost Estimate (BCE) of $10,922 million.

5.2 Project Cost Management and Control

The ESA April 2018 MPR shows that construction progress – based on invoiced construction costs – reached 78.3% of the CBB compared with planned progress of 83.2%. (Details of active contract budgets and expenditures are in Appendix J). Cost trends have remained consistent since the 2014 re-baselining with actual expenditures less than planned. The likelihood of completing construction to support the start of revenue service has benefited the additional time gained by moving the target RSD out to the first quarter of 2022.

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 the first quarter of 2018 are plotted to monitor progress on this plan. The chart reveals that cumulative cost invoices have remained approximately $500 million below planned expenditures over the last year. The PMOC's simple cost projection – modeled on the 2014 Rebaseline and using the current construction budget and the February 2022 target RSD – shows that the program needs to maintain the current average production rate through 2020. This may be a challenge since future work will shift from heavy civil construction to MEP, finishes, and systems testing that present many complex issues and generally require a higher level of coordination.

To date, construction cost increases have been offset by contingency drawdowns with a result that the overall program budget has remained constant at $10.178 billion. In April 2018 the MTACC received approval for additional funding for the ESA program through December 2020, and they will request further additional funding in the 2020–2024 Capital Plan based on the ESA program reassessment that they completed in April 2018. The PMOC is concerned that MTACC's inability to achieve the planned rate of construction spending may impact the timely achievement of revenue service.

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	April 2018			
		Current Budget	Actual Awards	Invoice to Date	Invoice Pct. of Budget
Construction Subtotal	**7,379.3**	**7,551.4**	**7,028.5**	**5,910.1**	**78.3%**
Soft Cost Subtotal	**2,798.5**	**2,626.3**	**2,032.6**	**1,993.1**	**75.9%**
Engineering	720.6	739.6	738.7	728.5	98.5%
OCIP	282.6	307.6	307.6	307.5	99.9%
Project Mgmt.	972.2	972.2	864.4	839.3	86.3%
Real Estate	182.1	178.0	119.2	117.8	66.1%
Rolling Stock	202.0	202.0	2.7	0.1	0.1%
Projectwide Reserve	(b)(4) [redacted]				
Total w/o Financing					

5.3 Change Orders

Table 5.4 lists the contract modifications with magnitudes greater than $100,000 which were executed during February, March, and April 2018. The PMOC reviewed several of these change orders and found that MTACC change order procedures were followed. Refer to Appendix N for further information.

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

Contract	Description / Mod No.	Amount
	February 2018	
CM005	Final Contract Closeout (mod. 40)	1,269,507
CM014B	FM-200 for CC1 thru CC8 (mod. 109)	467,842
CQ033	Detention Pipe Profile (mod. 7)	743,500
CS179	Emergency Switchgear Sequence and AC Control Cabinet (mod. 53)	404,845
	March 2018	
CM007	Upper Tail Track Arch Extension (mod. 31)	183,015
CS179	39th Street Conduit Issue Corrections (mod. 46)	326,974
CS179	Plaza Conduit Openings (mod. 75)	131,555
GEC	Miscellaneous task order services (mod. 137)	149,000
GEC	CH057D force account support (mod. 154)	373,944
VQ033	CIL Redundant Processors and West End Changes (mod. 7)	2,900,000
	April 2018	
CM014B	Delete Conduits for Two-Way Radio System (mod. 98)	(1,079,189)
CS179	Fire Alarm and Communication Coordination Drawings (mod. 66)	482,534

5.4 Project Funding

On April 25, 2018, the MTA board authorized MTACC to reallocate $349.6 million of ESA funds from current and prior Capital Plans and to temporarily transfer $157 million from the 2015–2019 Regional Investment program to use for the ESA program. The Capital Plan Review Board

approved these changes on May 31, 2018. The changes have not yet been incorporated into the ESA program. [**ESA-A47-Dec17]**

Federal Funding: The total Federal funding commitment to the ESA project is $2,699 million, of which $2,698 million was expended through May 1, 2018.

Local Funding: The budget for Local Funding is $7,479 million, of which $5,020 million was expended through May 1, 2018. Financing costs are funded separately from other local sources.

5.5 Project Cost Contingency

(b)(4) [redacted]

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

(b)(4) [redacted]

Concerns and Recommendations:

The PMOC is optimistic that, with the Capital Plan Budget Amendment that was approved in April 2018, the contract contingency budgets will be updated to reflect the current forecasts and contingency drawdowns will be abated through December 2020. The PMOC remains concerned that the ESA program still requires an allocation of approximately $956 million in the 2020–2024 Capital Plan.

6.0 RISK MANAGEMENT

The ESA risk profile changed significantly based upon MTACC's current ESA program re-assessment of April 2018 acknowledged that the Manhattan/Systems schedule path has become the ESA program critical path and has delayed the Target RSD by approximately by 9 months from May 2021 to February 2022. The PMOC focuses here on discussion of the most critical risks.

Harold Interlocking – ESA Risk

Harold Re-Sequencing Plan ("ESA First"): In an effort to reduce the impacts of Amtrak's force account resource constraints, especially supply of Electric Traction (ET) personnel, ESA has re-sequenced its Harold construction schedule on three separate occasions and developed what is known as the "ESA First" schedule as a result. Although this has helped to reduce the impact of

insufficient Amtrak support, it has not eliminated it entirely and it continues to be a challenge for MTACC.

Amtrak Preparation for Extended East River Tunnel Outages: The PMOC remains concerned about the potential impact that Amtrak's program to harden the East River Tunnel (ERT) Lines 1 and 4 will have on the Harold work. The Amtrak program is in preparation for extended track outages to repair Hurricane Sandy damage in ERT Lines 1 and 2. This work was originally planned to begin in 2019 starting with Line 2, but Amtrak has now postponed it until 2025. Amtrak has provided no details regarding how this change might affect the remaining predecessor hardening work for ERT Lines 1 and 4. The risk remains that reliability issues might require Amtrak to make emergency repairs on either Lines 1, 2, or 4 at any time between now and the forecast RSD of December 2022.

Positive Train Control

This risk has two distinct elements, as discussed here.

a.) A potential risk that may be realized in the near future is the impact that LIRR installation of Positive Train Control (PTC) in Harold Interlocking may have on the Harold Critical Path work, especially the successor activities to the CIL cutovers scheduled for June and July 2018. Although LIRR originally submitted a waiver request to the FRA in early October 2017 to have the December 31, 2018, deadline extended and subsequently 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 July 2018.

b.) Another risk is that LIRR may divert some level of force account resources away from support for the ESA work to provide support for LIRR's systems-wide PTC work during the remainder of 2018.

Capital Funding Risk

Since early in 2017, the MTACC has been weighing whether to seek additional funds through the current or next Capital Plan. The MTACC addressed its concerns for ESA program funding through December 2020 with Budget Amendment 3 for the 2015–2019 Capital Plan. MTACC is also forecasting a need for approximately $956 million in the 2020–2024 Capital Plan. The PMOC remains concerned that – until the 2020–2024 Capital Plan is approved – this potential future funding constraint may significantly impact the program budget and schedule as well as the start of Revenue Service. **[Ref: ESA-127-Jun17]**

ESA Vehicle Risk

The PMOC remains concerned about the schedule slippage of the LIRR M-9A vehicle procurement program, which could potentially impact delivery of the vehicles, and, hence, MTACC's Revenue Service Date. The PMOC had previously determined that, if LIRR could resolve these delays before the end of 2017, there would be minimal, if any, impact to the FFGA Revenue Operations Date of December 2023. The PMOC's analysis of LIRR's most recent Vehicle Procurement Schedule (January 2018), however, indicates that 214 vehicles would be available by the FFGA Revenue Operations date if the present M-9 car builder is awarded the M-9A contract, but only 144 vehicles would be available if a different car builder is awarded the contract. Whether or not this would be sufficient to begin ESA service into GCT would be dependent upon whatever the initial level of LIRR service will be, which has not been determined yet. Additionally, MNR has indicated its intent to jointly participate in LIRR's M-9A procurement for up to 200 vehicles using MTA Capital funds. It is not clear what impact, if any, this would have on the LIRR procurement process.

Manhattan/Systems Performance Risk

The primary PMOC concern since September 2017 has been the likelihood that the Manhattan/Systems schedule path could become the ESA program critical path. On April 23, 2018, this concern was realized when MTACC announced the findings of its project schedule review and acknowledged that delays along the Manhattan/Systems schedule path has indeed resulted in this path becoming the program critical path. This significant change first appeared in the April 1, 2018 Alternate IPS update, which showed that the completion of Manhattan/Systems work path lost three months during the first quarter of 2018. The PMOC remains concerned that delays in completing the Manhattan/Systems work may continue to impact the completion of the overall ESA program and the start of revenue service based on the following **[Ref: ESA-128-Sep17]:**

- Contract CS084 is reported at only 16.2% complete (actual) vs. planned 78.0%.
- Contract CM014B is reported at only 54.3% complete (actual) vs. planned 85.8%.
- Trackwork installation is behind planned schedule on Contract CM007.
- Contract CS086 has not yet been awarded, although MTA approved, in June 2018, MTACC's recommendation to award.
- Managing inter-contract handoffs and interfaces has become a significant issue that will be increasingly challenging and represents significant MTACC-retained risks.
- Due to contractor work site time and access constraints, there is very limited opportunity for the contractors to make up the time lost to interface delays. Should delays continue to accumulate, a meaningful recovery will likely not be possible.
- This risk was realized in April 2018 when MTACC issued the Alternative IPS that showed the Manhattan/Systems schedule path as the ESA Program critical path.

6.1 Risk Process

Status/Observations:

The PMOC observes that the ESA Risk Manager continues working to strengthen the ESA risk management process so that it serves as a key element for the PMT's decision making process. During 2017, the Risk Manager conducted a Contract CM014B Risk Refresh workshop and a comprehensive Risk Review for the remaining ESA work in the Harold Interlocking that was facilitated by an experienced outside consultant. Also, the Risk Manager 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 its 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 June 2018 as the 2Q2018 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 – 2020-2024 Capital Plan potential risk of funding constraint; [short-term risk under the 2010-14 and 2015-19 amendments is minimal; long-term risk under the 2020-24 Capital Plan remains significant];
    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) Implementation/duration of the Incremental Integrated Systems Testing Plan;
    f) Continued availability of adequate Amtrak and LIRR force account resources;
    g) Continued availability of required track outages in Harold Interlocking;
    h) Maintaining adequate schedule performance of the remaining work in Harold Interlocking;
    i) Significant schedule path float has been used and Manhattan/Systems path now controls critical path, specifically the risk of maintaining the IST schedule [risk realized in 2Q2018]; and,
    j) Coordination risk retained by MTACC in Manhattan and the ESA tunnels with regard to construction and testing interface management for the systems work.
3. The comprehensive Harold risk review conducted during 2Q2017 identified a number of potentially significant risks that could delay completion of the critical work in Harold Interlocking planned for 2017-18 and potentially delay the Revenue Service Date. These risks include the following:

    A. Major Risks included in the Risk Assessment

    1. Positive Train Control: Installation, testing, and activation of Positive Train Control by LIRR in Harold Interlocking to meet the December 31, 2018, FRA mandated deadline. LIRR formally requested a waiver from the FRA to extend installation beyond the deadline based on the interlocking's status as an active construction area. LIRR submitted a revised waiver request to the FRA on December 22, 2017. The FRA replied on May 2, 2018. As a result of the FRA's response, LIRR must resubmit its revised PTC Implementation Plan and proposed alternative schedule by August 2, 2018.
    2. LIRR Force Account Performance: Ability of LIRR force account resources to provide both a very high level of support for third-party contractor access and protection and adequate productivity for significantly increased direct labor work involving track, 3rd rail, and signals, in accordance with the current 2018 ESA schedule plan.
    3. Northeast Quadrant Rail Work: Ability of MTACC-ESA, Amtrak, and LIRR to fully prepare for and execute the remaining work in the Northeast Quadrant in Harold Interlocking, in accordance with the current ESA schedule plan, on a very tight schedule involving significant long-term Amtrak and LIRR track outages.
    4. LIRR CIL Cutovers: Ability of LIRR to complete the pre-testing and final cutovers of H1/H2/Location 30 in accordance with the current ESA schedule plan. LIRR

successfully cutover the H4/H5/H6/Location 30 CILs in Harold on schedule during June 2018.

5. Contract CH058A Preparation Work for B/C Tunnel construction: Ability of Amtrak and LIRR force account resources to complete, in accordance with the current ESA schedule plan, all track, catenary, signal and third-rail work required prior to NTP for CH058A.

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

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

6.3 Risk Mitigations

Current Risk Mitigation Efforts

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

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

Concerns and Recommendations

1. The PMOC recognizes that MTACC and ESA have been proactive in dealing with railroad force account and track outage 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 continue to 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 schedule path, now the ESA Program critical 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 had previously recommended 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. The PMOC notes that the ESA project is currently transitioning to a new organization with revised operations and processes in order to better manage and mitigate current and future risks. These changes represent the implementation of the MTACC president's ESA Six-Point Plan to reduce risk.

7.0 PMOC CONCERNS AND RECOMMENDATIONS

Priority in Criticality column

1 – Critical 2 – Near Critical

No. / Date Initiated	Section	Issues/Recommendations	Criticality
ESA-124-Jun16	6.3-Risk Mitigations	Continued issues with insufficient Amtrak FA support of third-party contractors and lack of required track outages. Current Status: During 2Q2018, ESA continued to experience insufficient Amtrak Track Foremen and Electric Traction Force Account personnel to support its 3rd Party contractor, CH061A. Amtrak provision of Force Account resources continued to challenge ESA during 2Q2018 and still requires improvement. Recommendation: The PMOC recognizes ESA's efforts to re-baseline the remaining work in 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. The GEC efforts in correcting these process issues have improved on the CS084 and VS086 contracts; however, additional improvement efforts are needed from the GEC on the CS179 contract and on all three contracts by LIRR. 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-127-Jun17	6.0 Risk Management	Since early in 2017, the MTACC has been weighing whether to seek additional funds through the current or next Capital Plan. This risk of funding constraint may significantly impact the project. The PMOC is concerned about potentially significant impacts to the program cost, budget, and schedule, as well as the start of Revenue Service.	1

No. / Date Initiated	Section	Issues/Recommendations	Criticality
		Current Status: The MTACC addressed its concerns for ESA program funding through December 2020 with Budget Amendment 3 for the 2015–2019 Capital Plan. MTACC is also forecasting a need for approximately $956 million in the 2020–2024 Capital Plan. Recommendation: The PMT must prepare a request to obtain the necessary funding for the ESA program in the 2020–2024 Capital Plan. It is anticipated that this work will conclude in the third quarter of 2019.	
ESA-128-Sep17	4.0 Project Schedule	Issue: A primary PMOC concern for Contracts CM007, CM014B, CS179, and CS084 had previously been that this near-critical schedule path has only 7 CDs of float. The work remaining in these contracts is currently forecast to be completed between May 2019 and January 2021. The PMOC anticipated that the remaining schedule path float will be used in the near future and Manhattan/Systems path will become the primary critical path for the program. This will place additional schedule pressure on the ESA target RSD of May 2021. Current Status: The Manhattan/Systems schedule path has become the ESA Program critical path, therefore, this risk was realized in 2Q2018. Contracts CM014B and CS084 remain 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. MTACC has prioritized its management and coordination of the work along the Manhattan/Systems schedule path. Recommendation: MTACC/ESA should continue to focus on managing the coordination between these three contracts to minimize any further delays and to maximize available schedule recovery opportunities.	1
ESA-129-Jun18	2.3 Construction (CS179)	Issue: MTACC has identified the need to implement an Incremental Integrated System Testing (IST) plan in order to meet the schedule requirements for RSD. This requires agreement on a revised IST plan and schedule among ESA-PMT, LIRR, and the CS179 contractor as well as associated contract modifications for CS179, CS084, VS086, CS086, and CQ033. Current Status: Incremental IST is forecast to commence in April 2019. The PMOC has observed that progress toward a final, agreed-upon Incremental IST plan and schedule has been slow. Recommendation: MTACC/ESA needs to work with LIRR and the CS179 general contractor, electrical sub-contractor, and systems integration sub-consultant to prioritize the finalization and approval of the Incremental IST plan and schedule.	

8.0 SPONSOR'S ACTIONS FROM QUARTERLY AND MONTHLY MEETINGS

Priority in Criticality column 1 – Critical 2 – Near Critical

No. / Date Initiated	Section	Sponsor Actions	Criticality	Resolution Date
ESA-A47-Dec17	Section 5.1	Since early 2017, MTACC has been weighing whether it to seek additional funds through the current or next Capital Plan. MTACC obtained approval for a Capital Program Budget Amendment to provide the program with additional local funds through December 2020 based on the reassessment forecast. Going forward, the MTACC will submit a 2020–2024 Capital Plan budget to obtain a total of approximately $956 million in local funding to complete the ESA program. The PMT must prepare a request to obtain the necessary funding for the ESA program in the 2020–2024 Capital Plan. It is anticipated that this work will conclude in the third quarter of 2019. Because this resolves the PMOC's concern, this issue will be removed from future monthly reports.	2	5/31/2018

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
CSTP	Comprehensive System Test 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
8/16	Amended FFGA Signed	12/23	Estimated Rev Ops at Amended FFGA
08/19	Original Revenue Service Date (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
$11,133.3 million	Total Project Cost ($YOE) as of April 2018, excluding Finance Charges and Regional Investment Program
$7,903.1 million	Amount of Expenditures as of April 30, 2018, based on the Total Project Budget of $10,177.8 million
93.1%	Awarded Percent Complete, based on the Re-plan budget of $10,177.8 million and invoices in the April 2018 MPR.
(b)(4) [redacted]	
78.3%	Construction Percent Complete vs. 83.2% as planned
77.7%	Overall Project Percent Complete vs. 82.1% as planned

APPENDIX C – LESSONS LEARNED

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

No.	Date	Phase	Category	Subject	Lessons Learned
6	June-13	Administration	Quality	Submittals	See below
	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: Use of PAC/Shotcrete involves consideration of site specific limitations on a case by case basis. Lesson learned is that projects which anticipate use of PAC/shotcrete should carefully examine all aspects of its use and that a careful engineering analysis of the expected use be made so that the approved use can be included in the contract documents for the project.				
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 adversely impact construction progress and may cause delays. The owner should ensure that it is getting the contractor's best personnel when excavating a tunnel or cavern.				
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 production rate estimates can have a significant impact on the project schedule.				

