

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

Report Period October 1 – October 31, 2018

PMOC Contract No. DTFT60D1400017

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

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PMOC Lead: **b(6)**

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

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Third Party Disclaimer

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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 73.7% actual versus 73.4% as-planned (based on invoice cost).

Construction Status: The Construction Status is 76.8% actual versus 76.5% as-planned (based on invoice cost).

Contracts Awarded/Completed: CH058A: Awarded October 31, 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 \$771.5 million (\$550.8 million unallocated; \$220.7 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: 12 major risks remain.

Harold Interlocking: Continued Northeast Quadrant (NEQ) and Westbound Bypass 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: 1.89 – Lost Time and 4.73 Recordable BLS Injury Ratios during September 2018; both increases from August 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: One CS179 Issue – Small Split HVAC units (waiver requested).

Organization: New Executive VP/Sr. Program Executive – ESA started on October 4, 2018.

All Project Sponsor cost and schedule data included in this report is based on the MTACC East Side Access Monthly Progress Report, August 2018 and referenced in this report as the ESA August 2018 MPR, which has a cost and schedule data date of September 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 August 2018 MPR, the PMT reported that the overall engineering progress is 84.4% complete compared with as-planned progress of 84.6%. Since the ESA July 2018 MPR, the PMT calculates summary engineering progress as a percentage of the \$871.8 million April 2018 EAC forecast. The ESA August 2018 Total Cost Report shows that 99.6% of the overall EIS and Engineering budget, including 99.8% of the design budget, has been invoiced.

Status of Construction Packages Advertised

CH058A Harold Structures Part 3A, B/C Approach Structure, was advertised on May 8, 2018. Six (6) bids were opened on August 9, 2018. Awarded October 31, 2018. NTP pending.

Status of Construction Packages Not Awarded

CM015 – 48th Street Entrance: Design work remained suspended through October 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. 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. The GEC incorporated West End Yard changes into PCO-211 and issued them to the CQ033 contractor as CPR-013 for the contractor to prepare an estimate.

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 mid-December 2018.
- 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 was 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 October 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 25 NOCs contributing to its inability to finalize designs; 16 of which MTACC was to issue Contractor Proposal Requests (CPRs) and 7 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 30 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. One previously noted Buy/Ship America issue 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. Final approval of the SCADA software design by LIRR remains as an open issue. 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 continues to assert that the lack of timely responses on design submittals and inquiries caused delays in the progression of the work. In an effort to progress 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, gave the contractor the approval to move forward with a signal design that utilizes this equipment. Work on the design to incorporate Positive Train Control (PTC) requires a contract modification that must still be developed and negotiated.

b. Procurement

The ESA August 2018 MPR shows that total procurement for the ESA project is 82.9% complete, with total awards of \$9,235 million. Since the ESA July 2018 MPR, the PMT calculates summary procurement progress as a percentage of the \$11,133 million April 2018 EAC forecast. The status of the remaining major near-term procurements is summarized below:

- CH058A Harold Structures Part 3A, B/C Approach Structure: the 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 was delayed due to uncertainty about the schedule for LIRR to complete required preparation work prior to contractor mobilization. The contract was awarded on October 31, 2018. NTP is pending.

c. Construction

In the ESA August 2018 MPR, MTACC reported that total construction progress is 76.8% complete compared with as-planned progress of 76.5%. Since the ESA July 2018 MPR, the PMT calculates summary construction completion as a percentage of the \$8,014 million April 2018 EAC forecast. The percentage of work complete, as shown throughout this report, is calculated using invoiced costs to represent construction progress. The current contract and force account budgets equal the amounts that are allocated in the MTA Impact accounting system and 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	359.9	722.8	57.5%	54.3%	1/28/20	3/23/20	
	nc	nc	nc	+14.7	(-1.5)	nc	+2.2%	nc	nc	
	712.3	662.6	49.7	345.2	724.3	57.5%	52.1%	1/28/20	3/23/20	
CM014B	484.7	461.6	23.1	290.9	512.4	95.1%	63.0%	8/18/18	7/27/20	
	+15.0	+3.0	+11.9	+6.1	nc	nc	+0.9%	nc	+48cd	
	469.7	458.6	11.2	284.8	512.4	95.1%	62.1%	8/18/18	6/9/20	
VM014	46.9	34.9	12.0	26.1	46.7	NA	74.8%	10/25/19	3/23/20	
	nc	nc	nc	nc	+2.5	NA	nc	nc	nc	
	46.9	34.9	12.0	26.1	44.2	NA	74.8%	10/25/19	3/23/20	

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: The CM006 contractor continued the following activities in October 2018: minor base contract work, water repairs, and open NCR work. The Dispute Resolution Board (DRB) is assisting with dispute dealing with scope transfers to other contracts. SC was not achieved in October 2018.

CM007 – GCT Station Caverns and Track:

Schedule: Milestone #4 (Track & 3rd Rail Work Complete), August 7, 2019, now December 23, 2019, -138 days

Milestone #5 (Substations US1 and US2 Complete), June 27, 2018, now September 27, 2019.

Milestone #5A (Caverns Ready for Integrated Systems Testing), August 7, 2019, now August 27, 2019, -20 days.

Milestone #6 (All Caverns and Tunnel Work Complete), December 16, 2019, now February 20, 2020, -66 days.

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

Construction Progress: Through October 31, 2018, Precast work in both caverns was approximately 94.5% complete. Precast for the cavern platforms in the Cavern was approximately 83.2% complete.

South and North Backs of House: Continued MEP and CMU installation.

45th Street Lobby: Continued CMU installation.

East Cavern: Continued mezzanine construction, continue stairs steel framing and precast slab installation, continue under stair finishes, complete platform wall and slab construction, continue upper level under platform MEP installation, and continued escalator to 51 and 55 installation and elevator 6 installation.

West Cavern: Continued upper and lower level track curb construction, mezzanine level electrical installation, continued stair steel framing and precast slab installation, continued stair finishes, continued elevator 19 installation, escalators 59 and 63 installation, and continued framing and glass installation at elevator 8.

Through October 7, 2018, MTACC reported that precast beams and decks are 93.5% complete. Precast platform walls and deck panels are 80.3% complete.

