

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

Report Period August 1 – August 31, 2018

PMOC Contract No. DTFT60D1400017

Project No. DC-27-5287, Task Order No. 0002, Work Order No. 07

Urban Engineers of New York, D.P.C., 2 Penn Plaza, Suite 1103, New York, NY 10121

PMOC Lead: [REDACTED] b(6)

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

TABLE OF CONTENTS

Executive Summary	1
Monitoring Report	2
1.0 Project Status	2
a. Engineering Design and Construction Phase Services	2
b. Procurement	4
c. Construction	4
d. Quality Assurance and Quality Control.....	12
2.0 Schedule Data	13
3.0 Cost Data	17
4.0 Risk Management	19
5.0 ELPEP Compliance Summary	21
6.0 Safety and Security	22
7.0 Issues and Recommendations	22

APPENDICES

Appendix A – Acronyms

Appendix B – Charts and Tables

Chart 1 – ESA Critical Paths – IPS 107, July 1, 2018

Table 1 – Summary of Critical Dates

Table 2 – Project Budget/Cost Table

Table 3 – Project Budget and Invoices

Table 4 – Comparison of Standard Cost Categories: FFGA vs. CBB

Table 5 – Summary by FTA Standard Cost Categories

Table 6 – Program Budget Adjustments

Table 7 – Program Critical Dates 90 Day Look-Ahead – IPS 107, July 1, 2018

Table 8 – ESA Core Accountability Items

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 the FTA or the project sponsor, in accordance with the purposes as described below.

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

EXECUTIVE SUMMARY

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

Overall Program Status: The Overall Program is 77.7% actual versus 77.6% as-planned (based on invoice cost).

Construction Status: The Construction Status is 77.7% actual versus 77.4% as-planned (based on invoice cost).

Contracts Awarded/Completed: CH058A: 6 bids opened – Aug. 9, 2018.

Construction Progress Issues: CM014B, CS084, VS086, CS179.

Program Funding: Total program funding is \$10,335 million, which is sufficient for the MTACC forecasts through December 2020.

Program Cost and Budget: Total remaining contingencies decreased to \$871.7 million (\$638.3 million unallocated; and, \$233.3 million allocated).

Integrated Project Schedule: The February 2022 forecast target RSD is unchanged. The ESA Program Critical Path is controlled by Manhattan/Systems work.

Risk Management: 10 major risks remain.

Harold Interlocking: Began Northeast Quadrant (NEQ) turnout and track installation.

Key Stakeholder Issues: LIRR –Late resolution of CS179, CS084, and VS086 issues. Amtrak – Continuing Force Account availability issues; Electric Traction improved availability.

MTACC - Change Order processing issues, GEC CPS support for Contractor Submittals, redesigns, RFIs, and Field Conditions.

Construction Safety: 2.30 – Lost Time and 3.45 – Recordable BLS Injury ratios during July 2018; both decreases from June 2018.

ELPEP Compliance: MTACC reported Schedule Contingency remains 20 CDs above the ELPEP minimum.

Project Management Plan: MTACC to update PMP and Sub-plans to reflect major management, organizational and process changes project-wide.

Buy America: Three CS179 Issues – Small Split HVAC units (waiver requested); Video Display Panels (waiver request in preparation); PA Speakers (waiver request in preparation).

All Project Sponsor cost and schedule data included in this report is based on the MTACC East Side Access Q2 2018 Progress Report (April, May, June), referenced in this report as the ESA Q2 2018 Report, which has a cost and schedule data date of July 1, 2018. Unless otherwise noted, all progress percentages in this report are based on invoiced costs, 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 Project Sponsor's technical capability and capacity to execute a project efficiently and effectively, and hence, whether the Project 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

1.0 PROJECT STATUS

a. Engineering Design and Construction Phase Services

In the ESA Q2 2018 Report, the PMT reported that the overall Engineering effort is 86.8% complete compared to as-planned completion of 100%. The ESA June 2018 Total Cost Report shows that 98.8% of the overall EIS and Engineering budget, including 99.0% of the design budget, has been invoiced.

Status of Construction Packages Advertised

CS086 Tunnel Systems Package 2 – Signal Installation: At the June 2018 MTA Board meeting, MTA approved MTACC's recommendation to award this contract. As of August 31, 2018, however, the contract had not been awarded.

CH058A Harold Structures Part 3A, B/C Approach Structure, was advertised on May 8, 2018. Six (6) bids were opened on August 9, 2018; MTA Procurement continues review for compliance with bid requirements.

Status of Construction Packages Not Awarded

CM015 – 48th Street Entrance: Design work remained suspended through August 2018. MTA has notified the building owner that construction of the 48th St. Entrance has been deferred.

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. GEC submitted 100% FIO drawings for the CS179 (systems) scope for the proposed entrance. LIRR had no comments and approved the package. MNR had 3 comments to which the GEC responded and revised the package. PMT is awaiting MNR approval. MTACC plans to build the alternate 47th Street Entrance by contract modification to the current active 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. 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 is being surveyed with completion expected in September 2018. 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.

Status of Positive Train Control Design

Positive Train Control: 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. MTACC will be installing, testing, and commissioning PTC for all track and signal systems built under the ESA Program.

- 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 later in 2018 and possibly not until the end of the year.
- 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.
- 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. LIRR is required to submit to the FRA, within 90 days, i.e., August 2, 2018, the revised PTC Implementation Plan with LIRR's proposed alternate schedule. As of August 31, 2018, LIRR has not yet provided FRA with the requested information.

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

CS179, Systems Facilities Package No.1: The backlog of overdue submittals and RFI reviews noted in earlier reports continues to be a significant unresolved issue for the CS179 project team. The contractor continues to assert that overdue responses on design submittals and Requests for Information (RFI), unresolved Notices of Change (NOC), and numerous Stop Work Orders (SWOs) are impacting the completion of design work and delaying the contract schedule. The contractor continues to note that there are 29 NOCs contributing to its inability to finalize designs; 9 of which MTACC was to issue Contractor Proposal Requests (CPRs) and 14 more that exceed the 30-day turnaround time duration provision in the contract. The completion of Final Design (FD) for all 10 Control Systems, which was scheduled for completion 28 months ago, has not occurred yet and the completion of FD for all 19 Non-Control Systems is also delayed. The full impact of the Control and Non-Control System FD delays on contract progress remains undetermined at this time. Previously noted Buy/Ship America issues that could impact design and construction completion also remain unresolved.

CS084, Traction Power Systems Package 4: While the contractor continues to contend that unresolved design issues, differing site conditions, and coordination issues caused delays to the execution of this contract, progress continues to be made on the fabrication and delivery of equipment. Some design issues related to water remediation methodologies and other identified field construction issues also remain open.

VS086, Systems Package 3 – Signal Equipment Procurement: The contractor continued to assert that the lack of timely responses on design submittals and inquiries caused delays in the progression of the work. MTACC made some unilateral decisions regarding the use of specialized track circuit equipment; and, despite having no final approval for its use from LIRR, directed the

contractor to move forward with a signal design that utilizes this equipment. Work on designs to incorporate Positive Train Control (PTC) and special power requirements in the signal cases requires contract modifications that must still be developed and negotiated.

b. Procurement

The ESA Q2 2018 Report shows that total procurement for the ESA project was 88.4% complete, with \$9.085 billion awarded of the \$10.335 billion current project budget (ESA Program only). The status of the remaining major near-term procurements is summarized below:

- CS086 Tunnel Systems Package 2 – Signal Installation is being procured as a RFP. Negotiations with the single proposer concluded in May 2018. BAFO finalization continued through August 2018. Contract award date had been forecast for August 2018, but, as of August 31, 2018, the contract has not been awarded.
- CH058A Harold Structures Part 3A, B/C Approach Structure: advertised May 8, 2018; six (6) bids opened August 9, 2018: NTP forecast Sept. 25, 2018.

c. Construction

In the ESA Q2 2018 Report, MTACC reported that total construction progress reached 77.7% complete compared with as-planned progress of 77.4%. The percentage of work complete, as shown throughout this report, is calculated using invoiced costs to represent construction progress. The program level completion percentage calculations changed this month due to the incorporation of the 2018 Baseline budget (e.g. completion percentages decrease when budgets increase). The current budgets equal the amounts allocated in the MTA Impact accounting system, which are used for percentage calculations for individual contracts.

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	325.0	732.1	52.3%	49.1%	1/28/20	5/1/20	
	nc	+0.1	(-0.1)	+21.7	(-2.7)	nc	+3.3%	nc	nc	
	712.3	662.5	49.8	303.3	734.8	52.3%	45.8%	1/28/20	5/1/20	
CM014B	463.6	447.0	16.6	275.7	518.7	94.1%	61.7%	8/18/18	6/9/20	
	nc	+0.1	(-0.1)	+12.2	(-1.9)	nc	+2.7%	nc	nc	
	463.6	446.9	16.7	263.5	520.6	94.1%	59.0%	8/18/18	6/9/20	
VM014	46.2	34.9	11.3	25.8	47.0	NA	73.8%	10/25/19	10/16/20	
	nc	nc	nc	+2.4	(-0.6)	NA	+6.9%	nc	nc	
	46.2	34.9	11.3	23.4	47.6	NA	66.9%	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 MS#4, Final Completion, by March 31, 2019.

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

CM007 – GCT Station Caverns and Track:

Schedule: Milestone #4 (Track & 3rd Rail Work Complete) August 7, 2019, is now January 27, 2020, -172 days.