APPENDIX D – SAFETY AND SECURITY CHECKLIST

Project Overview	
Project mode (Rail, Bus, BRT, Multimode)	Rail
Project phase (Preliminary Engineering, Design, Construction, or Start-up)	Construction
Project Delivery Method (Design/Build, Design/Build/Operate/Maintain, CMGC, etc.)	Primarily Design Bid/Build

Project Plans	Version	Review by FTA	Status
Safety and Security Management Plan	12/2010 Rev. 2	2012	Sponsor has forwarded the revised SSMP directly to FTA.
Safety and Security Certification Plan	11/2008 Rev. 1		Is within the SSPP of LIRR.
System Safety Program Plan	11/2008 Rev. 1		N/A
System Security Plan or Security and Emergency Preparedness Plan (SEPP)	11/2010		Is within the SSPP of LIRR.
Construction Safety and Security Plan	3/2007 Rev. 1		Project Construction Safety and Security Plan, contractors' site specific safety and security plans.

Safety and Security Authority	Y/N	Notes/Status
Is the Sponsor subject to 49 CFR Part 659 state safety oversight requirements?	Y	
Has the state designated an oversight agency as per Part 659.9?	Y	The New York State Public Transportation Safety Board (NYSPTSB) is the SSOA. The SSOA has stated that they will not interface with the safety certification process for ESA until such a time as it is signed and certified by LIRR.
Has the oversight agency reviewed and approved the Sponsor's SSPP as per Part 659.17?	In Devel-opment	In Q4 of 2013, the SSOA has asked the FTA for guidance on approving the SSPP.
Has the oversight agency reviewed and approved the Sponsor's Security Plan or SEPP as per Part 659.21?	In Devel-opment	The New York State Public Transportation Safety Board (NYSPTSB) is the SSOA. The SSOA has stated that they will not interface with the security review process for ESA until such a time as it is signed and certified by LIRR.

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

SSMP Monitoring	Y/N	Notes/Status
Is the SSMP project-specific, clearly demonstrating the scope of safety and security activities for this project?	Y	
Sponsor reviews the SSMP and related project plans to determine if updates are necessary?	Y	Sponsor has forwarded the revised SSMP directly to FTA.

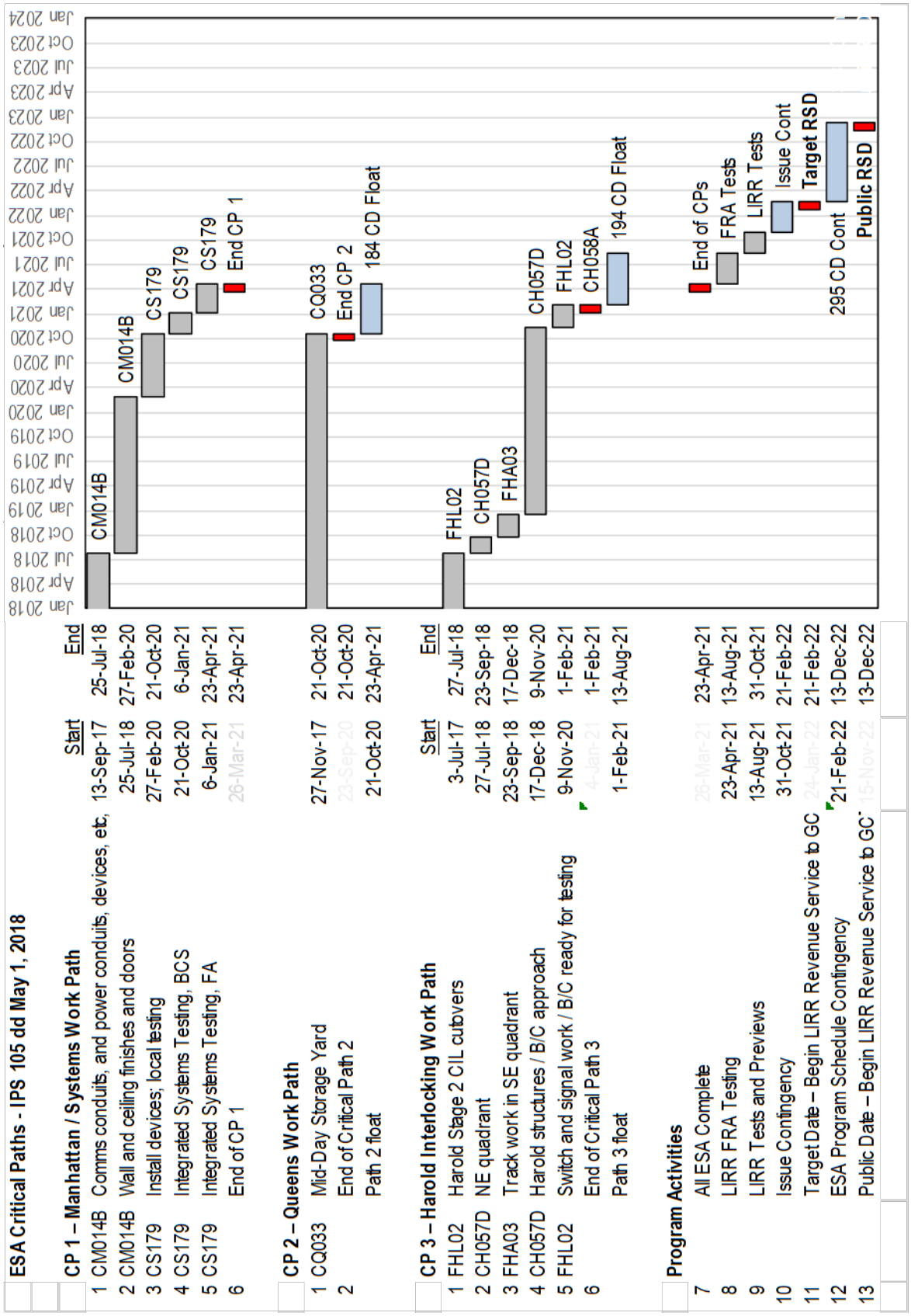
SSMP Monitoring	Y/N	Notes/Status
Does the Sponsor implement a process through which the Designated Function (DF) for Safety and DF for Security are integrated into the overall project management team? Please specify.	Y	The safety certification designee for MTACC, as well as the MTACC quality chief, meets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

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

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

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

APPENDIX F – ESA CRITICAL PATH CHART



ESA Critical Paths - IPS 105 dd May 1, 2018

			Start	End
CP 1 – Manhattan / Systems Work Path				
1	CM014B	Comms conduits, and power conduits, devices, etc.	13-Sep-17	25-Jul-18
2	CM014B	Wall and ceiling finishes and doors	25-Jul-18	27-Feb-20
3	CS179	Install devices; local testing	27-Feb-20	21-Oct-20
4	CS179	Integrated Systems Testing, BCS	21-Oct-20	6-Jan-21
5	CS179	Integrated Systems Testing, FA	6-Jan-21	23-Apr-21
6		End of CP 1	26-Mar-21	23-Apr-21
CP 2 – Queens Work Path				
1	CQ033	Mid-Day Storage Yard	27-Nov-17	21-Oct-20
2		End of Critical Path 2	23-Sep-20	21-Oct-20
		Path 2 float	21-Oct-20	23-Apr-21
CP 3 – Harold Interlocking Work Path				
1	FHL02	Harold Stage 2 CIL cutovers	3-Jul-17	27-Jul-18
2	CH057D	NE quadrant	27-Jul-18	23-Sep-18
3	FHA03	Track work in SE quadrant	23-Sep-18	17-Dec-18
4	CH057D	Harold structures / B/C approach	17-Dec-18	9-Nov-20
5	FHL02	Switch and signal work / B/C ready for testing	9-Nov-20	1-Feb-21
6		End of Critical Path 3	4-Jan-21	1-Feb-21
		Path 3 float	1-Feb-21	13-Aug-21
Program Activities				
7		All ESA Complete	26-Mar-21	23-Apr-21
8		LIRR FRA Testing	23-Apr-21	13-Aug-21
9		LIRR Tests and Previews	13-Aug-21	31-Oct-21
10		Issue Contingency	31-Oct-21	21-Feb-22
11		Target Date – Begin LIRR Revenue Service to GC	24-Jan-22	21-Feb-22
12		ESA Program Schedule Contingency	21-Feb-22	13-Dec-22
13		Public Date – Begin LIRR Revenue Service to GC	15-Nov-22	13-Dec-22

APPENDIX F - SCHEDULE ANALYSIS TABLES

Table F: 90 Day Look-Ahead Schedule – IPS 105 May 1, 2018 Schedule

ACTIVITY ID	ACTIVITY DESCRIPTION	START	FINISH
CH053: Harold Structure - Part 1 & G.O.2 Substation			
CH053-5140	Con-Ed Energize High Voltage Service at GO2 Substation		28-May-18
CH053-6110	CH053 Handover GO2 Substation to LIRR		23-Oct-18
CH053FC	CH053 – Final Completion		23-Oct-18
CH057A - Westbound Bypass Structure (exclude Slab)			
CH057A-5590	CH057A Milestone 4 – Final Completion		17-Feb-18 A
CH061A: Tunnel A			
CH061A-55341	Intermediate Milestone #2 – Pole Completion for CQ033 Area 2		1-Dec-17 A
CH061A-55351	MS#1 – Port Wash 2 Overrun Catenary Structures		12-Feb-18 A
CH061A-8280	Fabricate Catenary Structures	7-Feb-18	26-Mar-18
CH058A: Harold Structures - B/C Structure/ Catenary Structure			
CH058A-0090	CH058A Advertise Date	09-May-18	
CH058A-0110	CH058A – Bid Due Date		10-Jul-18
CH058B: Harold Structures - Eastbound Reroute Structure			
CH058-3090	CH058 60% - 100% Design Documentation	20-Jul-10A	3-Jul-18
FHL01: Harold Stage 1 - LIRR F/A			
FHL01-1990	Energize GO2 Substation (CH053-Milestone #3)		13-Feb-19
FHL02: Harold Stage 2 - LIRR F/A			
FHL02-7800	EO Control Complete		28-Feb-18 A
FHL02-CSR1240	H5/H6/30 South Pre-Cutover Testing	3-Jul-17A	2-May-18
FHL03: Harold Stage 3 - LIRR F/A			
FHL03-1660	Track D Ready for Final IST on Harold		10-Nov-19
FHA01: Harold Stage 1 - Amtrak F/A			
FHA01-1000	ET Catenary: Complete Catenary Work for Stage 1		20-Apr-19
FHA02: Harold Stage 2 - Amtrak F/A: Balance Work			
SUMFHA02-1540	Cutover - ZJ1/ZJ2 (747)		6-May-18
FHA02-1060	CH054A - Completed SMUS 1 & 2 / Install New RTU		8-May-18
FHA03: Harold Stage 3 - Amtrak F/A			
FHA03-CA8109	Catenary Ready for Cutover 2I		3-Jun-18
FHA03-CA8110	Catenary Ready for Cutover 2J		24-Jun-18
VH051A (Part 1): Harold & Point CILs			
VH51C0340	FIAT COMPLETED (w/HTSCS Contract)		29-Jun-18
VH051B (Part 2): Harold Tower SCS			
VH51H0300	As-Built Drawings	01-May-15A	31-May-18
VHA03: Procure Materials for Harold Stage 3 - Amtrak F/A			
VHA03	VHA03 -Procure Amtrak Materials - Harold Stage 3	05-May-14A	19-Jan-25
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-May-18
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

ACTIVITY ID	ACTIVITY DESCRIPTION	START	FINISH
CM005: Manhattan South Structures			
CM005-1050	Milestone 5 Final Completion - MS70 (May 6, 2016)		28-May-18
CM013A: 55th Street Vent Facility			
CM013A-280	CM13A - MS#3 Final Completion		3-Mar-18
CM004: 245 Park Ave. Entrance & 44th Street Vent Structure			
CM04-C0940	CM004 Contractual Final Completion (ML#2 Date 820 CDs from NTP)		1-May-18
CM006: Manhattan North Structures			
CM006-MS2A	CM006 Milestone #2A (55th Street Vent Facility Complete - 702 days from NTP (3/2/16)		8-May-18
CM006-SC	CM006 Milestone #2 Substantial Completion)		3-Dec-18
CM007: GCT Caverns			
CM007-CS179-CIA.19A	East Cavern Lower Level – Under Platform Conduits		1-May-18
CM007-P4-1420	Milestone 5 – Substations US1 and US2 Complete		4-Dec-18
CM014A: GCT Concourse and Facilities Fit Out			
CM014A-1100	Substantial Completion		30-Jun-18
CM014B: GCT Concourse and Facilities Fit Out (BL)			
CM014B-1030	CM014B To Complete Conduits & Infrastructure Sufficient for CS179 to Start Work - Zone 2		31-Jul-18
CM014B-CS179.CIA.1	CM014B Milestone 10 (Shaft #4) Available for CS179		2-May-18
CM014B-CS179.CIA.11	CM014B Provide Emergency Feed from B20 Substation		1-May-18
CM014B-VM014-0060	Delivery EL-10		14-Sep-18
CM014B-VM014-0150, -0320, -0330	Delivery ES-02, ES-47, ES-48		1-May-18
CM014B-VM014-0180, -0280, -0290	Delivery of ES-32, ES-43, ES-44		16-May-18
CM014B-VM014-0340	Delivery of ES-49		30-May-18
CM014B-VM014-0350	Delivery of ES-50		23-May-18
CQ032: Plaza Substation & Queens Structures			
CQ032-MS06	MILESTONE #6 – SUBSTANTIAL COMPLETION		3-Dec-18
CQ033: Mid-Day Storage Yard Facility (Procurement Status TBD)			
CQ033-1002	AR#2 – CH061A Catenary Poles	19-Sep-18	
CQ033-1005	AR#5 - YL Approach Area		28-Jul-18
CS084: Tunnel Systems Package 4 – Traction Power Systems			
CO3-1090	FAB/DEL BUS DUCT, 12KA, NEGATIVE – CO3 - MANHATTAN		6-Jun-18
CS179: System Package 1 - Facilities Systems*			
CM006-CS179.CIA.04	GCT-5 Facility TP Switch Control Room 102		1-May-18
CM006-CS179.CIA.14A	Tracks 301 & 302 & 303 & 304 - GCT-3 to Cavern		1-May-18
CM006-CS179.CIA.28	Roosevelt Island Ventilation Facility - Cable Vault		1-May-18
CM007-CS179.CIA.14B2	CM007-CS179 - Conduit from GCT-3 CIR thru L203 to East Cavern Upper Level NBOH		1-May-18
CM007-CS179.CIA.20A	CM007-CS179 - West Cavern Lower Level - Under Platform Conduits		1-May-18
CM007-CS179.CIA.20C	CM007-CS179 - West Cavern Upper Level - Under Platform Conduits		1-May-18
CM007-CS179.CIA.31	CM007-CS179 - Conduit from SBOH East Cavern Lower Level thru duct bench in Tunnel L304 to GCT-2		1-May-18

ACTIVITY ID	ACTIVITY DESCRIPTION	START	FINISH
CM007-CS179.CIA.14B1	CM007-CS179 - Conduit from CR-105 in GCT-3 thru L202 to West Cavern Upper Level NBOH		1-May-18
CM007-CS179.CIA.14C1	CM007-CS179 - Conduit from GCT-4 CIR thru L301 to West Cavern Lower Level NBOH		1-May-18
CM007-CS179.CIA.14C2	CM007-CS179 - Conduit from CR-104 in GCT4 thru L304 to East Cavern Lower Level NBOH		1-May-18
VS086: System Package 3 - Signal Equipment Procurement			
000020	MS#2 Final Approved Design for ESA		30-May-18
000040	MS#3 Plaza Delivery		3-Aug-18

*There is currently disagreement between the CS179 Contractor and MTACC-ESA regarding actual and/or forecasted dates for the Contract Milestones. Once an agreement is achieved, this data will be more detailed and accurate.