Track: Continued trackwork construction in the Cavern and into the Tunnel Track area. Continued turnout installation. Continued qualification testing of Special Trackwork DFF assemblies; variances requested from LIRR. Through October 31, 2018, MTACC reports that Track, Third Rail and Special Trackwork installation was approximately 38.5% complete. Track and Third Rail – RTB was approximately 43.2% complete. Track and Third Rail – DFF was approximately 42.4% complete. Track and Third Rail – Special Trackwork was approximately 10.8% complete.

CM014B – Concourse and Facilities Fit-Out:

Schedule: 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, #4A, 4B and #6. Turnover of the rooms to CS179 continues.

Milestone #5 (44th St. Vent Building) June 4, 2017, now forecast for October 31, 2018: The building storefront installation is complete. CM014B punch list work nears completion.

Milestone #7 (50th St. Vent Building) January 27, 2018; now projected for the end of 2018.

The re-design of the 47th Street Entrance, at the Cross Passageway, remains the primary critical path in the contract. 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 October 31, 2018, the structural steel erection was 71% complete by piece and 65% by weight. 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 plumbing fixtures throughout the Concourse. Mechanical work continues with the installation of 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 architectural suspended ceiling grid system is ongoing and installation of the marble stone wall finish continues from south to north.

Biltmore Connection: Work at Tracks #38-39 continues. Application of intumescent paint to structural steel is complete. This work continues on the tertiary critical path for the contract.

Biltmore EL #22: Installation of hydraulic borehole incurred an obstruction. A CPR is being processed for the corrective work.

Wellways: In the Wellways escalator maintenance is ongoing, one day every 2 months. In Wellway #1, the glass tile installation is continuing. CS179 continues with light fixture 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 continues.

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

50th St. Vent Facility: Work includes installation of parallel switchgear and associated conduit. Installation of Elevator #9 cab and entrance continues.

VM014 – Vertical Circulation Elements (Escalators and Elevators):

Schedule: 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 MTACC CCM advised that LIRR has directed CM014B to proceed with the temporary protection package, for Elevators #1 and #2, submitted by the VM014 contractor.

CM007: Through October 31, 2018 the VM014 contractor has set in place escalators #59 (West Cavern) and #51 (East Cavern). Work continues on Elevator #19 (West Cavern).

CM014B: The contractor continues to have work held up at the following elevators: Elevators #3 and #4 (Machine Room obstructions), Elevators #1 and #2 (Protection Package), #20 (Water and Shaft/Headhouse misalignment), Elevator #13 (existing shaft too shallow), Elevator #22 (obstruction in the borehole). Elevator #21 is installed and in In-Contract Maintenance).

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	261.3	263.5	100.0%	99.9%	9/6/16	12/31/18	
	nc	nc	nc	+0.7	nc	nc	+0.2%	nc	nc	
	265.4	261.5	4.0	260.6	263.5	100.0%	99.7%	9/6/16	12/31/18	
CQ033	325.0	298.7	26.3	128.4	345.0	40.9%	43.0%	8/18/18	11/4/20	
	+17.0	+2.8	+14.2	+13.1	(-0.4)	nc	+4.4%	nc	nc	
	308.0	295.9	12.1	115.3	345.4	40.9%	38.6%	8/18/18	11/4/20	

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: The CQ032 contractor continued the following activities to progress work in October 2018: work regarding closure of NCRs, work to eliminate water infiltration conditions, documentation, and other commercial items. SC was not achieved in October 2018. Of concern remain the eight 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 November 4, 2020, -86 days.

Construction Progress: The CQ033 contractor continued the following construction activities in October 2018: fire line installation, water main, sanitary and storm pipe installation, and duct bank construction. Other activities: Car Appearance Maintenance (CAM) platform work, Yard Lighting pole installation, catenary structure work, ballast retainer, and traction power cable pull work continued.

Systems Contracts

Costs and substantial completion dates are tabulated below for active Systems contracts. The information for CS084 and VS086 is supplemented by discussions at a mid-October 2018 Progress Meetings that reviewed contract progress up to October 10, 2018.

	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	431.5	644.4	81.5%	75.2%	7/1/20	7/27/21	1
	nc	nc	nc	+10.7	(-2.2)	nc	+1.7%	nc	+28 cd	
	606.9	572.5	34.5	420.8	646.6	81.5%	73.5%	7/1/20	6/29/21	
CS084	79.7	73.4	6.3	18.3	82.8	85.1%	25.0%	12/2/19	4/9/21	1
	nc	nc	nc	+0.3	nc	nc	+0.5%	nc	+58 cd	
	79.7	73.4	6.3	18.0	82.8	85.1%	24.5%	12/2/19	2/10/21	
VS086	21.8	19.9	1.9	10.7	22.2	NA	53.8%	10/14/19	10/14/19	1
	nc	nc	nc	+0.8	(-0.1)	NA	+4.0%	nc	nc	
	21.8	19.9	1.9	9.9	22.3	NA	49.8%	10/14/19	10/14/19	
VH051	30.2	29.7	0.5	29.5	30.2	NA	99.6%	4/30/15	12/31/19	
	nc	+0.2	(-0.2)	+0.2	nc	NA	+0.4%	nc	+365 cd	
	30.2	29.5	0.7	29.3	30.2	NA	99.2%	4/30/15	12/31/18	

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.

CS084 – Tunnel Systems Package 4 – Traction Power Systems:

Schedule: 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 obstructions in CS084 work areas from other ESA contractors, SWOs, 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: Design completion of the substations and associated equipment was delayed due, per the contractor, to the lack of design approvals by the MTA. The design focus is presently 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. One critical item is LIRR's approval of SCADA software. The PMOC is concerned about this because the timeliness of LIRR's middle/comment review process continues to need improvement.

Construction Progress: A considerable amount of substation equipment has been delivered to storage, where it will remain until the TPSS rooms for those substations are ready for their installation. 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. As of mid-October 2018, the only New York ESA site construction work being performed by the CS084 contractor was at the Vernon (C05) substation facility. Every one of the remaining five regular substation facilities (C01/C02, C03, 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.

As noted previously by the PMOC, MTA has the contractual obligation to provide 26 Inductive Reactors to the contractor for installation at various locations. In 3Q2018, the contractor noted that the reactors presented for pickup showed signs of damage. The contractor refused to accept these reactors and notified MTACC of this problem. The contractor requested that MTA test the reactors and provide documentation to certify that the reactors are fit for service. In October 2018, MTACC advised the contractor that LIRR would not perform any operational capability testing of any of the reactors before transferring ownership to the contractor, which the contractor disagreed with.