Milestone #5 (Substations US1 and US2 Complete) June 27, 2018, is now January 11, 2019, -197 days.

Milestone #5A (Caverns Ready for Integrated Systems Testing) August 7, 2019, is now July 25, 2019.

Milestone #6 (All Caverns and Tunnel Work Complete) December 16, 2019, is now February 24, 2020, -69 days.

Milestone #6A (Substantial Completion) January 28, 2020, is now April 17, 2020, -83 days.

ESA and the contractor continued to review the contractor’s Time Impact Analysis (TIA)/recovery schedule dealing with trackwork issues and may incorporate further impacts due to systems coordination issues.

Construction Progress: South and North Back of House, East and West: Continued MEP and CMU installation and upper level platform slabs.

45th Street Lobby: Continued MEP and CMU installation.

East Cavern: Continued Mezzanine Level Chase waterproofing installation. Continued stair steel framing and precast slab installation. Continued stair, CMU, wall board, and waterproofing installation. Continued upper level under platform MEP installation. The escalator contractor started cavern escalator installation.

West Cavern: Continued Mezzanine Level electrical installation. Continued upper level under-platform MEP installation. Continued stair steel framing and precast slab installation. Continued stair, CMU, wall board and waterproofing installation. The escalator contractor started cavern elevator and escalator installation.

Through August 31, 2018, MTACC reports that precast beams and decks are 91.2% complete. Precast platform walls and deck panels are 73.0% complete.

Track: Continued trackwork construction in the Cavern and into the Tunnel Track area. Continued rail destressing activity. Continued turnout installation at GCT2, GCT4 and GCT5. Continued qualification testing of Special Trackwork DFF, and completed High Attenuation RTB testing; variances requested from LIRR. Through August 31, 2018, MTACC reports that Track and Third Rail installation is 35.3% complete.

CM014B – Concourse and Facilities Fit-Out:

Schedule: In its ESA Q2 2018 Report, MTACC reports that this contract is 62% complete vs. 96% planned. The CCM reports that all of the milestones for completion of the various communication rooms and closets have been completed. In rooms and closets that have FM200 fire suppression, the rooms/closets have been pressure sealed, but no gas tests have been done because mechanical purge systems are not in place. This includes Milestones #1, #2, #3, #4, and #6. Turnover to CS179 continues.

Milestone #5 (44th St. Vent Building) June 4, 2017, now forecast for June 2018, but not achieved: The fans have been installed in Shaft #1 by the CS179 contractor (who has joint occupancy). The building storefront installation is complete. CM014B punch list work is underway.

The design of the 47th Street Entrance remains the primary critical path. Structural steel work has now become the secondary critical path and is significantly behind schedule. The Biltmore Room construction is the tertiary critical path.

Through August 7, 2018, the structural steel erection was 69% complete by piece and 64% by weight. As previously reported, this work is proceeding very slowly and is impacting the schedule and the CS179 contract. Cumulative metal ceiling deck progress was 23% complete.

Construction Progress: Electricians continued with installation of overhead conduit throughout, Chiller Plant Room and racks/conduit to various zones. Plumbers continue with domestic water installation and vent pipe throughout the Concourse. Mechanical work continues with the installation fan coil units, ductwork, and chilled water piping. Painting of block walls and columns continues throughout Zones 1-4. Installation of waterproofing and gutters at the deck continues throughout. Installation of architectural suspended ceiling grid system is underway and installation of the marble stone wall finish continues in the Public Corridor.

Biltmore Connection: For Biltmore update see following VM014 report.

Wellways: In Wellway #1, installation of glass tile wall finish is underway, along with ceiling tiles, sprinkler heads and light fixtures. In Wellway #2, installation of sprinklers, light fixtures and ceiling tiles continues. Setting of escalator sections continues in Wellway #4 and rigging setup is ongoing in Wellway #3.

47th Street Cross Passage: Redesign drawings have been completed by the GEC and delivered to the CCM office.

50th St. Vent Facility: This area continues in full fit-out mode. Installation of steam vent, mechanical pipe insulation, bathroom piping, and make-up water piping is ongoing. HVAC pipe testing nears completion.

VM014 – Vertical Circulation Elements (Escalators and Elevators):

Schedule: In the MTACC Q2 2018 Report to the PMOC, it is reported that, through June 30, 2018, 73.8% of this contract has been invoiced and 64.0% paid. Through August 31, 2018, for the CM007 contract, elevator and escalator sections have begun to be delivered to the site and erection of elevators is underway.

Although this contract includes milestones covering fabrication and delivery of escalators and elevators, the actual schedule for those areas is driven by the respective schedules and access dates provided by the CM014B and CM007 contractors.

Construction Progress: The CCM advised the PMOC that contractor will use the previously approved construction elevator/escalator unit numbering plan. The MTACC CCM advised that a package on temporary cab protection for Elevators #1 and #2 is being prepared for LIRR review.

CM007: Escalator rigging in the Caverns will take approximately 2 weeks to set up. Rails have been delivered for Elevators #6 (East Cavern), #8 (West Cavern) and #19 (West Cavern) and erection is underway. The Elevator #19 installation is proceeding smoothly. SEC is setting up the area to start installation of Escalator #59. Surveys for Elevator #8 and #6 are under review.

Biltmore Room: The contractor will complete the escalator rigging plan submittal by mid-September 2018. The new start date for Escalators #1 and #2 installation is May 2019.

Other Issues: Water has accumulated in Elevator #12 (44th St. Vent Bldg.) and Elevator #20 (48th St. Entrance) shafts. The contractor is using sump pumps as temporary fixes to the problem. The Elevator #13 piston has been replaced.

Queens 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	257.3	100.0%	99.7%	9/6/16	12/31/18	
	nc	nc	nc	nc	(-0.2)	nc	nc	nc	nc	
	265.4	261.5	4.0	260.6	257.5	100.0%	99.7%	9/6/16	12/31/18	
CQ033	308.0	295.9	12.1	106.2	347.2	36.3%	35.9%	8/10/20	9/30/20	
	nc	+1.2	(-1.2)	+12.0	nc	nc	+3.9%	nc	nc	
	308.0	294.7	13.3	94.2	347.2	36.3%	32.0%	8/10/20	9/30/20	

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 MS#7, Final Completion, by March 31, 2019.

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

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. AR#2 requires the installation of new catenary poles and Amtrak wire transfers, although new pole locations are obstructed by an Amtrak signal trough. The contractor requires both AR#1 and #2 to install underground ductbanks to complete the YS Track, followed by Integrated Testing. MTACC currently forecasts MS#6 Substantial Completion (SC) at September 13, 2020, -34 days.

Construction Progress: The CQ033 contractor continued the following construction activities in August 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 work, and underdrain and ballast retainer work continued.

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	565.4	41.5	410.6	646.8	77.5%	72.0%	7/1/20	6/1/21	1
	nc	nc	nc	+8.6	+0.5	nc	+1.5%	nc	nc	
	606.9	565.4	41.5	402.0	646.3	77.5%	70.5%	7/1/20	5/24/21	
CS084	79.7	73.4	6.3	14.2	83.1	82.9%	19.4%	12/2/19	12/21/20	1
	nc	+0.4	(-0.4)	nc	nc	nc	(0.1%)	nc	nc	
	79.7	73.0	6.7	14.2	83.1	82.9%	19.5%	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	5/20/18	2
	nc	nc	nc	nc	+0.1	NA	nc	nc	nc	
	30.2	29.5	0.7	29.3	30.1	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.

CS084 – Tunnel Systems Package 4 – Traction Power Systems:

Schedule: The information for CS084 is supplemented by discussions at an early-August 2018 Progress Meeting that reviewed contract progress up to August 8, 2018. The PMOC previously reported on the reasoning, per the contractor's perspective, of the significant variance between actual and planned progress. The contractor contends that there is no change in that reasoning. Consequently, the contractor continues to indicate that all of the contract milestones are delayed as a result of delays associated with the approval of substation designs, unresolved issues, and site access restraints. The timely development and issuance of necessary contract modifications on this contract and other contracts for which work is required to progress the CS084 work continues to be an issue requiring improvement.

Design Progress: The contractor continues to assert that previous delays in receiving comments from MTACC for C08 facility switchgear, SCADA requirements, PLC information, and general C08 substation design impacted its ability to meet its own original design, procurement, fabrication, and installation schedules. Design completion of the substations and associated equipment was, as noted in previous PMOC reports, delayed due, per the contractor, to the lack of design approvals by the MTA. With most of the substation and equipment designs now approved, the design focus is now on developing solutions to issues identified during site surveys and construction activities. As these issues are identified, the GEC is being tasked to develop design solutions. However, despite continued interaction by MTACC senior management with LIRR senior management, the LIRR's submittal/comment review process is still in need of improvement and remains an item of concern. The PMOC continues to have concerns about the length of time it is taking to address the various design approval issues.

Construction Progress: Some equipment for several of the substations has been fabricated and delivered to storage, where it will remain until the TPSS rooms for those substations are ready for their installation of the substation equipment. The contractor continues to cite coordination issues,

design approval delays, access restraints, and differing site conditions as its reasons why work at the various locations cannot progress. With the exception of construction work at the CO5 substation, 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. 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. 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 and February 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.