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

TABLE G – CONTRACT CS179 (As of June 2018)

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

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

Last Activity in IPS ID# String	Scope	IPS Start	IPS Finish	Status
FHA03-CA5182	Install 7,100 LF CA WBY Track	1/25/23	1/31/23	Only 6 of 25 catenary poles required for this task have been installed as of June 30, 2018.
FHA03-1800	Re-install CAs at three CH057D Turnout locations[1]	7/23/18	8/3/18	CH057D contractor to install five 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	11/1/18	11/3/18	Tunnel B/C predecessor construction is scheduled to begin during 4Q2018. 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	9/24/19	11/28/19	The CQ033 contractor began catenary demolition for the MDSY during 4Q2017, but, to date, has not begun to install the catenary poles necessary for the Sub 3 to North Runner connection. Amtrak will transfer wires after CQ033 completes installation of the catenary poles.
FHA04-1050	Install 3,600 LF CA EBRR Track	12/19/24	3/7/25	CH058B not advertised yet. CH058B to install 10 catenary poles prior to Amtrak installation of CAs.
FHL02.TK.00350	Install CAs 1 Turnout location[2] FHL02	3/9/19	3/10/19	LIRR to install the #3234W turnout. Amtrak will install CAs after LIRR installs the turnout.
FHA04-1020 and FHL04-1120	Install CAs 6 Turnout locations[3] FHA04	4/13/24	5/13/24	LIRR to install turnouts prior to Amtrak installation of CAs. Turnout installation scheduled to begin in 4Q2018.
FHA03-CA8106	Complete Loop 1A Electrification	12/12/18	12/18/18	Amtrak Loop 1A Track construction partially complete. Amtrak ET will install Catenary wires after Amtrak track construction is complete.
FQA65-1092	Install CAs 14 Turnout locations[4] in Loop and T Interlockings - FQA65	10/29/25	10/30/25	Turnout procurement for Loop and T "on hold" by MTACC since early 2016. Amtrak ET will install catenary assemblies after all turnouts are procured and installed.
FHA03-CA88	PW2 Overrun	2/21/18	7/3/18	Amtrak began catenary construction of PW2 Overrun in June 2017. The CH061A contractor completed installation of the required catenary poles in January 2018.

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

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

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

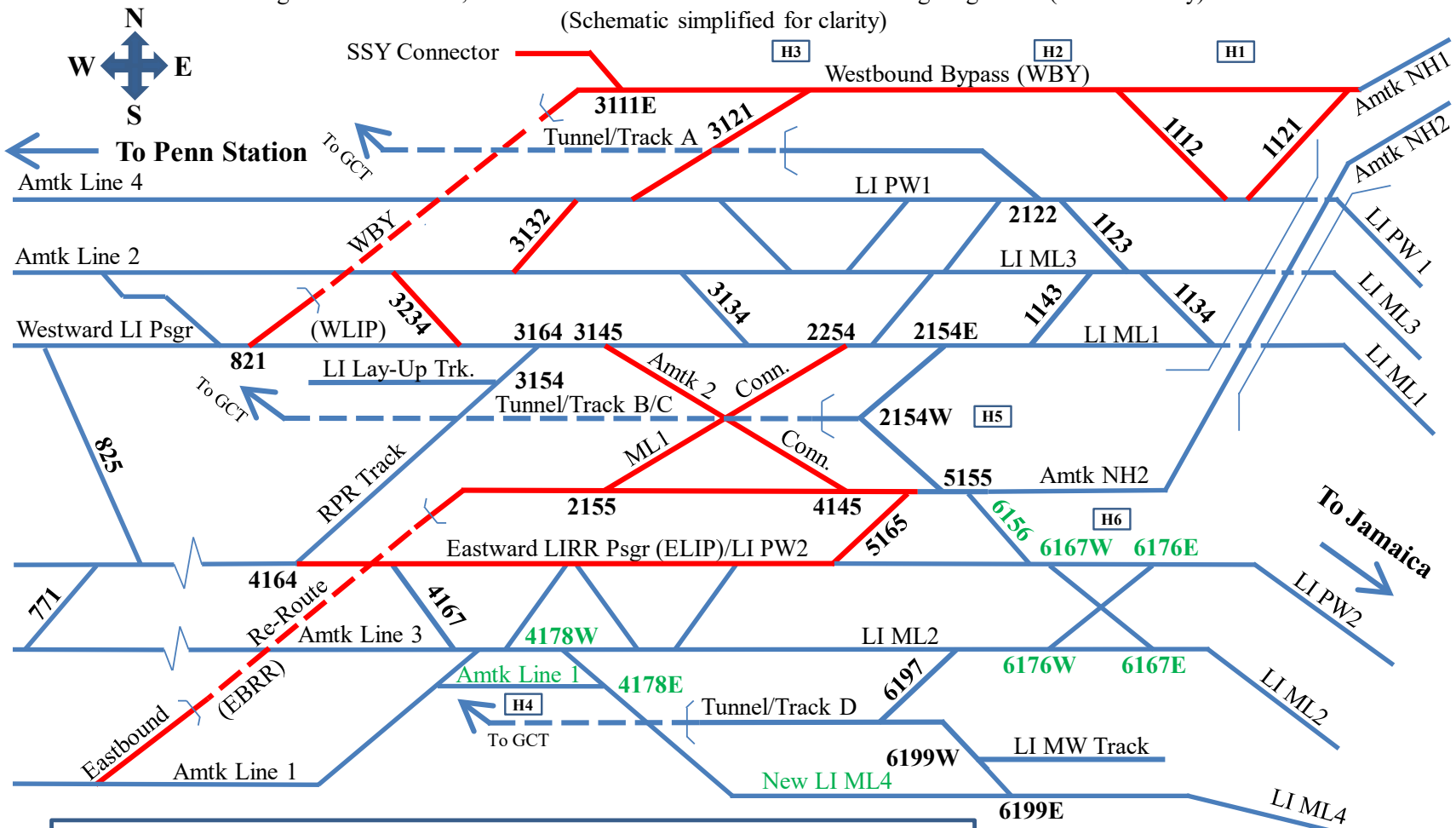
Schematic #3: Status of Harold Interlocking Turnouts and Crossovers to be Installed

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.

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

Progress as of June 30, 2018 - based on ESA 14-4 Harold Interlocking Alignment (main line only)
(Schematic simplified for clarity)



Legend

- Locations for OCS and new track (except ELIP)/turnouts/crossovers to be installed
- Locations where new OCS was installed during 2Q2018
- Locations for new track/turnouts/crossovers to be installed with 3rd Rail, no OCS
- Locations where existing track/turnouts/crossovers will remain as is

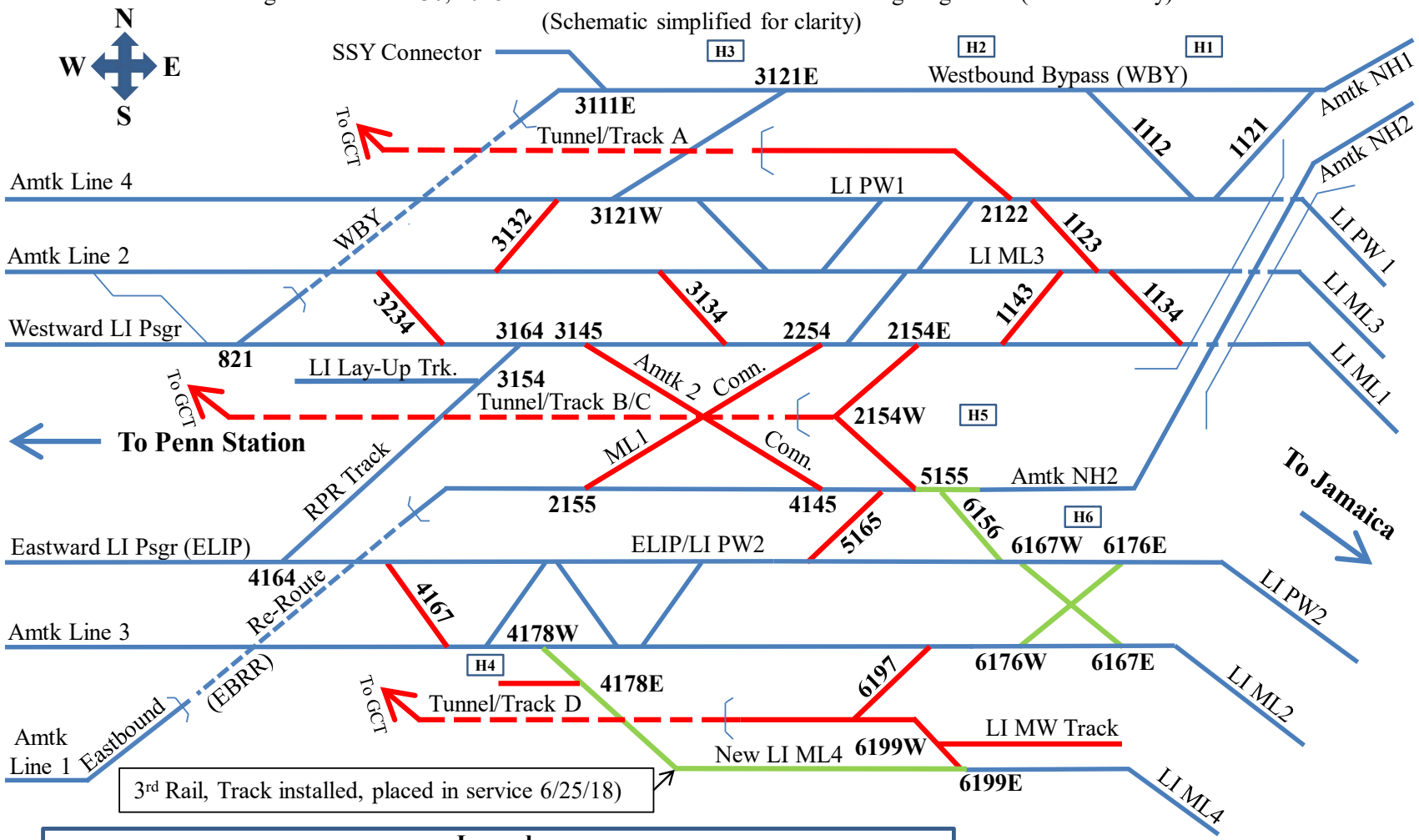
Note: No new catenary installations were made during 2Q2018, although LIRR put the New ML4 Track, the noted portion of Amtrak Line 1, several crossovers, and associated 3rd rail in service during the quarter.

Appendix I: Harold Progress Monitoring Schematic

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

Progress as of June 30, 2018 - based on ESA 14-4 Harold Interlocking Alignment (main line only)

(Schematic simplified for clarity)



Legend

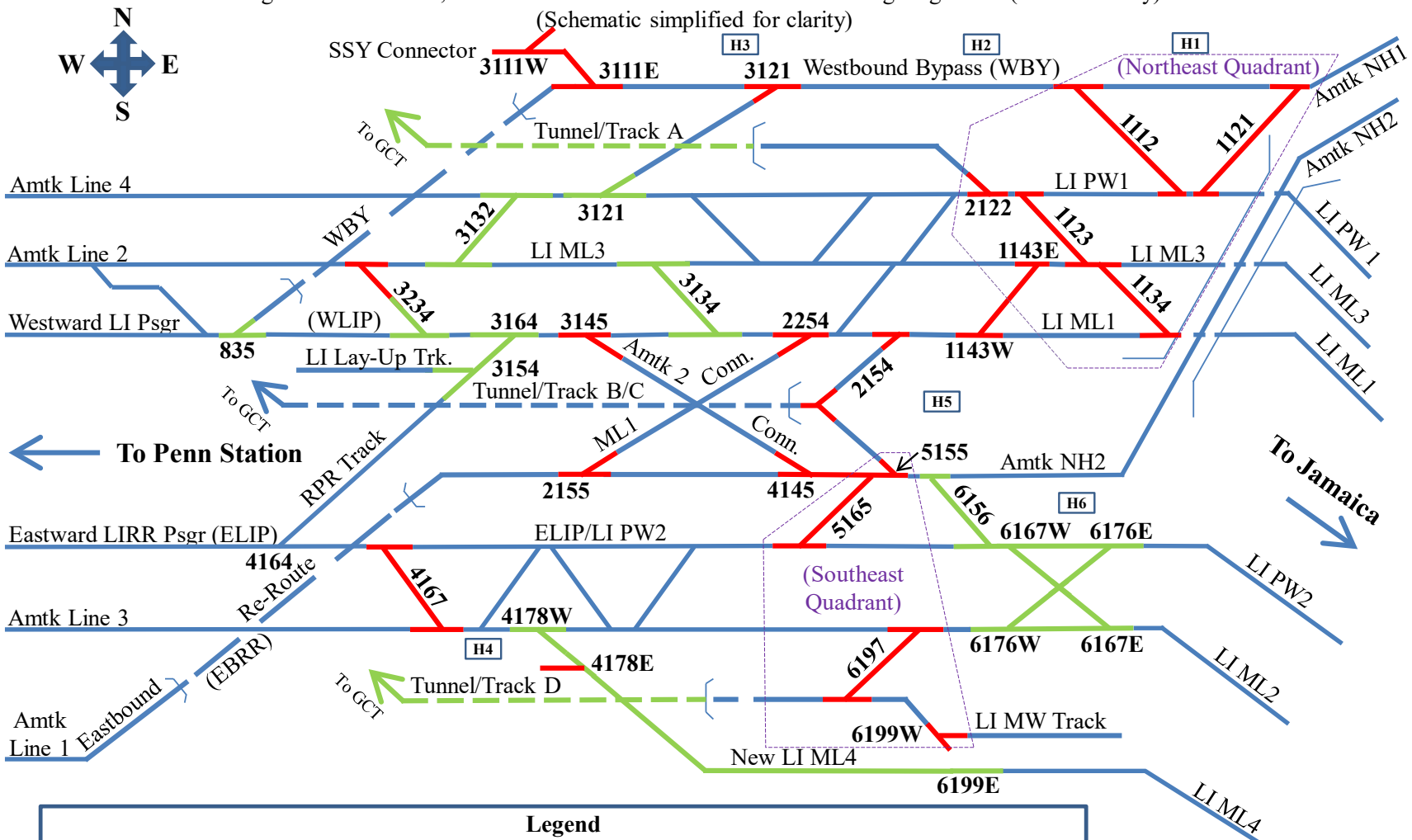
- Locations for 3rd Rail and new track (except ELIP)/turnouts/crossovers to be installed
- Locations where 3rd Rail and new track were installed during 2Q2018
- Existing track/turnouts/crossovers to remain as is or be constructed (WBY & EBRR)

Note: 3rd Rail and new ML4 Track were placed in service on June 25, 2018. The new #6167, #6176, and # 6156 crossovers were also placed in service for 3rd Rail operation on that date.

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

Progress as of June 30, 2018 - based on ESA 14-4 Harold Interlocking Alignment (main line only)

(Schematic simplified for clarity)



Legend

- ESA turnouts/crossovers to be installed
- ESA turnouts/crossovers/track installed during 2Q2018
- New Track to be installed by ESA
- Track installed, not in service
- Existing Track to remain as is

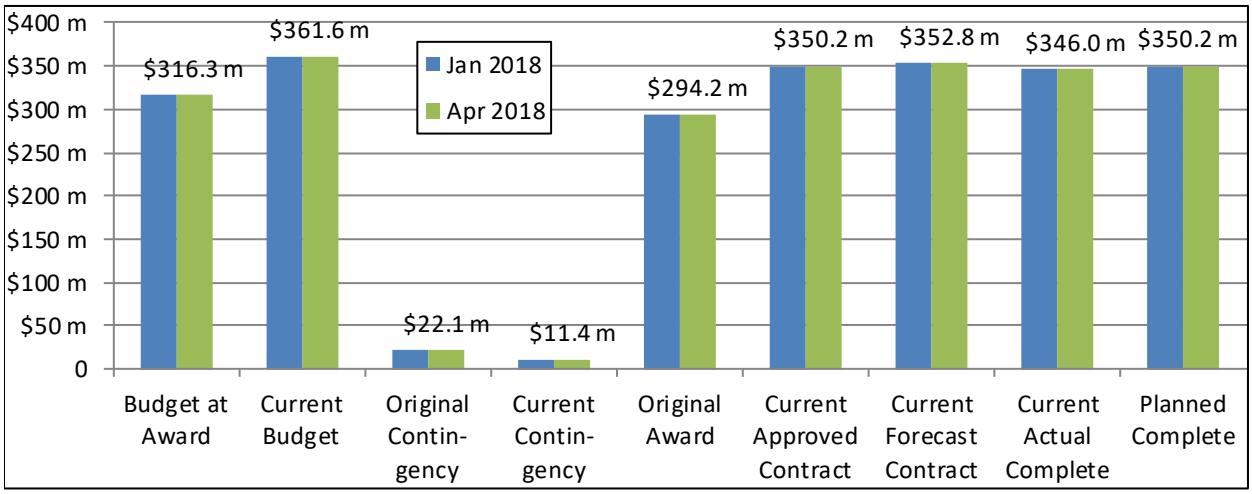
Note: New LI ML4 Track and the new #6156, #6167, and #6176 crossovers were placed in service on 6/25/18.

