

PMOC COMPREHENSIVE MONTHLY REPORT

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

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

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Third Party Disclaimer

This report and all subsidiary reports are prepared solely for the Federal Transit Administration (FTA). This report should not be relied upon by any party, except FTA or the project sponsor, in accordance with the purposes as described below

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

EXECUTIVE SUMMARY

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

NOTE: In July 2018, the MTACC revised their methodology for calculating progress at the ESA program level – total program, engineering/design/CPS, procurement, and construction – to more accurately indicate progress as a percentage of the full forecasted April 2018 EAC of \$11,133 million (through the 2022 Revenue Service Date), rather than the currently funded budget of \$10,335 million (through December 2020). This change caused a decrease in the calculated program level percentages because the April EAC for each program area is larger than its current budget; although the dollar value of progress increased, the progress percentage decreased because the EAC is greater than the current budget. MTACC will continue using the April 2018 EAC of \$11,133 million as the basis of these calculations in the future. The PMOC concurs that the change better reflects program level progress, and that this will be consistent with progress calculations made when budgets include the additional funding to be made available in the 2020-2024 Capital Plan.

The chronology leading to the MTACC change in the progress calculation methodology includes:

- \$10,177 million budget was the basis of progress reporting from June 2014 through April 2018.
- In April 2018, MTA approved Budget Amendment 3 to increase budget to \$10,335 million, sufficient for all scheduled work through December 2020.
- \$10,335 million budget was the basis of progress reporting in May 2018 and June 2018.
- In July 2018, MTACC began using the full forecasted April 2018 EAC of \$11,133 million as the basis of progress reporting in recognition that EAC is anticipated to become the approved budget by January 2021 when the project is fully funded in the 2020-2024 Capital Plan.

Refer to Section 5.0, Project Cost, for more information about this change.

Overall Program Status: The Overall Program is 72.9% actual versus 72.7% as-planned. These percentages are lower than those shown in the June 2018 report (77.7%/-77.6%) because MTACC changed the basis of calculating progress. Refer to the above note.

Construction Status: The Construction Status is 76.0% actual versus 75.7% as-planned. These percentages are lower than those shown in the June 2018 report (77.7%/-77.4%) because MTACC changed the basis of calculating progress. Refer to the above note.

Contracts Awarded/Completed: Contract CS086 awarded on September 21, 2018.

Construction Issues: CM014B, CS084, VS086, CS179 (all continuing).

Program Funding: In April 2018 the MTA approved Budget Amendment 3 to increase the ESA program funding to \$10,335 million, which is sufficient for MTACC forecasts through December 2020. Refer to the above note.

Program Cost and Budget: The ESA program Current Baseline Budget was increased to \$10,335 million. Refer to the above note.

As of July 2018 report, the current actual total remaining ESA program contingencies decreased to \$805.3 million (\$607.2 million unallocated; and \$198.1 million allocated).

Integrated Project Schedule: The February 2022 target RSD forecast is unchanged. The ESA program critical path is controlled by Manhattan/Systems work.

Risk Management: 11 major risks; including new risk for CS084 Equipment Issues.

Harold Interlocking: LIRR and the CH057D contractor successfully completed all main line track and turnout reconfigurations in the Northeast Quadrant (NEQ) of Harold Interlocking during September 2018.

Key Stakeholder: LIRR – Late completion of Positive Train Control design, late final

Issues: 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: 0.00 – Lost Time and 1.03 – Recordable Injuries during August 2018; both decreases from July 2018.

ELPEP: MTACC reported Schedule Contingency is only 20 CDs above ELPEP

Compliance: minimum.

Project Management Plan: MTACC to update PMP and Sub-plans to reflect major management, organization, 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).

Organization: Executive VP/Sr. Program Executive – ESA retired Sept. 28, 2018.

All Project Sponsor cost and schedule data included in this report is based on the MTACC East Side Access Monthly Progress Report, July 2018 referenced in this report as the ESA July 2018 MPR, which has a cost and schedule data date of August 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.

Monitoring Report

QUARTERLY SUMMARY

1. PROJECT DESCRIPTION

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

2. CHANGES DURING 3rd Quarter 2018

a. Engineering/Design Progress

In the ESA July 2018 MPR, the PMT reported the overall Engineering effort at 84.4% complete compared to planned completion of 84.3%. These percentages are lower than those shown in the June 2018 report (86.8%/100%) because MTACC changed the basis of calculating progress (from this point forward) to be a percentage of the \$872 million April 2018 engineering updated EAC, rather than the approved program Current Baseline Budget as was used until this point. Refer to Section 5.0, Project Cost, for more information about this change.

b. New Contract Procurements

Contract CS086 Tunnel Systems Package 2 – Signal Installation: CS086 was awarded on September 21, 2018.

Contract CH058A Harold Structures Part 3A, B/C Approach Structure, was advertised on May 8, 2018. Six bids were opened on August 9, 2018. Award pending.

c. Construction Progress

In the ESA July 2018 MPR, MTACC reported that total construction progress reached 76.0% complete compared with planned progress of 75.7%. These percentages are lower than those shown in the June 2018 report (77.7%/77.4%) because MTACC changed the basis of calculating progress (from this point forward) to be a percentage of the \$8,014 million April 2018 construction updated EAC, rather than the approved program Current Baseline Budget as was used until this point. Refer to Section 5.0, Project Cost, for more information about this change.

d. Continuing and Unresolved Issues

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 three quarters of 2018, but not totally eliminated, by ESA frequent program re-planning and re-sequencing. This situation with regard to Amtrak access and protection for the third-party contractors improved measurably during 3Q2018. Improvement is still needed for the Amtrak direct labor work.

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 lines 1, 2, or 4 at any time between now and the Public RSD of December 2022. Although this risk would appear to be postponed, nonetheless the PMOC believes that it will remain until the forecast RSD based on Amtrak's historic reactions to service disruptions in any of its tunnels, when outside work such as ESA has been suspended, often for indefinite extended periods, until the cause(s) of the disruption(s) is/are fully resolved.

LIRR Positive Train Control (PTC): There are three potentially significant impacts of PTC implementation. 1) 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. This will impact design changes to active Contracts CS179, VS086, and Contract CS086 (awarded in September 2018). 2) There may be 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. In its letter of May 2, 2018, the FRA requested LIRR to resubmit its alternate PTC implementation plan and revised schedule. The PMOC notes that LIRR's response to FRA, due by August 2, 2018, has not been issued as of September 30, 2018. If the waiver is not granted, LIRR may prioritize PTC installation over ESA work in Harold Interlocking, which could create a serious setback to MTACC's efforts to advance the ESA work. 3) LIRR may divert some level of force account resources away from support for the ESA work to provide support for LIRR's system-wide PTC work during the remainder of 2018. Significant remaining ESA construction that could be negatively affected by PTC installation, should the waiver not be granted, includes all Southeast Quadrant and Tunnel B/C track, signal, and electric traction (both AC and DC) preparation work.

Late Design Approval 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 of the 10 control systems is now delayed 29 months.

Manhattan/Systems Performance Risk: The PMOC remains concerned that delays in completing the Manhattan/Systems work may impact the completion of the overall ESA program and the start of revenue service. The Manhattan/Systems work is on the ESA program primary critical path. The Manhattan/Systems path lost approximately two weeks during May, June, and July of 2018. The PMOC notes the following: CS084 displaced CM014B on this path; progress on both of these contracts is significantly behind schedule; and award of CS086 is over one year late.

Advancement of the MTACC Plan for Incremental Integrated Systems Testing: 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 had previously been scheduled to start in April 2019 but has been delayed until August 2019 due to delays in starting systems work in the Train Operations Center. In addition, the PMOC notes that the technical discussions about Incremental IST involving MTACC, LIRR, the CS179 general contractor and its electrical and systems integrator subcontractors have progressed very slowly and are impeding the timely

completion and approval of the required contract modifications for Contracts CS179, CS084, CS086, and VS086.

e. New Cost and Schedule Issues

In April 2018 the MTA approved Budget Amendment 3 to increase the ESA program funding to \$10,335 million, which is sufficient for MTACC forecasts through December 2020. In 2019, MTACC will request further additional funds in the 2020-2024 Capital Plan to provide a total of approximately \$11,133 million for the ESA program.

In July 2019, the MTACC revised their methodology for calculating ESA program level progress to more accurately indicate progress as a percentage of the full forecasted April 2018 EAC, rather than the currently funded budget. This change caused a decrease in the calculated program level percentages because the April 2018 EACs for each program area are larger than the current budgets. Refer to Section 5.0, Project Cost, for more information about this change.

MTACC continues to refine and use the alternative methodology for the IPS schedule. The forecast Target RSD date remains February 21, 2022, although time was lost on all three of the program critical work paths. The two weeks on the critical path were absorbed by a reduction in the Issue Contingency activity and the Target RSD date held. The PMOC notes that the initial Issue Contingency activity duration was 113 CDs as of April 2018 and has already decreased to 99 CDs after only 3 months.

3. PROJECT STATUS SUMMARY AND PMOC ASSESSMENT

a. Sponsor Management Capacity and Capability

The Executive VP/Sr. Program Executive – ESA has retired and left the project effective September 28, 2018. The new Program Executive is expected to join the project in early October 2018.

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 contractor and the amount of time required to respond to RFIs and field change requests on all of the Systems contracts. This creates cost and schedule impacts resulting from work stoppages due to late contract modifications needed for the timely progression of contract work. Another concern is that the PMOC has noted an increase in incidents in which work from a preceding contractor is either not accomplished or done improperly, causing the follow-on contractor to experience delays in the execution of its contract work. This raises a concern that MTACC may be understaffed in the area of field inspectors who should be ensuring that contractor work efforts are properly completed and in accordance with contract requirements.

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 continues to implement organization and process changes designed to correct the issues to prevent their recurrence. The PMOC does note the recent improvements in approving contract modifications but believes that continued, long-term efforts will be required to reduce the backlog and prevent recurrence of this problem.

b. Real Estate Acquisition

In its ESA July 2018 MPR, ESA reported that MTA Real Estate is jointly investigating, along with building owner JP Morgan Chase (JPMC) and the Metro North Railroad (MNR), the potential effects on the ESA Project of JPMC's announcement that it will demolish its headquarters at 270 Park Avenue in order to build a larger building on the same site. Additionally, MTA Real Estate continues to work on expanding the LIRR terminal egress capacity at 47th Street due to deferral of construction of the 48th Street Entrance.

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, late responses to contractor RFIs, 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 continues to implement organization and process changes designed to correct the issues to prevent recurrence. The PMOC also notes improvements in contract modification processing times during 3Q2018.

d. Procurement

The ESA July 2018 MPR shows that total procurement for the ESA Program is 82.4% complete, with total awards at \$9,171 million. This percentage is lower than that shown in the June 2018 report (87.9%) because MTACC changed the basis of calculating summary procurement (from this point forward) to be a percentage of the \$11,133 million April 2018 program updated EAC, rather than the approved program Current Baseline Budget as was used until this point. Refer to Section 5.0, Project Cost, for more information about this change.

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 MTACC recommendation to award in June 2018; MTACC awarded the contract on September 21, 2018.
- CH058A Harold Structures Part 3A, Tunnel B/C Approach Structure; contract was advertised on May 8, 2018 and six bids were received on August 9, 2018. The award is pending.

e. Railroad Force Account (Support and Construction)

During September 2018, LIRR Track personnel installed the #1134W turnout to complete its Northeast Quadrant (NEQ) turnout reconfiguration project in Harold Interlocking. LIRR Signal and 3rd Rail personnel supported the Track Department by making the associated signal and 3rd rail modifications. Amtrak Electric Traction personnel supported the LIRR NEQ track construction, installed the HML2 Full Tension Air Break, and continued to install overhead catenary over the LIRR Eastward Passenger Track as part of "PW2 Overrun" construction.

f. Third-Party Construction and Procurement

Manhattan

Contract CM006 Manhattan North Structures: During 3Q2018, the CM006 contractor 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 3Q2018, the CM007 contractor continued work at mezzanine and platform levels. Through September 30, 2018, precast progress in the East and West caverns reached 92.5% completion. Progress of the precast platforms in the East and West caverns reached 77% completion. Track installation continued in the westbound tunnels,

caverns, and tail tracks. Qualification testing of direct fixation and special trackwork components and trackwork construction continued.

Contract CM014B GCT Concourse & Facilities Fit-Out: In Wellways #1 and #2, the CM014B contractor continued finishing ceiling panel installation and systems devices connection. In Wellway #4, rigging demobilization began. Through September 30, 2018, the concourse structural steel erection was 74% complete by piece and 66% 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: For the CM014B contract, all escalators and elevators have been fabricated and delivered either to the site or the warehouse. In CM007, the escalator and elevator work has begun.

Queens

Contract CQ032 Plaza Substation and Queens Structures: During 3Q2018, 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 3Q2018: yard and street utilities, catenary structure work, ductbank construction, personnel access bridge and cart storage building foundation, and car appearance maintenance platform construction. Traction power cable pulls started.

Harold Interlocking

Contract CH057D – Harold Track Work Part 3: During September 2018, the CH057D contractor continued construction of the Westbound Bypass (WBY) Track although it did not achieve Milestone #4, WBY Completion, scheduled for September 2, 2018, due to its support of other LIRR Northeast Quadrant track construction.

Contract CH061A – Track A Cut and Cover Structure: During September 2018, the CH061A contractor continued punchlist activities in Tunnel A subsequent to MTACC’s declaration of Substantial Completion in August 2018.

Systems

Contract CS179 – Systems Facilities Package No. 1: During 3Q2018, the CS179 contractor continued installation of conduit, cable, equipment, fire stopping, fire standpipe, lighting, etc., in the tunnels and at the various facilities where there were no Stop Work Orders (SWOs) and where access was obtainable. Water infiltration, Buy America, and access restraint issues continue and must still be remedied. The completion of Final Designs (FD) for all 10 Control Systems, which was scheduled for completion 29 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. MTACC’s inability to develop and issue promised Contractor Proposal Requests (CPRs) on a timely basis for the NOCs is a significant issue impacting progress on the contract; and, while the CS179 PMT is attempting to reduce the number of open NOCs, those attempts are, in many cases, tied to the arduous and lengthy contract modification process noted earlier in this report. Previously noted Buy/Ship America issues that could impact design and construction completion also remain unresolved.

Contract CS084 Traction Power Systems Package 4: During 3Q2018, installation work in the Vernon (C05) substation continued, but was again limited due to obstructions from the CS179 contractor’s installations. Every one of the remaining six regular substation facilities (C01/C02, C03, C04, and C06/C07) has some level of noted deficiencies or coordination issues precluding the start of significant construction by the contractor (See Appendix L for details). Progress on addressing the issues is severely limited, as a significant number of the cited issues involve

coordination with other contracts and will require the development and issuance of contract modifications to various contracts. 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. Off-site fabrication of the C08 substation began in June 2018 and continues, with delivery now expected in May 2019. Two major quality issues, another failure of a substation transformer and the appearance of damage to MTA-supplied inductive reactors that will require additional investigation, arose in 3Q2018.

Contract VS086, Systems Package 3 – Signal Equipment Procurement: As previously reported, MTACC advised that, in the absence of decisions from the LIRR on two critical open design issues, the contractor would proceed with the signal design using the TRU-III track circuit equipment and would provide signal heads using incandescent bulbs rather than Light Emitting Diodes (LEDs). The LIRR continues to test the TRU-III track circuit equipment and has yet to make a decision regarding the use of this equipment on its property. Should the LIRR decide to not use this equipment, then the signal design will need to be modified. A third design issue, the use of the ATT-20 track circuit equipment, will also be incorporated into the design, but MTACC has yet to develop and issue a contract modification directing the contractor to incorporate this equipment into the overall signal design. The lack of progress on contract modifications continues to pose risks to the successful and timely completion of this contract. MTA has yet to incorporate Positive Train Control (PTC) into this contract to meet FRA requirements. While a design scope package was sent to LIRR for approval, a date for LIRR’s response is unknown. The design scope package must be approved by LIRR before MTACC can prepare a CPR to the contractor for the work. It is unclear at this time if incorporation of PTC into the signal design will impact the substantial completion date of the contract.

g. Vehicles

On September 20, 2018, LIRR withdrew its procurement for the M-9A vehicles in order to revise it to include procurement of Locomotive Hauled Married Pair (LHMP) units and the de-commissioning of the existing M-3 railcars. The resultant delay to the procurement schedule has not yet been determined, however.

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) that is currently being developed by the ESA Operational Readiness Group; a group consisting of 11 Task Working Groups (TWGs).

i. Project Schedule

The IPS 108 (data date August 1, 2018) update shows that the Target RSD forecast date – February 21, 2022 – remains unchanged from IPS 105, with the primary critical path running through Manhattan/Systems work. During May, June, and July of 2018, both the Manhattan/Systems and the Queens longest paths each lost approximately two weeks, and the Harold Interlocking longest path lost approximately two months.

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, project April 2018 interim budgets and expenditures through July 2018.

Table 2: Project Budget/Cost Table
(Cost shown in millions)

	FFGA			MTA Current Budget (Interim)			Expenditures July 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	11,451.5	100.0%	8,526.1	74.5%
Financing Cost	1,036.0		14.0%	617.6	1,116.5	9.7%	617.6	55.3%
		1,116.5	9.3%					
Total Project Cost	6,350.0		86.0%	9,255.3	10,335.1	90.3%	7,908.5	76.5%
		10,922.0	90.7%					
Total Federal Share	2,683.0		36.3%	2,698.8	2,698.8	23.6%	2,698.7	99.9%
		2,698.8	22.4%					
5309 New Starts share	2,632.0		35.6%	2,436.7	2,436.7	21.3%	2,436.7	99.9%
		2,632.1	21.9%					
Non New Starts share	51.0		0.7%	66.6	66.6	0.6%	66.6	99.9%
		66.6	0.6%					
ARRA	0.0	195.4	1.6%	195.4	195.4	1.7%	195.4	99.9%
Local Share	3,667.0		49.6%	6,556.5	7,636.2	66.7%	5,209.8	68.2%
		8,223.2	68.3%					

k. Project Risk

The Manhattan/Systems program schedule path remains the ESA Program Schedule critical path. The ESA Program Schedule critical path major risks include: the Incremental IST plan and schedule that still requires finalization and agreement by MTACC, LIRR, CS179, and other affected contractors; inadequate construction progress on Contracts CM014B and CS084 work; and completion of negotiations, agreement, and contract modifications for revised schedule milestones on critical contracts. The PMOC remains concerned about progress of the ESA program. Although the programmatic float remained constant throughout the third quarter of 2018, the Issue Contingency activity lost two weeks.

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 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 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 in early 2017.
- **Cost/Schedule Contingency:** MTACC, FTA, and the PMOC are in agreement 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. The PMOC does note that the Schedule Contingency is only 20 CDs above ELPEP minimum, although it has not changed during the third quarter of 2018.

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: Alternative 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 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

commence with a subsequent revision that addresses any changes resulting from the MTACC Six-Point Plan for ESA.

MTACC is planning to update the Project, Cost, Schedule and Risk 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 had earlier forecast completion of the draft updates during 3Q2018, but this was not achieved and is now expected to be completed by December 31, 2018.

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 organizational, management and process 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.
- Earlier construction problems have resulted in current as-built issues that impact the scope of work for the follow-on contracts.
- GEC's responsiveness to RFIs and Field Change Requests on contracts has often been slow and has impacted construction progress.
- Processing and approval of construction contract modifications is taking too long and creates cost and schedule impacts.

Although management focus on all of these issues has resulted in some improvements, the PMOC notes that these issues have continued to significantly challenge the ESA Program through 3Q2018. The MTACC president, together with the ESA Executive VP/Sr. Program Executive and the ESA-PMT, have made significant changes to the ESA project organization, management, and operational processes to better focus efforts on improving the effectiveness of management decision making, execution of critical required actions, and coordination with LIRR, the primary project stakeholder. The transition to the new ESA project organization and operation continued through 3Q2018.

b. Staffing

The Executive VP/Sr. Program Executive – ESA has retired and left the project effective September 28, 2018. The new Program Executive is expected to join the project in early October 2018 and will be new to both MTACC and the East Side Access Project.

The PMOC has no specific concerns or recommendations about the Sponsor's staffing at this time other than to note that capacity limitations caused by insufficient staffing might be 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 CS086 contracts and timely processing and approval of construction contract modifications may require additional staffing adjustments to those recently completed through 3Q2018.

1.2 Project Management Plan

a. History of Performance

The MTACC has re-planned the ESA program three times since the 2006 FFGA, resulting in higher budgets and longer schedules. The June 2014 re-plan budget was \$10,177 million and the Public RSD was December 2022. The PMOC notes that, since that time, ESA has encountered schedule set-backs primarily due to: lack of funding for award of contracts and systems contract options; poor performance by the CM006 and CM014B contractors; insufficient progress on CS179, CS084, and VS086; late NTP for CM007 and CQ033; significant delays to complete CM015 and CS086 design; and ongoing challenges in Harold Interlocking caused by lack of adequate railroad force account support. As a result, MTACC and the ESA-PMT completed a program re-assessment in April 2018 as a fourth “re-plan” that determined the need to increase the EAC to \$11,133 million and extend the Target RSD to February 2022, with no change to the Public RSD in December 2022. Until full funding is available in the 2020–2024 Capital Plan, the ESA program is working with an interim budget of \$10,334 million, which was funded in Budget Amendment 3.

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 4Q2018 to reflect the recent changes in the ESA project organization, management and operational processes.

1.3 Project Controls

a. Schedule

MTACC re-baselined the ESA program schedule in June 2014 with a Public RSD of December 2022, which included 22 months of Program level contingency from the February 2021 Target RSD. The PMT submitted a draft schedule contingency drawdown plan and hold point values in December 2014 as required by the ELPEP agreement, which was endorsed by all parties in October 2015.

The ESA program level schedule contingency was reduced to 9.7 months at the end of April 2018 as a result of the Target RSD slipping to February 2022, where it has remained throughout the third quarter of 2018. The Manhattan/Systems work path remains the ESA program primary critical path and has no float; the second path is controlled by the Harold work with 151 calendar days of float; and the Queens work is the third path with 185 calendar days of float.

b. Cost

In June 2014, the MTACC re-baselined the ESA program with a budget of \$10,177 million (excluding financing costs and Rolling Stock Reserve). MTACC completed the April 2018 baseline forecast that identified an increase in the ESA program estimate-at-completion to \$11,133 million, 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 it agreed to with the FTA/PMOC and to report on the contingency drawdowns in their Quarterly Progress Reports to the FTA. The ELPEP FTA Hold Point 1A (60% constructed; 90% bid) was achieved, which allowed the minimum contingency to be reduced to \$260 million. Currently, construction is 88.1% bid (awarded), 76.0% complete (invoiced), and has total contingencies of \$805.3 million (allocated and unallocated).

These percentages are lower than those shown in the June 2018 report (94.1%/77.7%) because MTACC changed the basis of calculating progress (from this point forward) to be a percentage of the \$8,014 million April 2018 construction updated EAC, rather than the approved program Current Baseline Budget as was used until this point. Refer to Section 5.0, Project Cost, for more information about this change.

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 Public RSD on December 2022. The FFGA amendment incorporated these changes in the Baseline Cost Estimate and Revenue Service Date that occurred from December 2006 (date of original FFGA) through June 2014 and set the budget at \$10,922 million and the FFGA Revenue Operation Date in December 2023. The ESA-PMT completed a full review of the ESA program in April 2018, which included a revised EAC of \$11,133 million and the Target RSD revised to February 2022, but no change to the December 2022 Public RSD. The PMOC notes that the new EAC exceeds the amended FFGA BCE by \$211 million, but holds 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 mechanical and electrical equipment.

1.5 Safety and Security

a. Safety and Security Certification Process

The PMOC notes that the 3Q2018 Operational Readiness Briefing has been delayed to November 2018. As previously reported, MTACC, during 2Q2018 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) 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 July 30, 2018, 2Q2018 Operational Readiness Briefing.

ESA Design Security Certification Summary Update	Number
Design Security Certification Complete	11
GEC to Submit Security Certification Package to LIRR	1
GEC to Present Package to LIRR (Pre-Meeting)	11
Zero Certifiable Elements in Security Package	22
Total	45

b. Project Construction Safety Performance

Through August 2018, ESA project safety statistics for lost time accident and 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 0.98 versus 1.70 (2018 BLS average) lost

time accidents per 200,000 work hours. The ESA recordable ratio for CY2018 was 1.72 versus 2.8 (2018 BLS average).

c. Security

The ESA PMT did not report any significant security issues in its ESA July 2018 MPR.

1.6 Project Quality

Quarterly Quality Oversight (QO): The only QO Audit that ESA reported as complete during 2Q2018 was for CM007, with a score of 76%. The audit for CQ033 was under MTACC review as of September 30, 2018, and audits for CM014B, CS179, and CM006 were not conducted for various reasons.