There have been two failures on the C03-2 transformer and one on the C05-2 transformer, the root causes of which were attributed to foreign debris in the windings. The GEC has recommended that all the coils in the C03-2 transformer be replaced and hi-pot testing of this re-built transformer be performed. To date, however, no formal position on acceptance of these transformers by LIRR is known at this time.

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;
4. Verification of existing conduit and manholes in several substations;
5. Coordination with other contractors; and
6. Possible damage to the 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 July 27, 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 take into consideration any impact from the open NOCs;
4. Does not address any impacts to the contract work from SWOs that remain in effect past the data date of the schedules; and
5. Does not include the required Integrated System Test Plan (ISTP) and test schedule that incorporates the MTACC incremental approach.

The PMOC recognizes MTACC's increased focus over the past few months on actively developing all the required schedule changes and future delay mitigations with the contractor. In its August 2018 Monthly Progress Report (MPR), MTACC indicated that the Incremental Integrated System Testing approach is already incorporated into the ESA Projects IPS, but it does not contain input from ESA systems contractors. As a result, schedule development is still incomplete, discussions and negotiations with all the concerned contractors must still occur, and appropriate contract modifications need to be executed before the implementation of the Incremental Integrated System Testing can occur. Considering MTACC's previous history on the ESA project in developing, negotiating, and executing contract modifications, the PMOC believes that MTACC's forecast to begin the Incremental Integrated System Testing by July 16, 2019, as noted in its August 2018 MPR, as overly optimistic.

The PMOC has been reporting that there were three Buy/Ship America on the CS179 contract. MTA Legal staff determined that the proposed PA speakers and video monitor display panels are

compliant with all Buy/Ship America provisions, which left the small HVAC units as the remaining issue. The contractor continues to note that outstanding NOCs contribute to its inability to finalize designs. MTACC's continued 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 30 months late. MTACC Senior Management indicates that the LIRR has formally approved 8 out of the 10 Control System FDs, although the PMOC is only aware of 7. 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; and, that any continued progress on system designs and equipment testing is being severely hampered by unanswered RFIs and unissued CPRs that have the potential to alter existing designs. However, the contractor continues to move forward with the equipment fabrication and testing based on submitted designs. Moving forward without approved designs on equipment procurement and fabrication is a risk to the timely completion of this contract due to possible future non-acceptance by LIRR.

Construction Progress: In October 2018, the CS179 contractor continued to progress 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. The contractor is developing a plan to chop out some of the concrete floor to install these drains. 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.

One additional concern related to environmental conditions in the various equipment rooms is now an item of discussion between MTACC, LIRR, and the contractor. The equipment racks being provided under this contract and the VS086 contract for all but the security-related equipment are all "open" racks, which exposes the components to damage from water and dust. While the HVAC systems in the rooms are designed to address most adverse environmental issues when ESA is operational, the contractors and ESA PMT members are concerned about what precautions need to be taken to protect the equipment between the time of equipment installation and full operation of the HVAC system for each room. Further, concern is for the possibility of water infiltration into the rooms and possible dripping of water onto the equipment when ESA is in revenue service.

VS086 – Systems Package 3, Signal Equipment Procurement:

Schedule: 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. Since MTACC wants to wait until solutions to all outstanding issues and the impact of the inclusion of PTC work are defined, it remains unclear when this schedule update will take place, although MTACC indicated that it will impact the substantial completion date. The timely development and issuance of contract modifications continues to be an issue impacting the efficient progression of the contract work. 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 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. 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 preliminary PTC design scope package to LIRR for approval; but LIRR has yet to respond to MTACC regarding comments on or approval of the package. The GEC’s preliminary proposed design scope package must be approved by LIRR before MTACC can prepare CPRs to the GEC and VS086 contractors for the work. It is unclear at this time when LIRR will deliver its response on the PTC Package.

In July 2018, the issue of Electro-Magnetic Interference (EMI) with ESA signal and communications equipment was identified. The contractor asserts that its original response to contract requirements included a request for a waiver of EMI testing; and, that its request was granted by MTA, although MTACC advised that it had no record of that request or approval.

Equipment Fabrication Progress: The FAT of the Plaza Interlocking equipment was held at the contractor’s facility in early October 2018 and was observed by an MTA representative. While the work required to address these issues is relatively minor, it does negate the otherwise positive results of the FAT. Additionally, LIRR has already indicated that re-testing of these particular issues will be required to ensure that they are resolved once they are delivered to the ESA worksites.

CS086 – Tunnel Systems Package 2 – Signal Installation

General: Contract CS086 is for the installation, testing and commissioning of the ESA Project Tunnel Signaling system within the GCT Caverns, tunnels and tunnel approaches. The VS086 Contractor provides the design of the tunnel signaling system and furnishes certain material and equipment for the tunnel signaling system. This material and equipment will be provided to the Contractor by the MTA for installation and testing. The CS086 Contractor will be required to provide additional material and equipment required by the Contract Documents to complete the work. There will be 4 additional major contacts that will support and must be adequately coordinated with CS086 construction. The contract was awarded with a Notice to Proceed given on September 21, 2018. The CS086 contract value at the time of award was \$52,990,000; and, the Substantial Completion date is February 21, 2021.

Schedule: The contractor submitted a preliminary schedule to MTACC for review; and the baseline schedule is due on December 14, 2018.

Work Activities:

- MTACC advised the contractor that personnel installing signal equipment are governed by the Federal Hours of Service Laws related to signal-covered service. This will require the contractor to provide extensive paperwork related to the laws and carefully plan and monitor the hours worked by its signal workers.
- MTACC reminded the contractor that all cabling in the tunnels must be of the Low-Smoke-Zero-Halogen (LSZH) variety to meet LIRR and MTA requirements.
- The contractor advised that it wanted to perform surveys of all equipment locations to identify any issues (e.g., water infiltration, obstructions, etc.) at those sites.

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	19.4	10.3	8.9	28.5	14.5%	46.1%	1/31/19	1/31/19	
	nc	+0.1	nc	+5.9	(-0.8)	nc	+30.3%	nc	nc	
	29.6	19.3	10.3	3.0	29.3	14.5%	15.8%	1/31/19	1/31/19	
CH061A	42.0	36.1	5.9	32.8	38.9	99.5%	91.0%	5/28/18	8/16/18A	1
	nc	+0.5	(-0.5)	+1.0	(-0.4)	nc	+1.7%	nc	nc	
	42.0	35.6	6.4	31.8	39.3	99.5%	89.3%	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 declared.