CS179 – Systems Package 1 – Facilities Systems:

Schedule: While MTACC reports that the SC date for this contract is June 1, 2021, the PMOC continues to question the validity of achieving substantial completion by that date, because the schedule:

1. Is based on the premise that all submitted designs are final (which is not the case);
2. Considers that all field work is ready-to-go as currently understood (which is not the case);
3. Does not include any design or testing contingency;
4. Does not take into consideration any impact from the open NOCs;
5. Does not address any impacts to the contract work from SWOs that remain in effect past the data date of the schedules; and
6. Does not include the required Integrated System Test Plan (ISTP) and test schedule that incorporate the MTACC incremental approach.

The PMOC recognizes MTACC's increased focus during August 2018 on actively negotiating all the required schedule changes and future delay mitigations with the contractor with the goal of reaching final schedule agreements in September 2018.

Three Buy/Ship America issues regarding small HVAC units, public address system speakers, and video monitor display panels remain unresolved and pose schedule risks to the successful and timely completion of this contract. The contractor continues to note that there are 29 NOCs contributing to its inability to finalize designs; 9 of which MTACC was to issue Contractor Proposal Requests (CPRs) and 14 more that exceed the 30-day turnaround time duration provision in the contract. MTACC's inability to develop and issue promised CPRs on a timely basis for the NOCs is a significant issue impacting progress on the contract.

Design Progress: The approval of all 10 control system Final Designs (FDs), a critical activity, is now 28 months late. MTACC Senior Management indicates that the LIRR has formally approved 8 out of the 10 Control System FDs. As previously noted, the PMOC is only aware of 7 formal signed concurrences by the LIRR. The contractor is also responsible to design, install, and test 19 Non-Control systems; several of which, according to the contractor, continue to have FD progress falling behind schedule. The contractor contends that the lack of resolution on open items (e.g.,

the open NOCs) is the primary cause for these delays. However, the contractor continues to move forward with the development of test plans and equipment fabrication. Moving forward without approved designs on equipment procurement and fabrication is, as previously noted by the PMOC, a risk to the timely completion of this contract due to possible future non-acceptance by LIRR. The contractor continues to indicate that any continued progress on system designs is being severely hampered by unanswered RFIs and unissued CPRs that have the potential to alter existing designs. Further, factory testing of equipment for 5 of the 10 Control Systems and 3 of the 19 Non-Control Systems is on hold pending the resolution of adjacent contractor coordination issues, Stop Work Orders, and resolution of RFIs and NOCs.

Construction Progress: In August 2018, the CS179 contractor continued to progress a substantial amount of various elements of work (installation of conduit, cable, fire stopping, fire standpipe, lighting, vent fans, etc.) in the tunnels and at the various substation facilities where access was available and conditions warranted. Coordination issues with other contractors, unexpected field conditions, unresolved design issues, water infiltration remediation efforts, open NOCs/CPRs, and numerous Stop Work Orders continue to impact further progress. In July 2018, the contractor reported that water infiltration issues at the C03 and C04 substation locations were impacting the progression of CS179 work. Subsequent investigation indicates that the conduit installation at the C04 substation was done improperly by another ESA contractor; resulting in water infiltration into the conduit. MTACC is discussing remedies to this issue with the responsible contractor. The subcontractor developing the Control and Non-Control systems continues to request information from MTACC to enable it to finalize testing plans and procedures, as well as plans for system training; but, due to the many open NOCs/CPRs and RFIs, MTACC has been unable to provide much of that information.

VS086 – Systems Package 3, Signal Equipment Procurement:

Schedule: The information for VS086 is supplemented by discussions at a late-August 2018 progress meeting that reviewed progress up to August 22, 2018. As previously reported, the milestones for this contract were modified in mid-2017 and must be modified again to provide a schedule that can be used to accurately evaluate progress. It remains unclear when this schedule update will take place or if it will impact the contract substantial completion date. The timely development and issuance of contract modifications continues to be an issue impacting progress. MTACC further notes that any impact on overall design completion, equipment procurement, and schedule can only be determined when design issues are resolved and contract modifications, if any, are approved.

Design Progress: The contractor continued to assert that the lack of timely responses on design submittals and inquiries caused delays in the progression of the work. In August 2018, the contractor indicated that the design work for incorporation of the ATT-20 track circuit will be identified in its next monthly schedule update. There are two design-related change orders that need to be developed and negotiated – one for the ATT-20 track circuit work and the other for incorporation of Positive Train Control (PTC) into the signal design. The GEC submitted a proposed PTC design scope package to LIRR for approval; but a date for LIRR's response is unknown. The GEC's 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.

In July 2018, the issue of Electro-Magnetic Interference (EMI) with ESA signal and communications equipment was identified. MTACC and the contractor continue to discuss how the EMI issue will be resolved.

Equipment Fabrication Progress: The contractor is preparing to re-submit its Plaza Interlocking FAT Procedure and indicated that the FAT will be held on September 19, 2018. The FIAT, which follows the FAT, is presently scheduled to occur in March 2019; but is subject to adjustment depending on FAT results, the completion of inter-related designs being done on the ESA CS179 contract, and the timeliness of the award of the ESA CS086 contract. In August 2018, MTACC raised a concern about equipment rack configurations being provided by the VS086 contractor. The racks are “open-type” racks with no external housing protecting the racked equipment from the environment in the equipment room, particularly water and moisture. Further discussions on this potential issue will take place between MTACC and the contractor.

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	19.2	10.4	--	29.6	nc	nc	1/31/19	1/31/19	
	nc	nc	nc	nc	(-0.1)	nc	nc	nc	nc	
	29.6	19.2	10.4	--	29.7	nc	nc	1/31/19	1/31/19	
CH061A	42.0	35.6	6.4	29.5	39.6	95.8%	82.7%	5/28/18	8/16/18	1
	nc	nc	nc	+2.6	(-0.2)	nc	+7.3%	nc	nc	
	42.0	35.6	6.4	26.9	39.8	95.8%	75.4%	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.

1. Substantial completion not declared.

CH057D – Harold Trackwork Part 3:

Schedule: During August 2018, the CH057D contractor continued Northeast Quadrant (NEQ) trackwork and turnout installation and successfully achieved Milestone #3, Special Trackwork Installation, by August 20, 2018.

Construction Progress: During August, the contractor installed the #1121 crossover (2 turnouts), and the #1112E, the #1123W, and #2122 turnouts. Additionally, the contractor completed demolition and reconstruction of LI PW1 Track (Port Washington #1) from 48th Street to 43rd Street in Harold Interlocking.

CH061A – Track A Cut and Cover Structure:

Schedule: During August 2018, the CH061A contractor completed Milestone #3, Substantial Completion, on August 16, 2018. ESA has announced, however, that Milestone #4, Final Completion, will be extended beyond its previously forecasted date of August 27, 2018.

Construction Progress: During August 2018, the CH061A contractor continued punchlist activities and construction of ductbench in Tunnel A.

Railroad Force Account Contracts

Railroad force account agreements do not contain schedule requirements, so the PMOC will not report on schedules in this section. Costs and substantial completion dates are tabulated below for active Force Account contracts:

	Current Budget	Appr'd Contract	Rem Budget	Invoice Cost	EAC	Planned Comp	Invoice Comp	Current BL SC	Forecast SC	Notes
FHA01	18.8	18.8	--	18.6	18.8	100.0%	99.0%	2/4/16	4/20/19	1
	nc	nc	nc	nc	nc	nc	nc	nc	nc	
	18.8	18.8	--	18.6	18.8	100.0%	99.0%	2/4/16	4/20/19	
FHA02	60.2	60.2	--	58.9	65.1	100.0%	97.9%	8/15/17	6/12/19	1
	nc	nc	nc	+0.9	+4.6	nc	+1.5%	nc	nc	
	60.2	60.2	--	58.0	60.5	100.0%	96.4%	8/15/17	6/12/19	
FHL01	27.3	27.3	--	26.9	35.1	100.0%	98.4%	1/31/19	2/13/19	1
	nc	nc	nc	+0.1	(-0.5)	nc	+0.2%	nc	nc	
	27.3	27.3	--	26.8	35.6	100.0%	98.2%	1/31/19	2/13/19	
FHL02	96.6	96.6	--	87.0	120.8	100.0%	90.0%	11/25/16	8/26/20	1
	nc	nc	nc	(-19.6)	+8.4	nc	(-20.4%)	nc	nc	
	96.6	96.6	--	106.6	112.4	100.0%	110.4%	11/25/16	8/26/20	

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.

1. Contract Awards for Force Account work are made on an as needed basis. Actual cumulative percent complete is based on the Total Budget Value, not the Approved Contract.

FHA01 – Harold Stage 1 Amtrak:

Construction Progress: Amtrak did not perform any significant former Stage 1 construction during August 2018. The PMOC is not concerned about this because the remaining Stage 1 work will only take one day and is presently scheduled to be done after all NEQ trackwork is complete, which will be in late September 2018.

FHA02 – Harold Stage 2 Amtrak:

Construction Progress: During August 2018, Amtrak Electric Traction (ET) personnel continued to install catenary wires and appurtenances over the LI Eastward Passenger Track to electrify the “PW2 Overrun” route for Amtrak equipment and supported the LIRR NEQ trackwork program.

FHL01 – Harold Stage 1 LIRR:

Construction Progress: LIRR Force Account personnel did not complete any significant former Stage 1 construction during August 2018.