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 September 2018 contractor NCR logs. The table shows closed NCRs, NCRs open for less than 90 days, and NCRs open for over 90 days for each ESA contract over the past four quarters.

This month, the PMOC is adding a new quality concern regarding the new traction power substation transformers being manufactured by the CS084 contractor and the MTA provided inductive reactors that the CS084 contractor will install as part of the new traction power systems for ESA. See Section 7.0 for details. **[ESA-130-Sep18]**

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 3Q2018, 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 was completed, and testing of the Special Trackwork Direct Fixation Fastener (STDFF) assembly remains 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. Although MTACC management indicates that 8 of the control system final designs are approved, the PMOC is only aware of LIRR's formal sign-off on 7 of these systems. As of the end of 3Q2018, the completion and approval of all 10 Control System final designs is 29 months late when compared to the original contract baseline schedule.

- Fabrication of some CS084 equipment in storage is only partially complete, as it is missing PLC equipment installations. Once all the issues regarding PLC components and programming are resolved, this equipment will need to have the PLC equipment installed and tested before delivery to ESA field locations.
- Although MTACC directed the VS086 Signal Equipment Procurement contractor to progress the signal circuit design to include the TRU-III track circuit equipment, LIRR continues to test this equipment on its property and a decision regarding use of this specialized track circuit equipment remains as an outstanding and unresolved issue.
- MTACC previously advised that the ATT-20 track circuit equipment will be utilized on the ESA project. However, in order to incorporate this design into the VS086 signal design, a contract modification is still required and remains as an open item.
- 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 was required to submit to the FRA, within 90 days on August 2, 2018, the revised PTC Implementation Plan with LIRR’s proposed alternate schedule. As of September 30, 2018, LIRR had not yet formally responded to the FRA.
- 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). **Accomplished.**
 - Completing all Harold NE Quadrant trackwork (planned June/July 2018; now August2018). **Accomplished.**
 - Completing all Harold SE Quadrant trackwork (planned September 2018; now October 2018).
 - Completing all track/signal/3rd rail/catenary modifications in preparation for the Tunnel B/C Approach Structure work (planned for 3Q and 4Q2018). Currently being delayed.

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. Some improvements through September 2018 were achieved and noticeable improvements have taken place, especially in providing access and protection to the third party contractors.

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 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 the forecast RSD of December 2022.

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 in Harold Interlocking on a week to week basis. Continued force account resource shortcomings, particularly with respect to direct construction work, 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, 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 for 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 identified by MTACC were addressed in the April 2018 baseline forecast. In April 2018, the MTA board approved Capital Program Budget Amendment 3 to provide the program with additional local funds through December 2020 based on the reassessment. In 2019, the MTACC will request further additional local funds in the 2020-2024 Capital Plan to provide a total of approximately \$11,133 million for the ESA program. Until the 2020-2024 Capital Plan is incorporated into ESA budgets, the PMT will use unallocated contingencies to cover budget gaps as necessary. The PMOC is concerned about potentially significant impacts that this risk could have on the ESA 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 \$2,698.8 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), which 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 implementation of 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. Now that the Harold schedule path is no longer the ESA Program Critical Path, MTACC is focusing on project 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. MTACC plans on completing a comprehensive risk review of the ESA project once agreement is reached with the CS179 contractor regarding the Incremental Integrated System Test plan, which will serve as the primary basis for the ESA Program schedule from now through revenue service.

2.0 PROJECT SCOPE

2.1 Engineering/Design and Construction Phase Services

In the ESA July 2018 MPR, the PMT reported the overall Engineering effort as 84.4% complete compared to planned completion of 84.3%. These percentages are lower than those shown in the June 2018 report (86.8%/100%) because MTACC changed the basis of calculating progress (from this point forward) to be a percentage of the \$872 million April 2018 engineering updated EAC, rather than the approved program Current Baseline Budget as was used until this point. Refer to Section 5.0, Project Cost, for more information about this change.

Status of Construction Packages Advertised

CS086 Tunnel Systems Package 2 – Signal Installation was advertised as an RFP on August 10, 2017. MTACC awarded the contract on September 21, 2018.

CH058A Harold Structures Part 3A, B/C Approach Structure, was advertised on May 8, 2018 and six bids were opened on August 9, 2018. The contract award is pending.

Status of Construction Packages Not Advertised

CM015 (48th Street 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 will continue to be suspended until further notice.

Alternate 47th Street Entrance (proposed modification to Contract CM014B): MTACC-ESA is developing an alternative LIRR GCT entrance at 47th Street and has approved the associated GEC contract modification. As of August 31, 2018, LIRR and MNR continued review of the 100% For-Information-Only (FIO) drawings. The GEC submitted 100% FIO drawings for the CS179 (systems) scope for the proposed entrance. LIRR had no comments and approved the package. MNR had three comments to which the GEC responded and revised the package. The PMT completed the CS179 (systems) design changes based on no further comments from MNR. The CM sent the 47th Street Entrance CPR to the CM014B contractor in September 2018. MTACC plans to build the alternate 47th Street Entrance by contract modification to the CM014B contract.

FQA33A, Mid-Day Storage Yard Facility – Amtrak F/A, includes provision for west end yard access to the Amtrak mainline through a connection from Sub 4 to Line 2. All yard exit options have been considered by ESA, Amtrak, and LIRR. The design package has been completed with incorporated LIRR review comments. Based on Amtrak's proposal for an elevated turnout, MTACC and the GEC are developing alternatives to the plan and have identified two options. In support of the options evaluation, the existing Sub 4 Line has been surveyed. The two options are

currently on hold pending MTACC decision on LIRR request for an alternative yard exit route, Alternate E. This will be the only exit route from the MDSY that will be provided under the ESA Program.

FQA33B, Mid-Day Storage Yard Facility – Amtrak F/A, includes provision for a second west end yard access to the Amtrak mainline through a connection from Sub 3 to Line 4. The FQA33B 100% design package remains temporarily on hold pending finalization and approval of the Sub 4 to Line 2 connection, the primary exit, to be built under FQA33A (see above). The second exit route will be constructed by Amtrak after Contract CQ033 completes the MDSY and upon arranging the funding source from LIRR.

FQL33, Mid-Day Storage Yard Facility – LIRR F/A, provides LIRR force account construction support for CQ033. The GEC has incorporated all LIRR final comments and LIRR has approved the package. The GEC will provide the signed and sealed package upon request from the CQ033 CM. Based on CPR-13 that was issued to the CQ033 contractor in July 2018 and included the FIO package, the CM is continuing scoping meetings with the CQ033 contractor.

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 mid-December 2018 at the earliest.
- The GEC has prepared initial scope design modifications to Contracts CS179, VS086, and CS086, which will provide for the LIRR designed PTC overlay onto the ESA systems. 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. The PMOC notes that these changes cannot be finalized until LIRR completes the PTC design. MTACC will be installing, testing, and commissioning PTC for all of the new facilities built under the ESA Program.
- 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 was required to submit to the FRA, within 90 days from the date of the FRA's letter, August 9, 2018, the revised PTC Implementation Plan with LIRR's proposed alternate schedule. As of September 30, 2018, LIRR has not yet formally replied to the FRA. The PMOC believes that the LIRR may not be able to finalize the revised PTC Implementation Plan without the completed PTC design.

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

Contract CS179, System Package 1 - Facilities Systems

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 3Q2018, is 29 months late. Additionally, the PMOC is aware of LIRR's formal approval of only seven of the ten Control System Final Designs (FDs) as of the end of 3Q2018. 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.

Contract CS084 Tunnel Systems Package 4 – Traction Power

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. 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 access restraints that may result in potential redesign efforts for the subject rooms.

Contract VS086, Systems Package 3 – Signal Equipment Procurement

Two design issues have the potential to impact the timely progression of the contract work. One, the use of the ATT-20 track circuit equipment, will be incorporated into the design but not until MTACC develops and issues a contract modification. That modification was not accomplished in time to incorporate the equipment into the Plaza Interlocking design before the FAT testing began at the end of September 2018; so additional testing will need to be done in the field once the design is completed. The second design issue is the incorporation of PTC into the overall signal design. This design cannot be accomplished until the LIRR completes its design of PTC and a contract modification is developed and issued to the VS086 contractor. The continued absence of an accurate and comprehensive schedule that shows all required contract activities is an impediment to the MTACC's ability to effectively manage this contract.

PMOC Overall Engineering/Design/CPS Observations

Since the June 2014 re-baselining, the GEC and PMT have frequently missed target dates for completion of planned design activities on the project that have caused procurement and construction start delays for many contracts. The PMOC acknowledges that some of the delays resulted from excessive time needed for outside stakeholder reviews and final approvals. 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 July 2018 MPR shows that total procurement for the ESA Program is 82.4% complete, with total awards at \$9,171 million. This percentage is lower than that shown in the June 2018 report (87.9%) because MTACC changed the basis of calculating summary procurement (from this point forward) to be a percentage of the \$11,133 million April 2018 program updated EAC, rather than the approved program Current Baseline Budget as was used until this point. Refer to Section 5.0, Project Cost, for more information about this change.

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 were completed in early May 2018. In June 2018, the MTA Board approved MTACC’s recommendation to award the contract. MTACC awarded the contract on September 21, 2018.
- CH058A Harold Structures Part 3A, B/C Approach Structure, contract was advertised on May 8, 2018. Six bids were opened on August 9, 2018. The award and NTP had been forecast for September 25, 2018, but this is being delayed due to uncertainty about the schedule for LIRR to complete required preparation work prior to contractor mobilization. The contract was not awarded as of September 30, 2018.

Concerns and Recommendations

The lack of stability in the contracting strategy and Contract Packaging Plan (CPP) remains a concern. The PMOC recommends that the ESA PMT make an effort to update the current version of the CPP, Rev. 12.0, and minimize shifting scope for the remainder of the project. This update needs to account for all planned contracts and packages, along with all anticipated scope/scope transfers and a procurement timeline.

2.3 Construction

The PMT reported in the July 2018 MPR that the total construction progress reached 76.0% complete compared with 75.7% as-planned. These percentages are lower than those shown in the June 2018 report (77.7%/77.4%) because MTACC changed the basis of calculating progress to be a percentage of the \$8,014 million April 2018 construction updated EAC (from this point forward), rather than the approved construction Current Baseline Budget as was used until this point. Refer to Section 5.0, Project Cost, for more information about this change. The completion percentages for *contracts and force account packages* continue to be calculated using their invoiced costs (rather than actual construction) as a percentage of their current awarded value. Refer to Appendix J for the budget, cost, and schedule status of each contract and force account package discussed below.

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	350.2	11.4	346.0	356.0	100.0%	98.8%	6/1/17	12/31/18	
	nc	nc	nc	nc	nc	nc	nc	nc	nc	
	361.6	350.2	11.4	346.0	356.0	100.0%	98.8%	6/1/17	12/31/18	
CM007	712.3	662.6	49.7	345.2	724.3	57.5%	52.1%	1/28/20	3/23/20	
	nc	nc	nc	+20.2	(-7.8)	+5.2%	+3.0%	nc	(-25cd)	
	712.3	662.6	49.7	325.0	732.1	52.3%	49.1%	1/28/20	4/17/20	
CM014B	469.7	458.6	11.2	284.8	512.4	95.1%	62.1%	8/18/18	6/9/20	
	+6.1	+11.6	(-5.4)	+9.1	(-6.3)	+1.0%	+0.4%	nc	nc	
	463.6	447.0	16.6	275.7	518.7	94.1%	61.7%	8/18/18	6/9/20	
VM014	46.9	34.9	12.0	26.1	44.2	NA	74.8%	10/25/19	3/23/20	
	+0.7	nc	+0.7	+0.3	(-2.8)	NA	+1.0%	nc	(-207cd)	
	46.2	34.9	11.3	25.8	47.0	NA	73.8%	10/25/19	10/16/20	

Notes: Costs in millions; line 1 = current value; line 2 = period change, nc = no change; and, line 3 = prior value.
Please refer to the contract narratives for additional information.

CM006 – Manhattan North Structures

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

Construction Progress: The CM006 contractor continued the following activities in September 2018: minor base contract work, water repairs, and open NCR work. SC was not achieved in the 3Q2018.

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 December 23, 2019, -138 days. The contractor has submitted a recovery schedule and Time Impact Analysis (TIA). MTACC submitted an offer and the contractor has submitted a counter-offer. Meetings negotiations continue.

Milestone #5 (Substations US1 and US2 Complete), June 27, 2018, now February 11, 2019, -150 days.

Milestone #5A (Caverns Ready for Integrated Systems Testing), August 7, 2019, now August 6, 2019.

Milestone #6 (All Caverns and Tunnel Work Complete), December 16, 2019, now February 12, 2020, -58 days.

Milestone #6A (Substantial Completion), January 28, 2020, now March 23, 2020, -55 days.

Construction Progress: South Back of House, East: Placement of Upper Level Platform Slab is complete. Installation of electrical/communication conduit continues in Upper and Lower Level rooms. Installation of HVAC, FSP (Fire Stand Pipe), and sprinkler piping is ongoing in Upper and Lower Level rooms.

North Back of House, East: Installation of Upper Level BOH (Back of House) equipment nears completion. Installation of electrical/communication conduit continues in Upper and Lower Level rooms. Installation of HVAC, FSP, and sprinkler piping is ongoing in Upper and Lower Level rooms.

South Back of House, West: Erection of Upper Level CMU walls will continue. Installation of Upper Level BOH (Back of House) equipment nears completion. Installation of electrical/communication conduit continues in Upper and Lower Level rooms. Installation of HVAC, FSP, and sprinkler piping is ongoing in Upper and Lower Level rooms.

North Back of House, West: Installation of Upper Level BOH (Back of House) equipment nears completion. Installation of electrical/communication conduit continues in Upper and Lower Level rooms. Installation of HVAC, FSP, and sprinkler piping is ongoing in Upper and Lower Level rooms.

West Cavern: Mezzanine electric conduit installation continues throughout. Upper Level under platform electric/communication conduit and HVAC/FSP/Sprinkler piping installation nears completion. Framing for Escalator #59 continued. Intumescent painting began for Escalator #63. At Elevator #8, the contractor began installation of rails and brackets.

East Cavern: Upper Level under platform electric/communication conduit and HVAC/FSP/-Sprinkler piping installation nears completion. Installation of under stair finishes is ongoing. Waterproofing at Escalator #51 will start September 20, 2018.

Through the end of September 2018, MTACC reported that precast beams and decks are 92.5% complete. Precast platform walls and deck panels are 77.0% complete.

Track: Continued trackwork construction in the Caverns and in the Tunnel Track areas. Continued rail destressing activity. Continued turnout installation. Continued qualification testing of Special Trackwork DFF assemblies; variances requested from LIRR.

Observations/Analysis: ESA must complete its review of the contractor's recovery schedule to achieve a revised contract schedule and IPS 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 CM014B. This turnover is expected to be complete in July 2018.

CM014B – GCT Concourse & Facilities Fit-Out

Schedule: In the July 2018 Monthly Report, MTACC reports that monthly progress was 2.0% versus 1.5% planned. Cumulative progress was 62.1% complete versus 95.1% planned.

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.

Concourse Cumulative Progress (Through September 30, 2018): 74% by piece, 66% by weight.

Concourse Metal Decking Progress (Throughout September 30, 2018): 23%.

The Communication Closets in Milestones 4A, 4B, and 6 have been turned over to CS179. The contractor must submit a turnover report.

Milestone #5 (44th St. Vent Building) June 4, 2017, then December 29, 2017; then March 2018; now June 2018. The CS179 contractor continues to work on the fans. CS179 continues joint occupancy. CM014B punch list work is ongoing.

Milestone #7 (50th St. Ventilation Facility) January 27, 2018; now projected for the end of 2018, due to contractor difficulties in procurement of the parallel switchgear.

Concourse (Madison Yard): Electricians continued with installation of overhead racks/conduit in various zones and Chiller Plant Room. Plumbers continue installing plumbing fixtures throughout the Concourse. Mechanical work continues with the installation chilled water piping, branch piping, control valves 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 is ongoing from south to north. Installation of the suspended ceiling system continues throughout the Concourse. The CCM reports that the CMU work is approximately 85% complete.

3-Story Building: Work has advanced to the 3rd Floor. Completion is forecast for October 2018.

Wellways: In Wellway #1, the glass tile installation is continuing. CS179 continues with light fixture and Fire Alarm cable installation. In Wellway #2 the glass curtainwall construction continues and CS179 is installing Fire Alarm cable. In Wellway #3 escalator truss installation

nears completion. In Wellway #4 escalator truss installation is complete and truss alignment and splicing continues. Machine Room work has begun.

Biltmore Connection: Flagging on the MNR Express Level continues at Tracks #39-42. The long term track outages at Tracks #40-41 will continue through November 2018 and then move to Tracks #38-39. This work continues on the tertiary critical path for the contract.

47th Street Cross Passage: All work is on hold per 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 the entrance continues and the work is now the primary critical path for this contract.

48th Street EL 20: There is an issue with the construction of the elevator headhouse. The contractor built the final lift of the shaft and the headhouse structure slightly askew of the rest of the shaft. Schindler has submitted a cost to GCTJV to make corrections to, possibly, fix the situation.

50th Street Vent Building: The Vent Building continues in full fit-out mode. Work includes installation of bathroom fixtures and paralleling switchgear. Installation of Elevator #9 cab and entrance 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: There are a total of 38 escalators and 20 elevators in the contract, covering both CM014B and CM007. CM014B has 22 escalators and 14 elevators. CM007 has 6 elevators and 16 escalators.

CM014B: All escalators and elevators have been fabricated and delivered either to the site or the contractor's warehouse in New Jersey. Through September 30, 2018, all 4 escalators in Wellway #4 have been set in place and alignment and splicing is underway. Dismantling and removal of rigging steel has begun. The last header of the 4 escalators in Wellway #3 has been damaged and is approximately 3/16" misaligned. The contractor is reviewing procedures for fixing the problem; on site or in the shop. In the meantime the rigging will remain in place. Elevator #9 (50th St. Vent Bldg.) is ready for In-Contract Maintenance review.

CM007: The last coordinated delivery date for escalators is March 2019. The last coordinated delivery date for elevators is December 2018. At Elevator #8, brackets and the first set of rails were installed. Construction has begun to erect the gantry for positioning the trusses for Escalator #59. CM007 is experiencing delays in the fit out of the escalator framing.

Observations/Analysis: Exhibit "A" is the mutually agreed upon delivery/access schedule between CM014B and CM007 and the VM014 contractor. CM014B has issued a new Exhibit "A" to the contractor, but has not executed it. So the new Exhibit is not in effect. The delays underway in CM007 with escalator framing fit out require re-issuance of their Exhibit "A".

Concerns and Recommendations: The PMOC is concerned that impact caused by the revised Exhibit "A" documents will impact the contract schedules and the start of the contract IST and overall IPS.

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	263.5	100.0%	99.7%	9/6/16	12/31/18	
	nc	nc	nc	nc	+6.2	nc	nc	nc	nc	
	265.4	261.5	4.0	260.6	257.3	100.0%	99.7%	9/6/16	12/31/18	
CQ033	308.0	295.9	12.1	115.3	345.4	40.9%	38.6%	8/18/18	11/4/20	
	nc	nc	nc	+9.1	(-1.8)	+4.6%	+2.7%	(-723cd)	+52cd	
	308.0	295.9	12.1	106.2	347.2	36.3%	35.9%	8/10/20	9/13/20	

Notes: Costs in millions; line 1 = current value; line 2 = period change, nc = no change; and, line 3 = prior value.
Please refer to the contract narratives for additional information.

CQ032 – Plaza Substation and Queens Structures

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

Construction Progress: The CQ032 contractor continued the following activities to progress work in September 2018: work regarding closure of NCRs, work to eliminate water infiltration conditions, documentation, and other commercial items. SC was not achieved in 3Q2018. Of concern remain the eight NCRs related to tunnel duct bench clearance as-built deviations from plan which will require field work.

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.

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 November 4, 2020, -86 days.

Construction Progress: The CQ033 contractor continued the following construction activities in September 2018: fire line installation, water main, sanitary and storm pipe installation, and duct bank construction. Other activities: Car Appearance Maintenance (CAM) platform work, Cart Storage Building foundation slab was completed, ballast retainer work continued, and traction power cable pulls continued.

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 continued to pursue 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 Cost	EAC	Planned Comp	Invoice Comp	Current BL SC	Forecast SC	Notes
CS179	606.9	572.5	34.5	420.8	646.6	81.5%	73.5%	7/1/20	6/29/21	1
	nc	+7.1	(-7.0)	+10.2	(-0.2)	+4.0%	+1.5%	nc	+28cd	
	606.9	565.4	41.5	410.6	646.8	77.5%	72.0%	7/1/20	6/1/21	
CS084	79.7	73.4	6.3	18.0	82.8	85.1%	24.5%	12/2/19	2/10/21	1
	nc	nc	nc	+3.8	(-0.3)	+2.2%	+5.1%	nc	+51cd	
	79.7	73.4	6.3	14.2	83.1	82.9%	19.4%	12/2/19	12/21/20	
VS086	21.8	19.9	1.9	9.9	22.3	NA	49.8%	10/14/19	10/14/19	1
	nc	nc	nc	nc	nc	NA	nc	nc	nc	
	21.8	19.9	1.9	9.9	22.3	NA	49.8%	10/14/19	10/14/19	
VH051	30.2	29.5	0.7	29.3	30.2	NA	99.2%	4/30/15	12/31/18	2
	nc	nc	nc	nc	nc	NA	nc	nc	+225cd	
	30.2	29.5	0.7	29.3	30.2	NA	99.2%	4/30/15	5/20/18	

Notes: Costs in millions; line 1 = current value; line 2 = period change, nc = no change; and, line 3 = prior value
Please refer to the contract narratives for additional information.

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. Although MTACC management indicates that 8 of the Control system final designs (FDs) are approved, the PMOC is only aware of LIRR's formal sign-off on 7 of these systems. Further, completion of the FDs for two of the Control Systems (Security and CTC) is on hold pending the lifting of MTACC-issued Stop Work Orders (SWOs) resulting from revised stakeholder requirements. As of the end of 3Q2018, the completion and approval of all 10 Control System final designs is 29 months late. Progress on Non-Control Systems designs is also delayed and the contractor continues to assert that it is open issues and NOCs that remain unaddressed which are responsible for delaying its ability to complete these designs and continue with equipment rack production. The delays in the finalization of the designs for the Control and Non-Control Systems have the potential to impact the timely completion of the contract. Additionally, three previously reported Buy/Ship America issues with Systems equipment remain unresolved. (See Appendix G for details).