CH057D – Harold Trackwork Part 3:

Schedule: The CH057D contractor was not able to achieve Milestone #4, Complete Construction of Westbound Bypass Track, during October 2018 (Milestone date September 2, 2018) due to the contractor's continued support of other LIRR Force Account construction activities in Harold Interlocking.

Construction Progress: During October 2018, the CH057D contractor continued construction of the Westbound Bypass Track (part of Northeast Quadrant construction), began Southeast Quadrant (SEQ) test pitting to locate potential subterranean obstructions, and began to extend Tunnel A trackwork from the #2122 turnout westward.

Railroad Force Account Contracts

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

	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	18.9	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	18.9	100.0%	99.0%	2/4/16	4/20/19	
FHA02	60.9	60.8	0.1	59.9	60.3	100.0%	98.4%	8/15/17	6/12/19	1
	+0.7	+0.6	+0.1	+0.3	nc	nc	(0.8%)	nc	nc	
	60.2	60.2	--	59.6	60.3	100.0%	99.2%	8/15/17	6/12/19	
FHL01	29.1	29.0	0.2	26.9	34.5	100.0%	92.2%	4/9/15	2/13/19	1
	+1.8	+1.7	+0.2	nc	nc	nc	(6.3%)	nc	nc	
	27.3	27.3	--	26.9	34.5	100.0%	98.5%	4/9/15	2/13/19	
FHL02	114.8	113.2	1.7	113.2	122.7	100.0%	98.5%	11/25/16	8/26/20	1
	+18.2	+16.6	+1.7	(-0.1)	nc	nc	(18.8%)	nc	nc	
	96.6	96.6	--	113.3	122.7	100.0%	117.3%	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. Budgets 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 October 2018. The PMOC is not concerned about this because the remaining work will only take one day and is presently scheduled to be done after the re-electrification of New Haven #1 Track (NH1) and LIRR Port Washington #1 (PW1) tracks is complete.

FHA02 – Harold Stage 2 Amtrak:

Construction Progress: During October 2018, Amtrak Electric Traction (ET) personnel continued to re-install the catenary system over Amtrak’s New Haven #1 (NH1) and LIRR’s Port Washington #1 (PW1) Tracks that was previously removed to make the Northeast Quadrant (NEQ) trackwork more efficient.

FHL01 – Harold Stage 1 LIRR:

Construction Progress: During October 2018, LIRR Electric Traction 3rd Rail personnel completed remaining electric traction cable installation and splicing required to commission and activate the new G02 Substation, which is scheduled for November 2018.

FHL02 – Harold Stages 2 LIRR:

Construction Progress: During October 2018, LIRR Signal personnel continued installation of switch heaters on the recently installed Northeast Quadrant turnouts. LIRR 3rd Rail personnel completed electric traction power cable connections to the NEQ turnouts.

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 August 2018 MPR. The PMOC continues to track developments regarding the Contract CS084 transformer test failures that occurred in 2017 and 2018 as well as the concerns about the condition of the 26 inductive reactors provided by MTACC to the CS084 Contractor.

2.0 SCHEDULE DATA

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Program Primary Critical Path – Manhattan/Systems

The ESA program primary critical path in IPS 109 remains through Manhattan/Systems work and ends on May 31, 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 scope that comprises the Manhattan/Systems path in IPS 109 and its end date is 24 calendar days later than the May 5, 2021, date that was reported in IPS 108. This slippage was compensated for by the program Issue Contingency activity being shortened by approximately four weeks.

The IPS schedule is based MTACC’s plan for incremental IST that remains as a proposal, for which MTACC has not yet received either final acceptance by the LIRR or the other contracts that could potentially be impacted (CM007, CM014B, CS179, VS/CS084). The IST dates and durations forecasted in IPS 109 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 the forecast timeframe.

Table 2.2: Primary Critical Path – IPS 109, September 1, 2018

Activity Name	Duration	Start	Finish
CS084 Tunnel Systems Package 4 – Traction Power			
Fabricate C08 Building Sections	220	31-Jul-18 A	7-Mar-19
Test, Ship and Deliver C08 Substation	75	8-Mar-19	21-May-19
Assemble C08, install conduit, equipment and ground	247	22-May-19	23-Jan-20
C08 testing, ConEd test, energize and in service	123	24-Jan-20	25-May-20
Traction power conduits, 2000KCM cables, terminate	151	26-May-20	23-Oct-20
Force Account C08 test and energize	65	26-Oct-20	29-Dec-20
CS179 – System Package 1 – Facilities Systems			
IST for track and radio systems	154	29-Dec-20	31-May-21
Program Activities			
FRA Testing (signal and power) †	113	31-May-21	20-Sep-21
LIRR Final Tests and Final Preview ‡	84	20-Sep-21	12-Dec-21
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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 work path and Queens work path.

‡ Successor to Harold Interlocking work path.

Discussion of Progress along the Critical Path

CS084 continues to control the majority of the Manhattan/Systems critical plan as it has since IPS 108. The completion of this work lost approximately three weeks in IPS 109. The critical path starts with the fabrication of traction power substation C08. In IPS 109, the current ongoing activity for fabrication of C08 building sections is forecast to complete approximately 7 weeks later than it was in IPS 108. Three weeks of this lost time is expected to be recovered by the time C08 fabrication is complete, which would be only three weeks later than in IPS 108. The work path continues through C08 factory testing, delivery, installation, grounding, field testing and ConEdison testing. This is followed by installation of traction power conduits and cables, terminations and energization of C08. The CS084 work is followed by CS179 IST for radio systems up to the end of the Manhattan/Systems path in May 2021. From this point, the path runs through LIRR FRA testing for signals and traction power and then LIRR final testing and previews. This is followed by the Issue Contingency activity, which has been reduced by approximately four weeks in this update leading to the Target RSD of February 21, 2022.

The Manhattan/Systems work path is subject to change due to several open/unresolved issues. The schedule includes the MTACC proposal for incremental IST, which needs to be discussed, negotiated, and accepted by the LIRR; executed in a contract modification for CS179; and, then subsequently incorporated in contract modifications for the interfacing contracts, as may be necessary. Additionally, the schedule includes a placeholder activity with a duration of more than one year for the construction of the 47th Street Entrance. Finally, the MTACC is working through the implications that the development of 270 Park Avenue could have on the ESA program.