FHL02 – Harold Stages 2 LIRR:

Construction Progress: During August 2018, LIRR Track personnel installed the #1123E, the #1143E, and the #1134E turnouts as part of the Northeast Quadrant trackwork in Harold Interlocking. LIRR Signal and 3rd Rail personnel supported the trackwork effort by installing new signal and electric traction power cables as the turnouts were installed.

d. Quality Assurance and Quality Control

The PMOC reports Quality Assurance/Control issues in its quarterly comprehensive reports. MTACC did not report any significant issues regarding Quality Assurance or Quality Control in its ESA Q2 2018 Report. The PMOC continues to track developments regarding the Contract CS084 transformer test failures that occurred in April 2017 and February 2018.

2.0 SCHEDULE DATA

b(4)

[Redacted]

[Redacted]

[Redacted]

[Redacted]

b(4)

[Redacted]	[Redacted]	[Redacted]	[Redacted]	[Redacted]
[Redacted]	[Redacted]	[Redacted]	[Redacted]	[Redacted]
[Redacted]	[Redacted]	[Redacted]	[Redacted]	[Redacted]
[Redacted]	[Redacted]	[Redacted]	[Redacted]	[Redacted]
[Redacted]	[Redacted]	[Redacted]	[Redacted]	[Redacted]
[Redacted]	[Redacted]	[Redacted]	[Redacted]	[Redacted]
[Redacted]	[Redacted]	[Redacted]	[Redacted]	[Redacted]
[Redacted]	[Redacted]	[Redacted]	[Redacted]	[Redacted]
[Redacted]	[Redacted]	[Redacted]	[Redacted]	[Redacted]
[Redacted]	[Redacted]	[Redacted]	[Redacted]	[Redacted]
[Redacted]	[Redacted]	[Redacted]	[Redacted]	[Redacted]
[Redacted]	[Redacted]	[Redacted]	[Redacted]	[Redacted]
[Redacted]	[Redacted]	[Redacted]	[Redacted]	[Redacted]
[Redacted]	[Redacted]	[Redacted]	[Redacted]	[Redacted]
[Redacted]	[Redacted]	[Redacted]	[Redacted]	[Redacted]

Program Primary Critical Path – Manhattan/Systems

The ESA program primary critical path in IPS 107 remains through Manhattan/Systems work and ends on May 13, 2021. Table 2.2 shows the contracts and work that comprise the Manhattan/Systems path as reported in this update. There were no significant changes to the Manhattan/Systems path in IPS 107 and its end date is approximately 9 calendar days later. This

slippage was compensated for by the program Issue Contingency activity being shortened by approximately one week.

The IPS schedule is based MTACC’s plan for incremental IST that remains as a proposal for which MTACC has not yet achieved either final acceptance by the LIRR or the other contracts that could be impacted (CM007, CM014B, CS179, VS/CS084). The IST dates and durations forecasted in IPS 107 are subject to execution of contract modifications so that incremental testing can begin as early as practical, activities have sufficient durations, and resources are leveled. The ESA program schedule contingency could be impacted if the Incremental IST is not started in this timeframe.

Table 2.2: Primary Critical Path – July 1, 2018 IPS

Activity Name	Duration	Start	Finish
CM014B – GCT Concourse and Facilities Fit-Out			
Columns, beams, conduits, piping, ducts & devices	196	01-Feb-18	15-Aug-18
Install wall, floor, ceiling & retail finishes	595	15-Aug-18	31-Mar-20
CS179 – System Package 1 – Facilities Systems			
Install and Terminate Devices in Zone 1	226	31-Mar-20	11-Nov-20
Phase 3 IST BCS Concourse & Caverns	77	11-Nov-20	26-Jan-21
Phase 3 IST Fire Alarm Devices GCT	108	26-Jan-21	13-May-21
Program Activities			
FRA Testing (signal and power) †	113	13-May-21	2-Sep-21
LIRR Final Tests and Final Preview ‡	81	2-Sep-21	21-Nov-21
b(4)			
Target Revenue Service Date			21-Feb-22
ESA Program-Level Contingency	295	22-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.

Discussion of Progress along the Critical Path

The work at the start of the Manhattan/Systems critical path is CM014B structural support and MEP work. The completion of this work lost approximately one week in this IPS update. The schedule forecast shows that the lost time will be compensated for by a reduction of the program Issue Contingency activity duration. This portion of the critical path concludes with CM014B GCT finishes and then continues on to CS179 device installation and local testing in GCT Zone 1. The completion of this work leads to the start of Phase 3 backbone communication system IST, then Phase 3 fire alarm testing and reaches the end of the Manhattan/Systems critical path on May 13, 2021, approximately one week later than the previous update. At this point, LIRR FRA testing for signals and traction power begins and it is followed by LIRR final testing and previews. This is followed by the Issue Contingency activity, which has been reduced by approximately one week in this update, and which has been provided to address the impacts of potential future issues, leading to a Target RSD of February 21, 2022.

The Manhattan/Systems work path is subject to change due to several open/unresolved issues. The first is that the schedule includes the MTACC proposal for incremental IST, which needs to be discussed, negotiated, and accepted by the LIRR and CS179 contractor, and then subsequently by the contractors for the interfacing contracts. The second issue is that the schedule includes a single

placeholder activity of one year in duration for the construction of the 47th Street Entrance. Additionally, the ESA PMO is reviewing the schedule coordination points between the Manhattan contracts and CS179. They are tying CS179 system device installation to the conclusion of wall and ceiling stone finishes in each GCT zone, rather than the later conclusion of floor finishes. The result of this effort will be apparent in the next IPS update, 108.

90-Day Look-Ahead of Program Critical Activities/Milestones

Appendix B, Table 7, shows the ESA Program the activities on the primary critical Manhattan/Systems work path that are planned for the next 90 days as forecast in IPS 107.

Sub Program Longest Path – Harold Interlocking

Harold Interlocking work is the second longest of the three ESA program areas. IPS 107 shows that the Harold Interlocking critical path changed in this update with the CH058A B/C Approach structure gaining control of the path from the start and the CH057D northeast quadrant work disappearing entirely. The path completes approximately one month later on March 7, 2021, therefore decreasing the float by a similar amount. The PMOC notes that the FHL02 cutovers were completed as planned and are no longer on the critical path.

In IPS 107, the Harold Interlocking work path begins with the procurement of CH058A leading to the planned NTP on September 7, 2018. The path continues with the design and approval of the 39th Street underpinning through February 2019 and followed by underpinning and structure construction through March 2020. CH058A continues with duct bench and track work through November 2020, which is followed by LIRR FHL04 force account for track and signal installation, testing, and cutover of the B/C track. The Harold work path ends on March 7, 2021 and has 180 CDs of float to the start of LIRR final systems testing in September 2021, at which point the path merges with the Manhattan/Systems critical path. The float on this path decreased approximately one month due to CH058A.

The Harold work path is subject to change since CH058A is yet to be awarded and, subsequently, to be based on a contract schedule. Additionally, CH057D was awarded on April 12, 2018, and an approved baseline schedule has not been incorporated into the IPS.

Sub Program Longest Path – Queens

The Queens (Mid-Day Storage Yard) work is the shortest of the three ESA program areas. IPS 107 shows that the Queens path changed during the update period and now completes 17 CDs earlier than in IPS 106, ending on September 13, 2020. The float on the Queens longest path has increased to 243 CDs.

The major change to the Queens path in IPS 107 was the incorporation of the contract schedules for CQ033 (Mid-Day Storage Yard) and VQ033 (Mid-Day Storage Yard CIL Procurement). This resulted in the signal trough work (CPR025) disappearing from the path. The longest path now starts with VQ033 design, engineering, fabrication, testing and delivery of the MID-8 CIL and battery hut in early September 2019. This is followed by CQ033 to install the CIL and battery hut; pull communication wire and cable; and install and commission the public address system. Integrated testing then begins in April 2020 and runs to CQ033 substantial completion on September 13, 2020, 17 CDs earlier than in IPS 106. This is followed by 243 CDs of float leading to the start of LIRR FRA testing for signals and power in May 2021, at which point the path merges with the Manhattan/Systems critical path.

Upcoming Contract Procurements

Table 2.4 shows the status of current and upcoming contract procurements, as reported in IPS 107 (July 1, 2018).

Table 2.4: Procurement Schedule

Contract Description	Advertise Date	Bid Date	NTP	Project Length	Substantial Completion
CS086: Tunnel Systems Package 2 – Tunnel Signals	8/10/17A	10/31/17A	8/2/18	29 mos.	1/31/21
CH058A: B/C Tunnel	5/4/18A	8/9/18A	9/7/18	27 mos.	12/4/20

Negotiations concluded in May 2018 for CS086, Tunnel Systems Package 2 – Signal Installation, for the RFP received on October 31, 2017, from a single proposer. The MTA board approved MTACC’s recommendation to award Contract CS086 at the June 2018 meeting. The contract has not been awarded as of August 31, 2018, however.

CH058A, B/C Tunnel, was advertised on May 8, 2018, with the Notice to Proceed now anticipated to be in September 2018. Bids were received and opened on August 9, 2018. LIRR resource availability to support Southeast Quadrant work may delay the award of CH058A. MTACC and LIRR are reviewing steps to mitigate the delay.

The procurement for the construction of the 48th Street Entrance has been removed from active reporting. It is anticipated that the construction of this entrance will be completed after the start of revenue service. The PMOC notes that the PMT is developing alternative access at 47th Street, which may built are a modification to CM014B.