Construction Progress: In 3Q2018, the contractor continued work on conduit, cable, fire stopping, fire standpipe, equipment, lighting, etc., in the tunnels and substation facilities to which it had access and where there were no SWOs. The resolution of coordination issues with other contractors that are working or have worked in CS179 contract facilities continues to be an issue impacting the progression of work on multiple contracts. Resolutions require stakeholder decisions, some GEC design efforts, and MTACC's processing of multiple contract modifications;

all lengthy processes. 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: During 1Q2018, MTACC identified the need to implement IST incrementally to meet the schedule requirements for RSD. This approach is different than originally planned by Contract CS179. The new Incremental IST plan requires an agreement on a the plan and schedule among the ESA PMT, LIRR, and the CS179 contractor, as well as associated contract modifications for CS179, CS084, VS086, CS086, and CQ033. Incremental IST was previously forecasted to commence in April 2019, but is now scheduled to start in August 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 eventually 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 is 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 September 2018, the actual progress of this contract is significantly behind schedule. Only one of the ten milestones scheduled for completion by the end of September 2018 was achieved. The progress percentages presented in the table are based on actual versus projected costs, not physical design or construction efforts. Discussions continue between the contractor and the MTA regarding the development of a comprehensive test plan, including the Incremental IST of all the Systems. The forecasted two-month delay in the start of the Incremental IST over the past three-month period, along with the fact that the Incremental IST Plan remains incomplete and without agreement by all parties, leaves the PMOC with 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 continue working with LIRR and the CS179 general contractor, electrical sub-contractor, and systems integration sub-consultant to expedite 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. Although, as noted previously, the progress data in the Table above is based on costs and not physical progress, the contract is well behind in physical progress. The lack of access to facilities and non-approval of equipment designs impacting equipment procurement and fabrication contributed, and in the case of limited access to work locations, continues to contribute to the contractor's inability to expend costs. Until the access restraint issues are resolved, physical work progress will be delayed and the actual work completion percentages in the Table relative to the physical progress of work on the contract will continue to significantly lag the planned progress values. As of the end of 3Q2018, the contractor has fabricated a significant amount of equipment and has either delivered it to the work site – in this case the C05 (Vernon) facility - or to a storage facility until equipment rooms in the other substation locations are ready for installations. Contractor invoicing for

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 asserts that additional information from the MTA related to the Programmable Logic Controllers (PLCs) is required for it to be able to complete its design work and release the PLC equipment designs for fabrication. A number of equipment cabinets that house the PLC equipment are already fabricated and were shipped to storage facilities to make space on the factory floor for other fabrications. Once the PLC equipment is fabricated, it must then be installed in the vacant space in the cabinets. Discussions are being initiated between MTACC and the contractor to determine the logistics of this installation work, as the contractor asserts this is now unanticipated extra work. Work progress is also being hampered by the need for additional design work by the GEC to address 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 3Q2018, equipment installations on MTA property continued to be severely limited due to SWOs and obstructions from other contractor's equipment installations. The contractor continues to reject the commencement of work in areas turned over by other contracts and continues to provide MTACC with a list of its concerns regarding unfinished work or obstructions in those areas; many of which have remained outstanding for several months without any apparent resolution action by MTACC. That list (See Appendix P) is updated each month and discussed at the monthly progress meeting. MTACC advises that a major issue affecting the traction power cable installation from C08 to the tracks in Harold Interlocking will be addressed under the CH058A contract; so, schedule coordination between that contract and the CS084 contract will be extremely important for the CS084 contractor to complete all the substation testing requirements. The coordination of C01/C02 substation equipment deliveries with the installation of trackage throughout the tunnels and in the tail track area installation, an issue that can potentially impact the schedule, remains under discussion. 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. The PMOC previously reported significant Quality issues occurred related to two of the 18 required substation transformers while undergoing hi-pot testing. The first transformer failure occurred in April 2017 and quality improvement efforts were undertaken at the transformer manufacturer's facility. The second failure, on a different transformer, occurred in February 2018. After an investigation into the root cause of the second transformer failure, additional fabrication procedures were implemented at the transformer manufacturer's facility. However, in 3Q2018, during the re-testing of this second transformer, another failure occurred. Subsequent investigation of the failure revealed that, as in the previous failures, foreign debris in the transformer windings appeared to have caused the failure. Also, during 3Q2018, an additional quality-related issue was identified; that of potential damage to the twenty-six MTA-supplied inductive reactors. MTACC and the LIRR will need to further investigate the extent of the damage to these reactors to determine if they can be used on this contract. **[ESA-130-Sep18]**

Concerns and Recommendations: 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. 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

the 10 transformers built before the modified fabrication process was implemented. The LIRR and MTACC continue discussions related to those concerns. The PMOC remains concerned about several issues, including:

1. Equipment delivery methodology (means and methods);
2. Installation of the C08 traction power cables due to missing conduit and manholes;
3. Transformer hi-pot testing failures (April 2017, February 2018, and August 2018);
4. Verification of existing conduit and manholes in several substations;
5. Coordination with other contractors; and,
6. Possible damage to the 26 MTA-provided inductive reactors due to improper storage and handling by MTA.

VS086 Systems Package 3 – Tunnel Signal Procurement

Design Progress: During 3Q2018, the contractor performed its internal Factory Acceptance Testing (FAT) of Plaza Interlocking; and, the FAT that will be witnessed by a MTACC representative is scheduled to start on October 1, 2018. The Plaza FAT occurs first and tests the individual equipment items. Should the FAT be successfully completed as scheduled, then delivery of the Plaza Interlocking equipment to its ESA location is scheduled for October 18, 2018. 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 FIAT, which will be conducted at the ESA site, is undetermined at this time. 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. There are four other outstanding issues needing resolution or direction: 1) Positive Train Control design and incorporation, and 2) signal case electrical service modifications, 3) LIRR's final approval for use of the TRU-III track circuit equipment, and 4) a contract modification to incorporate the ATT-20 track circuit equipment design into the overall signal design package. The LIRR continues to test the TRU-III track circuit equipment and has yet to make a decision regarding the use of this equipment on its property. Should the LIRR decide to not use this equipment, then the signal design will need to be modified. The use of the ATT-20 track circuit equipment will also be incorporated into the design, but MTACC has yet to develop and issue a contract modification directing the contractor to incorporate this equipment into the overall signal design. MTACC has yet to incorporate Positive Train Control (PTC) into this contract to meet FRA requirements. While a design scope package was sent to LIRR for approval, a date for LIRR's response is unknown. The design scope package must be approved by LIRR before MTACC can prepare a CPR to the contractor for the work. It is unclear at this time if incorporation of PTC into the signal design will impact the substantial completion date of the contract. Incorporation of these items will require changes to completed designs and several contract modifications; all of which will 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.

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	Planned Comp	Invoice Comp	Current BL SC	Forecast SC	Notes
CH057D	29.6	19.3	10.3	3.0	29.3	14.5%	15.8%	1/31/19	1/31/19	
	nc	+0.1	(-0.1)	+3.0	(-0.3)	+14.5%	+15.8%	nc	nc	
	29.6	19.2	10.4	--	29.6	nc	nc	1/31/19	1/31/19	
CH061A	42.0	35.6	6.4	31.8	39.3	99.5%	89.3%	5/28/18	8/16/18	1
	nc	nc	nc	+2.3	(-0.3)	+3.7%	+6.6%	nc	nc	
	42.0	35.6	6.4	29.5	39.6	95.8%	82.7%	5/28/18	8/16/18	

Notes: Costs in millions; line 1 = current value; line 2 = period change, nc = no change; and, line 3 = prior value

Please refer to the contract narratives for additional information.

1. Substantial completion not declared.

CH057D – Harold Trackwork Part 3

Construction Progress: In September 2018, the CH057D contractor continued to construct the Westbound Bypass (WBY) Track and supported the LIRR to restore PW1 Track to service after it had reconstructed it during August 2018. As of September 3, 2018, the CH057D contractor completed all main line Northeast Quadrant (NEQ) trackwork in its scope.

Observations/Analysis: The PMOC made frequent site visits to the NEQ trackwork and observed that the ESA PMT, the contractor, and LIRR worked together very closely to successfully complete all main line trackwork in the NEQ scope.

Concerns/Recommendations: As a result of the tone set by the ESA PMT, at this time, the PMOC has no present specific concerns about future remaining NEQ, Southeast Quadrant (SEQ), and Tunnel B/C preparation construction, however the PMOC also notes that availability of LIRR force account personnel could become an issue in the future. The PMOC does recommend, however, that the ESA PMT continue to closely manage all remaining CH057D construction and be prepared to take appropriate action if and when conditions warrant.

CH061A – Track A Cut and Cover Structure

Construction Progress: During September 2018, the CH061A contractor continued to complete punchlist items in Tunnel A after ESA declared Substantial Completion on August 16, 2018.

Observations/Analysis: The PMOC notes that the ESA PMT and the contractor maintained a good working relationship throughout the life of this contract, which was a primary reason for its successful completion.

Concerns/Recommendations: Since all critical work on this contract is complete, the PMOC has no concerns or recommendations about it at this time. As a result of the foregoing, the PMOC will no longer include this contract in future reports.

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	18.9 +0.1 18.8	100.0% nc 100.0%	99.0% nc 99.0%	2/4/16 nc 2/4/16	4/20/19 nc 4/20/19	1
FHA02	60.2 nc 60.2	60.2 nc 60.2	-- nc --	59.6 +0.7 58.9	60.3 (-4.8) 65.1	100.0% nc 100.0%	99.2% +1.3% 97.9%	8/15/17 nc 8/15/17	6/12/19 nc 6/12/19	1
FHL01	27.3 nc 27.3	27.3 nc 27.3	-- nc --	26.9 nc 26.9	34.5 (-0.6) 35.1	100.0% nc 100.0%	98.5% +0.1% 98.4%	4/9/15 nc 4/9/15	2/13/19 nc 2/13/19	1
FHL02	96.6 nc 96.6	96.6 nc 96.6	-- nc --	113.3 +26.3 87.0	122.7 +1.9 120.8	100.0% nc 100.0%	117.3% +27.3% 90.0%	11/25/16 nc 11/25/16	8/26/20 nc 8/26/20	1

Notes: Costs in millions; line 1 = current value; line 2 = period change, nc = no change; and, line 3 = prior value
Please refer to the contract narratives for additional information

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 September 2018. The PMOC is not concerned about this because the remaining Stage 1 work is minor, does not have a negative impact on the ESA schedule, and can be done at any time.

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

Concerns/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 September 2018, Amtrak Electric Traction (ET) personnel completed construction of the HML2 Full Tension Air Break and continued construction of the overhead catenary system (OCS) on the Eastward LIRR Passenger Track/Port Washington #2 Track (part of the "PW2 Overrun" work activity).

Observations/Analysis: The PMOC acknowledges that Amtrak has had difficulty in the past supporting ESA and its contractors. During 3Q2018, however, Amtrak ET and C&S personnel supported ESA's and LIRR's CIL cutovers and NEQ track construction in an entirely adequate manner, which allowed both efforts to be completed successfully and on schedule.

Concerns/Recommendations: Because adequate Amtrak support for the ESA Project has historically been sporadic, the PMOC will always be concerned about it. The PMOC is aware that ESA, LIRR, and Amtrak have always worked closely together to coordinate project requirements and recommends that the parties continue to do so until all required project construction is successfully completed.

FHL01 Harold Stage 1 – LIRR F/A

Construction Progress: During September 2018, LIRR did not perform any significant Stage 1 construction as all Force Account personnel were concentrated on NEQ construction.

Observations/Analysis: The remaining Stage 1 work, LIRR's third rail cable installation into the new G02 Substation, is 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 scheduled for 4Q2018.

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 ConEd to ensure that the activation remains on schedule.

FHL02 Harold Early Stage 2 – LIRR F/A

Construction Progress: During September 2018, LIRR Track personnel installed the #1134W turnout, thereby completing construction of the mainline portion of the Northeast Quadrant (NEQ) trackwork. LIRR Signal and Third Rail personnel supported that effort and continued to install signal and 3rd rail components for the turnouts installed during August 2018, which included the #1112, #1121, and #1123 crossovers and the #1134E and #2122 turnouts.

Observations/Analysis: LIRR worked very closely with the CH057D contractor to complete all main line work associated with NEQ construction on schedule under very tight track usage constraints.

Concerns/Recommendations: The PMOC's notes that its previous concerns about LIRR's NEQ construction capabilities proved to be largely unfounded. Nonetheless, the PMOC is concerned that LIRR will not be able to adequately maintain its support of ESA construction during 4Q2018, most notably for Tunnel B/C preparation and SEQ track construction that will also impact Contract CH057D. The PMOC recommends that ESA continue to work closely with LIRR to keep both those important project elements on schedule.

2.4 Operational Readiness

Status: The most recent quarterly update Operational Readiness (OPR) briefing was held on July 30, 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 (3Q2018) has been delayed from October 2018 to November 2018, thus limiting information regarding current status. Details of the progress of the Rail Activation Plan (RAP) and specific TWGs are contained in Appendix Q, but updates are incomplete due to limited availability about current status.

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. 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. 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. In the 2Q2018 briefing, MTACC advised that a revised ESA Revenue Service Plan (RSP) was needed because it appears

that certain needed infrastructure work may not be available by the forecasted ESA RSD because planned Amtrak work might interfere with ESA work. The development of a revised RSP, which could take 12 months to do per LIRR, will impact new railcar procurement and LIRR staffing and training requirements. Information about the procurement of railcars is noted below in Section 2.5. The LIRR's plan for staffing and training is, because of the need for a revised RSP, still a work in progress.

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 originally intended to procure the M-9A vehicles for ESA service using a two-step RFP process. However, on September 20, 2018, LIRR withdrew its original RFP so that it could revise and issue a new RFP. The new RFP will include revised requirements for the M-9A vehicles as well as procurement of locomotive-hauled unpowered married pair (LHMP) coaches and de-commissioning of existing LIRR M-3 vehicles. As of September 30, 2018, LIRR had not announced its schedule for this new procurement.

Observations/Analysis: Based on previous LIRR information provided to the PMOC, the resultant award from the original two-step procurement was scheduled to occur in December 2018, with potential initial delivery of new M-9A vehicles in December 2019 (contingent on award to the existing M-9 car builder). The PMOC believed that schedule to be overly optimistic and believes that a new schedule may be similarly optimistic. Until the LIRR develops a schedule for this new procurement, however, it will not be possible to analyze what impact this may have on the ESA program.

Concerns and Recommendations: The PMOC remains concerned about the LIRR M-9A vehicle procurement and that the original RFP has been withdrawn. The PMOC recommends that LIRR develop the new RFP and solicit it as quickly as possible.

2.6 Property Acquisition and Real Estate

Status: In its ESA July 2018 MPR, ESA reported that MTA Real Estate is working with building owner JP Morgan Chase (JPMC) and Metro North Railroad (MNR) to determine what the implications and impact will be (on the ESA project) of JPMC's decision to demolish its building at 270 Park Avenue in order to build a larger building on the same site. Additionally, MTA Real Estate continues to work on expanding the LIRR terminal egress capacity at 47th Street due to deferral of the 48th Street Entrance construction.

Observations/Analysis: MTA Real Estate continues to perform its 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 July 2018 MPR indicates that Community Relations outreach included notification to property owners in Sunnyside Gardens concerning CH057D and LIRR construction of the NEQ trackwork in Queens and notification to surrounding property owners in Manhattan about various minor street work.

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 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 had earlier planned to issue the draft of the next revision to the PMP during 3Q2018, but this has been delayed to late in the 4Q2018.

3.1 PMP Sub-Plans

MTACC plans to 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 year, 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 4Q2018: Technical Capacity and Capability Plan; Schedule Management Plan; Cost Management Plan; Risk Management Plan. MTACC's earlier plan to issue these updates during 3Q2018 was not achieved.

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. MTACC plans to create a new procedure for the management processes being used by the newly formed PMO Analytics Group.

Observations: None.

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

and then LIRR final testing and previews. The path concludes with an Issue Contingency activity before the Target RSD on 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 IPS 108.

Table 4.2 – Primary Critical Path

Activity Name	Duration	Start	Finish
CS084 Tunnel Systems Package 4 – Traction Power			
Fabricate C08 Building Sections	264	25-May-18A	12-Feb-19
Test, Ship and Deliver C08 Substation	73	13-Feb-19	26-Apr-19
Assemble C08, install conduit, equipment and ground	246	29-Apr-19	30-Dec-19
C08 testing, ConEd test, energize and in service	122	31-Dec-19	30-Apr-20
Traction power conduits, 2000KCM cables	146	1-May-20	23-Sep-20
Term cable, Force Account, C08 test and energize	71	24-Sep-20	3-Dec-20
CS179 System Package 1 – Facilities Systems			
IST for traction power and radio systems	155	4-Dec-20	7-May-21
Program Activities			
LIRR FRA Signals and Power Testing †	113	7-May-21	27-Aug-21
LIRR Final Testing and Previews ‡	80	27-Aug-21	14-Nov-21
Issue Contingency	99	15-Nov-21	21-Feb-22
Target Revenue Service Date			21-Feb-22
ESA Program-Level Contingency	295	21-Feb-22	13-Dec-22
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 – Harold Interlocking

IPS 108 shows that the Harold Interlocking work path is the second program longest path, which is a change from IPS 105 in which it was the longest of the three ESA program areas. The finish date for the Harold Interlocking longest path – March 30, 2021 – lost 57 calendar days from IPS 105 to IPS 108. However, float decreased by only 43 CDs to 151 CDs (from 194 CDs) because of the losses on the Manhattan path. The critical CIL cutovers were completed as scheduled in June and July 2018. The Harold Interlocking path now begins with CH058A, for which MTACC is forecasting a NTP on October 25, 2018. The CH058A NTP date is predicated on MTACC securing track outages in January 2019 to perform track reconfigurations in advance of Track B/C approach construction. The NTP date will be additionally delayed for several months if the outage is not secured to perform work in that timeframe. IPS 108 shows Track B/C Approach Structure construction until January 2021, followed by force account switch, signal, and cutovers through the end of March 2021. At the completion of construction, the Harold critical path has 151 CDs of float to the LIRR final testing activity where the path joins the ESA program critical path (Manhattan/Systems work).

Sub Program Longest Path – Queens

The finish date for the Queens longest path – November 4, 2020 – lost 14 calendar days from IPS 105 to IPS 108. Float remained six months due to time lost on the Manhattan/Systems path. During

May, June, and July 2018, the Queens path became the least critical program path due to the time lost on the Harold Interlocking path.

Progress along the beginning of the Queens path is constrained by the CQ033 work necessary to resolve a conflict between an existing Amtrak signal trough and a proposed catenary pole. The work path then runs through CQ033 signals and power systems construction; track construction; signal installation; commissioning the MID-8 CIL and battery hut; and, ending in November 2020 at the conclusion of Midday Storage Yard integrated testing. At the completion of the construction, the Queens critical path has 185 CDs of float to the LIRR FRA testing activity where the path joins the ESA program critical path

4.3 90-Day Look-Ahead of Important Activities

An ESA program look-ahead schedule (refer to Appendix F) shows milestones and significant activities that are forecast for the next 90 days on active contracts. Table 4.3 lists upcoming procurement milestones that are forecast to occur through 2018, as reported by the PMT.

Table 4.3 – Upcoming Contract Procurement Milestones

Contract Description	Advertise Date	Bid Date	NTP	Project Period	Substantial Completion
CH058A B/C Tunnel	5/4/18A	8/9/18A	10/25/18†	26 months	12/22/20

Note: † MTACC updated the NTP date at the ESA Cost and Schedule Meeting on September 27, 2018.

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. It is likely that program float could be consumed in reaching agreement with the CS179 contractor on the incremental IST schedule. **[Ref: ESA-128-Sep17]**
2. The ESA program schedule contingency has been reduced to 295 CDs, which is 20 CDs more than the minimum required FTA ELPEP schedule contingency of 275 CDs. The ability of MTACC to maintain the FTA minimum until the next hold point (90% construction) is seriously at risk due to the uncertainties within the Manhattan/Systems schedule, the greatest of which is the still evolving plan for the Incremental IST.
3. Progress on CS084, Tunnel Systems Package 4 – Traction Power, is slow and is currently reported at 24.5% complete compared with 85.1% 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.
4. Concerns continue for the delays in the procurement of CS086, Tunnel Systems Package 2 – Signal Installation. The delayed start-up of CS086 in October 2018 has used valuable schedule time unproductively. The PMOC is concerned about the cumulative impacts of these delays on the Program schedule.
5. The PMOC has growing concerns about the significant schedule changes that have been made that resulted in major shifts among contracts on the Manhattan/Systems schedule path, which is the ESA Program Critical Path. The fundamental issue is that the MTACC does not have an agreement among the contractors and LIRR for the Incremental IST schedule, which will exert a significant influence on the critical path. Until this schedule is

locked down the ability of the ESA programs to achieve the planned RSD is uncertain at best. A final Incremental IST schedule is expected no later than November 30, 2018.

5.0 PROJECT COST

At the April 2018 board meeting, MTACC apprised the MTA board of a new updated forecast EAC for the ESA program in the amount of \$11,133 million. This figure includes program level forecasts of \$8,014.1 million for construction; \$871.8 million for engineering; \$1,980.4 million for soft costs; and, \$267.0 million for contingencies. Also at April 2018 meeting, the MTA board approved Budget Amendment 3 for additional funding to establish a total interim budget in the amount of \$10,335 million for the ESA program (through December 2020). In 2019, MTACC will request further additional funds in the 2020-2024 Capital Plan to provide a total of approximately \$11,133 million for the ESA program.

As noted throughout this report, in July 2018, the MTACC revised their methodology for calculating progress at the ESA program level – total program, engineering/design/CPS, procurement, and construction – to more accurately indicate progress as a percentage of the full forecasted April 2018 EAC of \$11,133 million (through the 2022 Revenue Service Date), rather than the currently funded budget of \$10,335 million (through December 2020). Although the dollar values of progress for each program area increased, the calculated progress percentages decreased because the April EAC for each area is larger than its current budget. MTACC will continue using the April 2018 EAC of \$11,133 million as the basis of these calculations in the future.

The chronology leading to this change in the progress calculation methodology includes:

- \$10,177 million budget was the basis of progress reporting from June 2014 through April 2018.
- In April 2018, MTA approved Budget Amendment 3 to increase budget to \$10,335 million, sufficient for all scheduled work through December 2020.
- \$10,335 million budget was the basis of progress reporting in May 2018 and June 2018.
- In July 2018, MTACC began using the full forecasted April 2018 EAC of \$11,133 million as the basis of progress reporting in recognition that the EAC is anticipated to become the approved budget by January 2021 when the project is fully funded in the 2020-2024 Capital Plan.

The procedure for calculating program level progress as described in the Cost Management Plan (CMP; revision 2; October 2016) noted the use of the current budgets for these calculations. As the MTACC developed the April 2018 EAC for the ESA program, it was apparent that continuing to use program budgets in the calculations would result in overstated progress. As part of the changes resulting from the MTACC president's ESA 6-point plan to reduce risk, the MTACC has prepared a draft update to the CMP that incorporates the use of the EAC for progress calculations. The PMOC concurs that the change better reflects program level progress, and that this will be consistent with progress calculations made when budgets include additional funding to be made available in the 2020-2024 Capital Plan.

5.1 Budget/Cost

In the ESA July 2018 MPR, MTACC reported that total construction progress reached 76.0% complete compared with planned progress of 75.7%. These percentages are lower than those shown in the June 2018 report (77.7%/77.6%) because MTACC changed the basis of calculating progress (from this point forward) to be a percentage of the \$8,014 million April 2018 construction updated EAC, rather than the approved program Current Baseline Budget as was used until this point. Refer to Section 5.0, Project Cost, above for more information about this change. Individual contract and force account package completions continue to be calculated as a percentage of their current awarded value.

The MTACC established the revised budget of \$10,178 million (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. MTACC has been reporting SCCs for the interim budget (to December 2020) of \$10,335 million established in April 2018 throughout the third quarter of 2018. The overall budget increase of \$157.3 million contributed to increased funds in the amount of \$93.8 million for Professional Services and \$380.2 million for Unallocated Contingency. Additionally, these increases were funded by significant decreases: \$50.6 million from Stations, Stops, Terminals; \$53.1 million from ROW, Land, Improvements; and, \$194.5 million from Vehicles. Changes to SCC budgets are shown in table 5.1.

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	Amend-ed FFGA	CBB 2Q2018	CBB 3Q2018	Change 2Q2018 to 3Q2018	CBB / FFGA Var.	CBB / Amend FFGA Var.
10 Guideway & Track Elements	1,988.7	3,405.5	3,353.4	3,409.1	3,403.7	-5.3	71.1%	1.5%
20 Stations, Stops, Terminals, Intermodal	1,168.7	2,238.2	2,326.8	2,327.7	2,277.1	-50.6	94.8%	-2.1%
30 Support Facilities (Yards, Shops, Admin)	356.3	474.2	450.8	516.0	516.0	--	44.8%	14.5%
40 Site Work and Special Conditions	205.1	610.6	562.5	560.7	548.3	-12.5	167.3 %	-2.5%
50 Systems	619.3	605.6	627.7	692.6	692.0	-0.6	11.7%	10.3%
60 ROW, Land, Existing Improvements	165.3	219.4	192.2	215.4	162.3	-53.1	-1.8%	-15.6%
70 Vehicles	494.0	209.9	879.5	209.9	15.4	-194.5	-96.9%	-98.2%
80 Professional Services	1,184.0	1,975.4	1,809.0	2,019.3	2,113.1	93.8	78.5%	16.8%
b(4)								
Subtotal	6,349.9	10,177.8	10,922.0	10,177.8	10,335.1	157.3	62.8%	-5.4%
100 Financing Cost	1,036.1	1,036.1	1,116.5	1,116.5	1,116.5	--	7.8%	0.0%
Total	7,386.0	11,213.9	12,038.5	11,451.6	11,451.6	--	55.0%	-4.9%

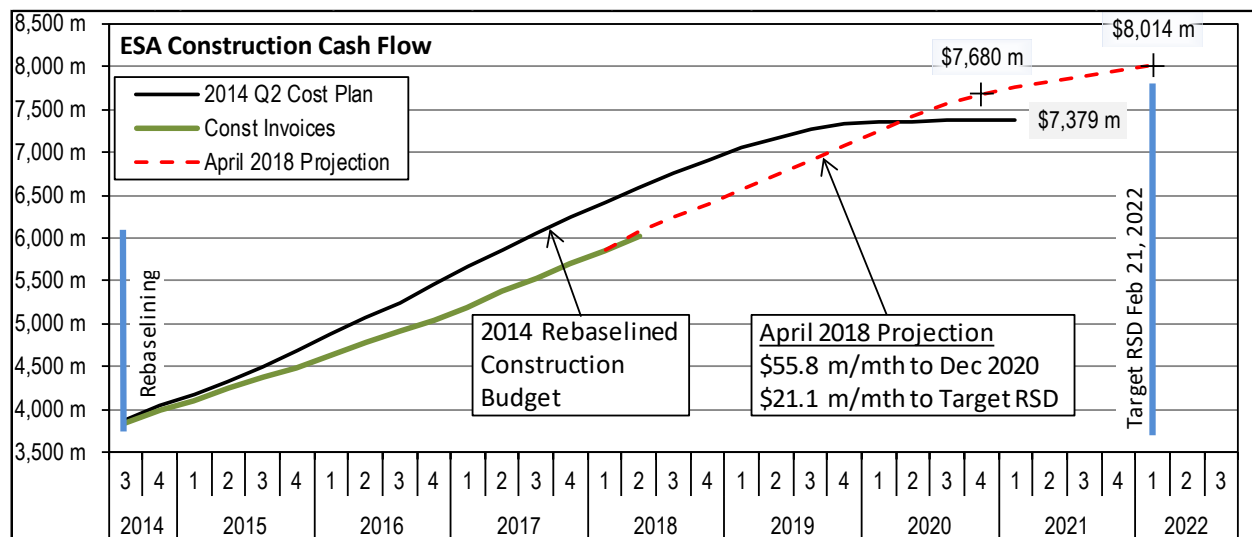
In April 2018, MTACC completed a re-assessment of the ESA program and forecasted a new estimate-at-completion of \$11,133 million, which is \$956 million above the June 2014 budget of \$10,178 million. This EAC would be incorporated in the ESA program budgets if and when it is approved as part of the 2020–2024 Capital Plan. The PMOC notes that the \$11,133 million EAC will exceed the amended FFGA Baseline Cost Estimate (BCE) of \$10,922 million.