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 109.

Sub Program Longest Path – Harold Interlocking

Harold Interlocking work remains as the second longest of the three ESA program areas in IPS 109. The path is controlled the CH058A B/C Approach structure. In IPS 109 the path concludes on May 18, 2021, approximately 7 seven weeks later the date shown in IPS 108; however, float on the path decreased by only 3 weeks due to parallel loses on the Manhattan/Systems path.

In IPS 109, the Harold Interlocking work path begins with the procurement of CH058A leading to a planned NTP on October 25, 2018, one month later than it was forecast in IPS 108. The CH058A NTP date is predicated on MTACC securing approval of track outages, planned for January 2019, to reconfigure tracks before the construction of the B/C approach. The NTP date would be delayed for an additional several months if this planned outage is not secured to perform work in that timeframe. The Harold Interlocking path continues with the design for the underpinning the 39th Street bridge, which, after release of Access Restraint 1 in March 2019, is followed by the underpinning and structural construction until August 2020. The path continues with track work through November 2020, which is followed by LIRR force account for track and signal work, testing, and cutover of the B/C track. The Harold work path ends on May 18, 2021, and has 126 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 the delay in awarding CH058A.

Sub Program Longest Path – Queens

The Queens (Mid-Day Storage Yard) work path is the shortest of the three ESA program areas in IPS 109. The Queens path changed during the update period, however it still ends on November 4, 2020 as it did in IPS 108. The float on the Queens longest path has increased to 209 CDs due to parallel loses on the Manhattan/Systems path.

The Queens path in IPS 109 has virtually the same scope, dates and float as it did in IPS 108. The difference is that the initial portion of the path, which addresses the Amtrak catenary-signal trough conflict (CPR025), lost approximately 9 weeks; however, this time is recovered by the of Access Restraint 2 on April 1, 2019. The work path then runs through construction of sewers in the Mid-Day Yard followed by signals and power systems construction; track construction; signal installation; commissioning the MID-8 CIL and battery hut; and, ends in November 2020 at the conclusion of Mid-Day Storage Yard integrated testing. The Queens path ends with 209 CDs of float to the LIRR FRA testing activity where the path merges with the ESA program critical path.

Upcoming Contract Procurements

Table 2.4 shows the status of current and upcoming contract procurements, as reported in IPS 109 (September 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	9/21/18A	29 mos.	2/26/21
CH058A: Harold Structures - Part 3A B/C Approach Structures	5/4/18A	8/9/18A	10/25/18	27 mos.	2/2/20

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

CH058A, B/C Tunnel: Awarded on October 31, 2018 with NTP pending.

PMOC Concerns

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

1. Concerns continue about the Manhattan/Systems work path. This path lost 24 calendar days of float this month, which reduced the time for Issue Contingencies. Until MTACC works through the uncertainties concerning Incremental IST, 47th Street Entrance, and redevelopment of 270 Park Avenue, future schedules may show the changes to the critical path, further delays, and reductions of the Issue Contingency. It is likely that program float could be consumed in reaching agreement with the CS179 contractor on the incremental IST schedule.
2. 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 yet 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.
3. The ESA program schedule contingency remains at 295 CDs, which is 20 CDs above the minimum required FTA ELPEP schedule contingency. The ability of the MTACC to maintain the FTA minimum until the next ELPEP hold point (95% constructed; first quarter of 2021) is at risk due to the uncertainties about the Manhattan/Systems schedule, the greatest of which is finalization of the plan for the Incremental IST.
4. Progress on CS084, Tunnel Systems Package 4 – Traction Power, is slow and is currently reported as 25.1% complete compared with 86.6% as-planned. The PMOC observes that much of the work has had day-for-day delays in each IPS update period. The PMT is working with the contractor to get a realistic schedule; however, the PMOC believes that a revised schedule will incorporate delays in the delivery of equipment that will push out milestone dates. The PMOC recommends that ESA analyze options to recover the schedule, focusing on major electrical equipment submittals and layouts, identifying major issues, and determining corrective measures.
5. Concerns continue for the delays in the procurement of CS086, Tunnel Systems Package 2 – Signal Installation. The delayed NTP for CS086 until September 21, 2018 has used valuable schedule float time that is no longer available during construction. The PMOC is concerned about the cumulative impacts of these delays on the Program schedule.

3.0 COST DATA

Budget/Cost

In the ESA August 2018 MPR, the PMT reported that the total project progress is 73.7% complete compared to as-planned progress of 73.4% of the \$11,133 million April 2018 EAC forecast. The report also shows that construction progress reached 76.8% compared with planned progress of 76.5% of the \$8,014 million April 2018 EAC forecast, based on invoiced construction costs. Contract percentage calculations use the amount that has been allocated to each contract in the MTA Impact accounting system as their budget.

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Change Orders/Budget Adjustments

The ESA August 2018 MPR lists 12 change orders with magnitudes greater than \$100,000 that were executed in August 2018. The net value of these change orders was \$5.8 million.

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

Contract	Description / Mod No.	Amount
CS179	2nd Ave CMU Wall Bracing (mod. 109)	101,000
CS179	Queens Plaza MER Room Changes (mod. 104)	126,500
CS179	B 10 FA Changes (mod. 106)	165,000
CS179	Deletion of FM-200 Systems from Communication Closets (mod. 87)	210,396
CS179	Tunnel SCADA Server Relocation (mod. 76)	575,000
CH061A	DSC - Extra New Concrete Between New Walls and Piles (mod. 15)	180,000
CH061A	Demolition of a Portion of the 12 kV duct bank (mod. 16)	199,000
CQ033	C1 Manhole and duct bank (mod. 21)	241,000
CQ033	Raised Platform for Amtrak's 4.6 Case (mod. 15)	1,000,000
CM014B	Bid Item No. 15A (mod. 180)	660,000
CM014B	Add & Modify Stairways at the 47 th Street Node (CPR-092) (mod. 165)	690,000
CM014B	Modify Restrooms, Digital Signage Conduits (CPR-079 R2) (mod. 170)	1,612,875

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 \$2,698.8 million, of which \$2,698.7 million was expended through September 1, 2018.