PMOC Concerns

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

1. The ESA program schedule contingency remains at 295 CDs, which is 20 CDs above the minimum required FTA schedule contingency. The ability of the MTACC to maintain the FTA minimum until the next hold point (95% constructed; first quarter of 2021) is doubtful due to the uncertainties on the Manhattan/Systems path.
2. Slippage on the ESA program primary critical path through Manhattan/Systems work has delayed its completion until May 13, 2021, resulting in a reduction of the Issue Contingency duration of approximately one week. These issues are significant concerns. Until MTACC works through the uncertainties concerning the schedules for Incremental IST and the 47th Street Entrance, it is likely that future completion forecasts may predict shifts in the critical path, further delays and reductions of the Issue Contingency.
3. The ESA program most critical path has no float and several significant open/unresolved issues; while the longest paths through the other two main program areas have significant float – greater than six months. The PMOC believes that the three most critical paths that currently present the major schedule risks to the on-time completion of the ESA program all run through the contracts that constitute the Manhattan/Systems scope of work, which ends with the completion of IST and start of LIRR FRA testing. The PMOC recommends a closer analysis of the activities leading to the start of LIRR FRA testing to reveal the contracts and work that pose the greatest schedule risks. These additional contracts may include CM007, CS084, and CS086, each of which has its own schedule challenges that may not be readily apparent due to their absence from critical path reporting.

4. The ESA Program needs contract schedules for CH057D Harold Structures and CH058A B/C Tunnel Approach, which is on the Harold Interlocking longest path. The PMOC recommends that schedules be obtained as soon as possible so that the path durations can be predicted accurately.
5. Progress on CS084, Tunnel Systems Package 4 – Traction Power, has been slow and is currently reported at 19.2% complete compared with 84.4% as-planned. The PMOC observes that much of the work has had day-for-day delays in each IPS update period. The MTACC has been holding executive level meetings to review progress and potential schedule adjustments. The PMOC believes that a revised schedule will recognize delays in equipment delivery and milestone dates will be pushed out. The PMOC recommends that ESA analyze options to recover schedule time where possible, focusing on resolution of contractor coordination issues and access restraints, identifying major issues, and determining corrective measures.
6. Concerns continue for the delays in the procurement of CS086, Tunnel Systems Package 2 – Signal Installation. With award of CS086 delayed to September 2018 at the earliest, the PMOC is concerned that the delays may eventually impact the Program schedule in spite of its contract duration having been previously reduced to 29 months.

3.0 COST DATA

Budget/Cost

The program level completion percentage calculations changed this month due to the incorporation of the 2018 Baseline budget (e.g. completion percentages decrease when budgets increase). The 2018 Baseline shows expected expenditures by category through December 2020 to be funded through the 2014-2019 Capital Plan as amended in June 2018. Refer to Appendix B, Table 3. The current budgets equal the amounts allocated in the MTA Impact accounting system, which are used for percentage calculations for individual contracts. The contingencies include funds from projects deferred to the 2020–2024 Capital Program and funds reallocated from the Regional Investment program.

In the ESA Q2 2018 Report, the PMT reported that the total project progress was 77.7% compared with planned progress of 77.6% of the \$10.335 billion 2018 Baseline Budget. The report also shows that construction progress reached 77.7% complete of the 2018 Baseline Budget compared with planned progress of 77.4%, based on invoiced construction costs. The program level completion percentage calculations changed this month and decreased due to the incorporation of the 2018 Baseline budget. (Details of the project budget and expenditures are shown in report Appendix B and report section 1.0-c).

b(4)

b(4)

b(4)

Change Orders/Budget Adjustments

The ESA Q2 2018 Report lists 7 Change Orders with magnitudes greater than \$100,000 that were executed in June 2018. The net value of these change orders was \$1.9 million

Table 3.2: Change Order Log (magnitude > \$100,000)

Contract	Description / Mod No.	Amount
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
GEC	Retroactive Overhead Rates Adjustment 2014-2015 (mod. 156)	(360,313)

Funding

Budget Amendment #3 to the 2015–2019 Capital Plan has been incorporated into the ESA program budget. This action added \$157 million (local funds) and increased the overall ESA program budget from \$10.178 million to a new value of \$10,335 million.

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

Local Funding: The budget for Local Funding, including the \$157 million added in Budget Amendment #3, is now \$7,637 million. Through July 1, 2018, \$5,120 million of local funds were expended. Financing costs are funded and paid separately from other local sources.

PMOC Concerns and Recommendations

1. The PMOC is concerned about MTACC’s unconventional strategy of holding additional funding in contingencies that would only be released to specific projects on an as needed basis

commensurate with construction progress. While this strategy gives the MTACC maximum flexibility, it differs from the generally accepted practice of committing to budgets for known program costs. This approach artificially inflates the contingency and reduces the accuracy of percent complete calculations.

2. The PMOC recommends that MTACC expedite discussions and negotiations with the CS179, CS084, VS/CS086, CM007, CM014B, and CQ033 contractors to resolve the major open cost and schedule issues, and incorporate the Incremental IST so that the associated budgets can be determined.
3. The MTACC needs to prepare its 2020–2024 Capital Plan, which is anticipated to include approximately \$950 million, to complete the ESA program and to restore \$157 million to the Regional Investment program. This future potential funding constraint could be a major risk.
4. Ongoing and possible future delays may result in increasing costs for the following contracts:
 - CS179 – the late completion of systems designs and extended schedule for incremental Integrated Systems Testing.
 - CS084 – the late completion of final design has delayed completion of fabrication of some traction power equipment, transformer test failures and resolution of damage to 26 inductive reactors provided by MTACC.
 - VS086 and CS086 – incorporation of Positive Train Control into the ESA signal system and technology issues.
5. Construction expenditures lagged behind the rate anticipated during the 2014 rebaseline. The PMOC has received an updated expenditure plan for the April 2018 reassessment and will monitor progress in comparison with that plan from this point forward.

4.0 RISK MANAGEMENT

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

Harold Interlocking – ESA Risk

Harold Re-Sequencing Plan (“ESA First”) Risk

Through August 2018, MTACC continued to adjust the “ESA First” Harold Re-sequencing plan to accommodate railroad force account constraints. As a result, the impacts caused by any insufficient Amtrak support were reduced during this period, but not totally eliminated. This situation continues to be a challenge for MTACC although noticeable improvements have been reported to continue through August 2018 for LIRR direct Force Account work and Amtrak ET support.

Amtrak Preparation for Extended East River Tunnel Outages Risk

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 and 4 in preparation for extended outages for ERT Lines 1 and 2 to complete Hurricane Sandy damage-related reconstruction work, originally planned for 2019 and now deferred until 2025, starting with Line 2. 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 Line 1, 2, or 4 at any time between now and the forecast RSD of December 2022.

LIRR Positive Train Control (PTC) Risk

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 based on LIRR's response to the FRA's May 2, 2018, request to resubmit the alternate PTC implementation plan and revised schedule. If the waiver is denied, PTC installation may take precedence over the ESA work in Harold. The PMOC notes that LIRR's response to FRA, due by August 2, 2018, has not been issued as of August 31, 2018.
- b.) Another risk is that LIRR may divert some level of force account resources away from support for the ESA work to provide support for LIRR's systems-wide PTC work during the remainder of 2018.
- 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 is following up with the PMT to determine if this situation presents any schedule risk to the three cited ESA contracts and also with regard to finalization of the CS179 Integrated System Testing Plan and Schedule.

Capital Funding Risk

The MTACC addressed its concerns for ESA program funding through December 2020 with Budget Amendment 3 for the 2015–2019 Capital Plan. MTACC is also forecasting a need for approximately \$956 million in the 2020–2024 Capital Plan. The PMOC remains concerned that – until the 2020–2024 Capital Plan is approved – this potential future funding constraint may significantly impact the program budget and schedule as well as the start of Revenue Service.

ESA Vehicle Risk

The PMOC remains concerned about the schedule slippage of the LIRR federal vehicle procurement program for the M-9A vehicles because it has the potential to significantly impact delivery of the vehicles, and, hence, MTACC's Revenue Service Date. The PMOC notes that, although the LIRR issued the Phase I, "Qualifications", portion of the two part competitive RFP procurement in November 2017, it had not issued the Phase II, "Cost/Technical", portion by the end of August 2018 as it continued to review vendors' "Qualifications" submissions. The procurement schedule is based on a December 2018 contract award and will require that the prospective vendors' submissions for both the Phase I and Phase II portions of the RFP are complete and satisfactory. The PMOC continues to be concerned that the December 2018 award may not be met based on the amount of time and effort normally involved with a procurement of this type.

Manhattan/Systems Performance Risk

The PMOC is concerned that the ESA program primary critical path is through Manhattan/Systems work, as the majority of forecasted critical work has yet to be agreed upon by the Contractors who are to perform the work. Slow progress along the Manhattan/Systems path of work resulted in the

loss of nine calendar days during the June 2018 update period. Additionally, this path continues to be at risk for future open/unresolved issues. The first is that the schedule includes a proposal for incremental IST, which needs to be discussed, negotiated, and accepted by the LIRR and CS179 contractor, as well as the other interfacing contractors. The second issue is that the schedule includes a single placeholder activity of one year in duration for the construction of the 47th Street Entrance.