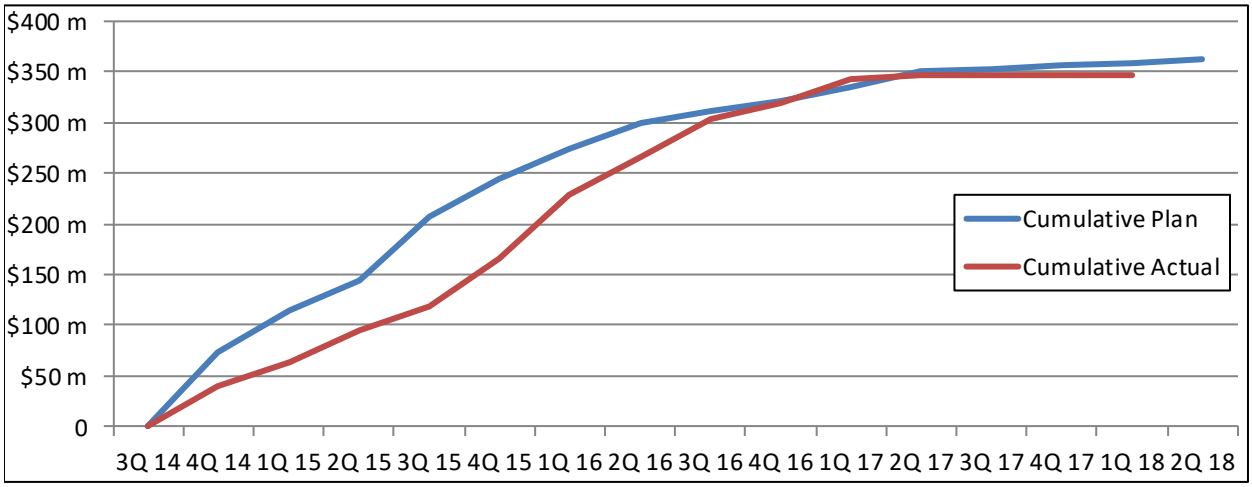
APPENDIX J – COST PERFORMANCE

CM006 Manhattan North Structures Apr 2018

Budget at Award	Current Budget	Change from Original to Current	Contract at Award	Current Approved Contract	Change from Original to Current	Current Forecast	Change from Current Forecast to Budget at Award
		(2-1)			(5-4)		(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%	1.0%	0.1%	0.0%	0.0%	0.40% per month



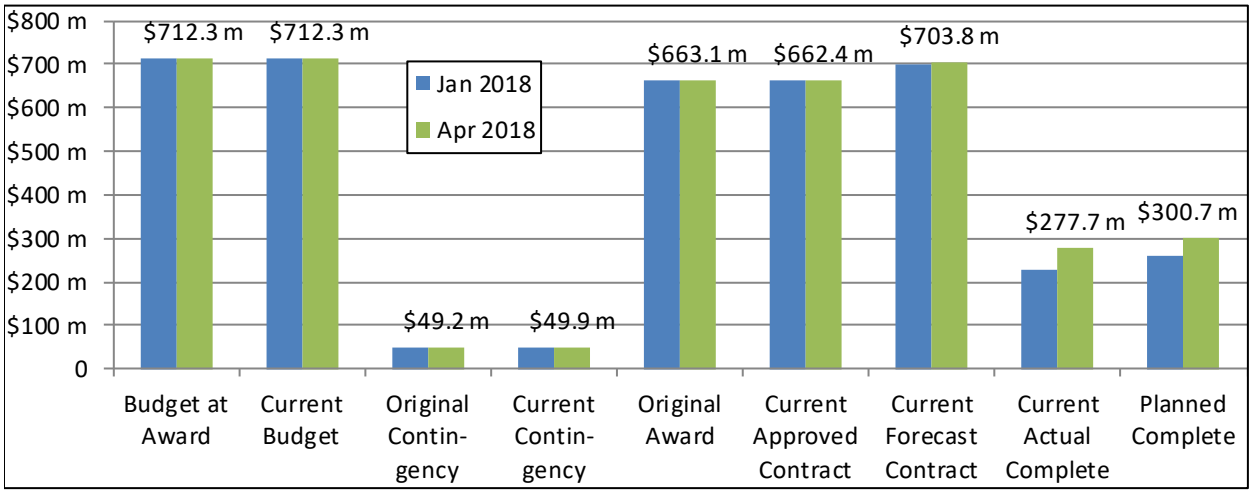


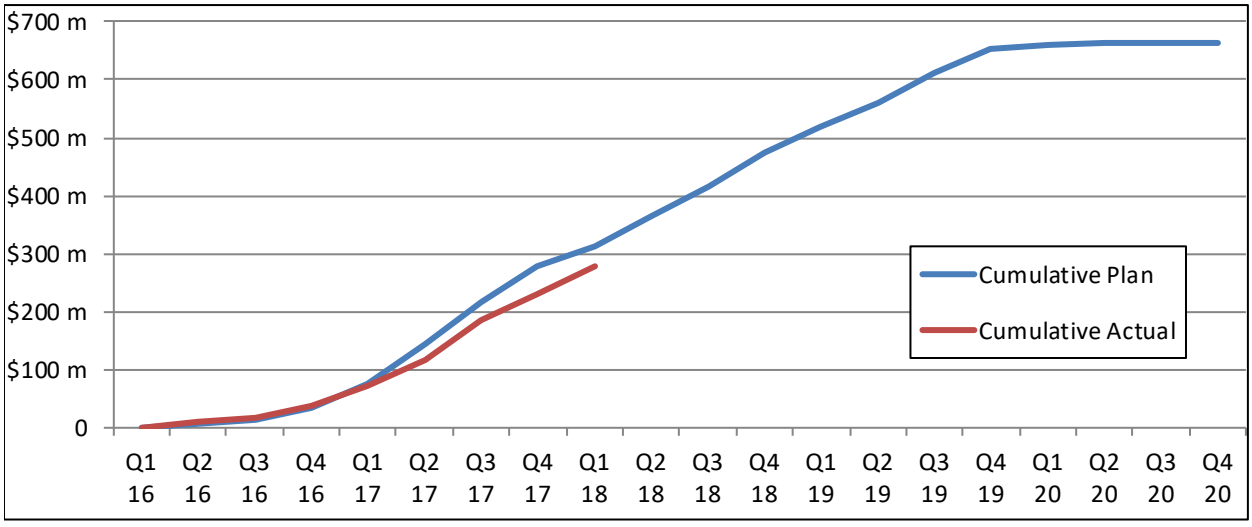
APPENDIX J – COST PERFORMANCE

CM007 GCT Caverns Apr 2018

Budget at Award	Current Budget	Change from Original to Current	Contract at Award	Current Approved Contract	Change from Original to Current	Current Forecast	Change from Current Forecast to Budget at Award
		(2-1)			(5-4)		(7-1)
$712.3	$712.3	$0.0	$663.1	$662.4	($0.7)	$703.8	($8.5)

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	
45.4%	41.9%	26.6%	2.2%	13.8%	2.3%	2.15% per month



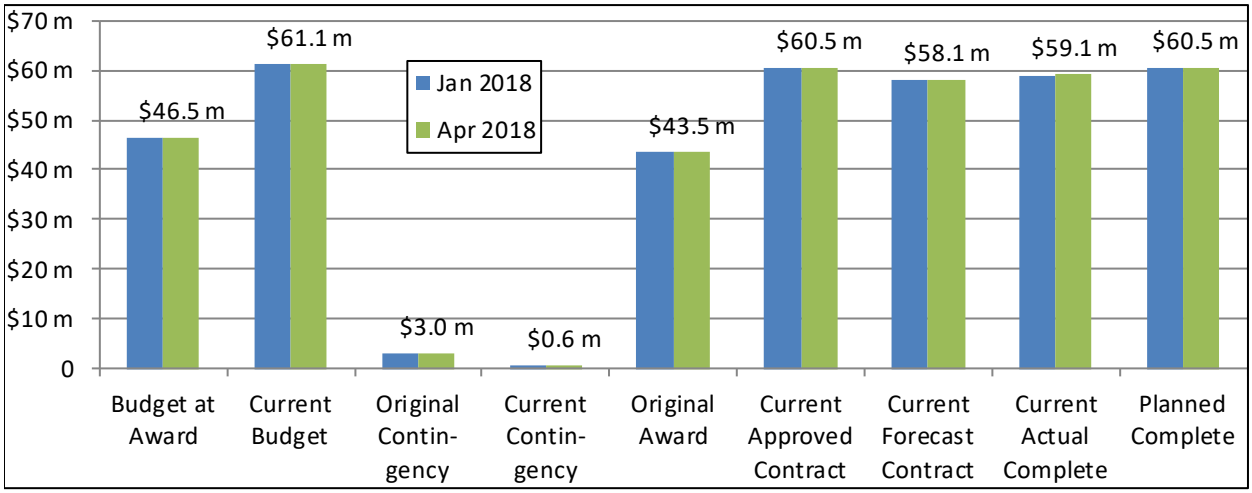


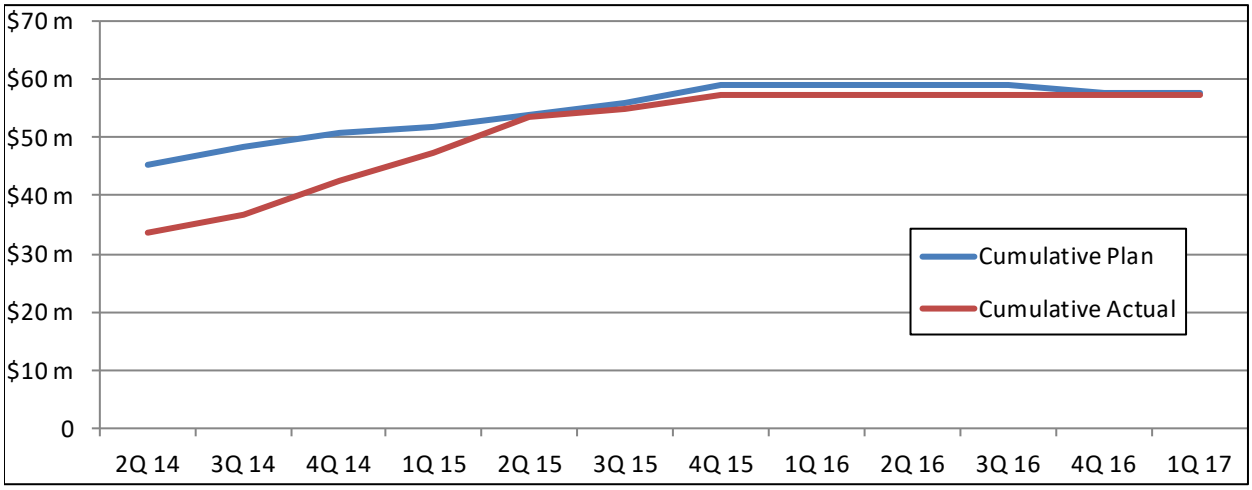
APPENDIX J – COST PERFORMANCE

CM014A GCT Concourse & Facilities Fit Out Early Work Apr 2018

Budget at Award	Current Budget	Change from Original to Current	Contract at Award	Current Approved Contract	Change from Original to Current	Current Forecast	Change from Current Forecast to Budget at Award
		(2-1)			(5-4)		(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%	97.6%	3.2%	0.3%	0.8%	0.1%	N/A per month



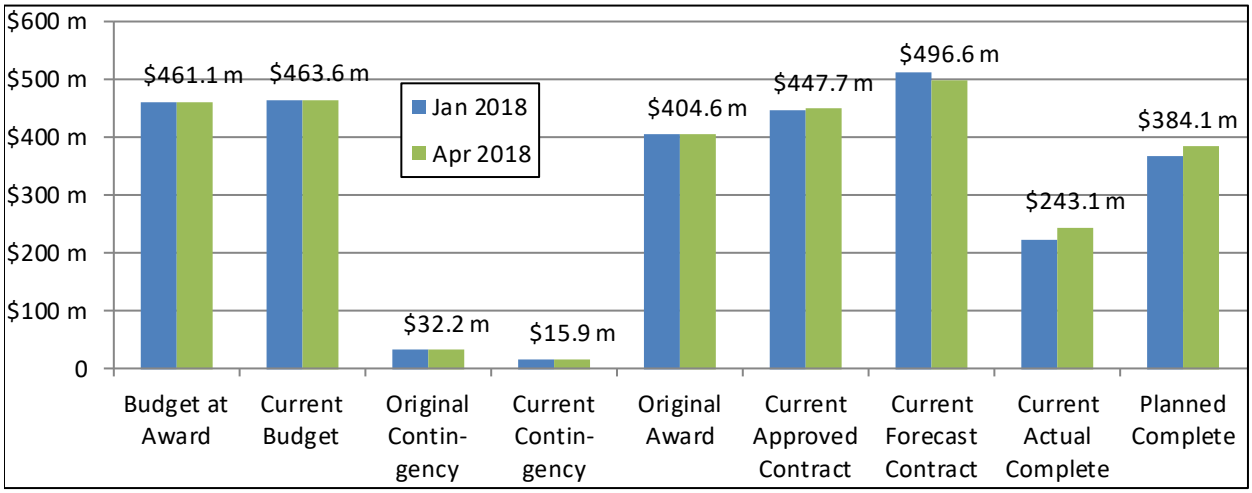


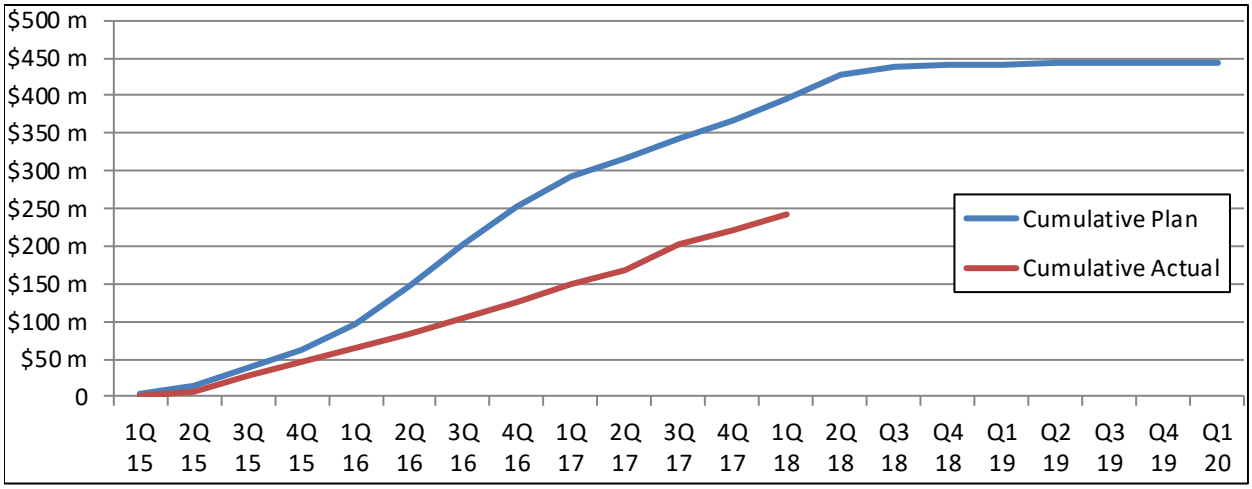
APPENDIX J – COST PERFORMANCE

CM014B GCT Concourse & Facilities Fit Out Apr 2018

Budget at Award	Current Budget	Change from Original to Current	Contract at Award	Current Approved Contract	Change from Original to Current	Current Forecast	Change from Current Forecast to Budget at Award
		(2-1)			(5-4)		(7-1)
$461.1	$463.6	$2.5	$404.6	$447.7	$43.1	$496.6	$35.5

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	
85.8%	54.3%	18.1%	1.5%	8.8%	1.5%	1.76% per month

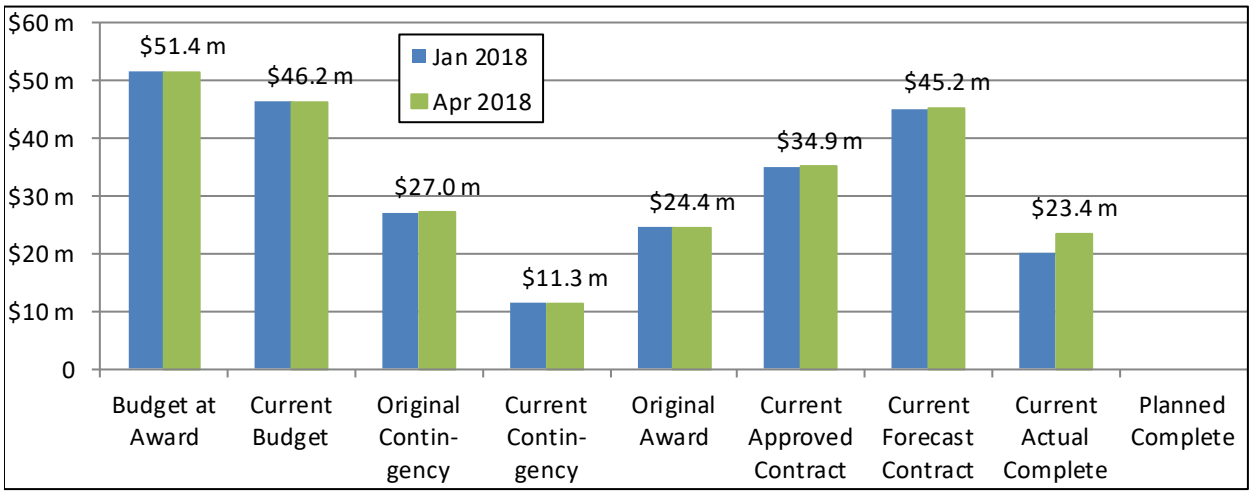




VM014 Vertical Circulation Elements (Escalators & Elevators) Apr 2018

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)
$51.4	$46.2	($5.2)	$24.4	$34.9	$10.5	$45.2	($6.2)

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	
NA	66.9%	28.1%	2.3%	8.0%	1.3%	1.38% per month

