# PMOC MONTHLY REPORT

## East Side Access (MTACC-ESA) Project

Metropolitan Transportation Authority

New York, New York

## Report Period February 1 – February 28, 2019

PMOC Contract No. DTFT60D1400017

Project No. DC-27-5287, Task Order No. 0002, Work Order No. 08

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PMOC Lead: b(6)

Length of time on project: Thirteen years on Project for Urban Engineers

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## APPENDICES



**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.

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## EXECUTIVE SUMMARY

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

| | |
|---|---|
| Overall Program Status: | The Overall Program is 76.0% actual versus 76.0% as-planned (based on invoice cost and April 2018 EAC forecast). |
| Construction Status: | The Construction Status is 79.0% actual versus 79.6% as-planned (based on invoice cost and April 2018 EAC forecast). |
| Contracts Awarded/Completed: | None. |
| Construction Progress Issues: | CM014B, CS084, VS086, CS179, CS086. |
| Program Funding: | Total program funding is $10,335 million, which is sufficient for the MTACC forecasts through December 2020. |
| Program Cost and Budget: | b(4) [redacted] |
| Integrated Project Schedule: | The target RSD forecast is February 14, 2022. The ESA program critical path is controlled by Manhattan/Systems work. |
| Risk Management: | 12 major risks remain. |
| Harold Interlocking: | New G02 Substation successfully completed commissioning; West End #6199 SEQ crossover installed; track removals for Tunnel B/C construction began. |
| Key Stakeholder Issues: | LIRR – Late resolution of CS179, CS084, and VS086 issues.<br>Amtrak – Continuing Force Account availability issues; Electric Traction improved availability.<br>MTACC - Change Order processing issues, GEC CPS support for Contractor Submittals, Redesigns, RFIs, and Field Conditions. |
| Construction Safety: | 1.04 – Lost Time and 1.04 – Recordable BLS Injury ratios during January 2019; both increases from December 2018. |
| ELPEP Compliance: | MTACC Schedule Contingency is only 27 CDs above minimum and Cost Contingency is $477 million above minimum. |
| Project Management Plan: | MTACC updating PMP/Sub-plans to reflect major management, organizational, and process changes (in progress). |
| Buy America: | One CS179 Issue – Small Split HVAC units (waiver requested). |

All Project Sponsor cost and schedule data included in this report is based on the MTACC East Side Access Q4 2018 Quarterly Progress Report and referenced in this report as the ESA Q4 2018 Report, which has a Cost and Schedule data date of January 1, 2019. 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.

## 1.0 PROJECT STATUS

### a. Engineering Design and Construction Phase Services

In the ESA Q4 2018 Report, the PMT reported the overall engineering effort at 85.5% complete compared to planned completion of 85.7%. Since the ESA July 2018 MPR, the PMT calculates summary Engineering progress as a percentage of the $871.8 million April 2018 EAC forecast of engineering costs. The ESA December 2018 Total Cost Report shows that 96.8% of the overall EIS and Engineering awards, including 96.9% of the design awards, have been invoiced.

**Status of Construction Packages Advertised**

CH063 Electric Traction Catenary Work, 3rd Party, will be a negotiated RFP procurement. The contract includes design-build ET catenary relocation work for the Mid-Day Storage Yard and completion of all the remaining catenary work required for operational readiness in Harold Interlocking. RFQ advertised online on January 4, 2019; documents were due on February 27, 2019, but MTACC extended the deadline to March 13, 2019, due to many vendor questions.

**Status of Construction Packages Not Awarded**

CM015 – 48th Street Entrance: Design work remained suspended through February 2019. MTA has notified the building owner that construction of the 48th St. entrance has been deferred. Based on code compliance requirements, an emergency exit to street level will need to be provided in the interim. The GEC is developing the design for this feature.

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 have developed alternatives to the plan and have identified two options. The two options are currently on hold pending MTACC decision on a LIRR request for an alternative yard exit route, Option E. The CQ033 Construction Manager completed his evaluation of Option E November 7, 2018, and MTACC forwarded the design to LIRR for review. Comments had been expected in January 2019, but LIRR did not provide its response and is awaiting results of Amtrak's review. Option E is still under review by Amtrak. 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 Option E, the primary exit, to be built under FQA33A (see above). Although this second exit route was earlier planned to be constructed by Amtrak after Contract CQ033 completes the MDSY and upon arranging the funding source from LIRR, LIRR might decide that this is not required based on the operational advantages offered by Option E under FQA33A. MTACC and LIRR are awaiting response from Amtrak regarding Option E as presented/discussed at the meeting at Amtrak headquarters on January 29, 2019.