5.2 Project Cost Management and Control

As noted throughout this report, in June 2019, the MTACC revised their methodology for calculating progress at the ESA program level to more accurately indicate progress as a percentage of the full forecasted April 2018 EAC, rather than the currently funded budget. Although the dollar values of progress for each program area increased, the calculated progress percentages decreased because the April EAC for each area is larger than its current budget. Refer to Section 5.0, Project Cost, for more information about this change. Individual *contract and force account package completions* are calculated as a percentage of their current awarded value. 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 planned construction cost curve has been updated to account for the April 2018 forecast.

Table 5.2: Planned vs Actual Construction Cash Flow



The construction cash flow plan was updated to account for the ESA April 2018 baseline forecast. To stay on plan the ESA program should maintain a monthly average approximately \$55.8 million through December 2020, and then continue to February 2021 with a monthly average of \$21.1 million. Maintaining the projected average spending rates is contingent on concluding negotiations for open issues (e.g. incremental IST). The chart reveals that cumulative construction costs are below the schedule projected costs for May, June, and July. 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 budgets along with current awards and invoiced costs.

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

Elements	Baseline Total Budget June 2014	April 2018 Baseline Forecast	July 2018			
			Current Budget (interim)	Actual Awards	Invoiced Costs	Invoice Pct. of Budget
Construction Subtotal	7,379.3	8,014.1	7,482.4	7,057.1	6,093.2	81.4%
Soft Cost Subtotal	2,798.5	2,852.2	2,245.6	2,113.9	2,020.0	90.0%
Engineering	720.6	871.8	770.2	739.0	735.6	95.5%
OCIP	282.6	457.4	379.2	379.2	307.4	81.1%
Project Management	972.2	1,117.3	963.7	873.7	858.9	89.1%
Real Estate	182.1	203.7	124.9	119.2	117.8	94.3%
Rolling Stock	202.0	202.0	7.5	2.7	0.2	2.3%
Soft Cost Subtotal	439.0	267.0	607.2	--	--	--
Total (without financing)	10,177.8	11,133.3	10,335.1	9,170.9	8,113.1	78.5%

5.3 Change Orders

Table 5.4 lists the 35 contract modifications with magnitudes greater than \$100,000 that were executed during May, June, and July 2018. The net increase of these modifications was \$29.1 million. 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
May 2018		
CH061A	Deletion of B-918.5N and B-914W Guy Anchor/rev Milestone 2 (mod. 9)	(195,750)
CH061A	Deletion of B-918.5N and B-914W Guy Anchor/rev Milestone 2 (mod. 9)	(195,750)
CH061A	Flowable Fill in Existing Tunnel A (mod. 10)	348,000
CH061A	Existing Soldier Pile CLSM (mod. 11)	1,030,000
CM004	Final Resolution of Outstanding Issues (mod. 91)	(131,666)
CM014B	Delete Emergency Shutoff Switches (mod. 112)	(104,427)
CM014B	RFI No. 487: 50th Street Vent Building Security Conduits for Existing Doors (mod. 152)	153,278
CS179	Water Infiltration Issues at Queens Facilities (mod. 74)	2,768,000
CS179	GCT 4 & 5 Room and Equipment Modification (mod. 86)	407,204
D0600	ESA General Engineering Consultant (GEC) Services (mod. 155)	446,293
PS819	From April 2018 to June 2018 (mod. 17)	2,500,000
GEC	From April 2018 to June 2018 (mod. 41)	6,842,377

Contract	Description / Mod No.	Amount
June 2018		
40-01R	Retroactive Overhead Rates Adjustment 2014-2015 (mod. 156)	(360,313)
CQ033	Testing Underground Storage Tanks (mod. 12)	160,000
CQ033	Harold Tower Repairs (mod. 18)	180,350
CQ033	Arch Street Temporary Retaining Wall (mod. 14)	220,968
CQ033	CH057A Catenary Transfer (ECOC#1 - 3/16/18) (BSS-May) (mod. 11)	870,000
CS084	Plaza Floor Openings (mod. 11)	318,000
CS179	MV90 Cable Changes (mod. 88)	542,304
July 2018		
GEC	North Runner Track Catenary (mod. 158)	173,315
CM014B	Bid Item # 13 - CM Field Equipment (mod. 55)	247,000
CM014B	Bid Item # 7 - Allowance for Security (mod. 56)	160,000
CM014B	CM014B Bundle 1 (mod. 155)	933,000
CM014B	CM014B Bundle 2 (mod. 157)	922,000
CM014B	Short Circuit Coord. Study, CM014A Equipment (CPR-A098; mod. 158)	265,000
CM014B	Leak Detection System (CPR-074) (mod. 159)	672,300
CM014B	CM014B Bundle 3 (mod. 160)	229,100
CM014B	Bid Item # 9 (mod. 162)	1,550,000
CM014B	Bid Item No. 20 - Structural Repairs (mod. 163)	4,400,000
CM014B	Revisions for Future 45th Street Entrance (CPR-090) (mod. 164)	1,990,000
CS179	Fire Alarm Tamper Flow Switches (mod. 95)	281,480
CS179	Clean Agent Power Feeds (mod. 96)	119,000
CS179	Addition of Pull Box Covers (mod. 97)	739,500
CS179	Roll Up Doors - Fire Alarm Interface (mod. 98)	335,000
CS179	Increase in Bid Item 5 - Community Outreach (mod. 103)	250,000

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 been incorporated into the ESA program cost reporting.

Federal Funding: The total Federal funding commitment to the ESA project is \$2,698.8 million, of which \$2,698.7 million was expended through August 1, 2018.

Local Funding: The budget for Local Funding is \$7,636.3 million, of which \$5,209.8 million was expended through August 1, 2018. Financing costs are funded separately by other local sources.

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Concerns and Recommendations:

The PMOC notes that the MTACC has implemented a strategy of holding the additional funding in contingencies, which are released to specific projects on an as-needed basis, commensurate with construction progress and other needs. While this strategy gives the MTACC maximum flexibility, it differs from the generally accepted practice of committing to budgets for known program costs. 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 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 Public RSD of December 2022.

Positive Train Control

This risk has three 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 completed in 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. In its letter of May 2, 2018, FRA requested that LIRR resubmit the alternate PTC implementation plan and revised schedule. The PMOC notes that LIRR's response to FRA was due by August 2, 2018, but has not yet been issued as of September 30, 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 system-wide, i.e., non-ESA, PTC work during the remainder of 2018.
- c.) LIRR was not able to complete PTC design in 1Q2018, as earlier projected, and design completion is now expected later in 2018. The GEC does not believe that this will be a problem because ESA/GEC has been coordinating with LIRR regarding the required PTC design changes for the associated ESA Contracts VS086, CS086, and CS179. The PMOC notes that these changes cannot be finalized until LIRR completes the PTC design. MTACC will be installing, testing, and commissioning PTC for all of the new facilities built under the ESA Program.

Capital Funding Risk

MTACC has forecasted 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 impacts of MTA's cancellation of the active RFP for the LIRR M-9A vehicle procurement program. This could potentially impact delivery of the vehicles and, hence, the MTACC's Revenue Service Date. The PMOC believes that LIRR's new RFP will only compound the delays experienced during the original procurement that had already fallen behind schedule. Although the impact of this delay on the new procurement schedule cannot be determined at this time, based on its analysis from the original procurement, the PMOC believes that it will most likely bring this risk much closer to realization.

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 have 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 continued delays in completing the Manhattan/Systems work may adversely 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 24.5% complete (actual) vs. planned 85.1%.

- Contract CM014B is reported at only 62.1% complete (actual) vs. planned 95.1%.
- Special Trackwork installation is significantly behind planned schedule on Contract CM007.
- Contract CS086 was awarded on September 21, 2018. Significantly delays to the award have used most of the earlier schedule float for this contract, and CS086 is now near critical.
- Managing inter-contract handoffs and interfaces has become a significant issue that will be increasingly challenging and represents a significant MTACC-retained risk.
- Due to contractor work site time and access constraints, there is very limited opportunity for the contractors to make up the time lost to interface delays. Should delays continue to accumulate, a meaningful recovery will likely not be possible.

6.1 Risk Process

Status/Observations: The PMOC observes that the ESA Risk Manager continues working to 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 Harold Interlocking that was facilitated by an experienced outside consultant. Also, the Risk Manager submitted a revised Risk Management Plan to the FTA and the PMOC during 4Q2017 and will reissue a subsequent update during 4Q2018.

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. The next Risk Register update for 3Q2018 is expected in October 2018.

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 the critical path, specifically the risk of maintaining the IST schedule [risk realized in 2Q2018];

- j) Coordination risk retained by MTACC in Manhattan and the ESA tunnels with regard to construction and testing interface management for the systems work; and,
 - k) CS084 equipment issues involving risk of possible LIRR rejection of 10 TPSS transformers fabricated prior to the 2nd of 3 “hi-pot” test failures and resolution of concerns about condition of MTACC provided inductive reactor equipment to be installed by the CS084 contractor. (New Risk)
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 was required to resubmit its revised PTC Implementation Plan and proposed alternative schedule by August 2, 2018, but, as of September 30, 2018, this has not occurred.
 - 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. With completion of this planned work in 3Q2018, this risk no longer remains and will be deleted from future reports.
 - 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. With completion of this planned work in July 2018, this risk no longer remains and will be deleted from future reports.
 - 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 preparation work required prior to NTP for CH058A. This work is currently delayed due to LIRR scheduling issues.
 - 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; and,
 - 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 effectively 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 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. This 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 and allows ESA to better able execute planned work in the Harold Interlocking.

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)]

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.

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APPENDIX A - LIST OF ACRONYMS

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

APPENDIX B - PROJECT OVERVIEW AND MAP

Project Overview and Map – East Side Access



MTA/LIRR East Side Access Project

Scope

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

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

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

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

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

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

Original Schedule

9/98	Approval Entry to PE	12/10	Estimated Rev Ops at Entry to PE
02/02	Approval Entry to FD	06/12	Estimated Rev Ops at Entry to FD
12/06	FFGA Signed	12/13	Estimated Rev Ops at FFGA
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
\$10,335.1 million	Total Project Interim Cost (\$YOE) through December 2020, as of April 2018, excluding Finance Charges and Regional Investment Program
\$8,311.1 million	Amount of Expenditures as of July 31, 2018, based on the Interim Project Budget of \$10,335.1 million
78.5%	Percent Complete, based on the Interim Project Budget of \$10,335.1 million and invoices shown in the July 2018 MPR.
\$805.3 million	Total Project Contingency remaining (including \$607.2 million identified by ESA as Unallocated Contingency, which includes ESA Management Reserve), as opposed to \$818.0 million in June 2014 baseline.
76.0%	Construction Percent Complete vs. 75.7% as planned based on the Total Project Budget of \$11,133.3 million shown in the July 2018 MPR.

APPENDIX C – LESSONS LEARNED

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

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

APPENDIX D – SAFETY AND SECURITY CHECKLIST

Project Overview			
Project mode (Rail, Bus, BRT, Multimode)		Rail	
Project phase (Preliminary Engineering, Design, Construction, or Start-up)		Construction	
Project Delivery Method (Design/Build, Design/Build/Operate/Maintain, CMGC, etc.)		Primarily Design Bid/Build	
Project Plans	Version	Review by FTA	Status
Safety and Security Management Plan	12/2010 Rev. 2	2012	Sponsor has forwarded the revised SSMP directly to FTA.
Safety and Security Certification Plan	11/2008 Rev. 1		Is within the SSPP of LIRR.
System Safety Program Plan	11/2008 Rev. 1		N/A
System Security Plan or Security and Emergency Preparedness Plan (SEPP)	11/2010		Is within the SSPP of LIRR.
Construction Safety and Security Plan	3/2007 Rev. 1		Project Construction Safety and Security Plan, contractors' site specific safety and security plans.
Safety and Security Authority	Y/N	Notes/Status	
Is the Sponsor subject to 49 CFR Part 659 state safety oversight requirements?	Y		
Has the state designated an oversight agency as per Part 659.9?	Y	The New York State Public Transportation Safety Board (NYSPTSB) is the SSOA. The SSOA has stated that they will not interface with the safety certification process for ESA until such a time as it is signed and certified by LIRR.	
Has the oversight agency reviewed and approved the Sponsor's SSPP as per Part 659.17?	In Development	In 4Q 2013, the SSOA has asked the FTA for guidance on approving the SSPP.	
Has the oversight agency reviewed and approved the Sponsor's Security Plan or SEPP as per Part 659.21?	In Development	The New York State Public Transportation Safety Board (NYSPTSB) is the SSOA. The SSOA has stated that they will not interface with the security review process for ESA until such a time as it is signed and certified by LIRR.	

Safety and Security Authority	Y/N	Notes/Status
Did the oversight agency participate in the last Quarterly Program Review Meeting?	N	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

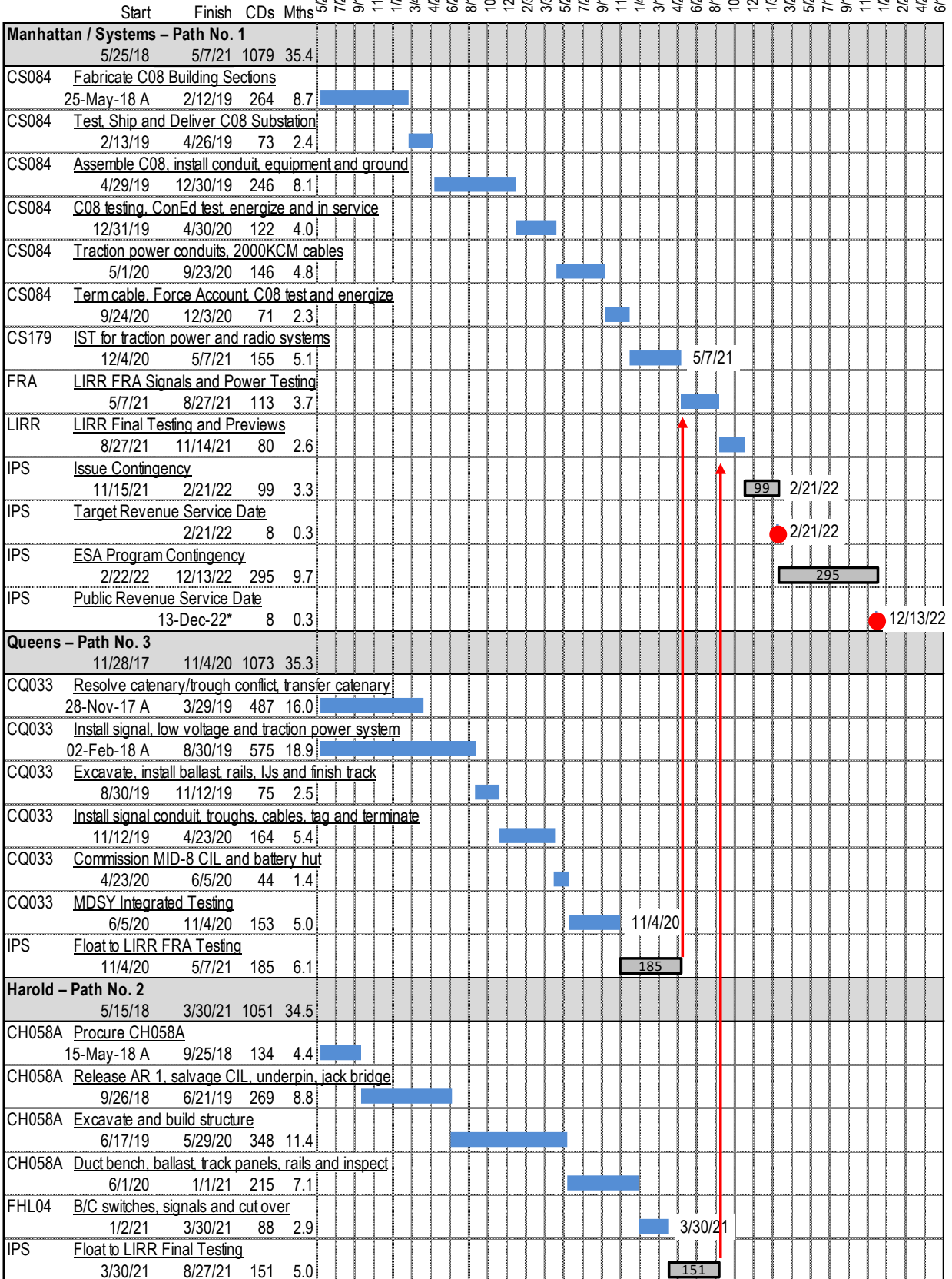
SSMP Monitoring	Y/N	Notes/Status
		the PHA log are either safety and/or security critical.
Has the Sponsor verified conformance with safety and security requirements during testing, inspection and start-up phases?	In Development	Project is not at these phases yet. The Sponsor is in the process of implementing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

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

APPENDIX F – ESA CRITICAL PATH CHART

ESA Critical Paths

IPS 108; data date August 1, 201



APPENDIX F - 90 DAY LOOK-AHEAD SCHEDULE

Table F: 90 Day Look-Ahead Schedule – IPS 108

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		24-Aug-18
CH053-6110	CH053 Handover GO2 Substation to LIRR		22-Oct-18
CH053FC	CH053 – Final Completion		22-Oct-18
CH057A - Westbound Bypass Structure (exclude Slab)			
CH057A-MR	Completion of Mechanical & Communication Rooms at Track-A Approach		16-Aug-18
CH057A-2050	Install Switch ZE1, #26.5 (1112W) - Green Field, No track outage		31-Aug-18
CH061A: Tunnel A			
CH061A-8210	CH061A MS#3 - Substantial Completion		16-Aug-18
CH061A-2010	Complete Tunnel A and WBY Track Installation		13-Sep-18
CH061A-8218	CH061A MS#4 - Final Completion		13-Sep-18
CH058A: Harold Structures - B/C Structure/ Catenary Structure			
CH058A-0110	CH058A – Bid Due Date		9-Aug-18
CH058A-0150	Issue Notice of Award - CH058A		11-Sep-18
CH058A0000	NTP CH058A Contract		25-Sep-18
CH058B: Harold Structures - Eastbound Reroute Structure			
	No milestones forecasted for next 90 CDs		
FHL01: Harold Stage 1 - LIRR F/A			
FHL01-1210	Testing & Commissioning GO2 Substation		29-Aug-18
FHL01.G02.2270	Completion of G02 conduits, cable pulls, feeder switches, DRIs and terminations		10-Oct-18
FHL02: Harold Stage 2 - LIRR F/A			
FHL02-CSR330	H1/H2 Cutover w/ Civil Speed Enforcement + Resequencing		4-Aug-18
FHL03: Harold Stage 3 - LIRR F/A			
FHL03MS3730	Install Switch T2 (1134E)		12-Aug-18
FHL03MS3690	Install Xover Q2 (1123E)		19-Aug-18
FHL03MS3700	Install Switch R2 (1143E)		26-Aug-18
FHL03MS3720	Install Switch T1 (1134W)		26-Aug-18
FHL03MS3680	Install Switch ZK2 (2122)		15-Sep-18
FHL03MS3710	Install Switch R1 (1143W)		15-Sep-18
FHL3.MS.6030	Operate 1121 Crossover (ZF1-ZF2)		15-Sep-18
FHL3.MS.6010	Complete Northeast Quadrant		23-Sep-18
FHL04: Harold Stage 4 - LIRR F/A			
FHL04-1270	NTP FHL04 - LIRR Harold F/A Const Stage 4		1-Aug-18
FHL04-1060	Remove Switch 855W		7-Oct-18
FHL04-1130	Install Switch JD1 (5165W)		13-Oct-18
FHA01: Harold Stage 1 - Amtrak F/A			
	No milestones forecasted for next 90 CDs		
FHA02: Harold Stage 2 - Amtrak F/A: Balance Work			
	No milestones forecasted for next 90 CDs		
FHA03: Harold Stage 3 - Amtrak F/A			
FHA03-CA8117	EWD Electrification		16-Oct-18
FHA03-CA8110	Catenary Ready for Cutover 2J		24-Jun-18
VH051A (Part 1): Harold & Point CILs			
VH51C0340	FIAT COMPLETED (w/HTSCS Contract)		1-Jul-18 A

ACTIVITY ID	ACTIVITY DESCRIPTION	START	FINISH
VH051B (Part 2): Harold Tower SCS			
VH51H0300	As-Built Drawings	1-May-15A	3-Jul-18 A
VHA03: Procure Materials for Harold Stage 3 - Amtrak F/A			
	No milestones forecasted for next 90 CDs		
VHA04: Procure Materials for Harold Stage 4 - Amtrak F/A			
	No milestones forecasted for next 90 CDs		
VHL02: Procure Materials for Harold Stage 2 - LIRR F/A			
VHL02-1010	Procure ZE Crossover	30-Jul-14 A	01-Aug-18
VHL03: Procure Materials for Harold Stage 3 - LIRR F/A			
	No milestones forecasted for next 90 CDs		
VHL04: Procure Materials for Harold Stage 4 - LIRR F/A			
	No milestones forecasted for next 90 CDs		
CM005: Manhattan South Structures			
CM005-1050	Milestone 5 Final Completion - MS70 (May 6, 2016)		30-Aug-18
CM013A: 55th Street Vent Facility			
CM013A-280	CM13A - MS#3 Final Completion		31-Aug-18
CM004: 245 Park Ave. Entrance & 44th Street Vent Structure			
CM04-C0940	CM004 Contractual Final Completion (ML#2 Date 820 CDs from NTP)		1-Aug-18
CM006: Manhattan North Structures			
CM006-CS179.CIA.04	GCT-5 Facility TP Switch Control Room 102	1-Aug-18	
CM006-CS179-04	GCT-5 Rooms	3-Aug-18	
CM006-CS179.CIA.14A	Tracks 301 & 302 & 303 & 304 - GCT-3 to Cavern	1-Aug-18	
CM006-CS179.CIA.28	Roosevelt Island Ventilation Facility - Cable Vault	1-Aug-18	
CM006-CS179-05	Cross Flue	3-Aug-18	
CM007: GCT Caverns			
CM007-CS179.CIA.17B	Conduit from TOC ER W Cavern Mezz thru N Service Corridor to TOC Office E Cavern Mezz NBOH		5-Sep-18
CM007-CS179.CIA.19B	East Cavern Mezz Level - Comm Conduits		12-Sep-18
CM007-CS179.CIA.17A	Conduit from CR-M2 in W Cavern Mezz thru S Service Corridor to CR-M1 in E Cavern Mezz SBOH		12-Sep-18
CM007-CS179.CIA.19C	East Cavern Upper Level - Under Platform Conduits		14-Sep-18
CM007-CS179.CIA.18A	CR-M2 & Conduit from S Service Corridor to CR-M2 in W Cavern Mezz SBOH		19-Sep-18
CM007-CS179.CIA.20C	West Cavern Upper Level - Under Platform Conduits		20-Sep-18
CM007-CS179.CIA.20B	West Cavern Mezz Level - Comm Conduits		21-Sep-18
CM014A: GCT Concourse and Facilities Fit Out			
CM014A-1100	Substantial Completion		16-Mar-18 A
CM014B: GCT Concourse and Facilities Fit Out (BL)			
MS#6	MS #6 - Comm. Closet CC-C4 & CC-C8		20-Aug-18
MS#4A	MS #4A - Comm. Closets CC-C1, CC-C2 CC-C5		20-Aug-18
MS#4B	MS #4B - Comm. Closets CC-C3, CC-C6, CC-C7 and Room B3265		20-Aug-18
MS#5	MS #5 - 44th Street Ventilation Facility		27-Aug-18
MS#5A	MS #5A - 48th Street Work (10/02/17 Required Date)		31-Aug-18

ACTIVITY ID	ACTIVITY DESCRIPTION	START	FINISH
PWR-99904	Unit Substation - #4 Connections & Terminations Complete		11-Oct-18
PWR-99903	Unit Substation - #3 Connections & Terminations Complete		16-Oct-18
CQ032: Plaza Substation & Queens Structures			
CQ032-MS06	MILESTONE #6 – SUBSTANTIAL COMPLETION		26-Oct-18
CQ033: Mid-Day Storage Yard Facility (Procurement Status TBD)			
ACR10	Access Restraint No. 1 - (Montauk Cutoff Area W. Thomson [119 CDs]	1-Aug-18	
ACR50	Access Restraint No. 5 - (39th St to 43rd St) [473 CDs]	1-Aug-18	
M80	Milestone No.8 - Complete All Work on Dwgs CQ033-CT-9401/9411/9412/9421/9425/9426 [457 CDs]		14-Sep-18
TP-SEC-3	Sec-3 Queens Blvd to Honeywell St-- Traction Power Ductbanks complete		9-Oct-18
CS084: Tunnel Systems Package 4 – Traction Power Systems			
90010	ACCESS RESTRAINT #2 - C04 TRACTION POWER SUBSTATION		1-Aug-18
90040	ACCESS RESTRAINT #5 - C01 AND C02 TRACTION POWER SUBSTATION		1-Aug-18
90050	ACCESS RESTRAINT #6 - C03 TRACTION POWER SUBSTATION		1-Aug-18
CS179: System Package 1 - Facilities Systems*			
AR10A.4	Access Restraint No. 10A - GCT Concourse - Zone 1 - Column Line 1 to 6 (Day 808 / 15-Jun-16)	2-Aug-18	
AR11	Access Restraint No. 11 - Access Tunnel No. 1 (765 / 4-May-16)	2-Aug-18	
AR07B	Access Restraint No. 7B - Queens - Tunnel A - Sta 1203+00 to 1213+03 & to CR-124 (1290 / 11-Oct-17)	28-Aug-18	
VS086: System Package 3 - Signal Equipment Procurement			
000020	MS#2 Final Approved Design for ESA		1-Aug-18
000040	MS#3 Plaza Delivery		21-Sep-18
000110	Plaza - Signal & Junction Box Delivery		5-Oct-18
000120	GCT6 - Signal & Junction Box Delivery		19-Oct-18
000050	MS#4, GCT 6 Delivery		26-Oct-18

*MTACC-ESA and the CS179 Contractor currently disagree about the actual and/or forecasted milestone dates.