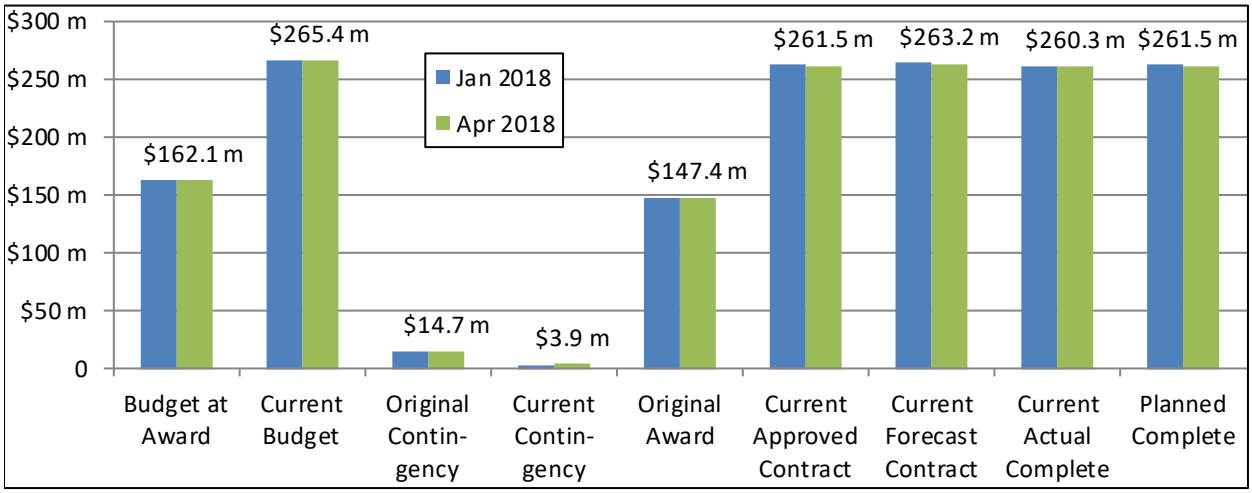


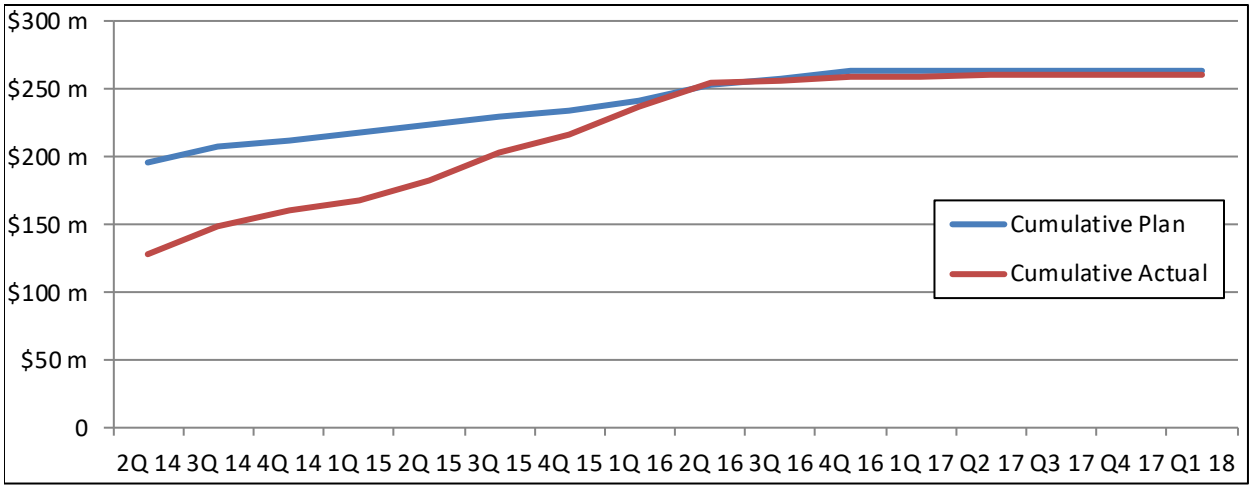
APPENDIX J – COST PERFORMANCE

CQ032 Plaza Substation & Queens Structures Apr 2018

Budget at Award	Current Budget	Change from Original to Current	Contract at Award	Current Approved Contract	Change from Original to Current	Current Forecast	Change from Current Forecast to Budget at Award
		(2-1)			(5-4)		(7-1)
$162.1	$265.4	$103.3	$147.4	$261.5	$114.1	$263.2	$101.1

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%	99.6%	0.6%	0.1%	0.3%	0.1%	0.13% per month



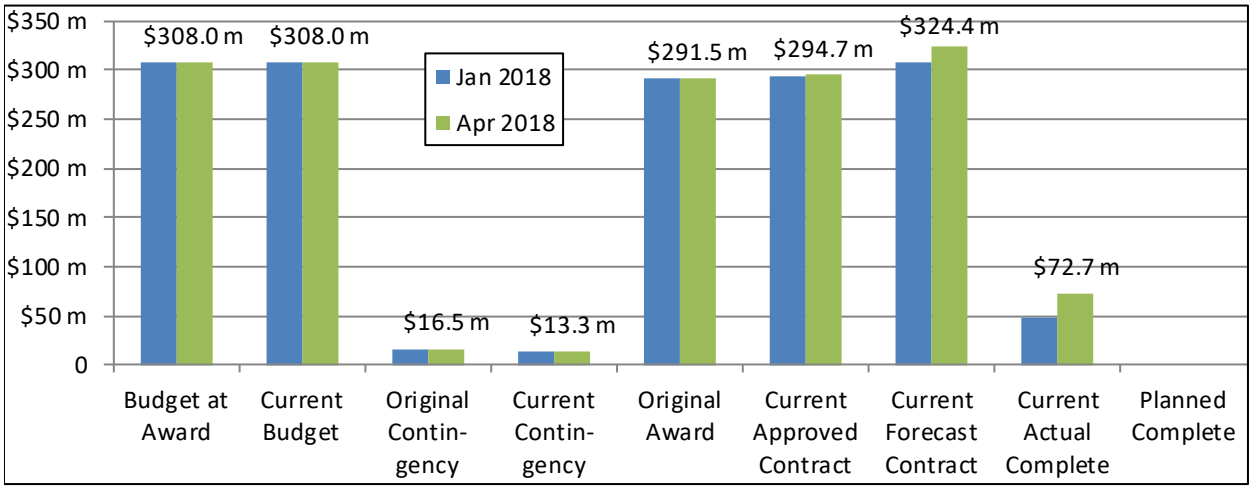


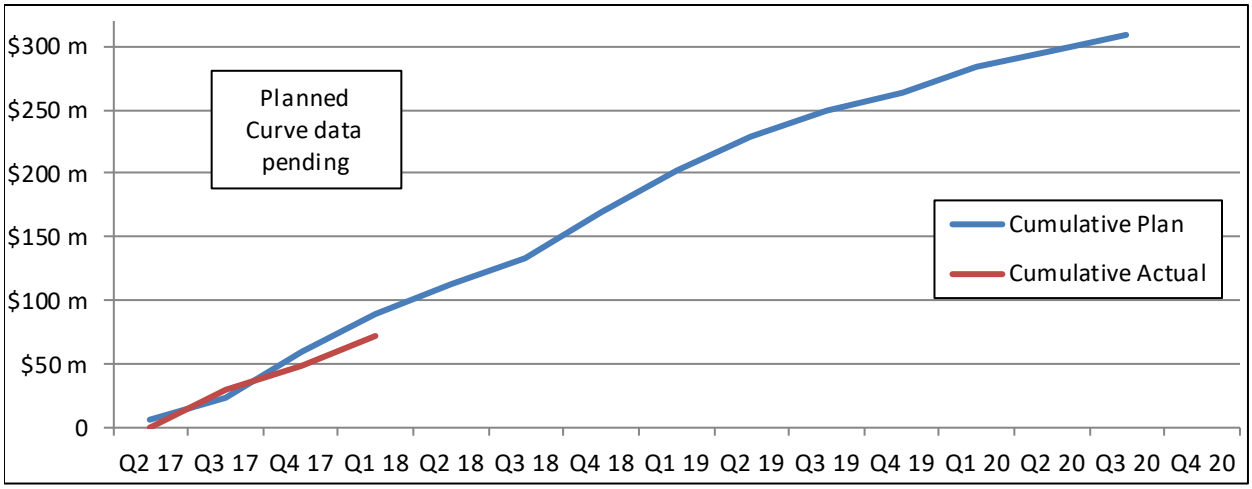
APPENDIX J – COST PERFORMANCE

CQ033 Mid-Day Storage Facility Apr 2018

Budget at Award	Current Budget	Change from Original to Current	Contract at Award	Current Approved Contract	Change from Original to Current	Current Forecast	Change from Current Forecast to Budget at Award
		(2-1)			(5-4)		(7-1)
$308.0	$308.0	$0.0	$291.5	$294.7	$3.2	$324.4	$16.4

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	24.7%	NA	NA	14.5%	2.4%	2.35% per month



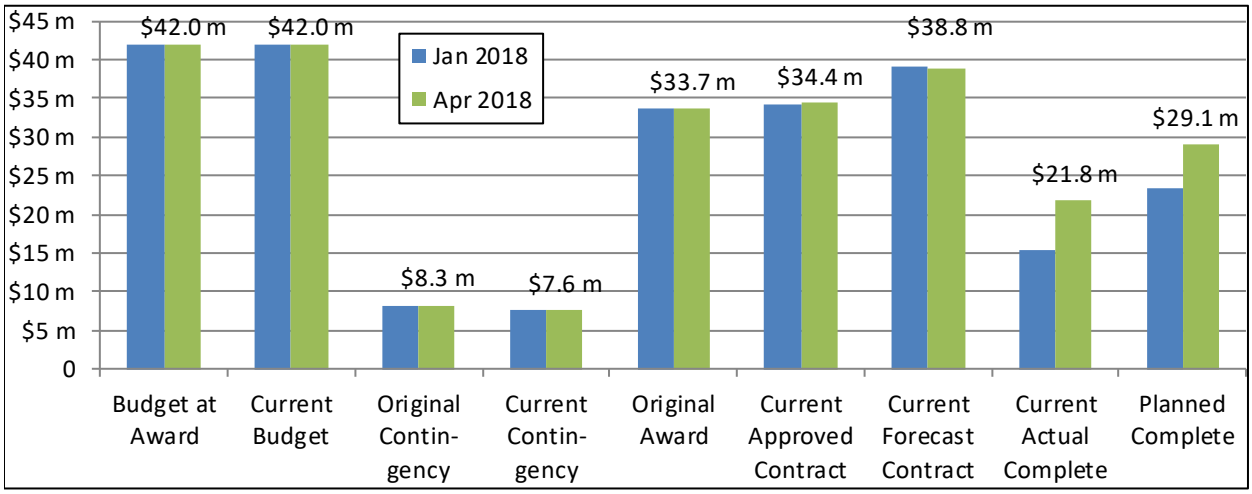


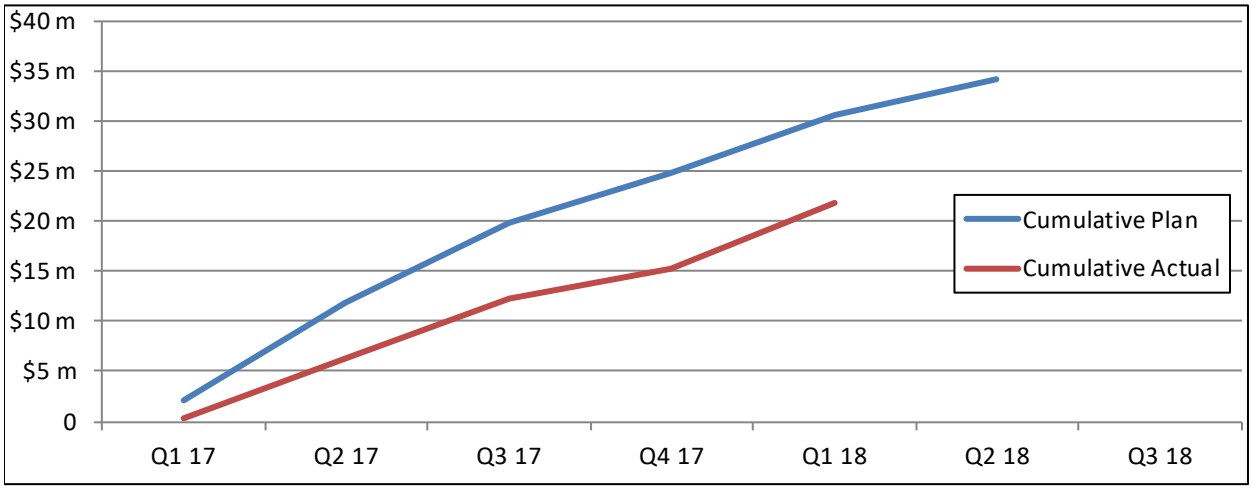
APPENDIX J – COST PERFORMANCE

CH061A Track A Cut and Cover Structure Apr 2018

Budget at Award	Current Budget	Change from Original to Current	Contract at Award	Current Approved Contract	Change from Original to Current	Current Forecast	Change from Current Forecast to Budget at Award
		(2-1)			(5-4)		(7-1)
$42.0	$42.0	$0.0	$33.7	$34.4	$0.7	$38.8	($3.2)

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	
84.5%	63.2%	57.3%	4.8%	27.7%	4.6%	18.40% per month



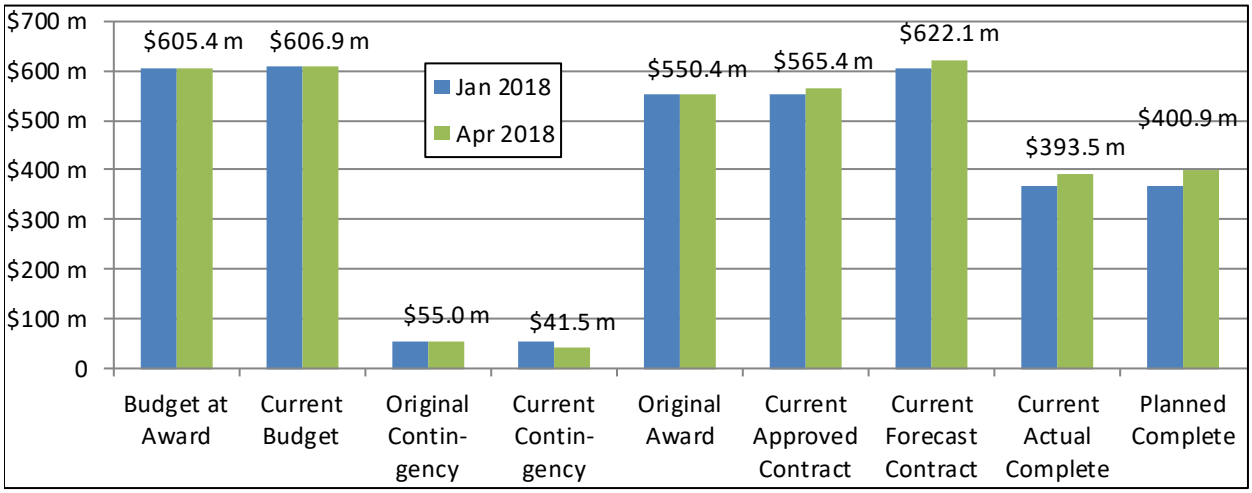


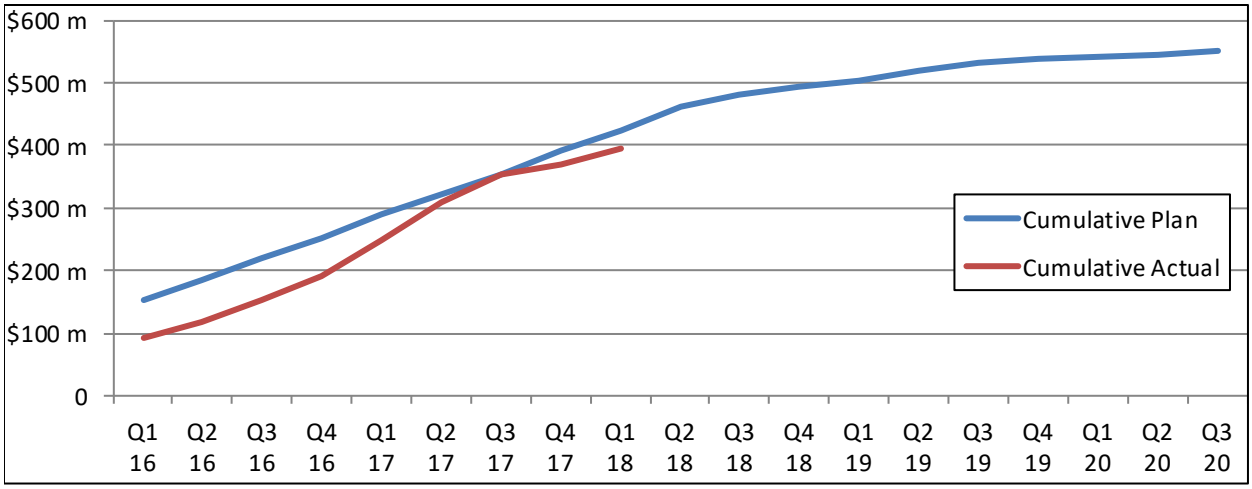
APPENDIX J – COST PERFORMANCE

CS179 Systems Package 1 – Facilities Systems Apr 2018

Budget at Award	Current Budget	Change from Original to Current	Contract at Award	Current Approved Contract	Change from Original to Current	Current Forecast	Change from Current Forecast to Budget at Award
		(2-1)			(5-4)		(7-1)
$605.4	$606.9	$1.5	$606.9	$565.4	($41.5) (options+mods)	$622.1	$16.7