**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 later forecast that LIRR would complete the PTC design in January 2019, but this was delayed due to resolving GEC/LIRR comments on the GCT3 and GCT4 application logic submittals with the PTC vendor and the LIRR PTC Group.
- 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 to insure coordination with the LIRR PTC requirements. The PMOC notes that these changes cannot be finalized until LIRR completes the PTC design. MTACC has already acknowledged that the contract modification for incorporation of PTC requirements will impact the substantial completion date for Contract VS086.

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

CS179, Systems Facilities Package No.1: The backlog of overdue submittal and RFI review responses 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 RFIs, unresolved Notices of Change (NOCs), and numerous Stop Work Orders (SWOs) are impacting the completion of design work and delaying the contract schedule. While MTACC has recently made some progress on addressing the contractor's NOCs, the contractor continues to note that there are still 18 NOCs contributing to its inability to finalize designs; 12 of which MTACC was to issue CPRs and 6 more that exceed the 30-day turnaround time duration provision in the contract. The completion of the Final Designs (FDs) for all 10 Control Systems, which was scheduled for completion 34 months ago, has not occurred yet; and, the completion of FD for all 19 Non-Control Systems is also delayed, mostly due to overdue responses on RFIs and submittals. The full impact of the Control and Non-Control System FD delays on contract progress remains undetermined at this time. One Buy/Ship America issue (previously noted) that could impact design and construction also remains unresolved.

CS084, Traction Power Systems Package 4: Although the contractor continues to contend that unresolved design issues, differing site conditions, and coordination issues are causing delays to this contract, progress continues to be made on the fabrication and delivery of equipment. Open design issues on this contract are related to water remediation methodologies in spaces designated for CS084 equipment and identification of solutions for field construction issues.

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. Work on the design to incorporate Positive Train Control (PTC) requires a contract modification that must still be developed and negotiated. Discussions continue between the contractor and the MTA to resolve a design issue regarding "light-out" protection that was identified in January 2019.

### b. Procurement

The ESA Q4 2018 Report shows that total procurement for the ESA Program is 84.6% complete, with total awards at $9,417 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 of all ESA program costs. Active procurements include:

- CH063 Electric Traction Catenary Work, 3rd Party: This will be a negotiated procurement using the RFP process. The contract includes design-build ET catenary relocation work for Mid-Day Storage Yard and completion of all the remaining catenary work required for

operational readiness in Harold Interlocking. The RFQ notice was advertised online on January 4, 2019, and the contract documents were made available on January 14, 2019. Forecast Procurement Milestones: RFQ responses originally due February 8, 2019, now extended to March 13, 2019; current dates forward, as shown, will be revised; issue RFP March 11, 2019; RFP responses due April 15, 2019; BAFO completion on June 14, 2019; contract award and NTP by July 31, 2019.

Contract CM015, 48th Street Entrance, is on hold pending an agreement between MTA and the owner of 415 Madison Avenue.

**c. Construction**

In the ESA Q4 2018 Report, MTACC reported that total construction progress reached 79.0% complete compared with planned progress of 79.6%. Since the ESA July 2018 MPR, the PMT calculates summary construction progress as a percentage of the $8,014 million April 2018 EAC forecast of construction costs. The percentage of work complete, as shown throughout this report, is calculated using invoiced costs to represent construction progress. Progress for individual contracts and force account packages is calculated as a percent of budget allocated in the MTA Impact accounting system.

**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% | 6/3/17 | 1/31/19 | 1 |
| | nc | nc | nc | nc | nc | nc | nc | nc | nc | |
| | 361.6 | 350.2 | 11.4 | 346.0 | 356.0 | 100.0% | 98.8% | 6/3/17 | 1/31/19 | |
| CM007 | 712.3 | 662.6 | 49.7 | 407.7 | 723.8 | 57.5% | 61.5% | 1/28/20 | 4/7/20 | |
| | nc | (-1.1) | nc | +12.9 | +0.1 | nc | +2.0% | nc | +15cd | |
| | 712.3 | 663.7 | 49.7 | 394.8 | 723.7 | 57.5% | 59.5% | 1/28/20 | 3/23/20 | |
| CM014B | 484.7 | 466.7 | 18.0 | 314.1 | 552.7 | 95.1% | 67.3% | 11/26/18 | 10/28/20 | |
| | nc | +0.7 | (-0.7) | +6.0 | +21.0 | nc | +1.2% | +100cd | +28cd | |
| | 484.7 | 466.0 | 18.7 | 308.1 | 531.7 | 95.1% | 66.1% | 8/18/18 | 9/30/20 | |
| VM014 | 46.9 | 34.9 | 12.0 | 27.2 | 48.1 | NA | 78.0% | 10/25/19 | 3/23/20 | |
| | nc | nc | nc | +1.1 | +0.3 | NA | +3.2% | nc | nc | |
| | 46.9 | 34.9 | 12.0 | 26.1 | 47.8 | 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.