Local Funding: The budget for Local Funding is \$7,636.3 million, of which \$5,510.9 million was expended through September 1, 2018. Financing costs are funded and paid separately from other local sources.

PMOC Concerns and Recommendations

1. The PMOC is concerned that MTACC’s strategy of holding funding as contingencies rather than funding contract budgets to their projected value results in an overstatement of both the contract completion percentages and the total value of unallocated contingencies, at any point in time. While MTACC’s strategy retains maximum flexibility, it differs from the generally accepted practice of committing funds to budgets for known program costs. The PMOC anticipates that the budgets will be updated after major contract modifications are executed and when the 2020–2015 Capital Plan is adopted.
2. 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.
3. 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 to incorporate the Incremental IST so that the associated budgets can be determined. Additionally, 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 the 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.
4. While construction expenditures continue to lag behind the rate anticipated during the 2014 rebaseline, the MTACC has updated the expenditure plan using the April 2018 EAC forecast. The PMOC has received an updated revised expenditure plan for the April 2018 EAC forecast 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 October 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 October 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 tunnel systems 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, had not been issued as of October 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 not expected until mid-December 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

MTACC is forecasting that the ESA program will need 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. In September 2018, LIRR retracted the original Phase I, "Qualifications", portion of the M-9A solicitation that it had advertised in November 2017. Subsequently, in October 2018, LIRR re-issued a new Phase I solicitation which included revised specifications for the M-9A vehicles as well as additional equipment not related to the M-9As. Proposals for this solicitation are scheduled to be returned by November 28, 2018. This will only elicit Phase I responses to the two phase procurement, however, so it is apparent that the LIRR's original intent to award the M-9A contract by December

2018 will not be met. Until the schedule for Phase II, “Cost/Schedule”, of this procurement is developed, it will not be possible to fully analyze the impact that this re-advertisement may have on the overall ESA schedule.

Manhattan/Systems Performance Risk

The PMOC is concerned that the ESA program primary critical path is through Manhattan/Systems work. Reported progress is slow, with the fabrication of C08 building sections at the beginning of the path lost approximately 7 weeks in IPS 109. The schedule indicates that only some of this time will be recovered so that the end of the path will still lose 3 weeks. Additionally, this path continues to be at risk for future open/unresolved issues. The schedule includes the MTACC proposal for an Incremental IST, which needs to be discussed, negotiated, and accepted by the LIRR; executed in a contract modification for CS179; and, then subsequently incorporated in contract modifications for the interfacing contracts, as may be necessary. The process for incorporating the Incremental IST is progressing but is taking longer than earlier anticipated. Additionally, the schedule includes a placeholder activity with a duration of more than one year for the construction of the 47th Street Entrance. Without a better schedule definition of the scope of work, schedule impacts cannot be determined. Finally, the MTACC is working through the implications that the development of the new bank building located at 270 Park Avenue could have on the ESA program.

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.

b(4)



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: 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:** 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 previously targeted the end of September 2018 to submit draft updates of the 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. This has been delayed and the cited plan update drafts are now expected to be issued during 4Q2018.

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 September 2018 were 1.89 for Lost Time Injuries (LTI) and 4.73 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 August 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 some 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 equipment rack configurations and possible future damage to equipment. Discussions on this potential problem continue between MTACC and the VS086 and CS179 contractors. 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 eight NCRs related to tunnel duct bench clearance as-built deviations from plan that remain on hold pending MTACC review of the Secondary Survey Report. Modifications to the tunnel duct bench to correct 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;
- 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:

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;
4. Verification of existing conduit and manholes in several substations;
5. Coordination with other contractors; and
6. Possible damage to the MTA-provided inductive reactors due to improper storage and handling by MTA.

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 reassessment. 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 as-needed basis commensurate with construction progress and based on future contract modifications. While MTACC’s strategy retains maximum flexibility, it differs from the generally accepted practice of committing funds to budgets for known program costs. The PMOC is concerned that the strategy results in an overstatement of both the contract completion percentages and the total value of unallocated contingencies, at any point in time.

Project Schedule: The PMOC remains concerned about the remaining program schedule contingency of 295 calendar days that is only 20 calendar days above the ELPEP minimum. IPS 109 shows that Manhattan/Systems work is the primary critical path for the ESA program, which lost 3 weeks in IPS 109 and has unresolved issues for Incremental IST, the 47th Street Entrance and the redevelopment at 270 Park Avenue. Additionally, Manhattan/Systems contracts that are not on the critical path include CM014B, CM007, and CS086, each of which has its own schedule challenges that may not be readily apparent due to the linear nature of 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);
10. Coordination risk retained by MTACC in Manhattan and the ESA tunnels with regard to construction and testing interface management for the systems work;
11. 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; and,
12. Foundation systems required for the new JP Morgan/Chase (JPMC) building at 270 Park Avenue may impact the LIRR Concourse at Grand Central Terminal as well as the MNR train shed. Ongoing active discussions between MTA, MTACC-ESA and JPMC continued through October 2018.

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

1. Positive Train Control in Harold: LIRR submitted a formal waiver request to FRA; LIRR was required to resubmit its revised PTC Implementation Plan/Schedule by August 2, 2018, but had not done so by October 31, 2018.
2. LIRR Force Account Performance: Ability of LIRR force account resources to provide both a very high level of support for third-party contractor access and protection and adequate productivity for significantly increased direct labor work involving track, 3rd rail, and signals, in accordance with the current ESA schedule.
3. Northeast Quadrant Rail Work: [No longer a risk as of September 30, 2018]
4. LIRR CIL Cutovers: [No longer a risk as of July 31, 2018]
5. 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.
6. Funding: ESA Project funding constraints (risk realized in 2Q 2017).
7. Amtrak Support: Ongoing/future Regional Projects requiring extensive Amtrak support.
8. 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