**APPENDIX G – MTA EAST SIDE ACCESS PROJECT –
BUY AMERICA STATUS SUMMARY
TABLE G – CONTRACT CS179 (As of September 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. 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. 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. 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 108 Data Date August 1, 2018**

Last Activity in IPS ID# String	Scope	IPS Start	IPS Finish	Status
FHA03-CA5182	Install 7,100 LF CA WB Track	1/25/23	1/31/23	Only 8 of 25 catenary poles required for this task have been installed as of September 30, 2018.
FHA03-1800	Re-install CAs at three CH057D Turnout locations ¹	7/29/18	8/14/18	The CH057D contractor installed 6 of 10 turnouts as part of NEQ track construction during August 2018. As of September 30, 2018, Amtrak had not re-installed the catenary over the NEQ turnouts on LIRR PW1 Track.
FHA03-CA4660	Relocate cross catenary east of 39th St. as result of const. of Tunnels A, B/C, and D	11/4/18	11/6/18	During September 2018, Tunnel B/C predecessor construction was postponed until at least 1Q2019. Amtrak will install CAs during and after track construction is complete.
FHA03-1130	Install 1,000 LF (est.) CA MDSY Sub 3 to North Runner	10/22/19	12/26/19	The CQ033 contractor began catenary demolition for the MDSY during 4Q2017, but, to date, has not begun to install the catenary poles necessary for the Sub 3 to North Runner connection. Amtrak will transfer wires after CQ033 completes installation of the catenary poles.
FHA04-1050	Install 3,600 LF CA EBRR Track	12/19/24	3/7/25	CH058B to construct Eastbound Re-Route (EBRR) Track has 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 SEQ Turnout locations ³ FHA04	4/29/24	1/25/25	CH057D contractor to install 6 SEQ and Tunnel B/C turnouts prior to Amtrak installation of catenary. SEQ turnout installation to begin in 4Q2018.
FHA03-CA8106	Complete Loop 1A Electrification	12/30/18	1/8/19	Amtrak Loop 1A Track construction partially complete. Amtrak ET will install CAs after Amtrak track construction is complete.
FQA65-1092	Install CAs 14 Turnout locations ⁴ in Loop and T Interlockings - FQA65	6/24/20	6/25/20	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	2/21/18A	9/18/18	Amtrak began catenary construction of PW2 Overrun in February 2018 and has worked on it sporadically since then.

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

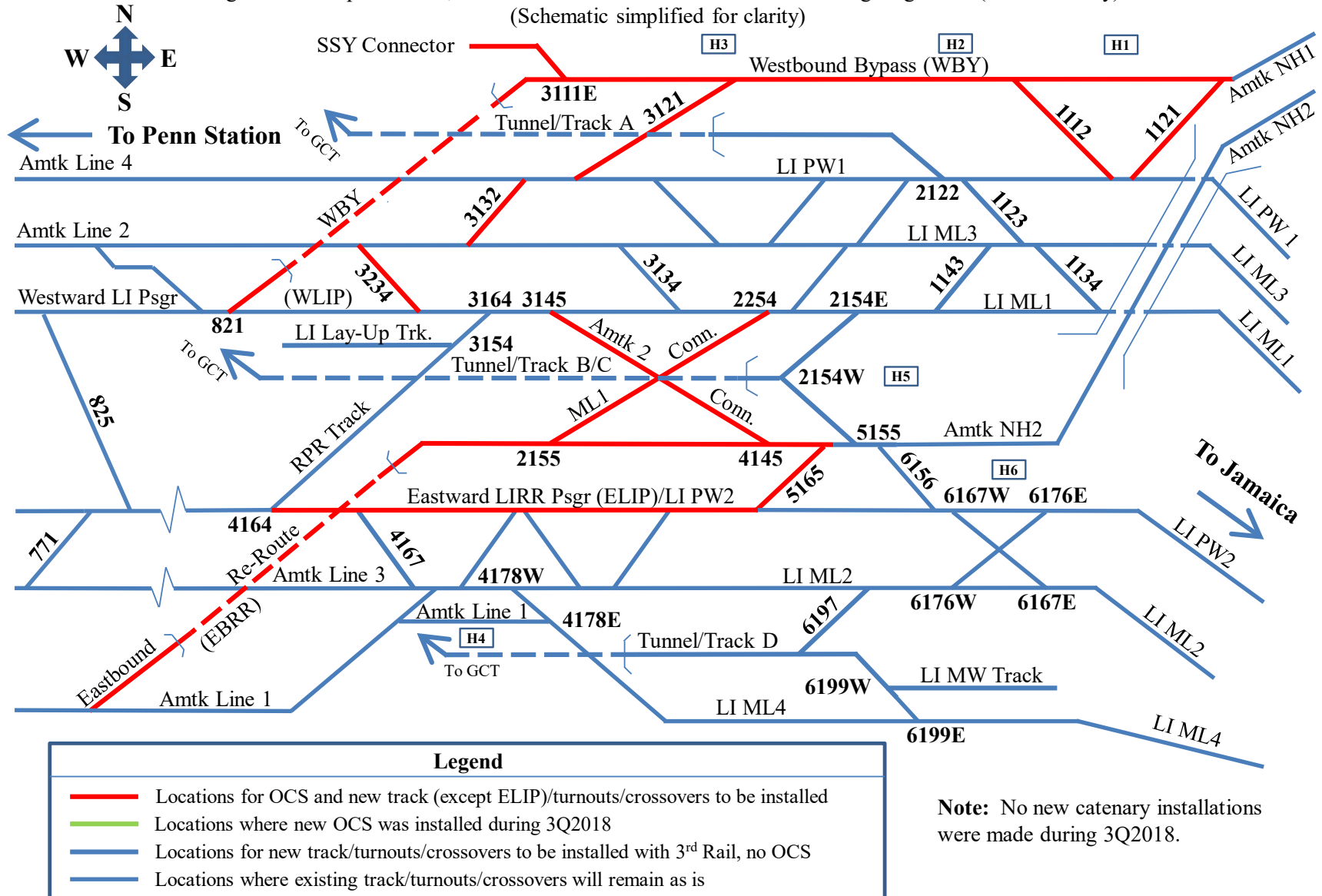
This diagram depicts, along with existing tracks, crossovers, and turnouts that will not be renewed, the present construction status of ESA constructed tracks, crossovers, and turnouts that have been or will be installed to make LIRR service into GCT possible. Existing trackage that will not be renewed 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.

Appendix I: Harold Progress Monitoring Schematic

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

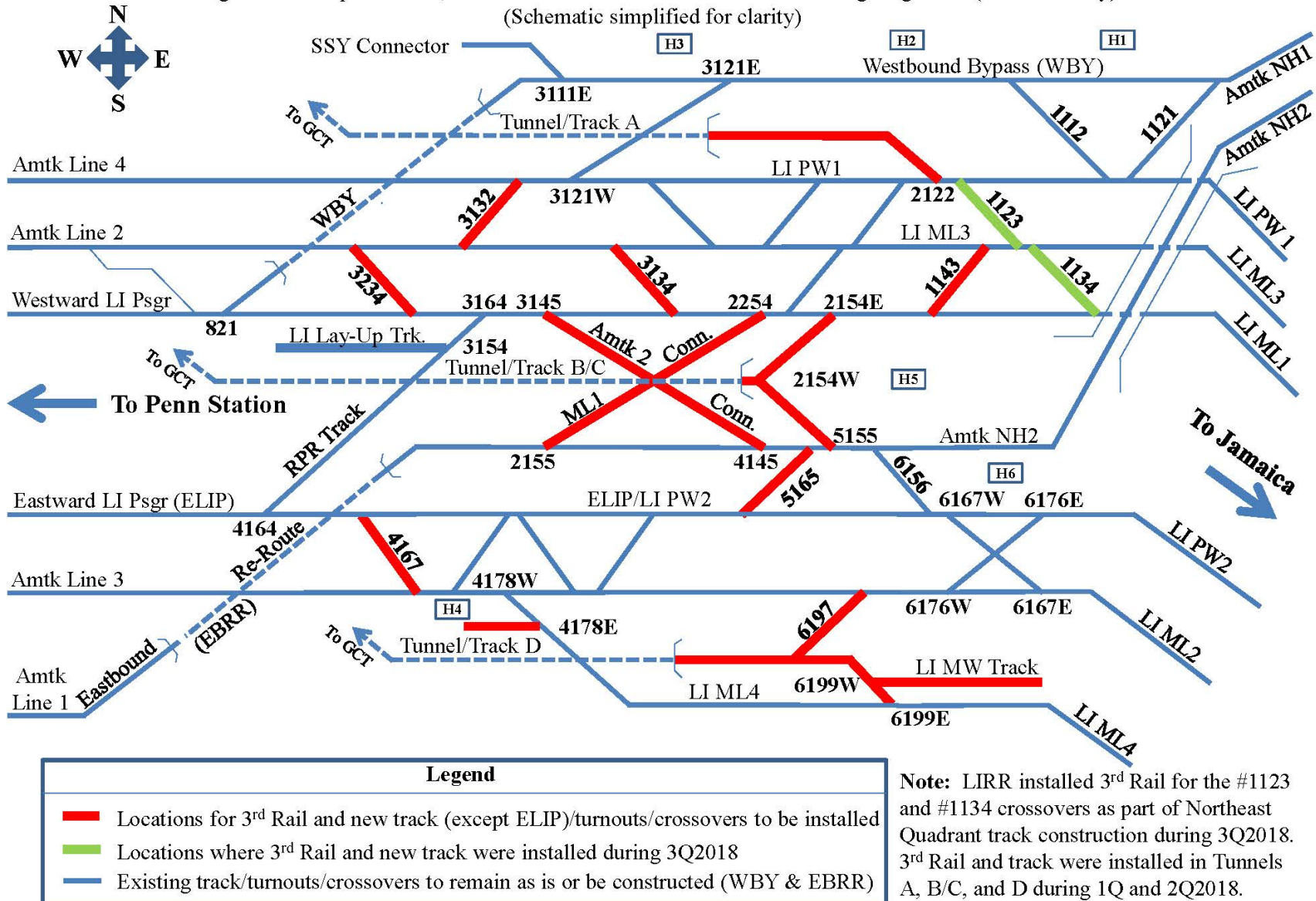
Progress as of September 30, 2018 - based on ESA 14-4 Harold Interlocking Alignment (main line only)
(Schematic simplified for clarity)



Appendix I: Harold Progress Monitoring Schematic

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

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

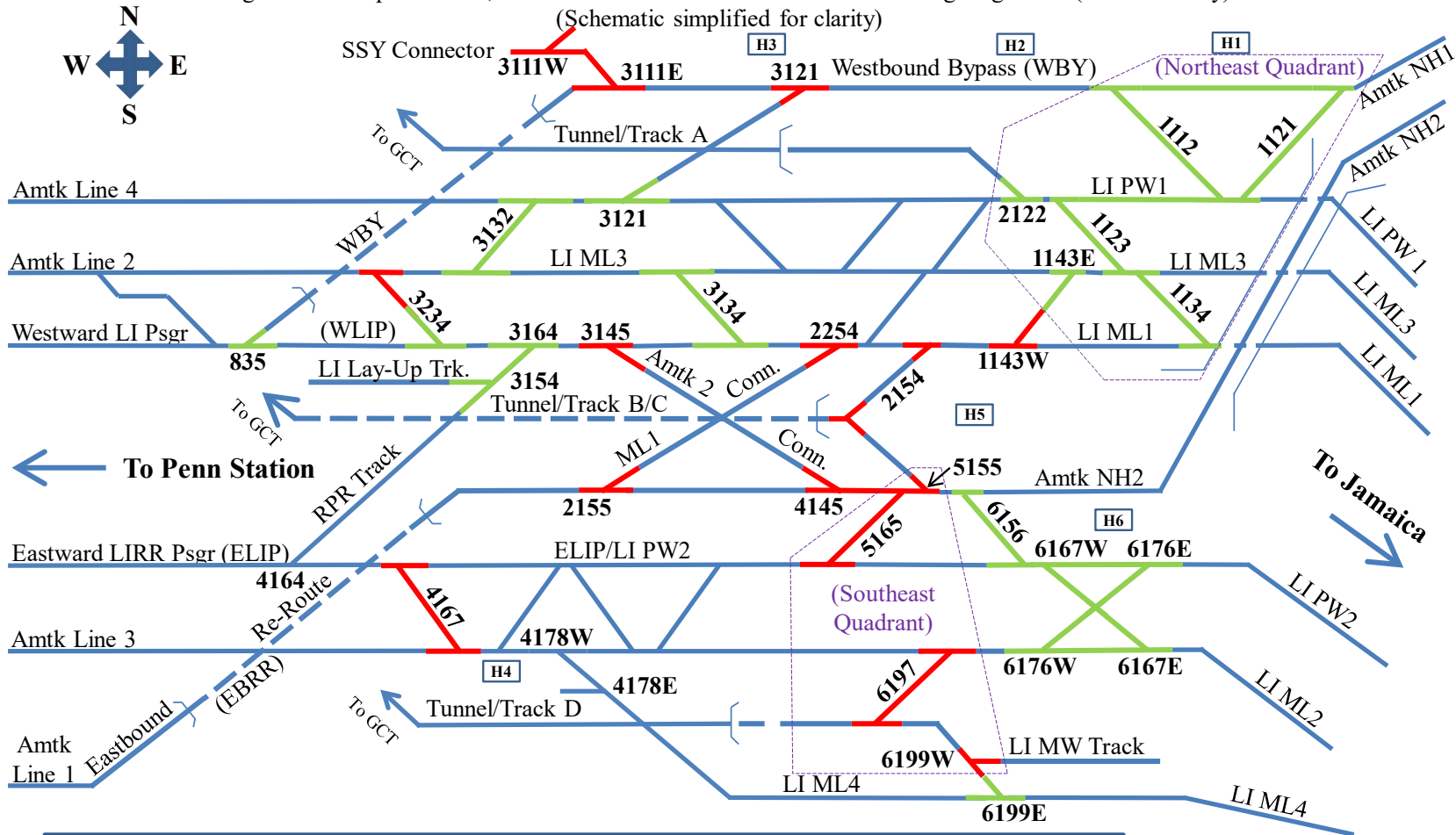


Appendix I: Harold Progress Monitoring Schematic

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

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

(Schematic simplified for clarity)



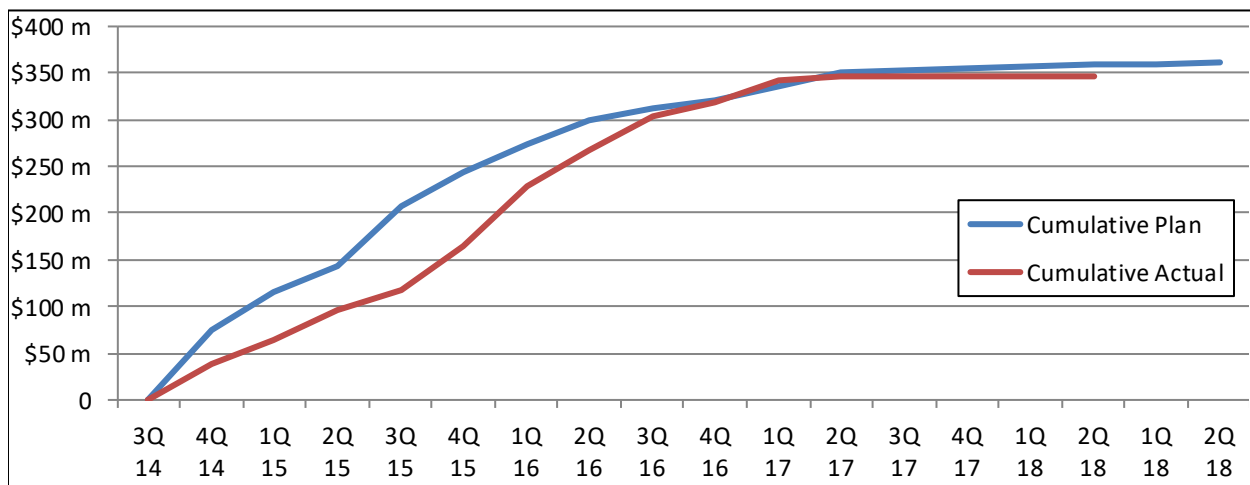
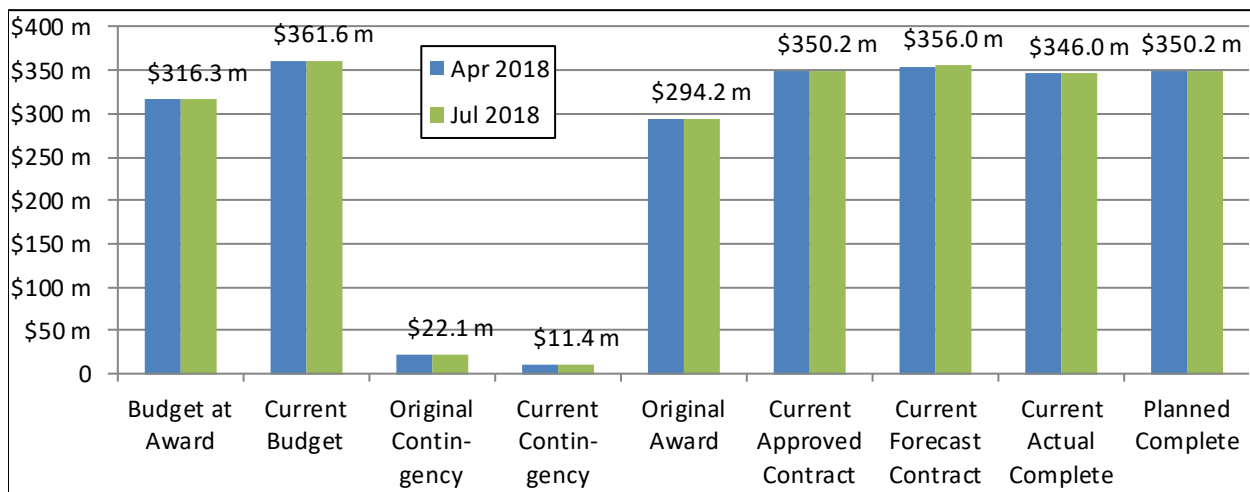
Legend	
	ESA turnouts/crossovers to be installed
	ESA turnouts/crossovers/track installed during 3Q2018
	New Track to be installed by ESA
	Track installed, not in service
	Existing Track to remain as is

Note: The #1112, #1121, #1123, and #1134 crossovers and the #2122 and #1143E turnouts were installed during 3Q2018.