1. Substantial completion not declared.

**CM006 – Manhattan North Structures:**

Schedule: The ESA Q4 2018 MPR projects Milestone MS#3, Substantial Completion (SC), by January 31, 2019, and MS#4, Final Completion, by May 1, 2019.

Construction Progress: The CM006 contractor continued the following activities in February 2019: minor base contract work and open NCR work. Sixteen NCRs remain open. Remediation of remaining leaks will be transferred to Contract CM007. ESA upper management met with the contractor regarding the date for Substantial Completion, but the outcome has not been disclosed.

**CM007 – GCT Station Caverns and Track:**

Schedule: The ESA Q4 2018 Report projects Milestone #4 (Track & Third Rail Work Complete) by December 13, 2019 (-128 CDs; the TIA/recovery schedule is still under review); Milestone #5 (Substations US1 and US2 Complete) by January 22, 2019 (-130 CDs; ESA reports this milestone

is likely to change again); Milestone #5A (Caverns Ready for Integrated Systems Testing) by September 30, 2019 (-54 CDs); Milestone #6 (All Caverns and Tunnel Work Complete) by April 7, 2020 (-113 CDs); and, Milestone #6A (Substantial Completion) by April 7, 2020 (-70 CDs).

Construction Progress: North and South Back of House, East and West: Continued electrical installation at mezzanine and lower levels and continued MEP work upper and lower levels; FM-200 fire protection and raised floor installation (E).

GCT 6: Ramp access to allow hi-rail equipment to get on track for access to cavern and tunnel areas via lower level track.

East and West Train Halls: Continued track curb construction and continued topping slab installation. Continued steel framing, painting, electrical and sprinkler piping installations. Continued escalators 51, 55, and 56 and elevators 6 and 18 installations in the East Train Hall, and escalators 59, 60, and 63 and elevators 8 and 19 installations in the West Train Hall.

Track: Continued track construction in the upper level Train Halls and lower level Tunnel Track. Continued third rail installation. Continued rail welding. Continued turnout installation. Continued qualification testing of Special Trackwork DFF assemblies.

Architectural Element - Walls: Through February 17, 2019, wall progress was approximately 24% Complete. Work included installation of support frames at the west end walls for the 46th, 47th, and 48th Street Cross Passageways.

**CM014B – Concourse and Facilities Fit-Out:**

Schedule: The ESA Q4 2018 Report indicates that this contract's actual progress was 67.3% complete vs. 96.8% planned. Milestone #7 (50th St. Ventilation Facility) January 27, 2018; then March 1, 2019; then December 3, 2019; now projected for September 12, 2019. Through February 19, 2019, the structural steel erection was 75% complete by piece and 69% 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 remained at 23% complete.

Construction Progress: Electricians continued with installation of B-20 Substation breaker control wiring, Siemens testing, and termination and splicing of US-3 to Feeder MH wires. Plumbers continue testing domestic water and installing plumbing fixtures throughout the Concourse. Installation of seismic angles has begun in Zones. 1-4. Mechanical work continues with the installation of AHU/FCUs in available areas. Painting of block walls and columns continues throughout Zones 1-4. Painting of Fire Stand Pipe continues throughout the Concourse. Installation of the marble stone wall finish is ongoing in public areas from south to north. Installation of the suspended ceiling system continues throughout the Concourse from south to north.

Biltmore Connection: MNR outage for tracks 39/40 will take place March 1, 2019. This work resumes the week of March 4, 2019. The upcoming work includes chopping existing beam encasements for new steel connections and demolition of Biltmore Level slab. This work continues on the tertiary critical path for the contract.