5.0 ELPEP COMPLIANCE SUMMARY

The current status of each of the remaining main Enterprise Level Project Execution Plan (ELPEP) components is summarized as follows:

- **Technical Capacity and Capability:** MTACC previously indicated that it will review the Technical Capacity and Capability (TCC) Plan and propose revisions, if required, to reflect the current status of the Program. MTACC submitted an updated TCC Plan in 3Q2017. In April 2018, FTA advised MTACC to incorporate its current updates and then commence with a subsequent revision that addresses management changes resulting from the MTACC Six-Point Plan for ESA.
- **Continuing ELPEP Compliance:** The ESA project should continue to make additional improvements in the following areas: Management Decision; Design Development; Change Control Committee (CCC) Process and Results; Stakeholder Management; Procurement; and Risk-Informed Decision Making. The PMOC has noted progress in two previously identified areas – Issues Management and Timely Decision Making, particularly when responding to new issues arising from the railroads’ Force Account resource availability, track outages, and other issues regarding the remaining work in Harold Interlocking.
- **Project Management Plan:** MTACC is using the current version of the PMP, Rev. 10, that the PMOC reviewed and the FTA accepted earlier in 2017.
- **Cost/Schedule Contingency:** MTACC has reached agreement with the FTA and the PMOC on the ELPEP minimum cost and schedule contingency hold points, levels, and drawdowns. MTACC continues to report the cost and schedule contingency levels against the ELPEP minimums in its quarterly reports to the FTA. The PMOC does note, however, that MTACC has reported that the Schedule Contingency remains only 20 CDs above ELPEP minimum.

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:** The ESA project should continue to make additional improvements to the Schedule Management Plan (SMP) in the following areas: Integrated Project Schedule (IPS) Updating, Forecasting, and Schedule Contingency Management against a current baseline schedule. MTACC is using Rev. 2 of the SMP, dated September 2016.
- **Cost Management Plan:** The ESA project should continue to make additional improvements to the Cost Management Plan (CMP) in the following areas: Project Level EAC Forecasting, Project Level EAC Forecast Validation, and MTACC Cost Contingency Management and Secondary Mitigation. MTACC is using Rev. 2 of the CMP, dated October 2016.

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

The ESA PMT is targeting the end of September 2018 to submit a draft updates of Project, Cost, Schedule, Risk Management, and the Technical Capacity and Capability Plans to document the changes called for by the incorporation of the MTACC Six-Point Plan for ESA to reduce potential programmatic risks.

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 revised EAC, budget and IPS as well as organizational, management, and process changes resulting from implementation of the MTACC Six-Point Plan for ESA.

6.0 SAFETY AND SECURITY

Based on safety information supplied by MTA, the PMOC calculated ESA Injury Ratios for July 2018 were 2.30 for Lost Time Injuries (LTI) and 3.45 for Recordable Injuries (RI). Both were above the 2018 Bureau of Labor Statistics (BLS) Safety Guidelines of 1.7 for LTI and 2.8 for RI. Additionally, ESA did not report any significant security issues in its ESA Q2 2018 Report.

7.0 ISSUES AND RECOMMENDATIONS

Design: The PMT design management team needs to focus on the timely achievement of intermediate milestones and work closely with the GEC to facilitate finalization of the scopes of work for remaining procurement and construction packages. Also, the PMOC has observed the following:

- Approvals from the railroads, both LIRR and Amtrak, and other outside stakeholders, are requiring considerably more time than planned; and,
- LIRR is making changes that alter the design basis and result in time-consuming and costly re-design work by the GEC.

The ESA PMT needs to continue to monitor and improve coordinating the interface of design reviews and equipment approvals between the GEC and LIRR for the CS084, CS179, and VS086 contracts. These shortcomings indicate possible technical capacity and capability issues in the particular design support areas. The PMOC acknowledges the efforts by senior management to resolve these issues, recognizes that improvements have been achieved and notes that these improvements need to continue.

Procurement: The lack of stability in the contracting strategy and Contract Packaging Plan (CPP) remains a concern. Scope shifting among different packages delays completion and finalization of the required design packages and has resulted in significant delays to the procurement schedules over the past two and a half years. 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.

Water Infiltration Concerns Regarding Contracts CS179, CS084, VS086, and CQ032:

The PMOC remains concerned about the numerous water infiltration issues in the electrical and electronic equipment rooms either constructed by, or provided for, these contracts. The PMOC notes that, while a number of the water remediation efforts employed have been successful, others have not; and this has caused delays to construction work. Further, the CS179 and CS084 contractors continue to advise MTACC of more water infiltration issues in areas where work access is now available. Another potential water infiltration/moisture issue was identified in August 2018 regarding VS086 equipment rack configurations and possible future damage to equipment. Discussions on this potential problem are underway between MTACC and the VS086 contractor. Water conditions remain in three main areas under CQ032: 1) the former Launch Block area, 2) the Stair #2 area and, 3) the former Early Access Chamber area.

Contract CQ032: The PMOC remains concerned about the resolution of five NCRs related to tunnel duct bench clearance as-built deviations from plan that remain on hold pending MTACC review of the Secondary Survey Report. These deviations have the potential to impact continuing trackwork construction and work train operations.

Contract CS179: The PMOC recommends that the ESA PMT continue making improvements regarding the PMOC's following concerns for CS179:

- Timely delivery and discussion about the contractors' monthly schedule submissions;
- Timely preparation and submission of documentation for two potential Buy/Ship America issues;
- Resolution and implementation of coordination issues;
- ESA PMT responses to contractor NOCs and issuance of CPRs; and,
- Timely design review and approvals to the contractor's design submittals and Requests for Information.

Contract CS084: MTACC should prioritize the execution of contract modifications to preclude any further impact to substation design and fabrication. Additionally, the PMOC remains concerned about the following issues: installation of traction power feeder cables between C08 substation and track; live load (dynamic) testing of the C08 Substation; integrated testing of all CS084 substations; management of coordination issues related to work area access issues with other contractors; suitability for use of the MTA-supplied inductive reactors; resolution of transformer "hi-pot" test failures; and resolution of access issues for delivery of equipment for the C01/C02 substations. Also, no additional surveys have been conducted to verify availability of required conduit/manhole system for each TPSS.

Contract VS086: The PMOC remains concerned that there is no accurate and comprehensive schedule in place that would allow MTACC to effectively manage this contract and encourages MTACC to quickly complete discussions regarding the development of such a schedule that addresses all the issues currently identified on this contract. The PMOC is concerned that design decisions are not being made in a timely manner. Although MTACC directed the contractor to utilize the TRU-III track circuit equipment in the signal design, LIRR is still testing the equipment to determine if the equipment is compatible with other LIRR circuitry. LIRR has yet to approve this equipment for use on its property; and, should LIRR reject the use of this track equipment based on the results of its testing, then some signal re-design work will be required. The PMOC recommends that LIRR accelerate its testing of the TRU-III track circuit equipment to reach an early decision on its use on the ESA Project.

Project Funding: The project is at risk due to the anticipated need for approximately \$956 million to address additional costs that were forecast by the PMT in the April 2018 program review. Interim funding needs through December 2020 have been addressed. The PMOC is concerned about future potential impacts on the program budget and schedule if there are delays in funding the ESA program in the 2020–2024 Capital Plan.

Project Budget: The PMOC is concerned about MTACC’s unconventional strategy of holding significant contingencies that would only be released to specific projects on an informal/annual as-needed basis commensurate with construction progress. While this strategy gives the MTACC maximum flexibility, it differs from the generally accepted practice of committing to budgets for known program costs. This approach tends to artificially inflate the contingency and reduce the accuracy of percent complete calculations.

Project Schedule: The PMOC remains concerned about the remaining program schedule contingency of 295 calendar days, 20 calendar days more than the FTA minimum. IPS 107 shows that Manhattan/Systems work is the primary critical path for the ESA program. The concern remains as the MTACC proposed incremental IST schedule has yet to be accepted by the LIRR, CS179, contractor and other contractors. The PMOC recommends a closer analysis of the activities leading to the start of LIRR FRA testing to reveal the contracts and work that pose the greatest schedule risks. These additional contracts may include CM007, CS084, and CS086, each of which has its own schedule challenges that may not be readily apparent due to their absence from critical path reporting.

Risk Management: The segmentation of construction packages has created multiple inter-contract interfaces and milestones. In the PMOC’s opinion, managing inter-contract handoffs and interfaces will continue to be very challenging and represents a significant MTACC-retained risk. The PMOC does recognize the PMT’s earlier efforts to mitigate some of the potential cost exposure by negotiating adjustments to schedule constraints across the four ESA contracts currently held by the same contractor (CM006, CM007, CS179, and CQ032). However, the PMOC believes that any meaningful schedule recovery, especially for Contracts CM014B, CS179, and CS084, will be difficult at best. The PMOC considers the major remaining risks for the East Side Access Program to be:

1. Program Funding – update of the program budgets and inclusion in the MTA Capital Plan (risk realized in 2Q 2018);
2. Recovery of lost time due to significant schedule delays on CM014B and CS084;
3. Successful execution of multiple hand-off interfaces across several contracts;
4. Contractor access and work area coordination in Manhattan;
5. Duration of integrated systems testing;
6. Continued availability of adequate Amtrak and LIRR force account resources;
7. Continued availability of required track outages in Harold Interlocking;
8. Maintaining adequate schedule performance of the remaining work in Harold Interlocking;
9. Remaining schedule path float will be used in the near future and Manhattan/Systems path will become critical (risk realized in April 2018); and,
10. Coordination risk retained by MTACC in Manhattan and the ESA tunnels with regard to construction and testing interface management for the systems work.