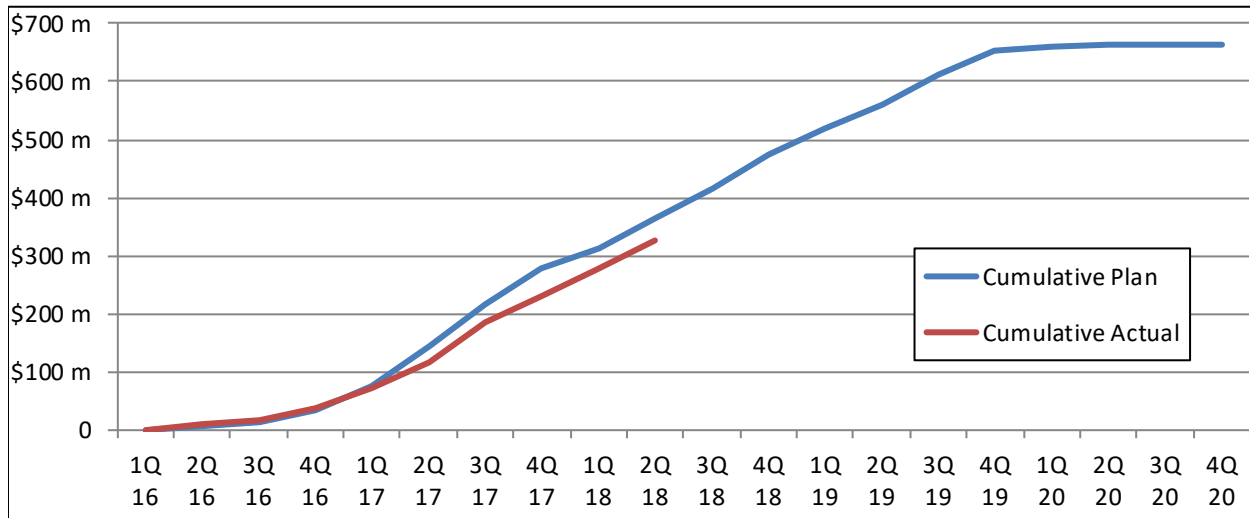
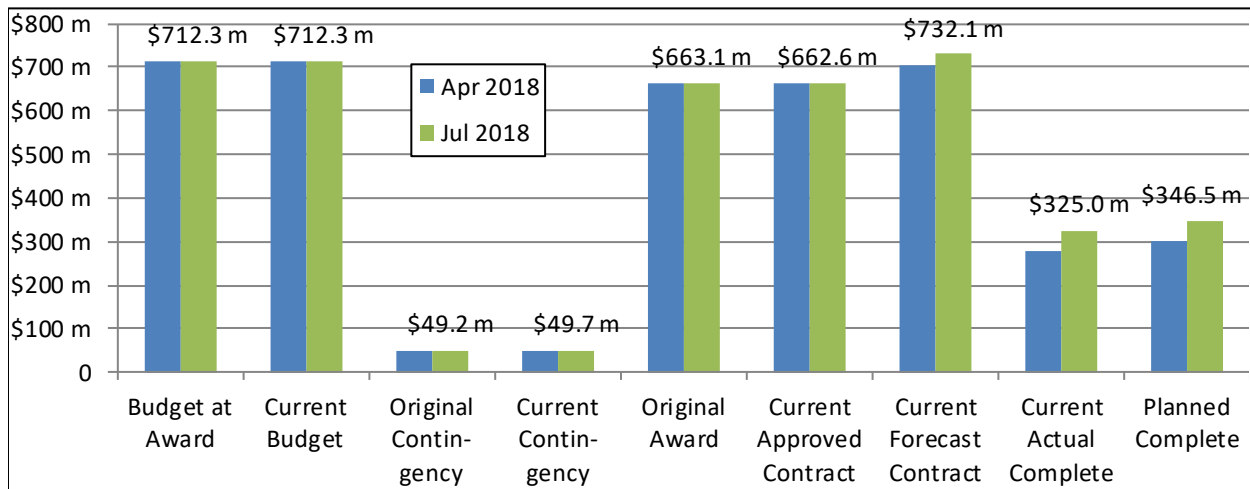
CM006 Manhattan North Structures

Jul 2018

1	2	3	4	5	6	7	8
Budget at Award	Current Budget	Change from Original to Current	Contract at Award	Current Approved Contract	Change from Original to Current	Current Forecast	Change from Current Forecast to Budget at Award
\$316.3	\$361.6	(2-1) \$45.3	\$294.2	\$350.2	(5-4) \$56.0	\$356.0	(7-1) \$39.7
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	0.20% per month	
100.0%	98.8%	0.1%	0.0%	-0.5%	-0.1%		



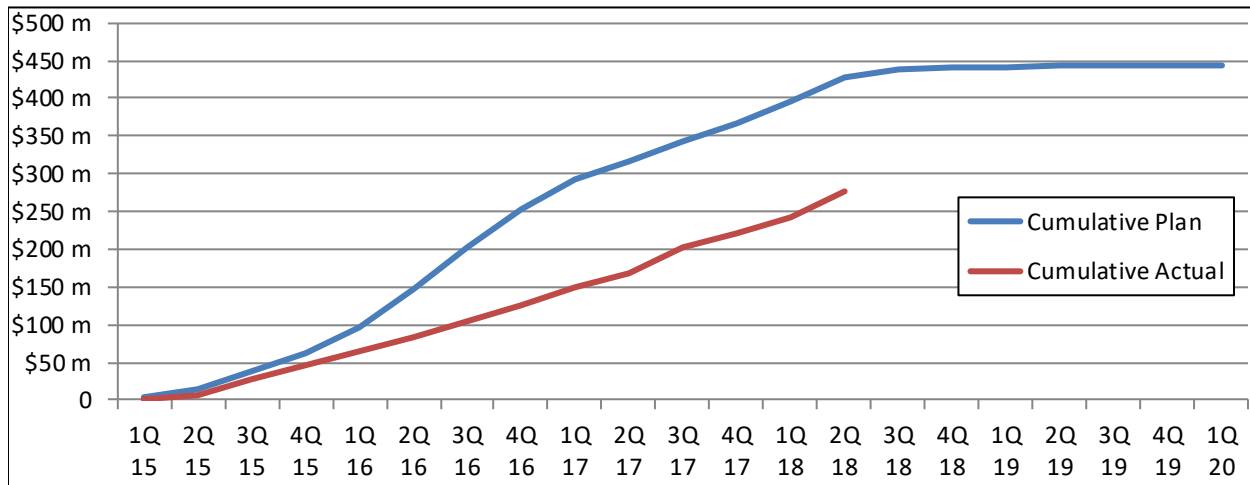
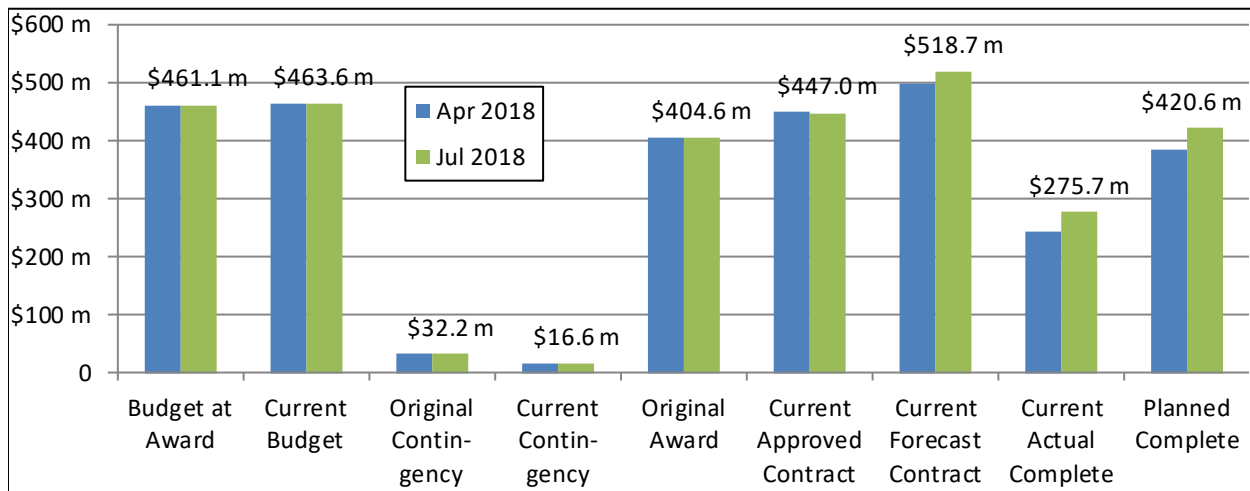
1	2	3	4	5	6	7	8
Budget at Award	Current Budget	Change from Original to Current	Contract at Award	Current Approved Contract	Change from Original to Current	Current Forecast	Change from Current Forecast to Budget at Award
\$712.3	\$712.3	(2-1) \$0.0	\$663.1	\$662.6	(5-4) (\$0.5)	\$732.1	(7-1) \$19.8
Percent Complete		Actual Prog Last 12 Mths		Actual Prog Last 6 Mths		Average Required Progress to reach forecast SC 2.31% per month	
Planned	Actual	Total	Avg/Mth	Total	Avg/Mth		
52.3%	49.1%	29.5%	2.5%	14.6%	2.4%		



CM014B GCT Concourse & Facilities Fit Out

Jul 2018

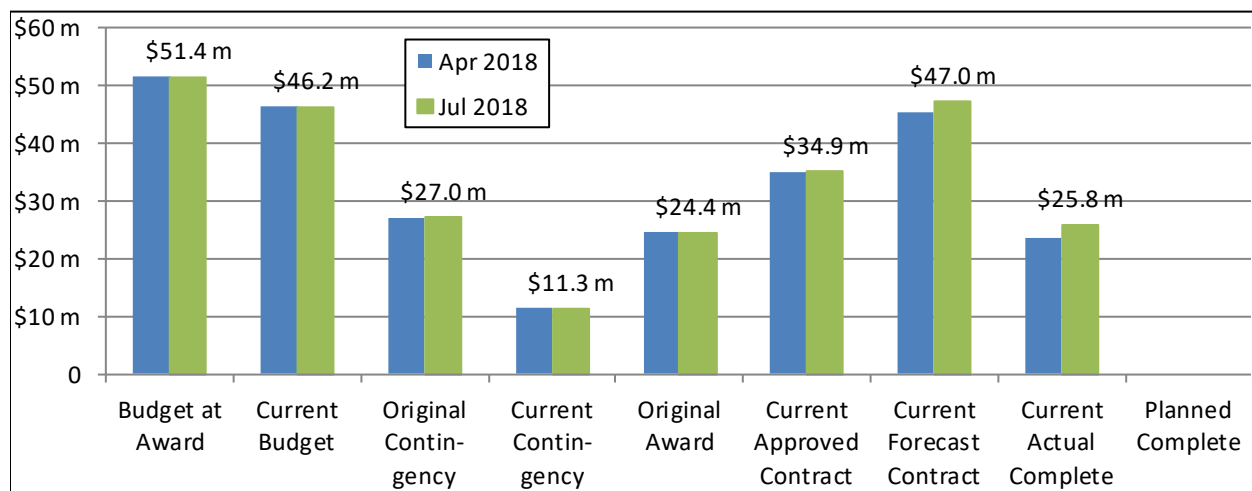
1	2	3	4	5	6	7	8
Budget at Award	Current Budget	Change from Original to Current	Contract at Award	Current Approved Contract	Change from Original to Current	Current Forecast	Change from Current Forecast to Budget at Award
\$461.1	\$463.6	(2-1) \$2.5	\$404.6	\$447.0	(5-4) \$42.4	\$518.7	(7-1) \$57.6
Percent Complete		Actual Prog Last 12 Mths		Actual Prog Last 6 Mths		Average Required Progress to reach forecast SC 1.67% per month	
Planned	Actual	Total	Avg/Mth	Total	Avg/Mth		
94.1%	61.7%	20.8%	1.7%	12.2%	2.0%		



VM014 Vertical Circulation Elements (Escalators & Elevators)

Jul 2018

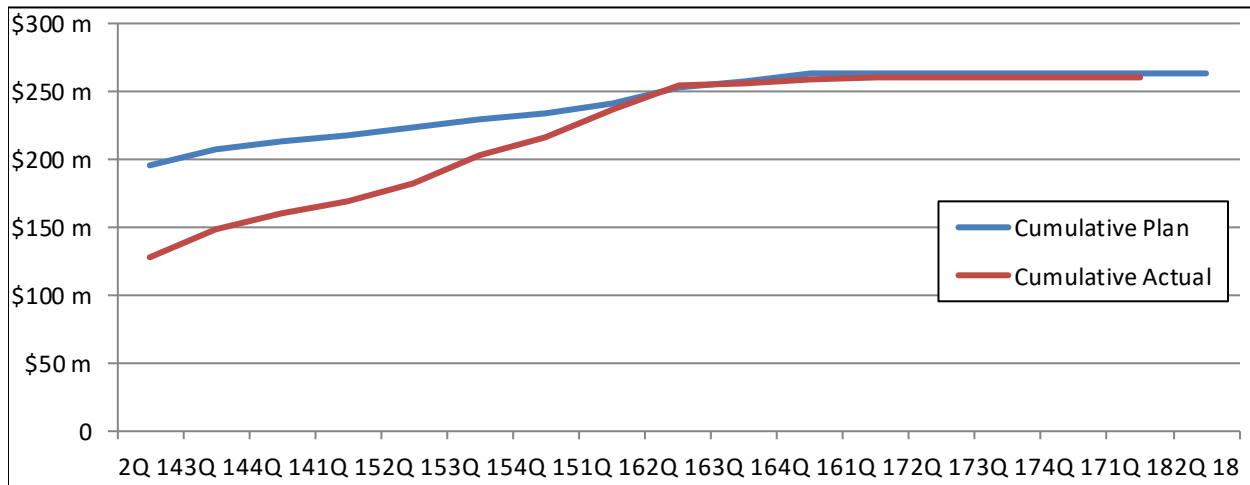
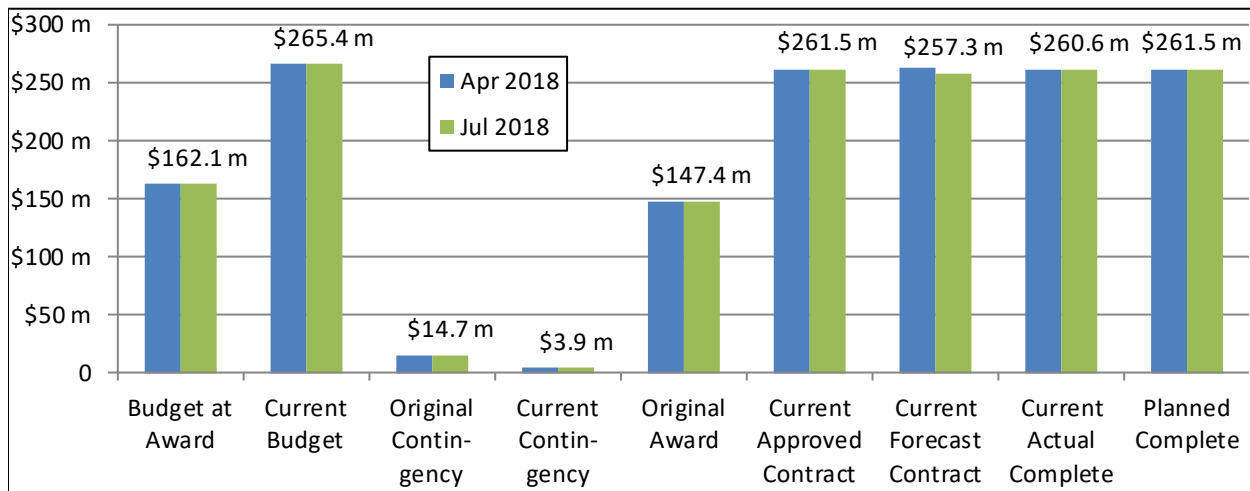
1	2	3	4	5	6	7	8
Budget at Award	Current Budget	Change from Original to Current	Contract at Award	Current Approved Contract	Change from Original to Current	Current Forecast	Change from Current Forecast to Budget at Award
\$51.4	\$46.2	(2-1) (\$5.2)	\$24.4	\$34.9	(5-4) \$10.5	\$47.0	(7-1) (\$4.4)
Percent Complete		Actual Prog Last 12 Mths		Actual Prog Last 6 Mths		Average Required Progress to reach forecast SC	
Planned	Actual	Total	Avg/Mth	Total	Avg/Mth		
NA	73.8%	33.2%	2.8%	14.9%	2.5%	0.94% per month	



CQ032 Plaza Substation & Queens Structures

Jul 2018

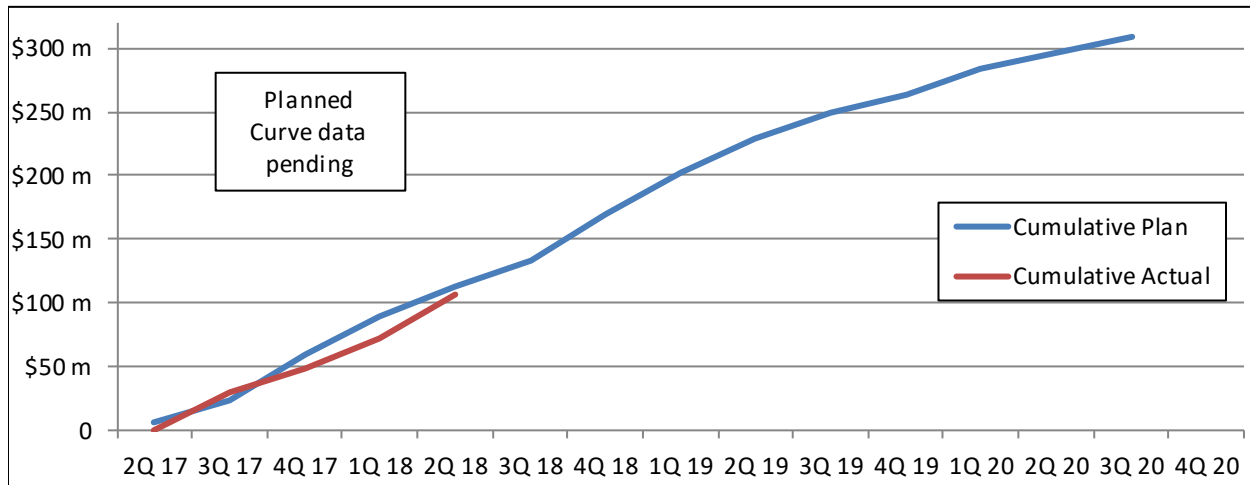
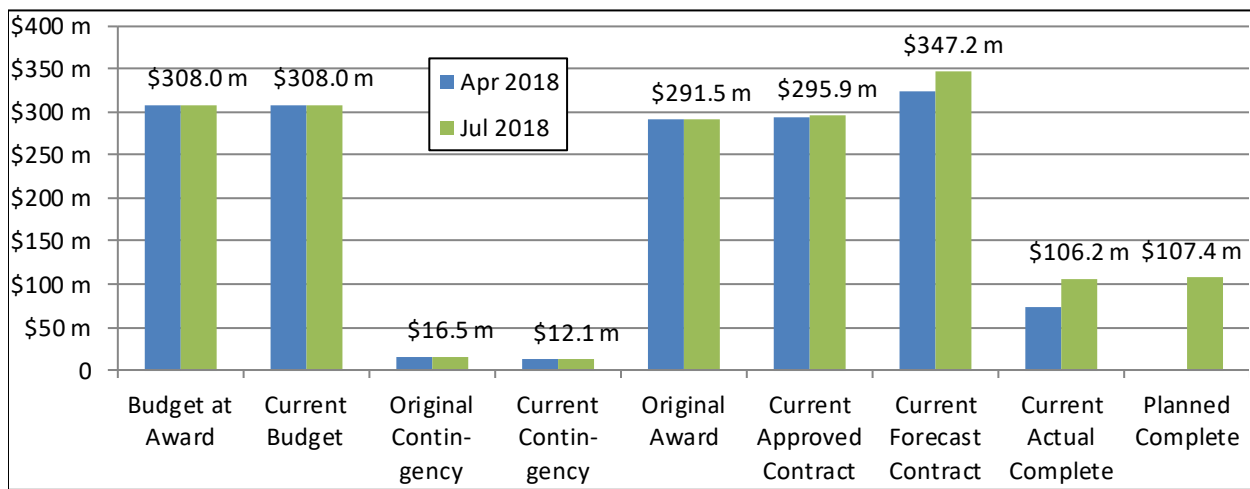
1	2	3	4	5	6	7	8
Budget at Award	Current Budget	Change from Original to Current	Contract at Award	Current Approved Contract	Change from Original to Current	Current Forecast	Change from Current Forecast to Budget at Award
\$162.1	\$265.4	(2-1) \$103.3	\$147.4	\$261.5	(5-4) \$114.1	\$257.3	(7-1) \$95.2
Percent Complete		Actual Prog Last 12 Mths		Actual Prog Last 6 Mths		Average Required Progress to reach forecast SC 0.05% per month	
Planned	Actual	Total	Avg/Mth	Total	Avg/Mth		
100.0%	99.7%	0.4%	0.0%	0.1%	0.0%		



CQ033 Mid-Day Storage Facility

Jul 2018

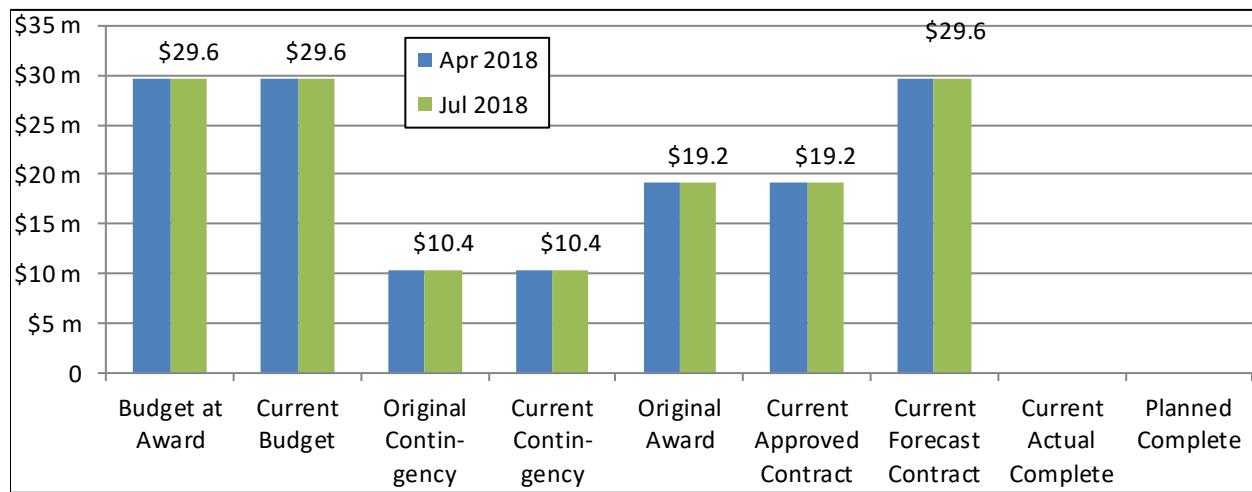
1	2	3	4	5	6	7	8
Budget at Award	Current Budget	Change from Original to Current	Contract at Award	Current Approved Contract	Change from Original to Current	Current Forecast	Change from Current Forecast to Budget at Award
\$308.0	\$308.0	(2-1) \$0.0	\$291.5	\$295.9	(5-4) \$4.4	\$347.2	(7-1) \$39.2
Percent 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	2.37% per month	
36.3%	35.9%	32.6%	2.7%	19.5%	3.3%		



CH057D Track A Cut and Cover Structure

Jul 2018

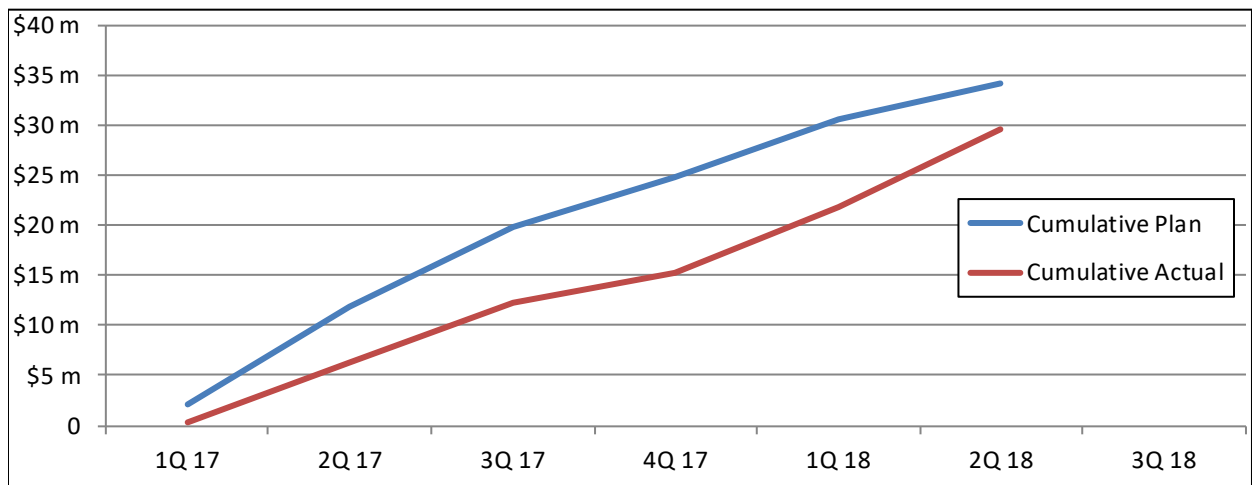
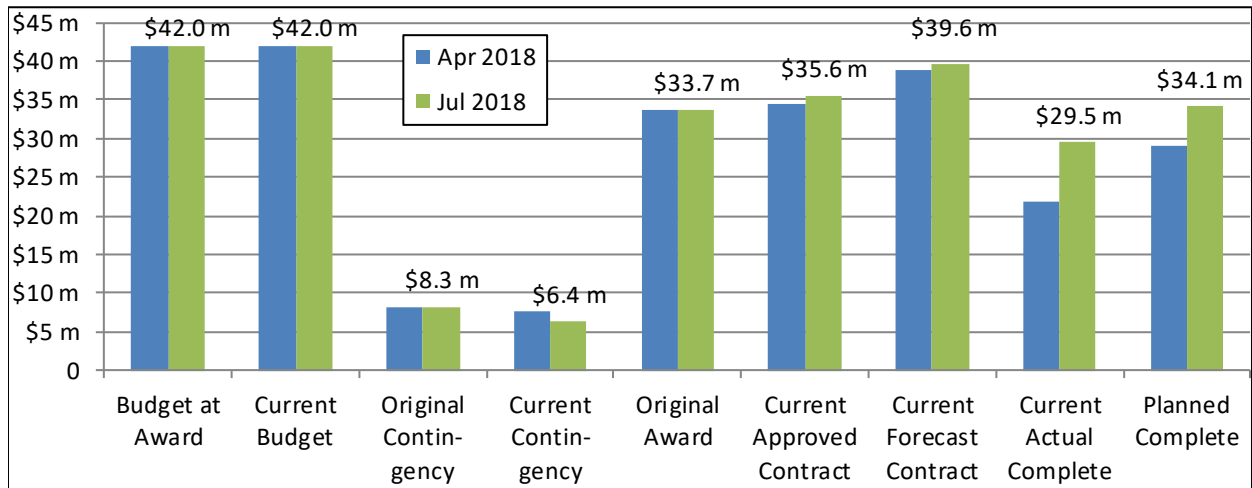
1	2	3	4	5	6	7	8
Budget at Award	Current Budget	Change from Original to Current	Contract at Award	Current Approved Contract	Change from Original to Current	Current Forecast	Change from Current Forecast to Budget at Award
\$29.6	\$29.6	(2-1) \$0.0	\$19.2	\$19.2	(5-4) \$0.0	\$29.6	(7-1) \$0.0
Percent Complete		Actual Prog Last 12 Mths		Actual Prog Last 6 Mths		Average Required Progress to reach forecast SC	
Planned	Actual	Total	Avg/Mth	Total	Avg/Mth	14.29% per month	
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%		