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	
70.9%	69.6%	19.5%	1.6%	5.6%	0.9%	0.82% per month



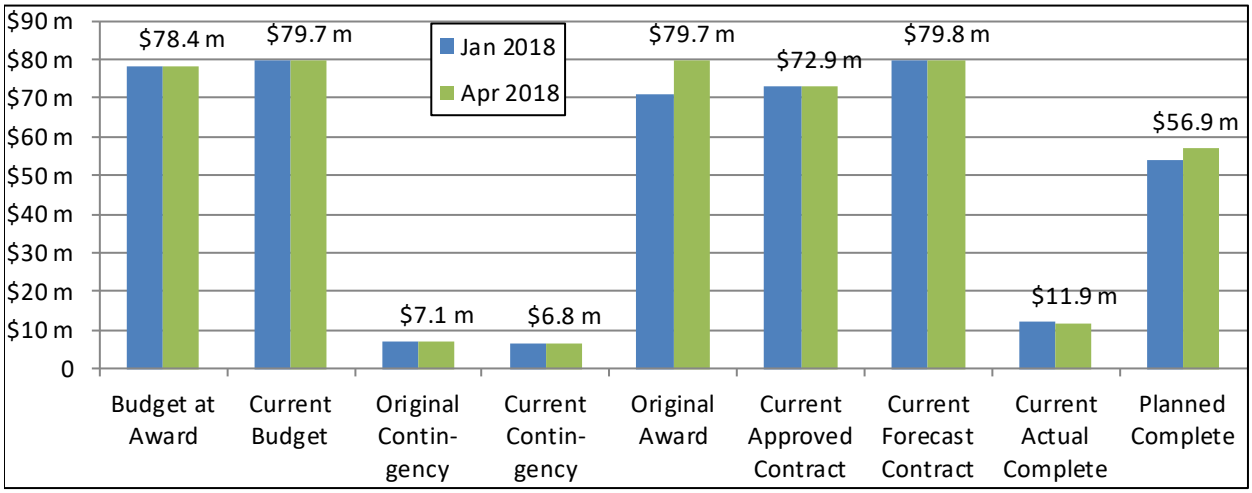


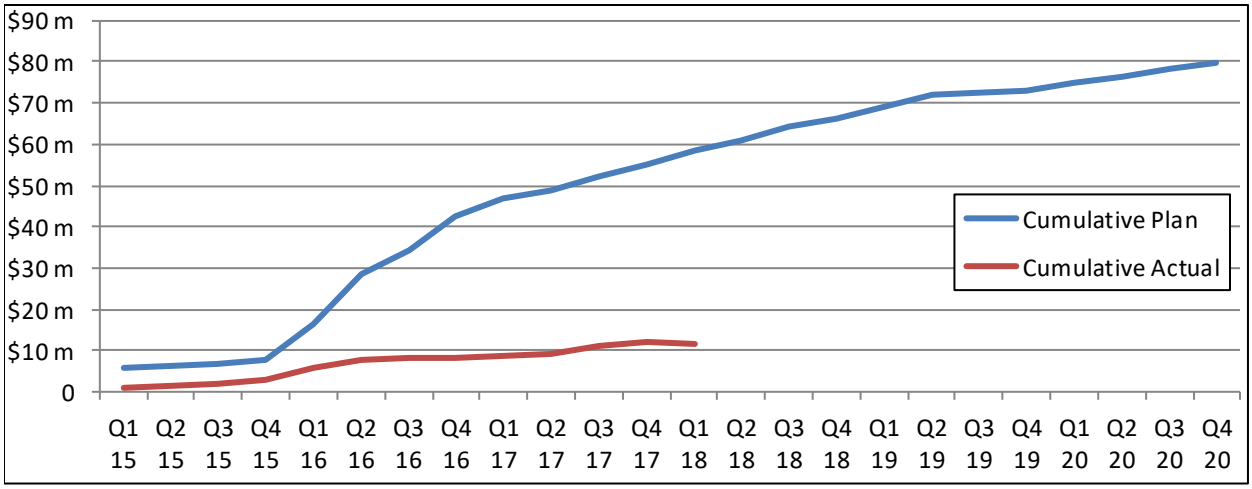
APPENDIX J – COST PERFORMANCE

CS084 Tunnel Systems Package 4 – Traction Power Apr 2018

Budget at Award	Current Budget	Change from Original to Current	Contract at Award	Current Approved Contract	Change from Original to Current	Current Forecast	Change from Current Forecast to Budget at Award
		(2-1)			(5-4)		(7-1)
$78.4	$79.7	$1.3	$79.7	$72.9	($6.8)	$79.8	$1.4

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	
78.0%	16.2%	4.2%	0.4%	1.0%	0.2%	2.62% per month



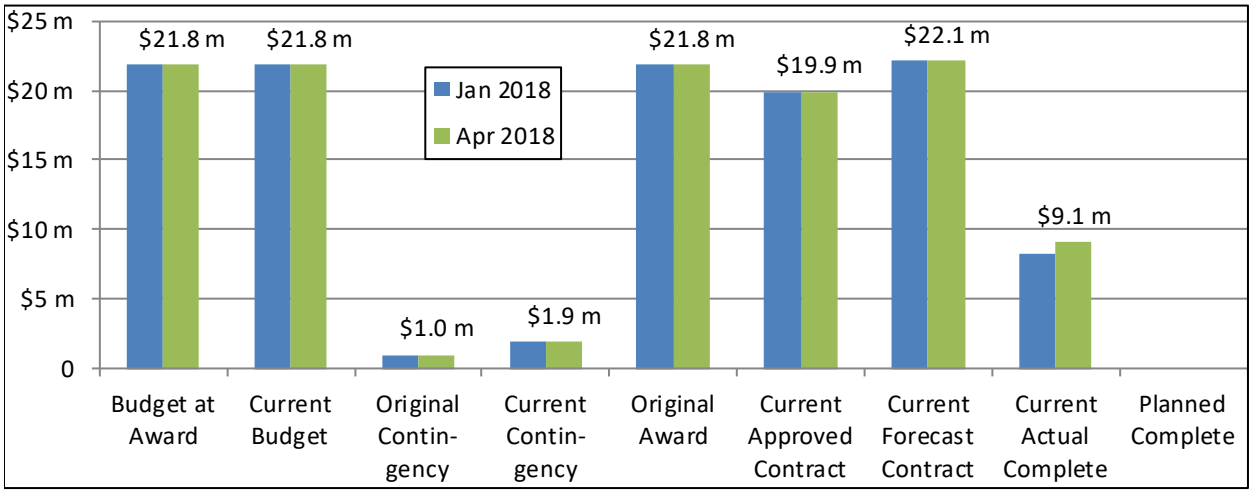


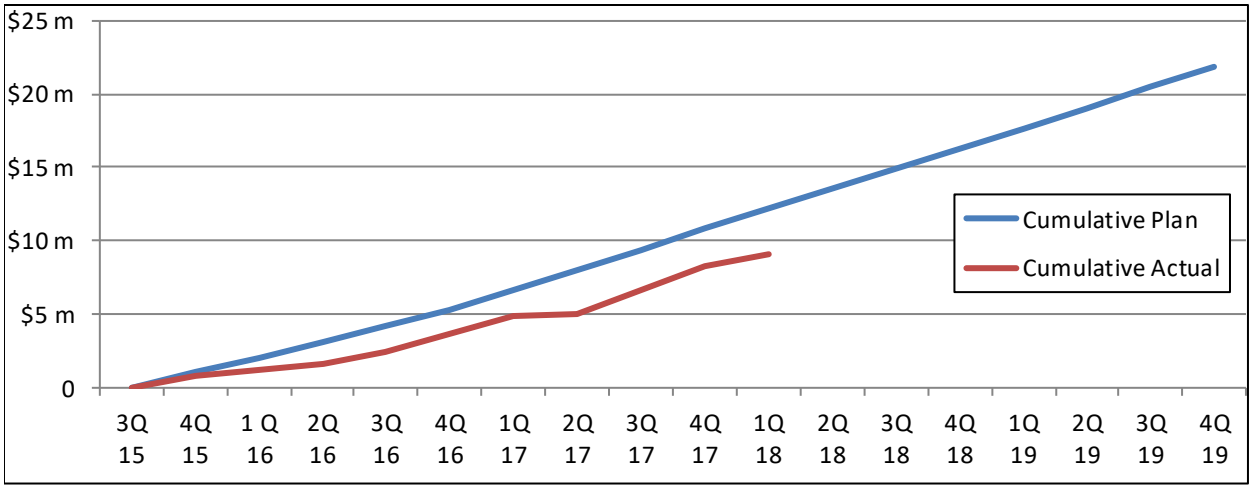
APPENDIX J – COST PERFORMANCE

VS086 Systems Package 3 – Signal Equipment Procurement Apr 2018

Budget at Award	Current Budget	Change from Original to Current	Contract at Award	Current Approved Contract	Change from Original to Current	Current Forecast	Change from Current Forecast to Budget at Award
		(2-1)			(5-4)		(7-1)
$21.8	$21.8	$0.0	$21.8	$19.9	($1.9)	$22.1	$0.3

Percent Complete		Actual Prog Last 12 Mths		Actual Prog Last 6 Mths		Average Required Progress to reach forecast SC
Planned	Actual	Total	Avg/Mth	Total	Avg/Mth	
NA	45.5%	21.0%	1.8%	12.4%	2.1%	3.03% per month



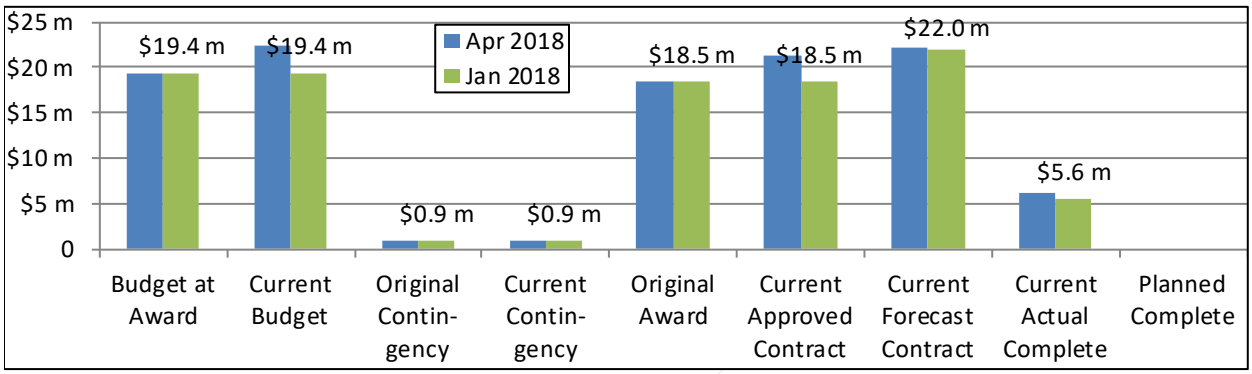


APPENDIX J – COST PERFORMANCE

VQ033 Midday Storage Yard CILs Apr 2018

Budget at Award	Current Budget	Change from Original to Current	Contract at Award	Current Approved Contract	Change from Original to Current	Current Forecast	Change from Current Forecast to Budget at Award
		(2-1)			(5-4)		(7-1)
$19.4	$22.3	$2.9	$18.5	$21.4	$2.9	$22.2	$2.8

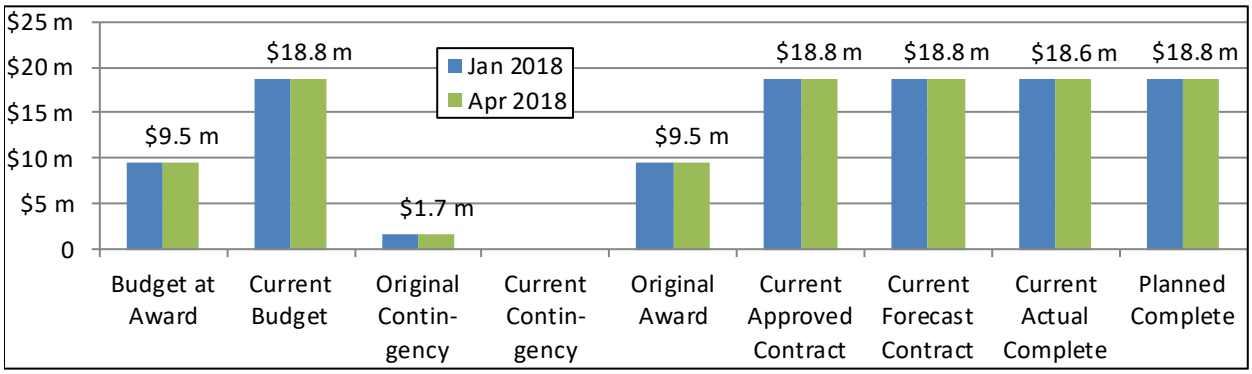
Percent Complete		Actual Prog Last 12 Mths		Actual Prog Last 6 Mths		Average Required Progress to reach forecast SC
Planned	Actual	Total	Avg/Mth	Total	Avg/Mth	
NA	28.8%	11.3%	0.9%	4.8%	0.8%	3.10% per month



FHA01 Harold Stage 1 – Amtrak F/A Apr 2018

Budget at Award	Current Budget	Change from Original to Current	Contract at Award	Current Approved Contract	Change from Original to Current	Current Forecast	Change from Current Forecast to Budget at Award
		(2-1)			(5-4)		(7-1)
$9.5	$18.8	$9.3	$9.5	$18.8	$9.3	$18.8	$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%	99.0%	0.2%	0.0%	0.1%	0.0%	0.06% per month

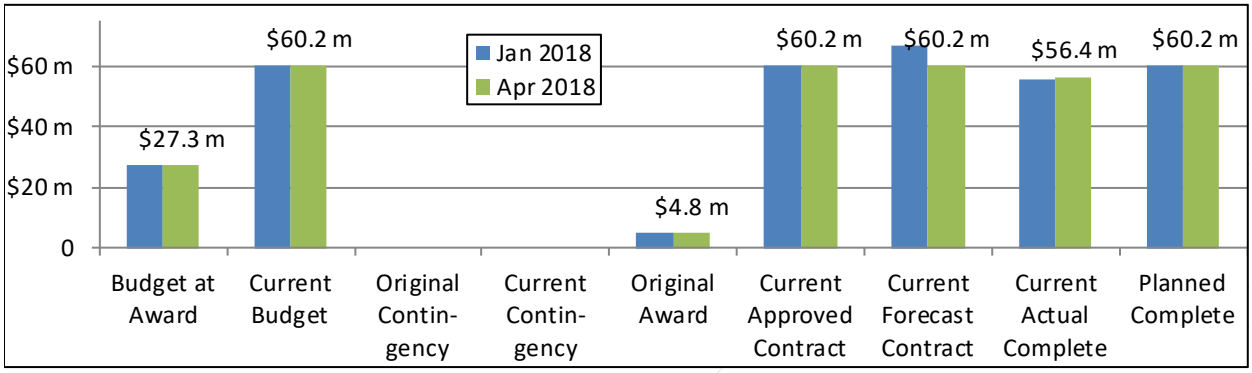


APPENDIX J – COST PERFORMANCE

FHA02 Harold Stage 2 – Amtrak F/A Apr 2018

Budget at Award	Current Budget	Change from Original to Current	Contract at Award	Current Approved Contract	Change from Original to Current	Current Forecast	Change from Current Forecast to Budget at Award
		(2-1)			(5-4)		(7-1)
$27.3	$60.2	$32.9	$4.8	$60.2	$55.4	$60.2	$32.9

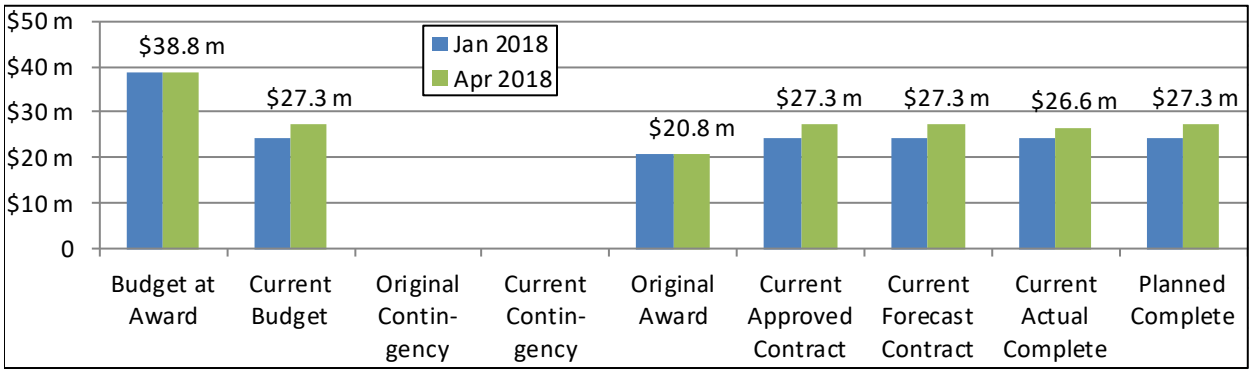
Percent Complete		Actual Prog Last 12 Mths		Actual Prog Last 6 Mths		Average Required Progress to reach forecast SC
Planned	Actual	Total	Avg/Mth	Total	Avg/Mth	
100.0%	93.8%	5.9%	0.5%	3.6%	0.6%	0.41% per month