Wellways: Escalator maintenance is ongoing, one day every 2 months. In Wellway #1, fabrication and installation of the glass tile is continuing. Sprinkler head installation nears completion. In Wellway #2, scaffold removal is underway. Glass panel fabrication is ongoing and glass tile installation nears completion. In Wellway #3, Machine Room installation and escalator build up continues and are scheduled to be completed June 2019. In Wellway #4, escalator build up continues and is scheduled to be complete May 2019. Machine Room installation and escalator build up continues and are scheduled to be completed May 2019.

47th Street Cross Passage: The expanded 47th St. Entrance temporarily replaces the delayed 48th St. Entrance (CM015) and becomes the only entrance at the northern end of the Concourse. The changes include increasing the number of stairs from 2 to 3 and widening the Central Stair. The stairs enter the Cross Passage at the western end with direct access to two existing stairs and 3 existing escalators to Madison Avenue. Through February 2019, construction of the stairs continues and installation of Elevator #13 has resumed.

50th Street Vent Facility: The Vent Building continues in full fit-out mode. Work includes installation of ceilings in select rooms, installation of CMU walls in 1st Basement Level, and punchlist work.

b(4)

**VM014 – Vertical Circulation Elements (Escalators and Elevators):**

Schedule: In the ESA Q4 2018 Report, it was reported that, through December 31, 2018, 74.8% of this contract had been invoiced and 74.5% paid. 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: CM014B: All 22 escalators have been fabricated and delivered. All elevator fabrication and delivery has been completed, with the exception of Elevator 10 (50th St. Vent Building) and Elevator 22 (Biltmore Connection). Installation of Elevators #1, #2, and #13 continues under an accelerated schedule. Elevator #17 cab is installed. Biltmore Room: The start date for Escalators #1 and #2 installation remains May 2019. The rigging plan was submitted February 5, 2019. CM007: Through February 2019, all 6 of the 6 elevators and 7 of the 16 escalators for installation on the train platforms were delivered. Through February 17, 2019, installation of support framing and stainless steel cladding continued for Elevators #5, #6, #7, and #18. In the West Train Hall, fabrication of galvanized steel tube frames for Escalator #60 continues. No escalator progress was reported for the East Train Hall. CM015: MTACC has requested that preparation of shop drawings begin for the 9 escalators in the contract.

**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 | 262.2 | 3.2 | 261.5 | 263.7 | 100.0% | 99.8% | 9/6/16 | 3/31/19 | 1 |
| | nc | nc | nc | nc | nc | nc | nc | nc | nc | |
| | 265.4 | 262.2 | 3.2 | 261.5 | 263.7 | 100.0% | 99.8% | 9/6/16 | 3/31/19 | |
| CQ033 | 325.0 | 308.1 | 16.9 | 162.4 | 346.9 | 57.2% | 52.7% | 8/10/20 | 2/15/21 | |
| | nc | +0.1 | (-0.1) | +7.7 | +1.4 | +4.9% | +2.8% | nc | +105cd | |
| | 325.0 | 308.0 | 17.0 | 154.7 | 345.5 | 52.3% | 49.9% | 8/10/20 | 11/2/20 | |

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. Substantial completion not declared.

**CQ032 – Plaza Substation and Queens Structures:**

Schedule: MTACC's Q4 2018 Report projects Milestone MS#6, Substantial Completion (SC), by March 31, 2019, and forecasts Milestone MS#7, Final Completion, by June 30, 2019.

Construction Progress: The CQ032 contractor continued the following activities in February 2019: work regarding closure of NCRs, work to eliminate water infiltration conditions, punch list items,

and other commercial items. Ten NCRs remain open. Of concern are seven NCRs related to as-built tunnel duct bench track clearance deviations to meet LIRR operational requirements. Probe information at several duct bench ladder recess locations to help determine embedded conduit locations was sent to the GEC for review and determination. SC was not achieved in February 2019.

**CQ033 – Mid-Day Storage Yard Facility:**

Schedule: Milestones MS#1, MS#2, MS#3, and MS#4 have been achieved. Milestones MS#4A (Start Integrated Testing), MS#5 (YS Track Completion), and MS#6 (Substantial Completion) are impacted by the delay of Access Restraints AR#1 and AR#2. AR#1 requires Amtrak to remove rail located at the west end of the Mid-Day Storage Yard (MDSY). AR#2 requires the installation of new catenary poles and Amtrak wire transfers, and pole locations are obstructed by an Amtrak signal trough. The contractor requires both AR#1 and #2 to install underground duct banks to complete the YS Track, followed by Integrated Testing. The ESA Q4 2018 Report projects Milestone MS#6 Substantial Completion (SC) for February 15, 2021, -189 days.