Specific remaining risks for the Harold Interlocking work, previously identified by MTACC, include the following:

1. Positive Train Control in Harold: LIRR submitted formal waiver request to FRA; LIRR must resubmit its revised PTC Implementation Plan/Schedule on August 2, 2018, but , as of August 31, 2018, has not submitted this to the FRA.
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 ESA schedule.
3. Northeast Quadrant Rail Work: Ability of MTACC-ESA, Amtrak, and LIRR to fully complete the planned work in the Northeast Quadrant in Harold Interlocking, as per the current ESA schedule, on a very tight schedule involving major Amtrak and LIRR track outages.
4. CH058A Preparation Work: Ability of Amtrak and LIRR force account resources to complete, in accordance with the current ESA schedule plan, all track, catenary, and third-rail work required prior to NTP for CH058A.
5. Funding: ESA Project funding constraints (risk realized in 2Q 2017).
6. Amtrak Support: Ongoing/future Regional Projects requiring extensive Amtrak support.
7. Reconstruction of Existing Amtrak ERT Lines 1 and 2: Deferred until after the ESA program. The risk now is from the impact of unplanned emergency tunnel repairs.

APPENDIX A – ACRONYMS

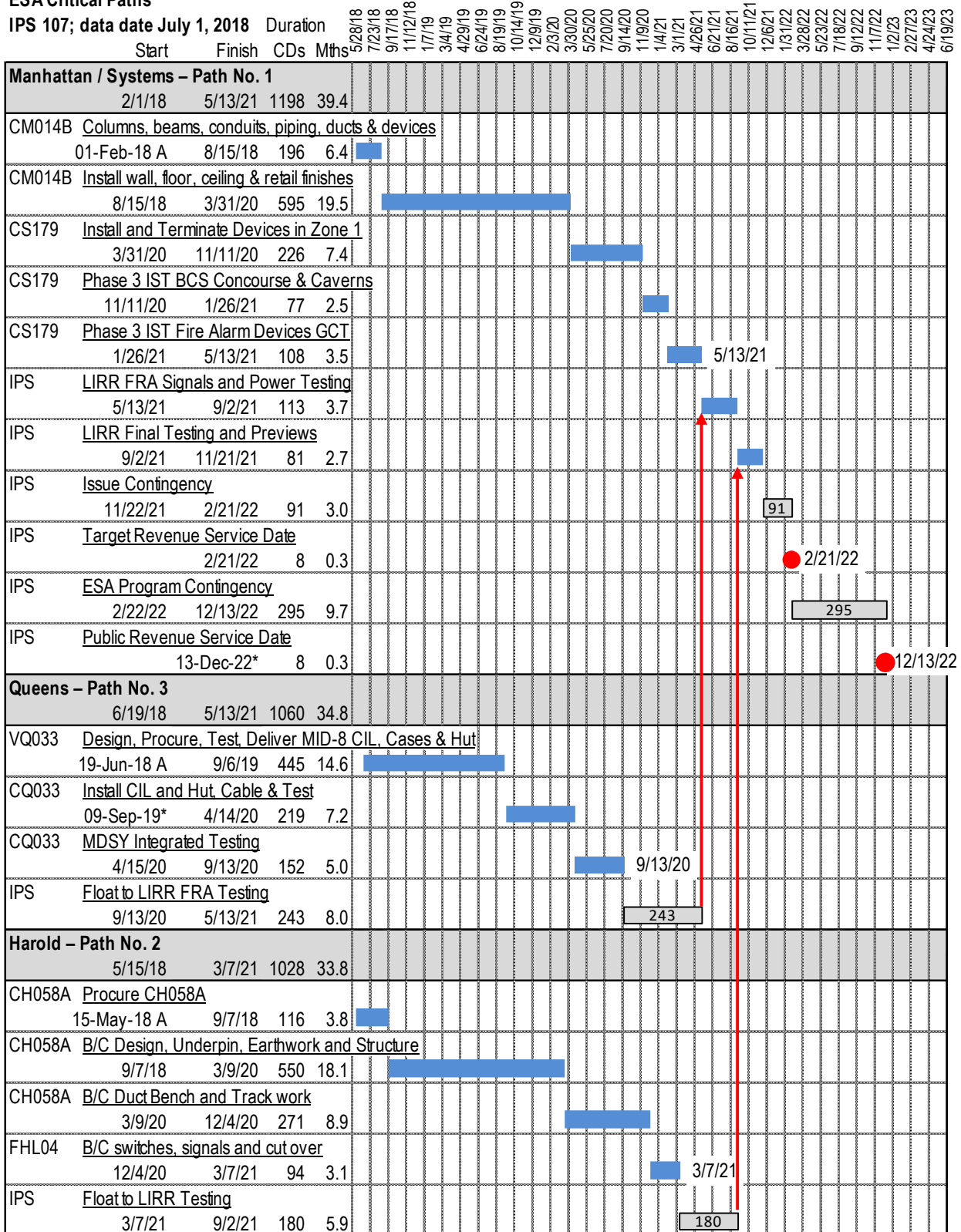
AFI	Allowance for Indeterminates	IST	Integrated System Test
ARRA	American Recovery and Reinvestment Act	LIRR	Long Island Rail Road
AWO	Additional Work Order	LSZH	Low Smoke Zero Halogen
BIM	Building Information Model	MNR	Metro-North Railroad
BLS	Bureau of Labor Statistics	MOD	Contract Modification
BSA	Buy/Ship America	MPR	Monthly Progress Report
C&S	Communication and Signals	MTA	Metropolitan Transportation Authority
CBB	Current Baseline Budget	MTACC	Metropolitan Transportation Authority Capital Construction
CCC	Change Control Committee	NCR	Nonconformance Report
CCM	Consultant Construction Manager	NOC	Notice of Change
CCTV	Closed Circuit Television	NTP	Notice to Proceed
CD	Calendar Day	NYCT	New York City Transit
CIL	Central Instrument Location	OCIP	Owner Controlled Insurance Program
CIR	Central Instrument Room	PAC	Pneumatically Applied Concrete
CM	ESA Construction Manager assigned to each contract	PCO	Proposed Change Order
CMP	Cost Management Plan	PLC	Program Logic Control
CMU	Concrete Masonry Unit	PMOC	Project Management Oversight Contractor (Urban Engineers)
ConEd	Consolidate Edison Company	PMP	Project Management Plan
CPOC	Capital Program Oversight Committee	PMT	ESA Project Management Team
CPP	Contract Packaging Plan	QA	Quality Assurance
CPR	Contractor Proposal Request	QPR	Quarterly Progress Report
DC	Direct Current	RFI	Request for Information
DCB	Detail Cost Breakdown	RFP	Request for Proposal
DFF	Direct Fixation Fastener	RMP	Risk Management Plan
EAC	Estimate at Completion	ROD	Revenue Operations Date
ELPEP	Enterprise Level Project Execution Plan	ROW	Right of Way
ERT	East River Tunnel	RPR	Relocated Primary Route
ESA	East Side Access	RSD	Revenue Service Date
ET	Electric Traction	RTB	Resilient Tie Block
F/A	Force Account	SC	Substantial Completion
FAT	Factory Acceptance Testing	SCADA	Supervisory Control and Data Acquisition
FD	Final Design	SDR	Second Design Review
FFGA	Full Funding Grant Agreement	SLCS	Signal Local Control System
FIAT	Factory Integrated Acceptance Testing	SMP	Schedule Management Plan
FRA	Federal Railroad Administration	SMS	Security Management System
FTA	Federal Transit Administration	SWO	Stop Work Order
GCT	Grand Central Terminal	TCC	Technical Capacity and Capability
GEC	General Engineering Consultant	TPSS	Traction Power Substation
HVAC	Heat, Ventilation and Air Conditioning	TSR	Track and Signal Route
IPS	Integrated Project Schedule	WBY	Westbound Bypass Tunnel
		YSB	Yard Services Building

APPENDIX B – CHARTS

Chart 1: ESA Critical Paths – IPS 107, July 1, 2018

ESA Critical Paths

IPS 107; data date July 1, 2018



APPENDIX B – TABLES

Table 1: Summary of Critical Dates

Program Milestone	FFGA	Forecast (F) Date, Actual (A) Date		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 the MTA CPOC in June 2014.
 ** Source –Based on PMOC 2014 schedule trending analysis representing a medium degree of mitigation.
 *** Source – Amended FFGA, August 2016

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

	FFGA				MTA Current Baseline Budget (CBB)		Expenditures July 1, 2018	
	Original FFGA	Amended FFGA	Pct. of FFGA	Obligated	CBB	Pct. of Total CBB	Expenditures	Pct. of CBB
Grand Total	7,386.0	12,038.5	100.0%	9,872.9	11,371.1	100.0%	8,435.7	74.2%
Financing	1,036.0		14.0%	617.6	1,036.0	9.1%	617.6	59.6%
Cost		1,116.5	9.3%					
Total Project Cost	6,350.0		86.0%	9,255.3	10,335.1	90.9%	7,818.1	75.6%
		10,922.0	90.7%					
Federal Share	2,683.0		36.3%	2,698.9	2,698.8	23.7%	2,698.0	100.0%
		2,698.8	22.4%					
5309 New Starts share	2,632.0		35.6%	2,436.7	2,436.7	21.4%	2,435.9	100.0%
		2,632.1	21.9%					
Non New Starts share	51.0		0.7%	66.7	66.7	0.6%	66.7	99.9%
		66.6	0.6%					
ARRA	0.0	195.4	1.6%	195.4	195.4	1.7%	195.4	100.0%
Local Share	3,667.0		49.6%	6,556.4	7,636.2	67.2%	5,120.1	67.1%
		8,223.2	68.3%					