FHL01 Harold Stage 1 – LIRR F/A Apr 2018

Budget at Award	Current Budget	Change from Original to Current	Contract at Award	Current Approved Contract	Change from Original to Current	Current Forecast	Change from Current Forecast to Budget at Award
		(2-1)			(5-4)		(7-1)
$28.8	$27.3	($1.5)	$20.8	$27.3	$6.5	$27.3	($1.5)

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%	97.3%	-1.4%	-0.1%	-2.7%	-0.5%	0.27% per month

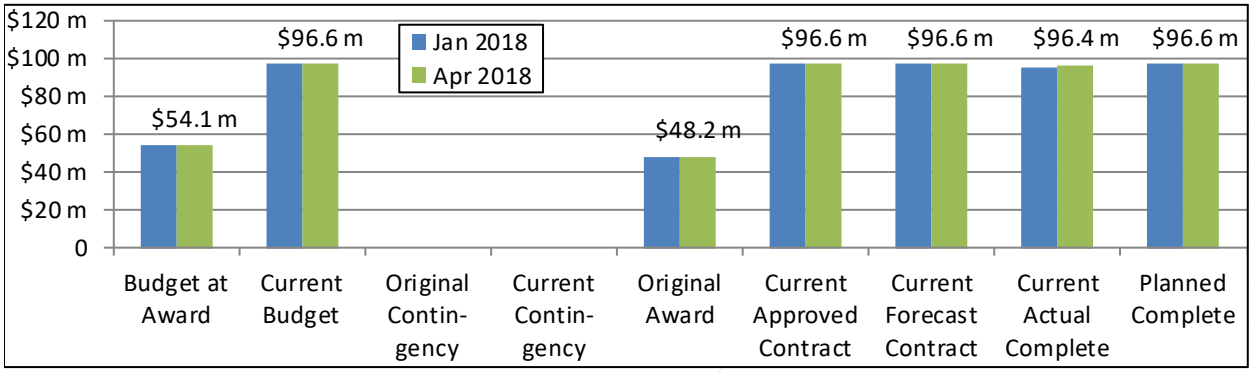


APPENDIX J – COST PERFORMANCE

FHL02 Harold Stage 2 – LIRR F/A Apr 2018

Budget at Award	Current Budget	Change from Original to Current	Contract at Award	Current Approved Contract	Change from Original to Current	Current Forecast	Change from Current Forecast to Budget at Award
		(2-1)			(5-4)		(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%	99.9%	1.2%	0.1%	5.4%	0.9%	0.00% per month



APPENDIX K – 3rd PARTY CONTRACT MILESTONE METRICS

As of IPS 105 May 1, 2018 Schedule

Mile-stone	Activity Description	IPS Baseline Date[1] June 2014	Appr Cont Baseline Date[2]	Current Contract Date[3]	Current ESA Forecasted Date[4]	Delta[5] IPS BL to Forecast	Notes
CM006: Manhattan Structures North							
NTP	Notice to Proceed	3/31/14A	N/A	N/A	3/31/14A	0	
SC	Substantial Completion	11/30/16	N/A	6/1/17	12/31/18	761	
FC	Final Completion	2/28/17	N/A	8/30/17	3/31/19	761	
CM007: GCT Caverns							
NTP	Notice to Proceed	4/19/16	4/11/16A	N/A	4/11/16A	-8	Approved baseline in Feb. 1, 2017 IPS.
4	Trackwork & 3rd Rail Work Complete (excludes STW @ GCT4, GCT6 & Plaza West)	N/A	10/3/19	8/7/19	2/5/20	125	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	12/4/18	160	
5A	Caverns Ready for Integrated Systems Testing	4/11/19	8/7/19	8/7/19	7/11/19	-27	
6	All Caverns and Tunnel Work Complete	N/A	12/16/19	12/16/19	2/6/20	52	
6A	Substantial Completion	7/19/19	1/28/20	1/28/20	6/26/20	150	
6B	Punchlist Completion	N/A	4/27/20	4/27/20	9/28/20	154	
7	Integrated System Testing Completion	N/A	6/1/20	6/1/20	1/19/21	232	
CM014B: GCT Concourse and Facilities Fit Out							
NTP	Notice to Proceed	11/2/14	2/2/15A	N/A	2/2/15A	92	Approved baseline in Nov. 1, 2016 IPS.
1	TMC/ CC-C5/ CR-C2 Comm Room & F/O Backbone Route from TMC-CRC2	12/3/15	6/1/16A	N/A	6/1/16A	181	
2	50th St. Comm Room CR102, Tunnel Fan Control Room, Electrical RM #126 & ICC (Room Ready)	3/3/16	4/17/17	N/A	4/17/17A	410	
3	Comm Room CR-C1/ Comm Closet CC-C1/ C2 & C6 & F/O Backbone from CR-C2 to CR-C1	5/3/16	11/30/16	N/A	12/3/16A	214	
4A	Comm Closets CC-C1, CC-C2 & CC-C5	5/3/16	11/30/16	4/15/18	6/15/18	773	
4B	Comm Closets CC-C3, CC-C7 & Room B3265	12/2/16	3/5/17	5/20/18	6/15/18	560	
5	44th St Vent Facility Complete	3/3/17	7/2/17	6/4/17	7/2/18	486	
5A	Complete all work at 48th St Entrance	2/15/18	3/20/17	10/2/17	5/14/18A	88	Actualized
6	Comm Closets CC-C4 and CC-C8	5/12/17	5/20/18	5/20/18	6/15/18	399	
7	Completion of 50th Street 2nd Phase	10/26/17	1/27/18	1/27/18	3/1/19	491	
8	Substantial Completion	7/24/19	1/21/19	8/18/18	5/18/20	299	
8A	Punchlist Complete	5/17/18	5/21/19	12/16/18	9/15/20	852	
9	Integrated Systems Testing Completed	7/24/19	3/23/20	10/25/19	1/19/21	545	
9A	Ready for Integrated Systems Testing	5/17/18	10/2/18	5/20/18	11/13/19	545	

Mile-stone	Activity Description	IPS Baseline Date[1] June 2014	Appr Cont Baseline Date[2]	Current Contract Date[3]	Current ESA Forecasted Date[4]	Delta[5] IPS BL to Forecast	Notes
10	Shaft 4	N/A	7/1/18	7/1/18	9/1/19	427	Delta is measured against the Approved Baseline Date for this milestone only.
11	Final Completion	10/22/19	3/23/20	8/8/20	1/19/21	455	
CQ032: Plaza Substation and Queens Structures							
NTP	Notice to Proceed	8/10/11A	8/10/11A	N/A	8/10/11A	-	
6	Substantial Completion	10/8/15	N/A	9/6/16	12/31/18	1180	6 month delay
7	Final Completion	1/7/16	N/A	12/5/16	3/31/19	1179	~8 month delay
CQ033: Mid-Day Storage Yard							
NTP	Notice to Proceed	7/4/15	N/A	N/A	4/11/17A	-	Approved baseline in Nov. 1, 2017 IPS.
1	Precondition Site Survey	N/A	6/10/17	6/10/17	9/29/17A	-111	
2	Temporary Construction Fence Along Arch St. Access Route	N/A	6/10/17	6/10/17	10/9/17A	-121	
3	RWIC Trailer	N/A	7/10/17	7/10/17	6/19/17A	21	
4	Submission of Integrated Test Plan	N/A	4/11/18	4/11/18	4/11/18A	0	Actualized
4A	Ready for Integrated Testing MDSY	N/A	3/11/20	3/11/20	5/22/20	72	~2 month savings
5	YS Track Completion	N/A	4/11/18	4/11/18	7/26/19	471	~5 month delay
6	Substantial Completion	10/25/18	8/10/20	8/10/20	12/9/20	776	Delta measured against Current Cont Date for all milestones except 6 and FC.
8	Completion of Plaza Work	N/A	7/12/18	7/12/18	7/20/18	8	
9	Complete Option 1 - Demo Amtrak Buildings	N/A	5/27/20	5/27/20	8/31/18	-635	
FC	Final Completion	1/23/19	N/A	N/A	3/11/21	778	Current Forecast Date is end of "Demobilization" activity in IPS. No FC activity was found in the IPS.
CH061A: Harold Structures Part 3 - Track A Cut and Cover Structure							
NTP	NTP CH061A - A Approach	7/5/16	1/27/17A	N/A	1/27/17A	206	
1	PW2 Catenary Structures	N/A	9/7/17	9/7/17	2/12/18A	158	Actual date reported later than data date.
2	Montauk Cutoff Catenary Structures	N/A	9/11/17	9/11/17	12/1/17A	81	The Aug. 1, 2017 IPS Report notes that the baseline was approved in July 2017. It is assumed that the Aug. 1, 2017 IPS has this data and was used for the Approved Baseline Dates
3	Substantial Completion	9/20/17	5/28/18	5/28/18	6/12/18	15	
4	Final Completion	N/A	8/27/18	8/27/18	9/12/18	15	
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	5/1/18	928	3 month delay

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
3	Completion of Multiple Rooms (CIR, Sig. Reactor, Interlocking 1D, TPSS C06 and C07)*	10/13/16	12/31/16	5/22/17	5/1/18	565	
4A	C04 TPSS Room (Level P1) Ready for CS084 Work at 2nd Ave. Vent Facility	5/5/16	2/1/17	2/1/17	5/1/18	726	
5	GCT 6 CIR Ready for CS086 (orig CS086) Installation	10/17/16	4/14/17	4/30/17	5/1/18	561	
6	B10 Permanent Power Energized (Precedes Energization of B05, B06,B08, B09, B11 & B13)	6/24/16	4/28/17	4/22/17	5/1/18	676	
7	GCT 5 CIR Ready for CS086 (orig CS086) Installation	2/17/17	5/27/17	4/30/17	5/1/18	438	
8	GCT 4 CIR Ready for CS086 (orig CS086) Installation	5/2/17	6/27/17	4/30/17	5/1/18	364	
9	C01 & C02 TPSS Room Ready for CS084 at Tail Tracks	8/7/17	6/8/17	6/8/17	5/1/18	267	
10	GCT 3 CIR Ready for CS086 (orig CS086) Installation	11/6/17	9/6/17	9/6/17	5/1/18	176	
11	C03 TPSS Room Ready for CS084 at 55th St. Vent Facility	2/20/18	2/27/18	3/25/18	12/5/18	288	4.5 month delay
12A	Integrated System Testing Start (TOC & All Permanent Power Complete)	5/2/18	12/8/18	9/1/18	5/16/19	379	
12B-1	Complete IST of All Systems Equip Installed by CM007	10/22/19	7/1/20	3/23/20	4/21/21	547	3 month delay
12B-2	Complete IST of All Systems Equip Installed by CM014A	7/24/19	7/1/20	3/23/20	4/21/21	637	
12B-3	Complete IST of All Systems Equip Installed by CM014B	7/24/19	7/1/20	3/23/20	4/21/21	637	
13	Substantial Completion Including Completion of IST	12/9/19	7/1/20	7/1/20	5/10/21	518	4 month delay
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	2/18/20	998	3 month delay
2	Energize Traction Power Substation C04 and C05	6/20/18	12/14/18	10/3/18	3/13/20	632	1.5 month delay
3	Energize Traction Power Substation C06 and C07	10/2/18	3/2/19	3/2/19	6/10/20	617	3 month delay
4	Energize Traction Power Substation C01 and C02	10/30/18	1/30/19	2/5/19	4/13/20	531	3.5 month delay
5	Energize Traction Power Substation C03	12/28/18	5/16/19	5/16/19	3/26/20	454	3.5 month delay
6	Complete Local testing of all substation	1/11/19	7/30/19	7/30/19	9/7/20	605	2 month delay
7	Substantial completion & Final Completion	10/21/19	11/25/19	12/2/19	12/8/20	414	2.25 month delay
VQ033: Mid-Day Storage Yard CIL Procurement							
NTP	Notice To Proceed (NTP) Actual 1/15/16 by JPS	N/A	1/15/16A	N/A	1/15/16A	-	Contract not in the June 2014 Re-baseline IPS.
1	Mid-3 CIL (NTP+549d)*	N/A	7/21/17	7/20/17	5/1/19	649	Approved baseline in May 1, 2016 IPS.
2	Mid-6 CIL (NTP+855d)*	N/A	5/23/18	5/23/18	8/9/19	443	Delta measured against Approved Contract Baseline Date for all milestones.
3	Mid-8 CIL (NTP+1158d)*	N/A	11/22/18	11/22/18	9/5/19	287	

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
SC	Substantial Completion (NTP+1216d)	N/A	5/19/19	5/19/19	3/5/20	291	
VS086: Systems Package 3 - Tunnel Signal Equipment							
NTP	VS086 NTP	7/7/14	9/30/14A	N/A	9/30/14A	85	Approved baseline in Dec. 1, 2016 IPS.
1	Furnish Catalog Cuts for Tunnel Sig. Equip and CIR Layouts (NTP+300CD)	5/6/15	6/5/17	5/8/17	1/17/18A	987	
2	Complete and Provide Final Design for Entire Tunnel Signal System (NTP+420CD)	9/5/15	9/19/17	7/7/17	5/30/18	998	2 week delay
3	Furnish Tunnel Signal Equip. & Hardware for Plaza CIR (NTP+582CD)	2/18/16	6/29/17	4/28/17	8/3/18	897	1.5 month delay
4	Furnish Tunnel Signal Equip. & Hardware for GCT5 & GCT6 CIRs (NTP+650CD)	4/26/16	1/9/18	11/13/17	12/5/18	953	1.5 month delay
5	Furnish Tunnel Signal Equip. & Hardware for GCT3 & GCT4 CIRs (NTP+730CD)	7/17/16	6/5/18	3/16/18	4/8/19	995	1.5 month delay
SC	Substantial Completion (NTP+1840CD)	12/9/19	10/14/19	10/14/19	10/14/19	-56	

Notes

General - Contract Milestones shown are current, and may not have been in the June 2014 Rebaseline IPS; An "A" after a date indicates an actualized date. Any delay or savings noted is over the previous quarter.

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. (data date May 1, 2018).

4 Current ESA Forecast Date - Date shown in current IPS Monthly Update (data date May 1, 2018).

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
	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	Submittal / Fabricate inc. SCADA Controls & Screens.
CO1 Tail Tracks 38th St	2/16/16	8/16/18	-70	1/18/17	5/3/18	-87	9/13/16	10/25/18	4	2/23/17	2/20/19	-92	2/9/18	3/12/19	-91	
CO2 Tail Tracks 38th St	2/16/16	8/1/18	-41	5/24/16	5/7/18	-89	9/13/16	2/19/19	-92	2/20/17	3/8/19	-91	2/9/18	4/18/19	-111	Sub inc. EO DC Switches Ctrl Cab, Main PLC, Rect PLC
CO3 55th Street	2/23/16	7/13/18	32	6/1/16	6/5/18	-90	9/13/16	3/28/19	-80	3/13/17	4/26/19	-87	8/2/18	6/12/19	-114	
CO4 2nd Avenue	2/18/16	6/5/18	-90	11/21/16	8/7/17A	0	9/13/16	6/12/18	-90	10/5/16	1/22/18A	0	3/13/17	7/13/18	-107	Sub inc. Bus Duct 38kV Tie. Fab inc. DC Feed, Main PLC
CO5 Vernon	2/18/16	8/18/17A	0	5/26/16	6/7/17A	0	9/13/16	6/1/18	-100	10/5/16	8/28/17A	0	11/8/16	6/15/18	-121	Sub inc. EO DC Switches Ctrl Cab, all other equip appr
CO6 QP Main	2/18/16	7/11/18	-91	5/26/16	8/7/17A	137	9/30/16	5/1/18	108	11/21/16	11/29/18	-76	6/13/17	1/18/19	-106	Sub inc. Bus Duct 12KA Pos, 18KA Neg 1 and 2 Fab inc. DC Switchgear
CO7 QP Yard	2/18/16	7/23/18	-91	5/26/16	5/7/18	-89	9/13/16	11/6/18	-76	1/12/17	12/6/18	-76	8/17/17	12/27/18	-77	Sub inc. Bus Duct (Various). Fab inc. DC Switchgear Del excludes SCADA Controls & Screens
CO8 43rd St Pre-fab Bldg	1/21/16	7/11/18	-77	5/12/16	8/16/17A	20	9/12/16	11/5/18	-62	10/25/16	2/21/19	-56	12/6/16	3/28/19	-62	Fab inc. pre-fab enclosure Del inc. pre-fab enclosure.

*Notes

1 - Current Update = Contractor's Monthly CPM Schedule Update 29 with Data Date 5/1/18.