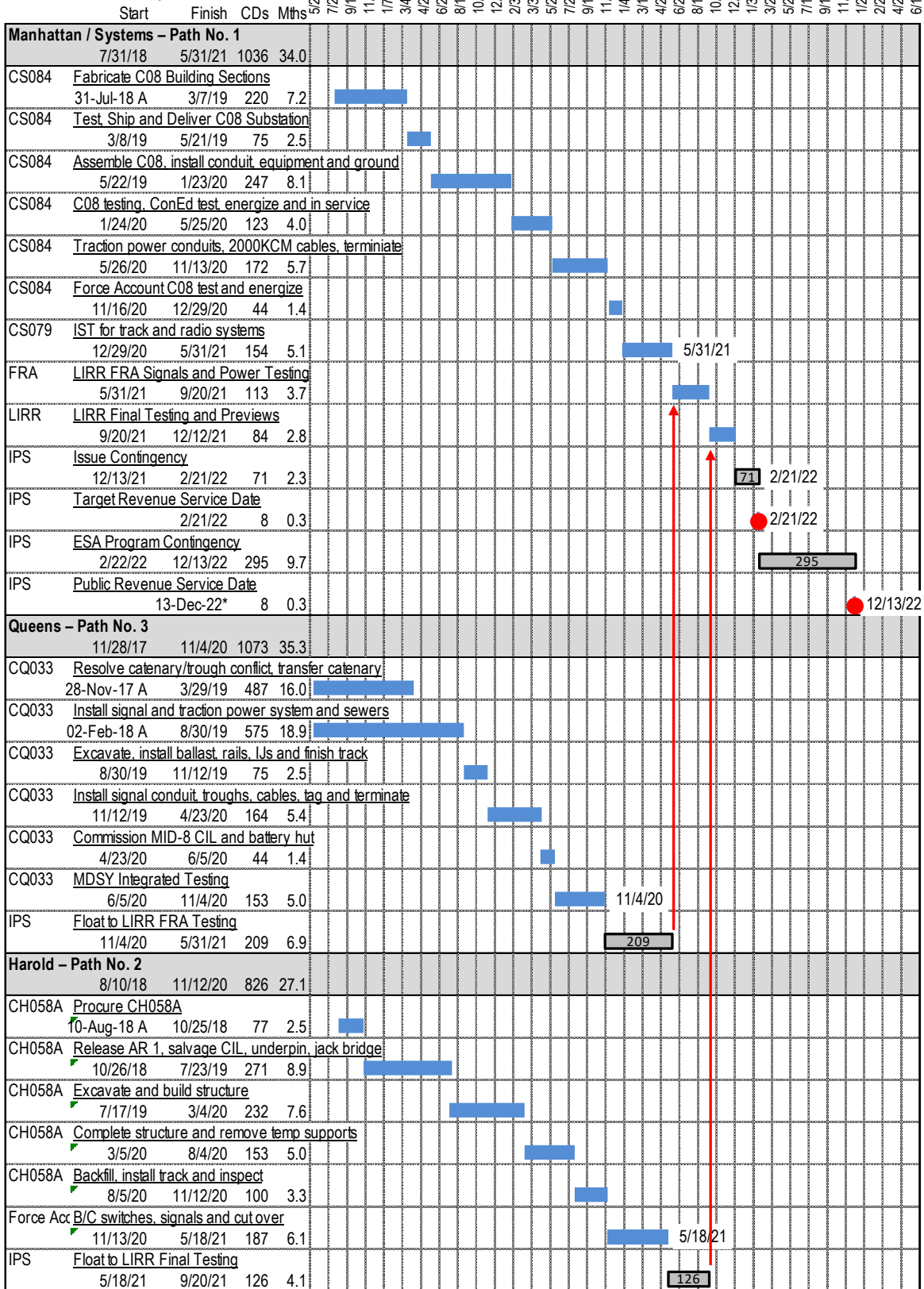
AFI	Allowance for Indeterminates	IPS	Integrated Project Schedule
ARRA	American Recovery and Reinvestment Act	IST	Integrated System Test
AWO	Additional Work Order	LIRR	Long Island Rail Road
BIM	Building Information Model	LSZH	Low Smoke Zero Halogen
BLS	Bureau of Labor Statistics	MNR	Metro-North Railroad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

APPENDIX B – CHARTS AND TABLES

Chart 1: ESA Critical Paths – IPS 109, September 1, 2018

ESA Critical Paths

IPS 109; data date September 1, Duration



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 Sept. 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	11,451.5	100.0%	8,634.6	75.4%
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%	8,017.0	77.6%
		10,922.0	90.7%					
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%	5,318.3	69.6%
		8,223.2	68.3%					

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

Elements	Baseline Budget June 2014	April 2018 EAC Forecast	September 1, 2018			
			Current Budget (interim)	Actual Awards	Invoiced Costs	Inv. Pct. of Budget
Construction Subtotal	7,379.3	8,014.1	7,537.0	7,098.8	6,156.1	81.7%
Soft Costs Subtotal	2,359.5	2,852.2	2,247.3	2,136.2	2,053.6	91.4%
Engineering	720.6	871.8	770.2	739.0	735.9	95.5%
OCIP	282.6	457.4	379.2	379.2	337.1	88.9%
Project Mgmt.	972.2	1,117.3	965.4	896.1	862.5	89.3%
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	2.4%
Contingency Subtotal	439.0	267.0	550.8	--	--	--
Total w/o Financing	10,177.8	11,133.3	10,335.1	9,235.0	8,209.6	79.4%

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

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

Standard Cost Category	FFGA	June 2014 Project Budget	Amended FFGA	Jun 2018 CBB	Jul 2018 CBB	Aug 2018 CBB	CBB / FFGA Var.	CBB / Amend FFGA Var.
10 - Guideway & Track Elements	1,988.7	3,405.5	3,353.4	3,403.7	3,403.7	3,407.6	71.3%	1.6%
20 - Stations, Stops, Terminals, Intermodal	1,168.7	2,238.2	2,326.8	2,277.1	2,277.1	2,292.1	96.1%	-1.5%
30 - Support Facilities (Yards, Shops, Admin)	356.3	474.2	450.8	516.0	516.0	531.4	49.2%	17.9%
40 - Site Work and Special Conditions	205.1	610.6	562.5	548.3	548.3	549.8	168.0%	-2.3%
50 - Systems	619.3	605.6	627.7	692.0	692.0	710.9	14.8%	13.3%
60 - ROW, Land, Existing Improvements	165.3	219.4	192.2	162.3	162.3	162.3	-1.8%	-15.6%
70 - Vehicles	494.0	209.9	879.5	15.4	15.4	15.4	-96.9%	-98.2%
80 - Professional Services	1,184.0	1,975.4	1,809.0	2,082.0	2,113.1	2,114.8	78.6%	16.9%
90 - Unallocated Contingency	168.5	439.0	720.2	638.3	607.2	550.8	226.8%	-23.5%
Subtotal	6,349.9	10,177.8	10,922.0	10,335.1	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		Sept. 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	3,407.6	3,242.0	2,922.3
20 - Stations, Stops, Terminals, Intermodal	1,168.7	2,238.2	2,326.8	2,292.1	2,208.6	1,733.9
30 - Support Facilities (Yards, Shops, Admin)	356.3	474.2	450.8	531.4	506.2	317.1
40 - Site Work and Special Conditions	205.1	610.6	562.5	549.8	500.9	507.3
50 - Systems	619.3	605.6	627.7	710.9	596.0	448.6
60 - ROW, Land, Existing Improvements	165.3	219.4	192.2	162.3	156.5	155.2
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	2,114.8	2,014.3	1,927.0
90 - Unallocated Contingency	168.5	439.0	720.2	550.8	--	--
Subtotal	6,349.9	10,177.8	10,922.0	10,335.1	9,235.0	8,017.0
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 (Cost in Millions)