CH061A Track A Cut and Cover Structure

Jul 2018

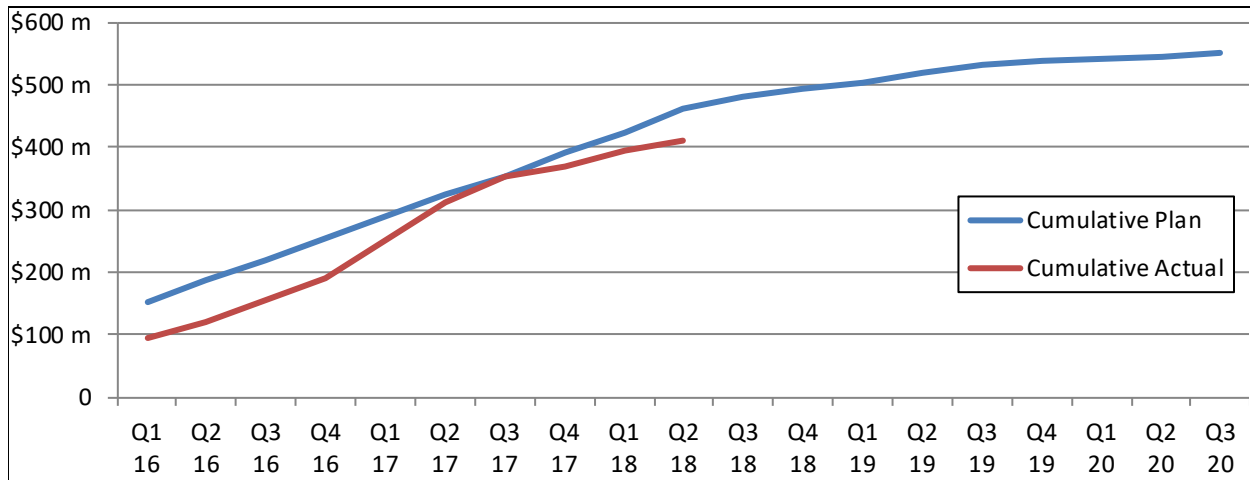
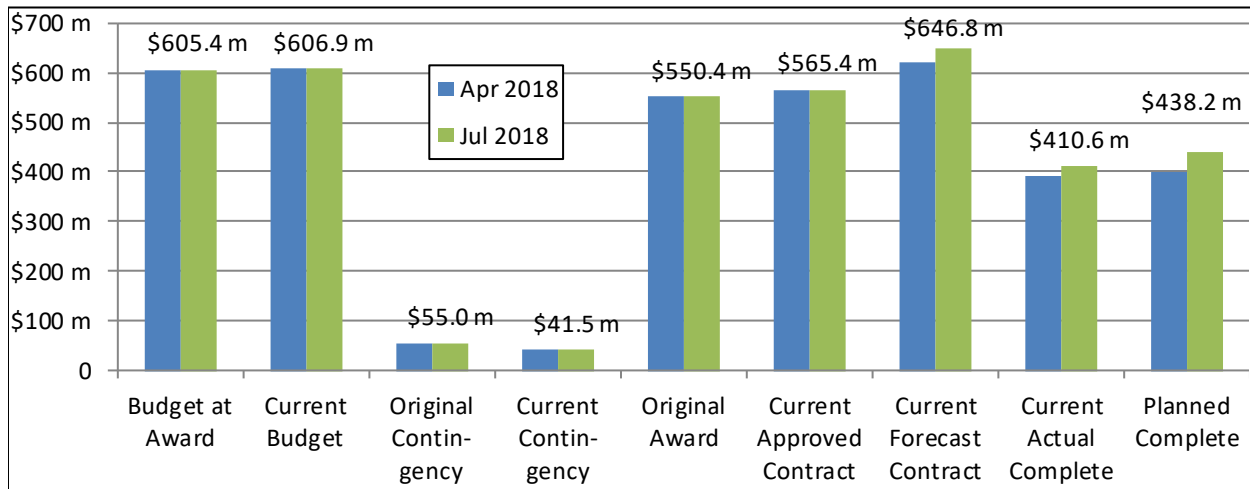
1	2	3	4	5	6	7	8
Budget at Award	Current Budget	Change from Original to Current	Contract at Award	Current Approved Contract	Change from Original to Current	Current Forecast	Change from Current Forecast to Budget at Award
\$42.0	\$42.0	(2-1) \$0.0	\$33.7	\$35.6	(5-4) \$1.9	\$39.6	(7-1) (\$2.4)
Percent 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		
95.8%	82.7%	64.4%	5.4%	38.1%	6.4%	8.65% per month	



CS179 Systems Package 1 – Facilities Systems

Jul 2018

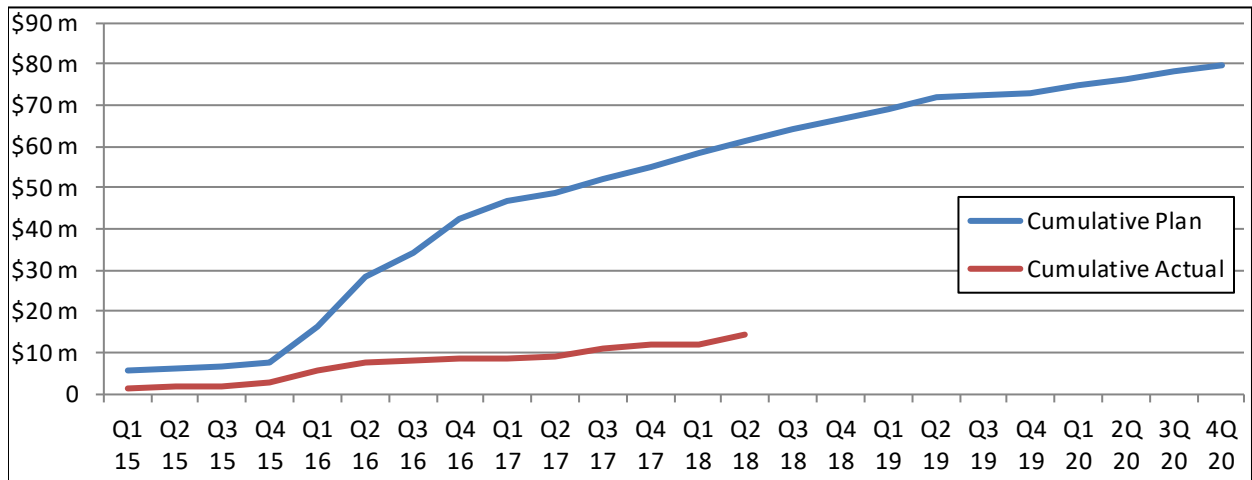
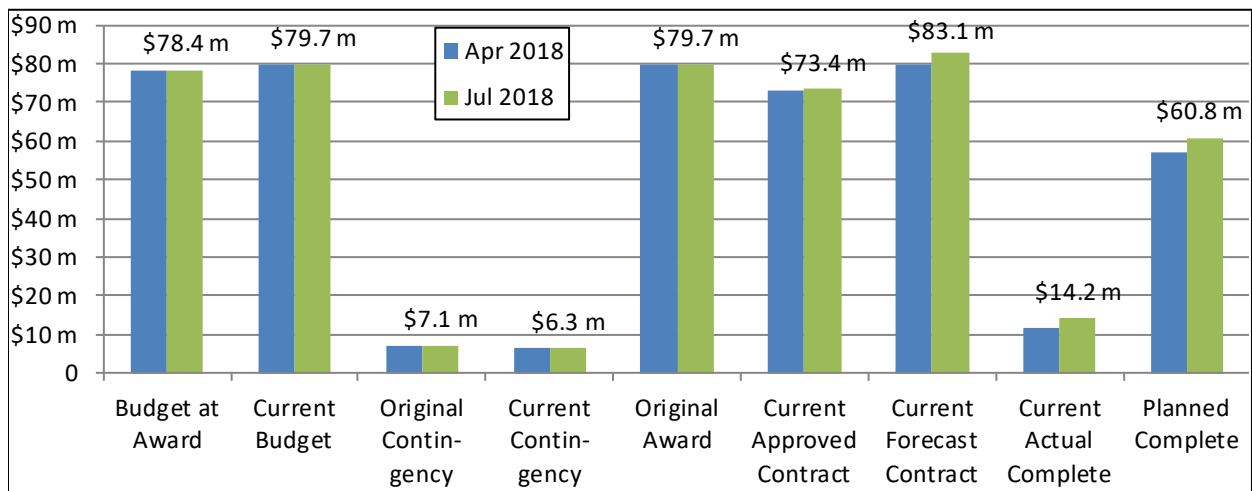
1	2	3	4	5	6	7	8
Budget at Award	Current Budget	Change from Original to Current	Contract at Award	Current Approved Contract	Change from Original to Current	Current Forecast	Change from Current Forecast to Budget at Award
\$605.4	\$606.9	(2-1) \$1.5	\$606.9	\$565.4	(5-4) (\$41.5) <small>(options+mods)</small>	\$646.8	(7-1) \$41.4
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	0.80% per month	
77.5%	72.0%	15.6%	1.3%	5.2%	0.9%		



CS084 Tunnel Systems Package 4 – Traction Power

Jul 2018

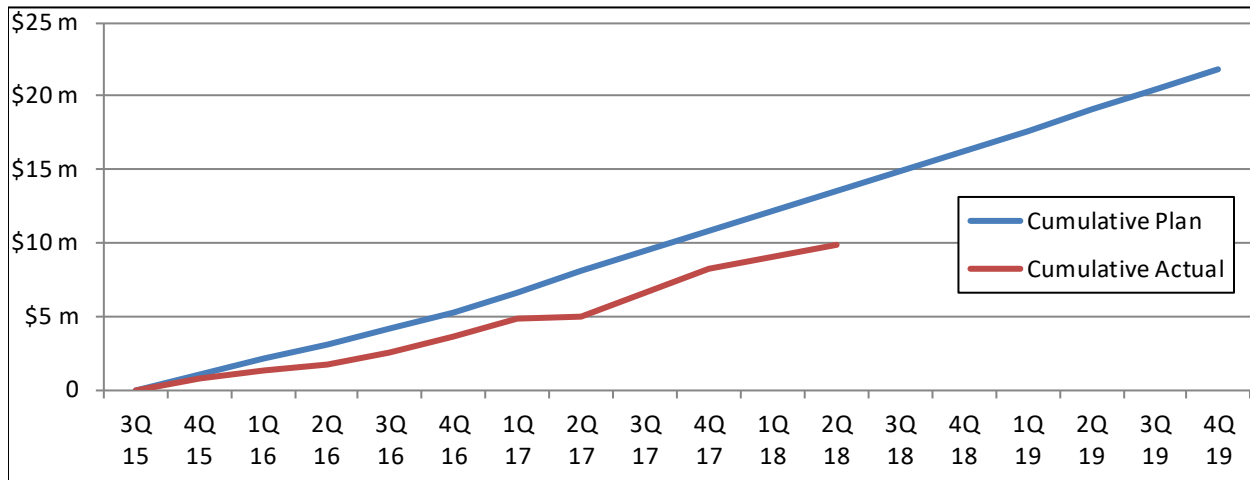
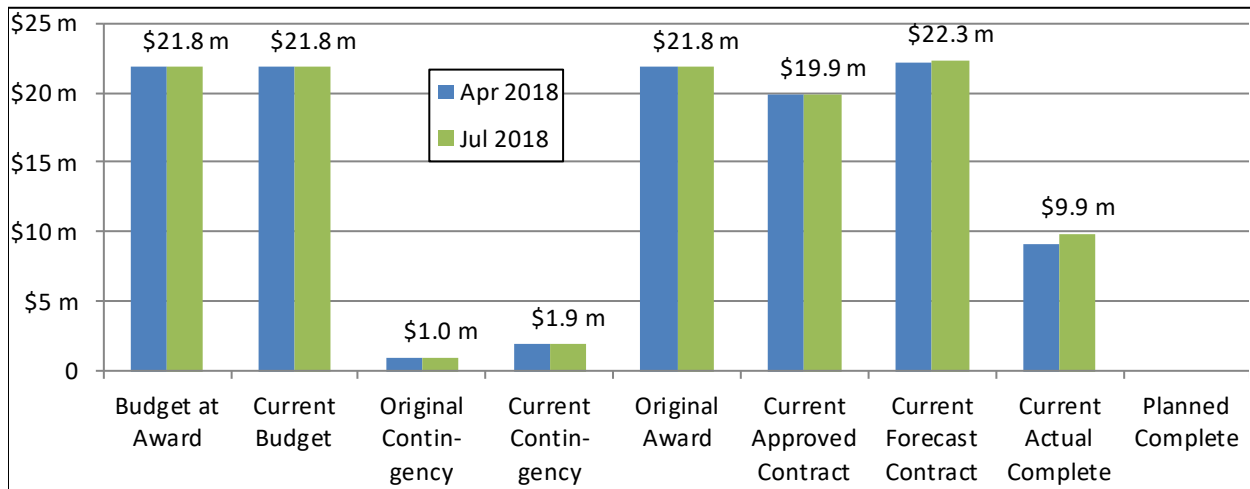
1	2	3	4	5	6	7	8
Budget at Award	Current Budget	Change from Original to Current	Contract at Award	Current Approved Contract	Change from Original to Current	Current Forecast	Change from Current Forecast to Budget at Award
\$78.4	\$79.7	(2-1) \$1.3	\$79.7	\$73.4	(5-4) (\$6.3)	\$83.1	(7-1) \$4.7
Percent 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		
82.9%	19.4%	6.4%	0.5%	3.0%	0.5%		



VS086 Systems Package 3 – Signal Equipment Procurement

Jul 2018

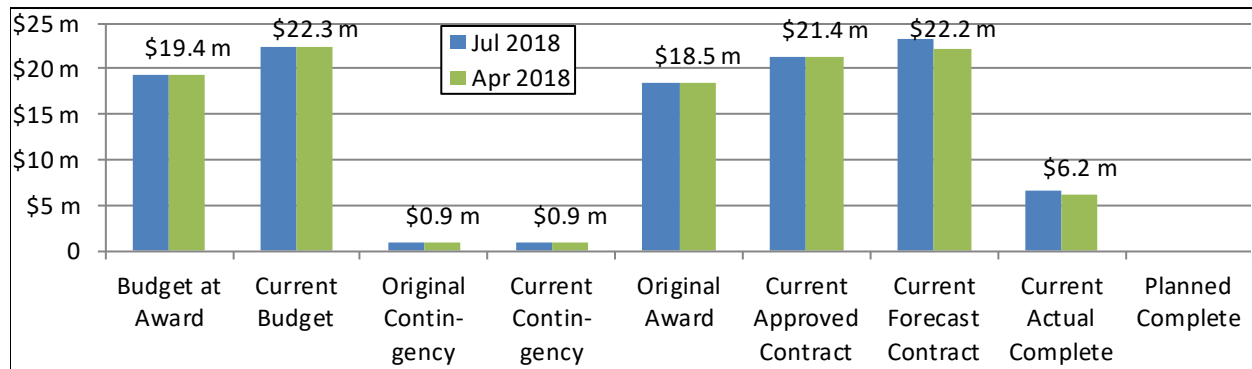
1	2	3	4	5	6	7	8
Budget at Award	Current Budget	Change from Original to Current	Contract at Award	Current Approved Contract	Change from Original to Current	Current Forecast	Change from Current Forecast to Budget at Award
\$21.8	\$21.8	(2-1) \$0.0	\$21.8	\$19.9	(5-4) (\$1.9)	\$22.3	(7-1) \$0.5
Percent Complete		Actual Prog Last 12 Mths		Actual Prog Last 6 Mths		Average Required Progress to reach forecast SC	
Planned	Actual	Total	Avg/Mth	Total	Avg/Mth	3.35% per month	
NA	49.8%	24.5%	2.0%	8.2%	1.4%		



VQ033 Midday Storage Yard CILs

Jul 2018

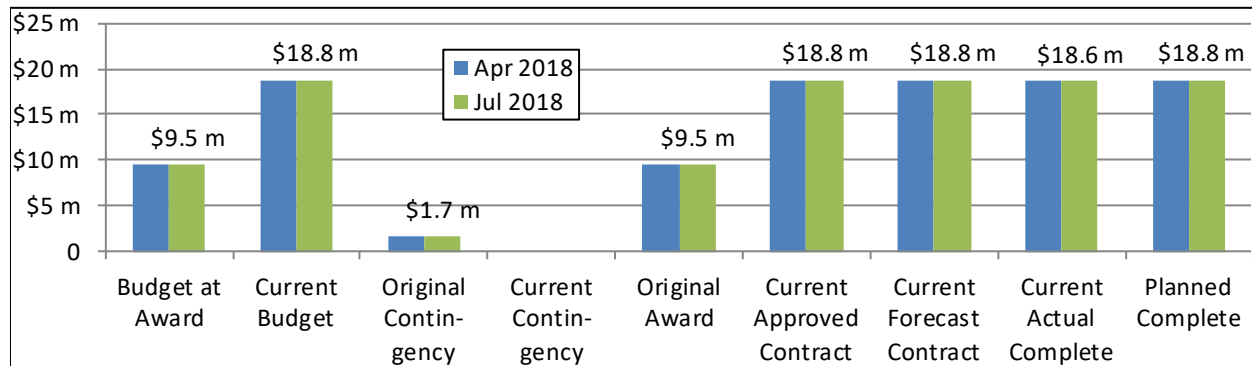
Budget at Award	Current Budget	Change from Original to Current	Contract at Award	Current Approved Contract	Change from Original to Current	Current Forecast	Change from Current Forecast to Budget at Award
\$19.4	\$22.3	(2-1) \$2.9	\$18.5	\$21.4	(5-4) \$2.9	\$23.2	(7-1) \$3.8
Percent Complete		Actual Prog Last 12 Mths		Actual Prog Last 6 Mths		Average Required Progress to reach forecast SC	
Planned	Actual	Total	Avg/Mth	Total	Avg/Mth		
NA	30.9%	8.1%	0.7%	0.6%	0.1%		



FHA01 Harold Stage 1 – Amtrak F/A

Jul 2018

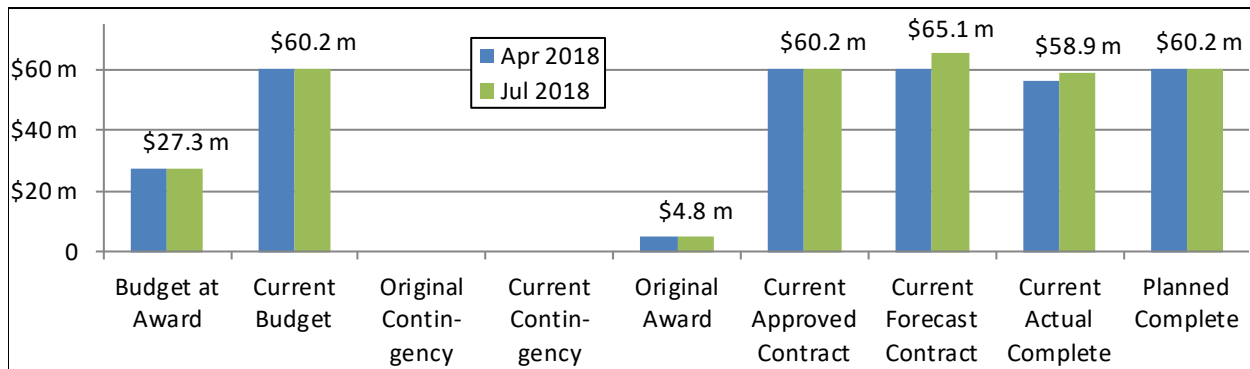
Budget at Award	Current Budget	Change from Original to Current	Contract at Award	Current Approved Contract	Change from Original to Current	Current Forecast	Change from Current Forecast to Budget at Award
\$9.5	\$18.8	(2-1) \$9.3	\$9.5	\$18.8	(5-4) \$9.3	\$18.8	(7-1) \$9.3
Percent Complete		Actual Prog Last 12 Mths		Actual Prog Last 6 Mths		Average Required Progress to reach forecast SC	
Planned	Actual	Total	Avg/Mth	Total	Avg/Mth		
100.0%	99.0%	0.1%	0.0%	-0.5%	-0.1%		



FHA02 Harold Stage 2 – Amtrak F/A

Jul 2018

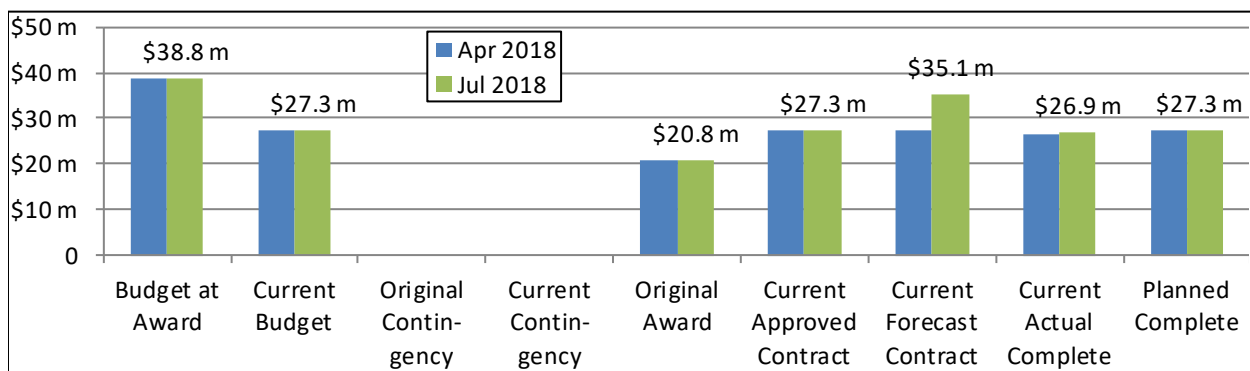
Budget at Award	Current Budget	Change from Original to Current	Contract at Award	Current Approved Contract	Change from Original to Current	Current Forecast	Change from Current Forecast to Budget at Award
\$27.3	\$60.2	(2-1) \$32.9	\$4.8	\$60.2	(5-4) \$55.4	\$65.1	(7-1) \$37.8
Percent Complete		Actual Prog Last 12 Mths		Actual Prog Last 6 Mths		Average Required Progress to reach forecast SC	
Planned	Actual	Total	Avg/Mth	Total	Avg/Mth	0.19% per month	
100.0%	97.9%	8.7%	0.7%	7.7%	1.3%		



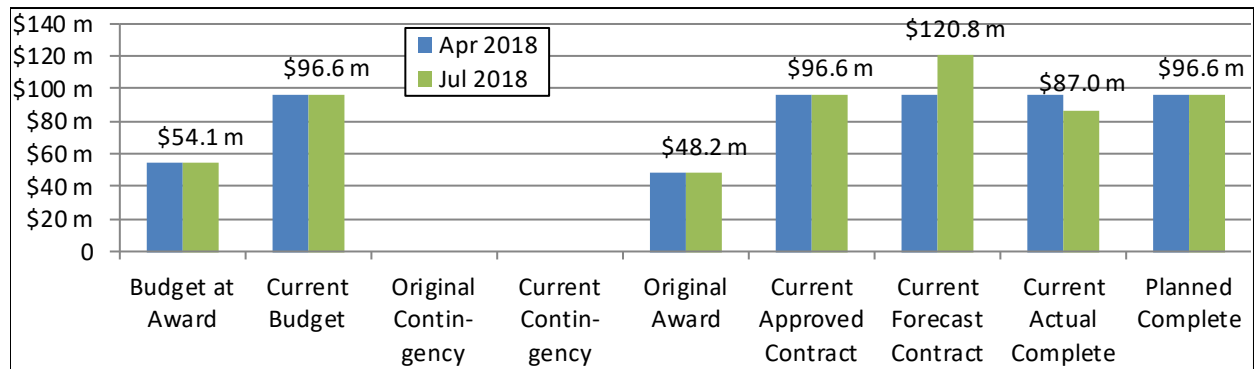
FHL01 Harold Stage 1 – LIRR F/A

Jul 2018

Budget at Award	Current Budget	Change from Original to Current	Contract at Award	Current Approved Contract	Change from Original to Current	Current Forecast	Change from Current Forecast to Budget at Award
\$28.8	\$27.3	(2-1) (\$1.5)	\$20.8	\$27.3	(5-4) \$6.5	\$35.1	(7-1) \$6.3
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	0.23% per month	
100.0%	98.4%	-0.1%	0.0%	-7.3%	-1.2%		



Budget at Award	Current Budget	Change from Original to Current	Contract at Award	Current Approved Contract	Change from Original to Current	Current Forecast	Change from Current Forecast to Budget at Award
\$54.1	\$96.6	(2-1) \$42.5	\$48.2	\$96.6	(5-4) \$48.4	\$120.8	(7-1) \$66.7
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	0.38% per month	
100.0%	90.0%	-10.0%	-0.8%	-6.7%	-1.1%		