2 - Delta = Change from the contractor previous quarter CPM Schedule update 26, data date 2/1/18, 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	12/13/19	-88	12/27/18	2/5/20	-92	1/21/19	2/26/20	-92	2/4/19	3/11/20	-91	12/2/19	11/30/20	-62	158 Ea.
CO2 Tail Tracks 38th St	11/14/18	1/24/20	-106	12/24/18	2/24/20	-94	1/22/19	3/30/20	-105	2/5/19	4/13/20	-104	12/2/19	11/30/20	-62	158 Ea.
CO3 55th Street	3/1/19	1/10/20	-106	N/A	N/A	N/A	5/6/19	3/16/20	-105	5/16/19	3/26/20	-105	12/2/19	11/30/20	-62	50 Ea.
CO4 2nd Avenue	4/27/18	8/29/19	-90	7/6/18	11/7/19	-90	8/7/18	12/9/19	-90	8/21/18	12/23/19	-90	12/2/19	11/30/20	-62	65 Ea.
CO5 Vernon	6/8/18	11/18/19	-47	N/A	N/A	N/A	9/19/18	2/28/20	-45	10/3/18	3/13/20	-45	12/2/19	11/30/20	-62	60 Ea.
CO6 QP Main	9/10/18	2/5/20	-92	N/A	N/A	N/A	1/3/19	5/27/20	-89	1/17/19	6/10/20	-89	12/2/19	11/30/20	-62	Install inc. Ground Cable - 1,207 LF.
CO7 QP Yard	10/22/18	1/27/20	-88	N/A	N/A	N/A	2/15/19	5/19/20	-83	3/1/19	6/2/20	-83	12/2/19	11/30/20	-62	Install inc. Ground Cable - 773 LF.
CO8 43rd St Pre-fab Bldg	9/12/17	1/31/20	-44	12/8/17	12/20/19	-63	2/1/18	2/4/20	-64	2/15/18	2/18/19	-64	12/2/19	11/30/20	-62	Install inc. Security Fence & Gates.

*Notes

1 - Current Update = Contractor's Monthly CPM Schedule Update 29 with Data Date 5/1/18.

2 - Delta = Change from the contractor previous quarter CPM Schedule update 26, data date 2/1/18, 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 – to be updated for Final

Contract	Criteria	3Q 2017	4Q 2017	1Q2018	2Q2018
CM007	< 90 days Open	37	17	11	30
	> 90 days Open	19	41	41	31
	Total Open	37	58	52	61
	Total Closed	12	34	46	62
	Total NCRs	49	92	98	123
CM014B	< 90 days Open	8	7	7	12
	> 90 days Open	6	--	4	15
	Total Open	8	7	11	12
	Total Closed	24	32	34	40
	Total NCRs	32	39	45	52
CQ032	< 90 days Open	13	6	6	6
	> 90 days Open	67	10	8	1
	Total Open	13	16	14	12
	Total Closed	102	106	106	114
	Total NCRs	115	122	122	126
CH053	< 90 days Open	--	--	0	0
	> 90 days Open	82	1	0	0
	Total Open	--	--	0	0
	Total Closed	94	91	91	91
	Total NCRs	94	91	91	91
CH057	< 90 days Open	3	--	0	0
	> 90 days Open	14	3	0	0
	Total Open	3	3	0	0
	Total Closed	23	23	26	26
	Total NCRs	26	26	26	26
CH057A	< 90 days Open	3	--	0	0
	> 90 days Open	2	2	2	2
	Total Open	3	2	2	2
	Total Closed	16	16	17	17
	Total NCRs	19	19	19	19
CS179	< 90 days Open	16	8	5	4
	> 90 days Open	12	8	12	14
	Total Open	16	16	17	18
	Total Closed	28	37	37	39
	Total NCRs	44	53	54	57
CS084	< 90 days Open	--	1	1	1
	> 90 days Open	--	--	0	1
	Total Open	--	1	1	2
	Total Closed	--	4	4	4
	Total NCRs	--	5	5	6
CQ033	<90 days Open	--	--	0	0
	>90 days Open	--	--	2	0
	Total Open	--	--	2	0
	Total Closed	--	--	0	11
	Total NCRs	--	--	2	11

APPENDIX N – CONSTRUCTION CONTRACT CHANGE MANAGEMENT

MTACC's ESA Project Management Plan states that a key CM responsibility is for the initiation, processing, negotiation, and resolution of construction change orders, subject to the MTACC change control process. MTACC procedures AD.11, Construction Contract Modification Approval, and PCA-036, Construction Contract Modifications for ESA (updated on December 18, 2017) provide guidance for this process.

The ESA project executed a total of 12 contract modifications having magnitudes in excess of $100,000 during the period from February 2018 through April 2018. These modifications had a total net cost of $6.4 million. The PMOC reviewed the staff summary sheets of select modifications to check compliance with the guidelines as shown below.

CM005 had 1 modification executed during the review period with a value of $1.269 million. The PMOC reviewed mod. 40, Final Contract Closeout, dated February 26, 2018. The PMOC observed that the CM followed the project procedures.

CM007 had 1 modification executed during the review period with a value of $183 thousand. The PMOC reviewed mod. 31, Upper Tail Track Arch Extension, dated March 19, 2018. The PMOC observed that the CM followed the project procedures.

CM014B had 2 modifications executed during the review period that resulted in an aggregate decrease of $611 thousand. The PMOC reviewed mod. 98, Delete Conduits for Two-Way Radio System, dated April 16, 2018. The PMOC observed that the CM followed the project procedures.

CQ033 had 1 modification executed during the review period with a value of $743 thousand. The PMOC reviewed mod. 7, Detention Pipe Profile, dated February 16, 2018. The PMOC observed that the CM followed the project procedures.

CS179 had 4 modifications executed during the review period that resulted in an aggregate increase of $1.345 million. The PMOC reviewed mod. 46, 39th Street Conduit Issue Corrections, dated March 13, 2018. The PMOC observed that the CM followed the project procedures.

VQ033 had 1 modification executed during the review period with a value of $2.9 million. The PMOC reviewed mod. 7, CIL Redundant Processors and West End Changes, dated March 13, 2018. The PMOC observed that the CM followed the project procedures.

GEC had 2 modifications executed during the review period that resulted in an aggregate increase of $522 thousand. The PMOC reviewed mod. 154, CH057D force account support, dated April 21, 2018. The PMOC observed that the CM followed the project procedures.

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

CM007 - Direct Fixation Qualification Testing*

Direct Fixation Fasteners (DFF)

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

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	Ongoing	Done

*As reported at ESA Monthly CM007 Progress Meeting June 14, 2018

CM007 - Direct Fixation Trackwork Construction*

Direct Fixation Fasteners (DFF)

Direct Fixation Fastener (DFF) Assemblies	Standard DFF	High Attenuation DFF (HADFF)	Special Trackwork DFF (STDFF)
DFF Installation Status	Progressing using permanent rail plates	Progressing using permanent rail plates	Not started
Actual Progress	See Note #1 below	40.8%	
Planned Progress	See Note #1 below	50.1%	

*Progress Data from June 10, 2018 ESA Progress Summary: Track, Third Rail & Special Trackwork.

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	27.0%		
Planned Progress	56.6%		

*Progress Data from June 10, 2018 ESA Progress Summary: Track, Third Rail & Special Trackwork.

Special Trackwork (turnouts)

S T Assemblies	ST RTB	ST DFF	
Installation Status	Progressing	Not started	
Actual Progress	4.6%		
Planned Progress	24.0%		

*Progress Data from June 10, 2018 ESA Progress Summary: Track, Third Rail & Special Trackwork.

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

C01/C02 (Tail Track)

1. Sloping floor to drain – re-design and CPR issued – awaiting proposal and estimates
2. Contractor's layout drawings still not approved – undergoing additional changes
3. Coordination: interferences from CS179 (fire alarms, light fixtures, conduit blocking ceiling penetrations, etc.)
4. Equipment delivery issue still unresolved
5. SCADA submittal requires approval by MTA

C03 (55th Street)

1. Not ready for handover from CS179 – delayed to at least 6/25/18
2. SCADA documentation must be re-submitted
3. Water condition (drain) needs resolution by CS179 (CS179 contract modification needed)
4.

C04 (2nd Avenue)

1. Floor recessed by CS179 for dielectric coating – needs inspection and acceptance
2. Coordination: interferences from CS179 (fan, fire alarm control panel, light fixtures, etc.)
3. Water condition behind plenum (possible NYCT issue)
4. Galvanized pull boxes installed by CS179 in lieu of fiberglass – need replacement
5. Structural calculations for CS179 hatch must be supplied to contractor

C05 (Vernon)

1. CM007 damaged ducts to monument pads – missing concrete encasement – CM007 to repairs
2. Removal of PVC duct in concrete conduits – MTACC needs to issue CPR
3. Switch room/Control room relocation required – need CPR
4. Still appears to be a water infiltration issue
5. CPRs needed for various other coordination issues
6. Grounding cable issue discovered – MTACC will issue a SWO until survey identifies extent of issue

C06/C07 (Plaza)

1. Missing penetrations in floor and on bench level for bus duct (CQ032 was to provide) – GEC to provide drawings
2. Floor needs to be recessed for installation of epoxy di-electric (CS032 requirement)

3. Doorway needs to be enlarged for delivery/installation of reactors (C/O to CS179 needed)
4. Coordination: interferences from CS179 (light fixtures and ductwork)
5. Steel beam that was to be used for lifting equipment during installation is of insufficient size

C08 (43rd Street)

1. Conduit duct banks between C08 vault and tracks (shown on contract drawings as existing) are missing and no schedule established by MTA to provide them – no conduit and manholes means no traction power to the tracks.
2. Fire alarm changes will be given to CS179 for installation – needs CS170 contract modification

APPENDIX Q – Operational Readiness
Rail Activation Plan & Task Working Groups (TWG) – 2Q2018 Status

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

TWG No.1 – Operational Readiness: Although forecasted for completion by the end of 2017, the Rail Activation Plan (RAP) being developed by TWG No. 1 remains as a work in progress with no finalization date available at this time (Note: the PMOC believes that the very nature of the RAP will cause it to be more of a "living document", necessitating modifications as conditions and scenarios occurring on the ESA Project are adjusted). During 2Q018, this TWG continued to undergo re-structuring so as to more effectively coordinate activities of all the TWGs and provide an increased level of efficiency to the overall development of the RAP. Team leadership was amplified and resources were shifted or relocated to make internal communications more timely and efficient. One particularly important section of the RAP is the Comprehensive System Test Plan (CSTP) that must be followed to progress to ESA revenue service. MTACC indicated that the CSTP was updated in August 2017 and that it would provide a copy to the PMOC; however, that CSTP has yet to be finalized, mainly because the ESA Integrated System Test (IST) Plan being developed under Contract CS179 (required for the CSTP) is still under development. MTACC advised that the various sections/volumes of the RAP are under review for required updates and that it would provide a schedule that shows the projected dates for completion of updates. Meetings are being held with LIRR Department leaders to further identify needed requirements for implementation of ESA service. Individual task requirements for all the TWGs are being reviewed and incorporated into a schedule that is reviewed weekly and incorporated into the overall ESA IPS on a monthly basis,

TWG No.2 – Train Service and Operations: The PMOC continued to raise a concern with MTACC regarding the status of the ESA Concept of Operations (ConOps); a document that, per MTACC, is the basis for all work being developed and progressed on the ESA Project. The ConOps has not been formally updated since March 2010, despite several significant changes made since then to the ESA project. While MTACC previously agreed that the document needs to be updated to reflect current operating philosophies, no progress has been made on this to date. A determination of the level-of-service the LIRR will be able to provide by the ESA RSD, and any potential service ramp up, is a high priority item under discussion. The implementation of ESA service over time (ramp up) rather than on one specific day has an impact on other critical ESA tasks (e.g., other Operations Plans, staffing and training, and the acquisition of new personnel). The LIRR is establishing a special team to focus on the evaluation and development, as needed, of a revised ESA service plan. This TWG continues to develop the ESA Service Disruption Plan, including MNR and NYCT where appropriate. MTACC reports that the incorporation of civil speed enforcement requirements in the Harold interlocking is complete.

TWG No. 3 – Infrastructure, Systems, and Engineering: One significant responsibility of this TWG is the integration of Federally-mandated Positive Train Control (PTC) for the LIRR. Per the current Federal mandate, PTC needs to be operational by all railroads by December 2018, which poses a significant challenge to the MTA. The MTA has submitted waiver requests to the FRA, specifically for the Harold Interlocking, asking to be relieved of this mandate for that area based on the Harold Interlocking being a construction zone. The FRA has requested that MTA provide

some additional information related to this request. The GEC is moving forward with development of preliminary PTC design requirements for incorporation into the various ESA contract documents impacted by the incorporation of PTC. The LIRR's support of GEC and contractor submittals falls under the responsibilities of this TWG. While there has been some improvement noted on LIRR reviews of submittals on some contracts, additional focus on the timely review of, and responses to, submittals on other contracts is needed. This TWG is also involved in the development and implementation of the 250 Hz Tunnel Avoidance Modification. The consultant engaged to design this 250Hz system presented a Preliminary Design Review in February 2018; and, the goal is to complete the design by the end of July 2018.

TWG No. 4 – Asset Management: This TWG, which is responsible for developing and implementing procedures for Asset Management, continues to very effectively progress its work; and, interim maintenance on 249 assets from seven completed contracts is underway.

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

TWG No.6 – Staffing and Training: This TWG is responsible for developing Staffing and Training Plans to ensure that the proper resources, skilled personnel, and equipment are available to begin ESA revenue service. The PMOC previously asked to see a schedule for staffing and training that was linked to the overall ESA IPS. At the April 1Q2018 briefing, MTACC reported that a detailed plan and schedule for the staffing and training effort was developed and would be incorporated into the overall ESA IPS. However, the Staffing and Training Plans are now being revalidated, for several reasons by senior LIRR management. Currently, there is no forecasted date for the finalization of either Plan. The lack of the availability of a Training Plan is being cited by the CS179 contractor as an impediment to the effective progression of the CS179 contract. The LIRR reports that budgeting for the hiring of personnel for some of the needed positions is accounted for in the 2018 LIRR Operating budget and some personnel are being hired as part of the effort to more effectively coordinate activities needed for the implementation of ESA service.

TWG No.7 – Safety and Security: MTACC continues to make significant progress in addressing the implementation of the certification processes for safety and security elements. This TWG also continues to meet with all ESA stakeholders to develop an LIRR ESA Emergency Action Plan. Workshops to discuss identified Safety and Security elements are being held on a periodic basis to ensure that all pertinent elements are identified and captured on Certification documentation.

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

TWG No. 9 – Agreements: This TWG continues to conduct meetings with LIRR, MNR, and NYCT to discuss strategies related to the 63rd Street Tunnel shared facilities. The TWG is also spearheading the effort to identify and discuss MTA's internal labor issues that may arise during the implementation and operations of ESA service.

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

TWG No. 11 – Fleet Readiness: This TWG focuses on the procurement of fleet-oriented equipment (railcars, locomotives, simulators, etc.) necessary for the final implementation and operation of the ESA Service. The procurement efforts for the railcars remains on-hold as of the end of 2Q2018. An update on the railcar procurement is noted in Section 2.5 – Vehicles. During 2Q2018, another procurement effort for the Protect Locomotives remained on-hold pending evaluation of design specifications related to the tunnel ventilation system and heat exposure ratings. However, MTACC now reports that the proposed locomotive design is deemed safe for use in the tunnels. LIRR can now move forward with the procurement of these locomotives.

APPENDIX R - ESA CORE ACCOUNTABILITY ITEMS
Table R – ESA Core Accountability Items

Project Status:		Original at FFGA	Amended FFGA	Current *	ELPEP **
Cost	Cost Estimate	$7.368 B	$10.922 B	$10.178 B	$8.119 B
Contingency	Unallocated /Risk Contingency	(b)(4)	[redacted]	[redacted]	[redacted]
	Total Contingency (Allocated plus Unallocated)	(b)(4)	[redacted]	[redacted]	[redacted]
Schedule	RSD	Dec 31, 2013	Dec 31, 2023	Dec. 2022	April 30, 2018
Total Project % Complete		Based on Invoiced Amount		77.7% actual vs. 82.1% (ESA Figure)	
Project Performance Rate since 2014 "Re-Plan"		Based on Earned Value		73.0% (PMOC calculation of construction spending at 1Q2018 planned vs. actual since re-baselining).	
Contracts	Total contracts awarded to date			$9.06 B	89.0% of total awards
	Total construction contracts awarded to date			$7.03 B	93.1% of construction awards

Major Issue	Status	Comments
Project Funding and Budget	The ESA PMT completed a comprehensive cost review for the ESA program and forecasts a need to increase the budget by approximately $956 million.	MTACC received approval for a capital budget amendment to fund the ESA program through December 2020. Those funds are not yet represented in the program budgets. MTACC needs to request an additional approximately $956 million in the 2020–2024 Capital Plan.
Project Cost	In April 2018, MTACC identified the need for additional funding of approximately $956 million, including: ▪ Third Party 328.2m ▪ Force Account 130.5m ▪ Soft Costs 303.1m ▪ OCIP 149.8m [redacted] (b)(4) [redacted] If funding constraints are realized, schedule delays may result in additional escalation costs.	If the 2020-2024 Capital Plan amendment is not approved for the required ESA funds, there may be future significant impacts to the completion of current contracts, award of remaining contracts, and/or completion of railroad force account work.
Project Schedule	This schedules is predicated on acceptance of the Incremental IST approach by the contractors and their agreement on acceptable schedule dates. Acceptable work progress along this schedule path, now the ESA Program Critical Path, relies heavily on the effectiveness of MTACC/ESA coordination efforts across 7 contracts.	(b)(4) [redacted] The primary critical path is through Manhattan/Systems work, of which approximately 6 months are needed for critical path IST work. The schedule for this work is at a preliminary stage and needs the agreement of the LIRR and the various contractors involved. There may be additional future delays due to the potential funding constraint discussed above.
Manh./Systems Schedule Path	Concerns continue about the ESA critical path through Manhattan/Systems work, which has no float to the Target RSD. This schedule is predicated on acceptance of the Incremental IST approach by the contractors and their agreement on acceptable schedule dates.	Acceptable work progress along this schedule path, now the ESA Program Critical Path, relies heavily on the effectiveness of MTACC/ESA coordination efforts across 7 contracts.

* 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.