Contract / Task Description	Prior Bud.	Change	Cur. Bud.
Contractors			
CH057 - Harold Structures Part 3 East Approach	73.2	(0.3)	72.9
CHA58 - Harold Structures - Part 4	69.4	(0.2)	69.1
CMB14 - GCT Concourse/Facilities Fit-Out	426.2	15.0	441.2
CQ033 - Midday Storage Yard Facility	300.8	15.1	315.9
Force Account			
FHA02 - Harold Stage 2: Amtrak	60.2	0.7	60.9
FHA03 - Harold Stage 3: Amtrak	--	2.1	2.1
FHA57 - Harold Structures Part 3: Amtrak	10.3	(0.0)	10.2
FQA33 - Midday Storage Yard: Amtrak	2.2	1.7	3.9
VA33A - Amtrak Sub 4 to ERT Line 2 Connect	--	0.4	0.4
FHL01 - Harold Stage 1: LIRR	27.3	1.9	29.1
FHL02 - Harold Stage 2: LIRR	90.5	18.3	108.7
FHL57 - Harold Structures Part 3: LIRR	10.4	(0.0)	10.4
FQL33 - Midday Storage Yard: LIRR	4.0	0.0	4.0
Project Management			
Metropolitan Transportation Authority (P0900)	158.4	1.7	160.1
Contingency/Reserve			
Unallocated Claim (Z0999)	25.2	(25.2)	--
Program Support (X0100)	349.6	(31.1)	318.5

Table 7: Program Critical Dates 90 Day Look-Ahead – IPS 109, September 1, 2018

Act. Id.	Name	Start	Finish	Float
CS084 Traction Power Systems Package 4				
C08-1560B	Fabricate Building Sections A-C	31-Jul-18A	20-Sep-18	3
C08-1560C	Fabricate Building Sections D-F	21-Sep-18	12-Nov-18	3
C08-1560D	Fabricate Building Sections G-I	09-Oct-18	29-Nov-18	3
C08-1560E	Fabricate Building Sections J-L	25-Oct-18	14-Dec-18	3
C08-1560F	Fabricate Building Sections M-O	20-Nov-18	09-Jan-19	3
C08-1560G	Fabricate Building Sections P-R	17-Dec-18	05-Feb-19	3
C08-1560H	Fabricate Building Sections S-T	16-Jan-19	07-Mar-19	3
C08-1560I	Complete Internal Wiring All Sections	08-Mar-19	18-Mar-19	3
C08-1700	Notification to Witness Factory Test C08 Queens	19-Mar-19	19-Mar-19	3
CQ033 Mid-Day Storage Yard Facility				
CPR-025-10	Catenary B-918 1/2 N and B-914W Guy Anchor and Amtrak Signal Trough Resolution	28-Nov-17A	30-Nov-18	146
CPR-025-20	Construction of Runaround Duct Bank	3-Dec-18	28-Dec-18	146
CPR-025-30	Terminate Signal & Remove Existing Utility interference with foundation (by Amtrak)	31-Dec-18	16-Jan-19	146
CPR-025-40	B-918 1/2 N Foundation & Erect Pole + B-914W Guy Anchor	17-Jan-19	5-Feb-19	146
CPR-025-50	Amtrak Wire Transfers	6-Feb-19	29-Mar-19	146
CH058A Harold B/C Structure / Catenary Structure				
0080	CH058A Procurement IFB-Bid/Award	10-Aug-18A	15-Oct-18	1
0150	Issue Notice of Award -CH058A		15-Oct-18	1
0160	Issue Notice to Proceed -CH058A	16-Oct-18	25-Oct-18	1
0000	NTP CH058A Contract		25-Oct-18	1
0040	Release Access Restraint #1 (138CD from NTP)	26-Oct-18	12-Mar-19	1

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)				
Schedule	RSD	Dec. 31, 2013	Dec. 31, 2023	Dec. 2022	April 30, 2018
Total Project Percent Complete		Based on Invoiced Amount	73.7% actual vs. 73.4% 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		\$9,235 M	82.9% (PMOC calculation†)	
	Total construction contracts awarded to date		\$7,099 M	88.6% (PMOC calculation†)	
Major Issue	Status		Comments		
Project Funding and Budget	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. The April 2018 EAC is \$11,133 million.		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, including float, are: b(4) 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 Manhattan/Systems and Harold areas of the ESA program both lost time in IPS 109 – through September 1, 2018. The Manhattan/Systems path lost approximately 3 weeks and the Harold Interlocking path lost approximately 7 weeks. The program schedule has an Issue Contingency activity of approximately 2.3 months, which lost 4 weeks during this update. There remain 42 months to the target RSD, which is followed by 9.7 months program float to the public RSD.		
Manhattan./ Systems Schedule Path	IPS 109 shows that the ESA Program Critical Path runs through the Manhattan/Systems contracts. This path lost approximately 3 weeks during IPS 109, 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 24 CDs from May 7, 2021 to May 31, 2021 in IPS 109. The schedule has significant unresolved issues (Incremental IST, 47 th Street Entrance, 270 Park) that may mask delays of 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 cost estimate total budget was established in the May 2018 current baseline budget.

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

† ESA April 2018 EAC Forecast: Construction \$8,014.1m; \$871.8m Engineering; \$1,980.4m Soft Cost; \$267.0m Contingency; and, Total \$11,133.3m.