Table 3: Project Budget and Invoices
(Cost shown in millions)

Note: ESA carries the Rolling Stock Reserve as an off-line cost, outside the program budget

Elements	Baseline Budget June 2014	Baseline Budget 2018	July 1, 2018			
			Current Budget	Actual Awards	Invoiced to Date	Inv. Pct. of Budget
Construction Subtotal	7,379.3	7,761.0	7,482.4	7,043.2	6,027.4	80.6%
Soft Costs Subtotal	2,359.5	2,429.1	2,214.4	2,042.3	2,002.6	90.4%
Engineering	720.6	841.1	739.6	738.8	729.7	98.7%
OCIP	282.6	416.2	379.2	307.6	307.4	81.1%
Project Mgmt.	972.2	1,039.4	963.1	874.0	847.5	88.0%
Real Estate	182.1	124.9	124.9	119.2	117.8	94.3%
Rolling Stock	202.0	7.5	7.5	2.7	0.1	1.8%
Contingency Subtotal	439.0	145.0	638.3	--	--	--
Total w/o Financing	10,177.8	10,335.1	10,335.1	9,085.5	8,029.9	77.7%

Table 4: Comparison of Standard Cost Categories: FFGA vs. CBB
(Cost shown in millions)

Standard Cost Category	FFGA	June 2014 Project Budget	Amended FFGA	Apr 2018 CBB	May 2018 CBB	Jun 2018 CBB	CBB / FFGA Var.	CBB / Amend FFGA Var.
10 - Guideway & Track Elements	1,988.7	3,405.5	3,353.4	3,409.1	3,396.4	3,403.7	71.1%	1.5%
20 - Stations, Stops, Terminals, Intermodal	1,168.7	2,238.2	2,326.8	2,327.7	2,277.1	2,277.1	94.8%	-2.1%
30 - Support Facilities (Yards, Shops, Admin)	356.3	474.2	450.8	516.0	516.0	516.0	44.8%	14.5%
40 - Site Work and Special Conditions	205.1	610.6	562.5	560.7	548.3	548.3	167.3%	-2.5%
50 - Systems	619.3	605.6	627.7	692.6	675.3	692.0	11.7%	10.3%
60 - ROW, Land, Existing Improvements	165.3	219.4	192.2	215.4	162.3	162.3	-1.8%	-15.6%
70 - Vehicles	494.0	209.9	879.5	209.9	15.4	15.4	-96.9%	-98.2%
80 - Professional Services	1,184.0	1,975.4	1,809.0	2,019.3	2,010.3	2,082.0	75.8%	15.1%
b(4)								
Subtotal	6,349.9	10,177.8	10,922.0	10,177.8	10,335.1	10,335.1	62.8%	-5.4%
100 - Finance Cost	1,036.1	1,036.1	1,116.5					
Total	7,386.0	11,213.9	12,038.5					

Table 5: Summary by FTA Standard Cost Categories
(Costs shown in millions)

Standard Cost Category	FFGA	June 2014		July 1, 2018		
		Project Budget	Amended FFGA	Current Budget	Awarded Value	Paid to Date
10 - Guideway & Track Elements	1,988.7	3,405.5	3,353.4	3,403.7	3,232.0	2,884.2
20 - Stations, Stops, Terminals, Intermodal	1,168.7	2,238.2	2,326.8	2,277.1	2,193.5	1,671.4
30 - Support Facilities (Yards, Shops, Admin)	356.3	474.2	450.8	516.0	503.6	288.5
40 - Site Work and Special Conditions	205.1	610.6	562.5	548.3	492.2	502.0
50 - Systems	619.3	605.6	627.7	692.0	576.7	432.2
60 - ROW, Land, Existing Improvements	165.3	219.4	192.2	162.3	156.5	155.1
70 - Vehicles	494.0	209.9	879.5	15.4	10.6	5.7
80 - Professional Services	1,184.0	1,975.4	1,809.0	2,082.0	1,920.4	1,879.0
b(4)						
Subtotal	6,349.9	10,177.8	10,922.0	10,335.1	9,085.5	7,818.1
100 - Finance Cost	1,036.1	1,036.1	1,116.5	1,116.5		
Total	7,386.0	11,213.9	12,038.5	11,451.6		

Table 6: Program Budget Adjustments

Contract / Task Description	Change in Budget
Construction	
<u>System Wide</u>	
CS086 - System Package 2: Signal Installation	23,482,351
Force Account	
<u>Long Island Rail Road</u>	
FHL51 - Harold and Point CILs, HTSCS:LIRR	450,000
Insurance	
I0100 - Insurance (OCIP)	71,627,742
b(4)	
b(4)	
b(4)	
b(4)	
b(4)	

Table 7: Program Critical Dates 90 Day Look-Ahead – IPS 107, July 1, 2018

Act. Id.	Name	Start	Finish	Float
CM014B – GCT Concourse and Facilities Fit-Out				
14010B	Rig & Set Columns, Beams & Joists (Not Supported by CMU) Tile 3114	01-Feb-18 A	2-Jul-18	0
15500	Rig & Set Columns, Beams & Joists (Not Supported by CMU) (Tile 3125)	16-Feb-18 A	2-Jul-18	0
15250D	Rig & Set Columns, Beams & Joists (Not Supported by CMU) (Tile 3122)	04-Apr-18 A	3-Jul-18	0
15256D	Install Beams (Supported by Masonry Walls) (Tile 3122)	04-Apr-18 A	10-Jul-18	0
15252D	Plumb & Bolt Columns, Beams & Joists (Not Supported by CMU) (Tile 3122)	16-Apr-18 A	11-Jul-18	0
15252C	Plumb & Bolt Columns, Beams & Joists (Not Supported by CMU) (Tile 3111)	10-Mar-18 A	12-Jul-18	0
15254C	Install Metal Decking & Pour Stops on Steel (Not Supported by CMU) (Tile 3111)	16-Mar-18 A	16-Jul-18	0
15258C	Install Metal Decking & Pour Stops on Steel (Supported by Masonry Walls) (Tile 3111)	16-Mar-18 A	16-Jul-18	0
15260C	Place Concrete on Metal Deck at Fire-Rated Rooms (Tile 3111)	13-Jul-18	16-Jul-18	0
15262	Install Roofing/Gutters on Q-Deck/Drip Pan (Tile 3111)	20-Mar-18 A	20-Jul-18	0
15262D	Install Liquid Applied Membrane on Q-Deck/Drip Pan (Tile 3111)	23-Apr-18 A	25-Jul-18	0
20052	Install Hangers & Supports for Mechanical Piping System (Tile 3101)	25-Jul-18	27-Jul-18	0
20056	Install Hot Water Piping (Mechanical) (Tile 3101)	27-Jul-18	3-Aug-18	0
20016	Install Fans (Tile 3101)	12-Apr-18 A	6-Aug-18	0
20032	Install Duct Insulation (Tile 3101)	06-Aug-18	13-Aug-18	0
20024	Install Air Outlets (Tile 3101)	13-Aug-18	14-Aug-18	0
20050A	FIAT -AHU-C43-13 (Tile 3101)	14-Aug-18	15-Aug-18	0
MEP-3101	MEP Complete (Tile 3101) Col Ln; 1 to 9		15-Aug-18	0
6422	Install Framing / Ceiling Supports for Ceilings (Tile 3101)	15-Aug-18	6-Sep-18	0
360131	Set Stone for Column Covers / Enclosures Col Ln; 1 to 3 (Tile 3101)	06-Sep-18	20-Sep-18	0
360135	Set Stone Panels on Walls Col Ln; 1 to 3 (Tile 3101)	20-Sep-18	4-Oct-18	0

Table 8: 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)	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
Schedule	RSD	Dec. 31, 2013	Dec. 31, 2023	Dec. 2022	April 30, 2018
Total Project Percent Complete		Based on Invoiced Amount	77.7% actual vs. 77.6% planned (ESA calc.)		
Project Performance Rate Since 2014 ESA Re-Plan		Based on Earned Value	78.4% (PMOC calculation of construction spending at 2Q 2018 planned vs. actual since re-baselining)		
Contracts	Total contracts awarded to date		\$9,085 M	90.8% (PMOC calc. using 2018 BL)	
	Total construction contracts awarded to date		\$7,043 M	89.2% (PMOC calc. using 2018 BL)	
Major Issue	Status		Comments		
Project Funding and Budget	b(4)		b(4)		
Project Cost	The ESA PMT updated the ESA program budgets based on the approval of Budget Amendment 3 for the 2015–2019 Capital Plan.		If the 2020–2024 Capital Plan is not approved for the 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	The primary critical and near-critical paths to target RSD include: 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 remaining schedule floats on the longest paths through the three major areas of the ESA program, 0 CDs on primary critical path, and 180 CDs and 243 CDs on the two near critical paths, will be monitored for the construction work scheduled to be completed in the remaining 42 months to the target RSD.		
Manh./ Systems Schedule Path	IPS 107 shows that the ESA Program Critical Path runs through the Manhattan/Systems work. This path lost approximately nine calendar days 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 9 calendar days this period, from May 4, 2021 to May 13, 2021. This schedule has significant unresolved issues (Incremental IST, 47 th Street Entrance) that may mask delays on other critical Manhattan/Systems work. Acceptable work progress along this schedule path relies heavily on the effectiveness of MTACC/ESA coordination efforts across 7 contracts.		

Notes: * The cost estimate total budget was established in the May 2018 baseline.

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