APPENDIX K – 3rd PARTY CONTRACT MILESTONE METRICS

As of IPS 108 August 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	No change over the quarter.
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	12/23/19	81	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	2/11/19	229	
5A	Caverns Ready for Integrated Systems Testing	4/11/19	8/7/19	8/7/19	8/6/19	-1	2 month forecasted delay over the quarter.
6	All Caverns and Tunnel Work Complete	N/A	12/16/19	12/16/19	2/12/20	58	
6A	Substantial Completion	7/19/19	1/28/20	1/28/20	3/23/20	55	3 month forecasted savings over the quarter.
6B	Punchlist Completion	N/A	4/27/20	4/27/20	6/22/20	56	3 month forecasted savings over the quarter.
7	Integrated System Testing Completion	N/A	6/1/20	6/1/20	6/11/20	10	7 month forecasted savings over the quarter.
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	8/20/18	839	
4B	Comm Closets CC-C3, CC-C7 & Room B3265	12/2/16	3/5/17	5/20/18	8/20/18	626	
5	44th St Vent Facility Complete	3/3/17	7/2/17	6/4/17	8/27/18	542	
5A	Complete all work at 48th St Entrance	2/15/18	3/20/17	10/2/17	8/31/18	88	
6	Comm Closets CC-C4 and CC-C8	5/12/17	5/20/18	5/20/18	8/20/18	465	
7	Completion of 50th Street 2nd Phase	10/26/17	1/27/18	1/27/18	9/9/19	683	
8	Substantial Completion	7/24/19	1/21/19	8/18/18	6/9/20	321	
8A	Punchlist Complete	5/17/18	5/21/19	12/16/18	10/7/20	874	
9	Integrated Systems Testing Completed	7/24/19	3/23/20	10/25/19	4/1/21	617	
9A	Ready for Integrated Systems Testing	5/17/18	10/2/18	5/20/18	11/18/19	550	

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.
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	No change over the quarter.
7	Final Completion	1/7/16	N/A	12/5/16	3/31/19	1179	No change over the quarter.
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	
4A	Ready for Integrated Testing MDSY	N/A	3/11/20	3/11/20	6/5/20	86	
5	YS Track Completion	N/A	4/11/18	4/11/18	9/5/19	512	
6	Substantial Completion	10/25/18	8/10/20	8/10/20	11/4/20	741	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	9/14/18	64	
9	Complete Option 1 - Demo Amtrak Buildings	N/A	5/27/20	5/27/20	2/28/19	-454	
CH057D: Harold Trackwork Part 3 – NEQ & SEQ							
1	Submittals for NEQ	N/A	6/27/18	6/27/18	6/27/18A	0	
2	Demolition of PW1 Track	N/A	7/28/18	7/28/18	7/28/18A	0	
3	NEQ Special Track Work	N/A	8/20/18	8/20/18	8/20/18	0	
4	NEQ WBY Track	N/A	9/2/18	9/2/18	9/2/18	0	
5	Submittals for SEQ	N/A	9/5/18	9/5/18	9/5/18	0	
6	PW2, ML2 & Special Track Work	N/A	10/15/18	10/15/18	10/15/18	0	
7	SEQ, TM2 & 6199	N/A	10/26/18	10/26/18	10/26/18	0	
8	Substantial Completion	N/A	1/31/19	1/31/19	1/31/19	0	
9	Final Completion	N/A	4/30/19	4/30/19	4/30/19	0	
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	
2	Montauk Cutoff Catenary Structures	N/A	9/11/17	9/11/17	12/1/17A	81	
3	Substantial Completion	9/20/17	5/28/18	5/28/18	6/12/18A	15	
4	Final Completion	N/A	8/27/18	8/27/18	9/13/18	17	

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
CS179: Systems Package 1 - Facilities Systems							
NTP	Facilities Systems Package 1 NTP	3/31/14A	3/31/14A	N/A	3/31/14A	-	Approved baseline in Oct. 1, 2016 IPS.
1	C05 TPSS Room Ready for CS084 Work at Vernon Blvd. Vent Facility	10/16/15	12/30/16	2/15/17	8/1/18	1020	3 month forecasted delay over the quarter.
3	Completion of Multiple Rooms (CIR, Sig. Reactor, Interlocking 1D, TPSS C06 and C07)*	10/13/16	12/31/16	5/22/17	8/1/18	657	3 month forecasted delay over the quarter.
4A	C04 TPSS Room (Level P1) Ready for CS084 Work at 2nd Ave. Vent Facility	5/5/16	2/1/17	2/1/17	8/1/18	818	3 month forecasted delay over the quarter.
5	GCT 6 CIR Ready for CS086 (orig CS086) Installation	10/17/16	4/14/17	4/30/17	8/1/18	653	3 month forecasted delay over the quarter.
6	B10 Permanent Power Energized (Precedes Energization of B05, B06,B08, B09, B11 & B13)	6/24/16	4/28/17	4/22/17	8/1/18	768	3 month forecasted delay over the quarter.
7	GCT 5 CIR Ready for CS086 (orig CS086) Installation	2/17/17	5/27/17	4/30/17	8/1/18	530	3 month forecasted delay over the quarter.
8	GCT 4 CIR Ready for CS086 (orig CS086) Installation	5/2/17	6/27/17	4/30/17	8/1/18	456	3 month forecasted delay over the quarter.
9	C01 & C02 TPSS Room Ready for CS084 at Tail Tracks	8/7/17	6/8/17	6/8/17	8/1/18	359	3 month forecasted delay over the quarter.
10	GCT 3 CIR Ready for CS086 (orig CS086) Installation	11/6/17	9/6/17	9/6/17	8/1/18	268	3 month forecasted delay over the quarter.
11	C03 TPSS Room Ready for CS084 at 55th St. Vent Facility	2/20/18	2/27/18	3/25/18	2/6/19	351	2 month forecasted delay over the quarter.
12A	Integrated System Testing Start (TOC & All Permanent Power Complete)	5/2/18	12/8/18	9/1/18	8/21/19	476	3 month forecasted delay over the quarter.
12B-1	Complete IST of All Systems Equip Installed by CM007	10/22/19	7/1/20	3/23/20	3/28/21	523	1 month forecasted savings over the quarter.
12B-2	Complete IST of All Systems Equip Installed by CM014A	7/24/19	7/1/20	3/23/20	3/28/21	613	1 month forecasted savings over the quarter.
12B-3	Complete IST of All Systems Equip Installed by CM014B	7/24/19	7/1/20	3/23/20	12/24/20	519	4 month forecasted delay over the quarter.
13	Substantial Completion Including Completion of IST	12/9/19	7/1/20	7/1/20	6/29/21	568	1.5 month forecasted delay over the quarter.
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	4/30/20	1070	2.5 month forecasted delay over the quarter.
2	Energize Traction Power Substation C04 and C05	6/20/18	12/14/18	10/3/18	5/12/20	692	2 month forecasted delay over the quarter.
3	Energize Traction Power Substation C06 and C07	10/2/18	3/2/19	3/2/19	10/19/20	692	4 month forecasted delay over the quarter.
4	Energize Traction Power Substation C01 and C02	10/30/18	1/30/19	2/5/19	6/15/20	594	2 month forecasted delay over the quarter.
5	Energize Traction Power Substation C03	12/28/18	5/16/19	5/16/19	7/30/20	580	4 month forecasted delay over the quarter.
6	Complete Local testing of all substation	1/11/19	7/30/19	7/30/19	11/18/20	677	2 month forecasted delay over the quarter.
7	Substantial completion & Final Completion	10/21/19	11/25/19	12/2/19	2/10/21	478	3 month forecasted delay over the quarter.

Mile-stone	Activity Description	IPS Baseline Date ¹ June 2014	Appr Cont Baseline Date ²	Current Contract Date ³	Current ESA Forecast Date ⁴	Delta ⁵ IPS BL to Forecast	Notes
VQ033: Mid-Day Storage Yard CIL Procurement							
NTP	Notice To Proceed (NTP) Actual 1/15/16 by JPS	N/A	1/15/16A	N/A	1/15/16A	-	Contract not in the June 2014 Re-baseline IPS.
1	Mid-3 CIL (NTP+549d)*	N/A	7/21/17	5/2/19	5/1/19	649	Approved baseline in May 1, 2016 IPS.
2	Mid-6 CIL (NTP+855d)*	N/A	5/23/18	8/13/19	8/12/19	446	Delta measured against Approved Contract Baseline Date for all milestones.
3	Mid-8 CIL (NTP+1158d)*	N/A	11/22/18	9/10/19	9/9/19	291	
SC	Substantial Completion (NTP+1216d)	N/A	5/19/19	3/6/20	3/6/20	292	
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	8/1/18	1061	2 month forecasted delay over the quarter.
3	Furnish Tunnel Signal Equip. & Hardware for Plaza CIR (NTP+582CD)	2/18/16	6/29/17	4/28/17	9/21/18	946	1.5 month forecasted delay over the quarter.
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	No change over the quarter.
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	No change over the quarter.
SC	Substantial Completion (NTP+1840CD)	12/9/19	10/14/19	10/14/19	10/14/19	-56	No change over the quarter.

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		
	Base-line *4	Current Update *1	Delta (mths) *2	Base-line *4	Current Update *1	Delta (mths) *2	Base-line *4	Current Update *1	Delta (mths) *2	Base-line *4	Current Update *1	Delta (mths) *2	Base-line *4	Current Update *1	Delta (mths) *2
CO1 Tail Tracks 38 th St	2/16/16	8/7/18	9	1/18/17	8/3/18	-92	9/13/16	3/4/19	-130	2/23/17	3/26/19	-34	2/9/18	4/15/19	-34
CO2 Tail Tracks 38 th St	2/16/16	9/5/18	-35	5/24/16	8/7/18	-92	9/13/16	3/18/19	-27	2/20/17	4/4/19	-27	2/9/18	4/24/19	-6
CO3 55 th Street	2/23/16	2/13/19	-215	6/1/16	9/5/18	-92	9/13/16	7/5/19	-99	3/13/17	7/29/19	-94	8/2/18	8/28/19	-77
CO4 2 nd Avenue	2/18/16	8/28/18	-84	11/21/16	8/7/17A	0	9/13/16	8/28/18	-77	10/5/16	1/22/18A	0	3/13/17	2/12/18A	151
CO5 Vernon	2/18/16	8/18/17A	0	5/26/16	6/7/17A	0	9/13/16	5/1/18A	31	10/5/16	8/28/17A	0	11/8/16	5/5/18A	41
CO6 QP Main	2/18/16	10/10/18	-91	5/26/16	8/7/18	-92	9/30/16	1/21/19	-265	11/21/16	2/19/19	-82	6/13/17	3/12/19	-53
CO7 QP Yard	2/18/16	10/22/18	-91	5/26/16	8/7/18	-92	9/13/16	4/15/19	-160	1/12/17	5/14/19	-159	8/17/17	6/4/19	-159
CO8 43 rd St Pre-fab Bldg	1/21/16	8/2/18	-22	5/12/16	8/16/17A	20	9/12/16	2/12/19	-99	10/25/16	3/18/19	-25	12/6/16	4/5/19	-8

***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			Complete			Testing Complete			Work Complete			Testing Complete		
	Base-line *4	Current Update *1	Delta (mths) *2	Base-line *4	Current Update *1	Delta (mths) *2	Base-line *4	Current Update *1	Delta (mths) *2	Base-line *4	Current Update *1	Delta (mths) *2	Base-line *4	Current Update *1	Delta (mths) *2
CO1 Tail Tracks 38 th St	11/6/18	1/20/20	-38	12/27/18	3/10/20	-34	1/21/19	3/31/20	-34	2/4/19	6/3/20	-84	12/2/19	2/10/20	-72
CO2 Tail Tracks 38 th St	11/14/18	2/6/20	-13	12/24/18	3/20/20	-25	1/22/19	4/10/20	-11	2/5/19	6/15/20	-63	12/2/19	2/10/20	-72
CO3 55 th Street	3/1/19	3/26/20	-76	N/A	N/A	N/A	5/6/19	5/29/20	-74	5/16/19	7/30/20	-126	12/2/19	2/10/20	-72
CO4 2 nd Avenue	4/27/18	11/27/19	-90	7/6/18	2/7/20	-92	8/7/18	3/9/20	-91	8/21/18	5/12/20	-141	12/2/19	2/10/20	-72
CO5 Vernon	6/8/18	4/17/19	215	N/A	N/A	N/A	9/19/18	7/29/19	214	10/3/18	1/28/20	45	12/2/19	2/10/20	-72
CO6 QP Main	9/10/18	4/10/20	-65	N/A	N/A	N/A	1/3/19	7/31/20	-65	1/17/19	8/14/20	-65	12/2/19	2/10/20	-72
CO7 QP Yard	10/22/18	6/12/20	-137	N/A	N/A	N/A	2/15/19	10/5/20	-139	3/1/19	10/19/20	-139	12/2/19	2/10/20	-72
CO8 43 rd St Pre-fab Bldg	9/12/17	2/24/20	-24	12/8/17	3/18/20	-89	2/1/18	2/26/20	-22	2/15/18	4/30/20	-72	12/2/19	2/10/20	-72

*Notes

1. Current Update = Contractor's Monthly CPM Schedule Update 32 with Data Date 8/1/18.

2 - Delta = Change from the contractor previous quarter CPM Schedule update 29, data date 5/1/18, 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

Contract	Criteria	4Q2017	1Q2018	2Q2018	3Q2018
CM007	< 90 days Open	17	11	30	9
	> 90 days Open	41	41	31	36
	Total Open	58	52	61	45
	Total Closed	34	46	62	86
	Total NCRs	92	98	123	131
CM014B	< 90 days Open	7	7	12	16
	> 90 days Open	--	4	15	11
	Total Open	7	11	12	27
	Total Closed	32	34	40	42
	Total NCRs	39	45	52	69
CQ032	< 90 days Open	6	6	6	2
	> 90 days Open	10	8	1	9
	Total Open	16	14	12	11
	Total Closed	106	106	114	118
	Total NCRs	122	122	126	129
CH053	< 90 days Open	--	0	0	0
	> 90 days Open	1	0	0	0
	Total Open	--	0	0	0
	Total Closed	91	91	91	91
	Total NCRs	91	91	91	91
CH057	< 90 days Open	--	0	0	0
	> 90 days Open	3	0	0	0
	Total Open	3	0	0	0
	Total Closed	23	26	26	26
	Total NCRs	26	26	26	26
CH061A	< 90 days Open			5	4
	> 90 days Open			1	2
	Total Open			6	6
	Total Closed			10	12
	Total NCRs			16	18
CS179	< 90 days Open	8	5	4	7
	> 90 days Open	8	12	14	14
	Total Open	16	17	18	21
	Total Closed	37	37	39	43
	Total NCRs	53	54	57	64
CS084	< 90 days Open	1	1	1	0
	> 90 days Open	--	0	1	0
	Total Open	1	1	2	0
	Total Closed	4	4	4	6
	Total NCRs	5	5	6	6
CQ033	<90 days Open	--	0	0	3
	>90 days Open	--	2	0	0
	Total Open	--	2	0	3
	Total Closed	--	0	11	11
	Total NCRs	--	2	11	14

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 35 contract modifications having magnitudes in excess of \$100,000 during the period from May 2018 through July 2018. These modifications represent a total net cost increase of \$29,065,563 million. The PMOC reviewed the staff summary sheets of select modifications to check compliance with the guidelines as shown below.

CM004 had 1 modification executed during the review period for a decrease of \$131 thousand.

CM014B had 12 modifications executed during the review period that resulted in an aggregate increase of \$11.4 million. The PMOC reviewed modification 164, Revisions for Future 45th Street Entrance (CPR-090), with a value of \$1.99 million and dated May 21, 2018. The PMOC observed that the CM followed the project procedures.

CQ033 had 4 modifications executed during the review period that resulted in an aggregate increase of \$1.4 million. The PMOC reviewed modification 11, CH057A Catenary Transfer (ECOC#1; BSS-May), with a value of \$870 thousand and dated June 7, 2018. The PMOC observed that the CM followed the project procedures.

CH061A had 4 modifications executed during the review period that resulted in an aggregate increase of \$1.0 million.

CS084 had 1 modification executed during the review period for a decrease of \$318 thousand.

CS179 had 8 modifications executed during the review period that resulted in an aggregate increase of \$5.4 million. The PMOC reviewed modification 74, Water Infiltration Issues at Queens Facilities, with a value of \$2.768 million and dated May 2, 2018. The PMOC observed that the CM followed the project procedures.

Professional Services had 5 modifications executed during the review period that resulted in an aggregate increase of \$9.6 million. The PMOC reviewed modification 158, North Runner Track Catenary, with a value of \$173 thousand and dated July 3, 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	Done	Done

*As reported at ESA Monthly CM007 Progress Meeting September 13, 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	54.4%	

*Progress Data from September 23, 2018 ESA Progress Summary: Track & Third Rail - RTB.

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	42.3%		
Planned Progress	72.3%		

*Progress Data from September 23, 2018 ESA Progress Summary: Track& Third Rail – RTB.

Special Trackwork (turnouts)

S T Assemblies	ST RTB	ST DFF	
Installation Status	Progressing	Not started	
Actual Progress	6.3%		
Planned Progress	26.6%		

*Progress Data from September 23, 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 contractor’s proposal.
2. Coordination: interferences from CS179 (fire alarms, light fixtures, conduit blocking ceiling penetrations, etc.).
3. Equipment delivery issue still unresolved.

C03 (55th Street)

4. Not ready for handover from CS179 – access date unknown.
5. SCADA documentation must be re-submitted for approval.
6. Water condition (drain) needs resolution by CS179 (CS179 contract modification needed).

C04 (2nd Avenue)

7. Floor recessed by CS179 for dielectric coating – needs inspection and acceptance.
8. Coordination: interferences from CS179 (fan, fire alarm control panel, light fixtures, etc.).
9. Water infiltration issues with ductbank.
10. Galvanized pull boxes installed by CS179 in lieu of fiberglass – need replacement.

C05 (Vernon)

11. CM007 damaged ducts to monument pads – missing concrete encasement – CM007 to repair.
12. Removal of PVC duct in concrete conduits – MTACC needs to issue CPR.
13. Switch room/Control room relocation required – need CPR.
14. Still have water infiltration issue.
15. CPRs needed for various other coordination issues.
16. Grounding cable issue discovered – MTACC issued a SWO until replacement by other contractor.

C06/C07 (Plaza)

17. Missing penetrations in floor and on bench level for bus duct (CQ032 was to provide) – contract modification required.
18. Floor needs to be recessed for installation of epoxy di-electric (CS032 requirement).
19. Doorway needs to be enlarged for delivery/installation of reactors (mod to CS179 needed).
20. Coordination: interferences from CS179 (light fixtures and ductwork).

C08 (43rd Street)

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

APPENDIX Q – Operational Readiness

Rail Activation Plan & Task Working Groups (TWG) – 2Q2018 Status

NOTE: The Quarterly update for 3Q2018 has been delayed from October 2018 to November 2018, thus limiting information regarding the current status of Operational Readiness. Accordingly, updates in this Appendix Q are incomplete due to limited availability about current 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 continues to believe 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 3Q2018, 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. The TWG leaders are interacting with LIRR department heads through a series of meetings to confirm what tasks need to be accomplished to implement ESA revenue service. This detailed interaction has led to the identification of some additional tasks that must be addressed to begin, or maintain, ESA revenue service. One particularly important section of the RAP is the Comprehensive System Test Plan (CSTP) that must be followed to progress to ESA revenue service. The development of this CSTP, which is dependent on the formulation of an acceptable Integrated System Test Plan (ISTP) still under development on the ESA CS179 contract, is on-going; with no forecasted completion date established as yet. MTACC also noted that the ESA CSTP Coordinator position, established to ensure the timely and effective development of the CSTP, is still vacant.

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. Currently, however, LIRR is considering having only limited passenger service on the forecasted ESA RSD rather than the full service originally envisioned. This is because it appears that certain infrastructure may not be available by the forecasted ESA RSD; and because Amtrak work may interfere with ESA work. Providing revenue service that differs from the existing Revenue Service Plan (RSP) will require the development of a new RSP. LIRR has put together a team to develop a new RSP; and LIRR anticipates it could take up to 12 months to complete. The implementation of a new RSP has an impact on other critical ESA tasks (e.g., other Operations Plans, staffing and training, and the acquisition of new personnel and railcars). This TWG continues to develop the ESA Service Disruption Plan, including MNR and NYCT where appropriate.

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 MTA. MTA submitted a waiver request to the FRA, specifically for the Harold Interlocking, asking to be relieved of this mandate for that area based on the Harold Interlocking being an active construction zone. Further status information on the PTC design,

waiver request, and implementation can be found in Section Nos. 1.7a and 2.1 of this report. 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. The goal to complete the design by the end of July 2018 was not met; and, after the July 2018 briefing, LIRR notified the PMOC that the final design review meeting would occur in August 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 2017; and, while submitted proposals were received and evaluated, no award date was identified as of the 2Q2018 briefing. 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. At the July 30, 2018 briefing, MTACC noted that the Staffing and Training Plans were being revalidated by senior LIRR management; and now, with the additional requirement for a revised RSP, there is no forecasted date for the finalization of either Plan.

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. As a result of several field surveys in GCT by LIRR, MNR, and MTACC-ESA personnel, a number of gaps in customer signage between what was proposed in the ESA Project and what MNR has in its GCT signage upgrade contract plans for signage were identified. Discussions are on-going between the parties to determine how to address these gaps and how to fund any contract additions to either the ESA Project or the MNR contract.

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. Activities in 2Q2018 included 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. In 3Q2018, procurement efforts for the railcars were cancelled and MTA expects to reissue a revised RFP in October 2018. An update on the railcar procurement is noted in Section 2.5 – Vehicles. During 2Q2018, another procurement effort for the Protect Locomotives was on-hold pending evaluation of design specifications related to the tunnel ventilation system and heat exposure ratings. However, while MTACC subsequently reported that the proposed locomotive design was deemed safe for use in the tunnels, MTACC has not provided an update on the procurement status 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	\$7,386 m	\$10,922 m	\$10,335 m*	\$8,119 m
b(4)					
Schedule	Revenue Service Date (RSD)	Dec 31, 2013	Dec 31, 2023	Dec. 2022	April 30, 2018
Total Project % Complete		Based on Invoiced Amount		72.9% actual vs. 72.7% planned (ESA calculation †)	
Project Performance Rate since 2014 “Re-Plan”		Based on Earned Value		78.4% (PMOC calculation of construction spending at 2Q2018 planned vs. actual since re-baselining)	
Contracts	Total contracts awarded to date		\$9,170.9 m	82.4% (PMOC calculation †)	
	Total construction contracts awarded to date		\$7,057.1 m	88.1% (PMOC calculation †)	
Major Issue	Status		Comments		
Project Funding and Budget	The ESA PMT updated the ESA program Current Baseline Budgets based on the approval of Budget Amendment 3 for the 2015–2019 Capital Plan. The ESA program Current Baseline Budget is \$10,335 million.		b(4)		
Project Cost	MTACC will request further additional funds in the 2020-2024 Capital Plan to provide total funding of approximately \$11,133 million for the ESA program.		If the 2020-2024 Capital Plan is not approved for the additional required ESA funds, then there may be significant impacts to the completion of current contracts, award of remaining contracts, and/or completion of railroad force account work.		
Project Schedule	b(4) The target RSD forecast is February 2022, unchanged from the previous IPS update. The public RSD remains December 2022. The Amended FFGA Revenue Operations Date is December 2023.		The completion dates of the longest paths through the three major areas of the ESA program all lost time during June, July, and August 2018. The Manhattan/Systems path and the Queens path both slipped two weeks and the Harold Interlocking path slipped two months. The program contains an Issue b(4)		
Manhattan/-Systems Schedule Path	IPS 108 shows the ESA Program Critical Path running through the Manhattan/Systems work. This path lost approximately two-weeks during this monthly update, the time for which was recovered from the Issue Contingency schedule activity.		Concerns continue about the ESA critical path through Manhattan/Systems work. The Manhattan/-Systems path completion date slipped 14 CDs from April 23, 2021, to May 7, 2021, in 2Q2018. The schedule has significant unresolved issues (Incremental IST, 47 th Street Entrance) that may mask delays on other near critical work. Acceptable work progress along this schedule path relies heavily on the effectiveness of MTACC/ESA coordination efforts across the seven area contracts.		

Notes: * The ESA program interim budget was established in the April 2018 reassessment.

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

† These percentages are lower than those shown in the June 2018 report because they are now being calculated using the ESA April 2018 updated EAC: Construction \$8,014.1 million; \$871.8 million Engineering;

\$1,980.4 million Soft Cost; \$267.0 million Contingency; and, Total Cost \$11,133.3 million. Refer to Section 5.0, Project Cost, for more information about this change.