Construction Progress: The CQ033 contractor continued the following activities in February 2019: fire line, water main and storm pipe installation, and duct bank construction. Other activities: Car Appearance Maintenance (CAM) platform work, foundation construction for Storage and Toilet Service Buildings, ballast retainer work continued; Yard Lighting pole construction, catenary structure work, and traction power cable pulls continued. All rail has been delivered to the site and rail welding operations continued. Turnouts are in production. Track construction is scheduled to start mid-March 2019. Preparations for concrete deck of the Pedestrian Access Bridge continued, placement to start when the weather breaks. Signal CIL (Central Instrument Location) building installations continued, and CIL MID-1 will be the next building to be set late March 2019. CIL MID-4 was delivered and set February 16, 2019. Soldier pile installation at the Tunnel D Approach is scheduled to start early March 2019.

**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 | 586.0 | 20.9 | 468.0 | 651.6 | 81.5% | 79.8% | 7/1/20 | 11/25/21 | 1 |
| | nc | +3.7 | (-3.7) | +5.2 | +4.9 | (4.1%) | (1.0%) | nc | nc | |
| | 606.9 | 582.3 | 24.6 | 462.8 | 646.7 | 85.6% | 80.8% | 7/1/20 | 11/25/21 | |
| CS084 | 79.7 | 73.7 | 6.0 | 21.8 | 83.2 | 85.1% | 29.5% | 12/2/19 | 4/23/21 | 1 |
| | nc | +0.2 | (-0.3) | nc | nc | (5.2%) | (0.1%) | nc | nc | |
| | 79.7 | 73.5 | 6.3 | 21.8 | 83.2 | 90.3% | 29.6% | 12/2/19 | 4/23/21 | |
| CS086 | 60.9 | 53.0 | 7.9 | -- | 60.9 | nc | nc | 2/21/21 | 2/21/21 | 2 |
| | nc | nc | nc | nc | nc | nc | nc | nc | nc | |
| | 60.9 | 53.0 | 7.9 | -- | 60.9 | nc | nc | 2/21/21 | 2/21/21 | |
| VS086 | 21.8 | 19.9 | 1.9 | 13.5 | 22.1 | NA | 67.7% | 10/14/19 | 11/19/19 | 1 |
| | nc | nc | nc | nc | nc | NA | nc | nc | nc | |
| | 21.8 | 19.9 | 1.9 | 13.5 | 22.1 | NA | 67.7% | 10/14/19 | 11/19/19 | |
| VH051 | 30.2 | 29.7 | 0.5 | 29.6 | 30.2 | NA | 99.7% | 4/30/15 | 5/31/21 | |
| | nc | nc | nc | nc | nc | NA | nc | +1,039cd | +426cd | |
| | 30.2 | 29.7 | 0.5 | 29.6 | 30.2 | NA | 99.7% | 6/25/12 | 3/31/20 | |

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.Forecast SC is based on the approved schedule that does not account for open unresolved issues.

2.Baseline Scheduled not yet accepted.

**CS179 – Systems Package 1 – Facilities Systems:**

Schedule: MTACC continues to work with the contractor on the development of a recovery schedule. This effort is being hampered by the unresolved status of many issues and the backlog of MTA responses on submittals and RFIs. In its ESA Q4 2018 Report, MTACC reports that the SC date for this contract is November 25, 2021, while the contractor's latest schedule cites a July 2021 SC date. The PMOC continues to question the validity of achieving substantial completion by any of these dates, 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; and
4. Does not address any impacts to the contract work from SWOs that remain in effect past the data date of the schedules.

In its Q4 2018 Report, MTACC advises that the Incremental Integrated Systems Testing plan has been incorporated into the overall ESA Integrated Project Schedule (IPS). However, as of the end of February 2019, the identification of tests to be performed, the details of the testing procedures to be used, and the scheduling of the tests remained as open items still under discussion.

Design Progress: The final approval of all 10 control system Final Designs (FDs), a critical activity, is now 34 months late. MTACC Senior Management indicates that the LIRR has formally approved 8 out of the 10 Control System FDs. 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. Despite not having the information it says it needs, the contractor continues to move forward with the development of test plans and equipment fabrication. Further, factory testing of equipment for 4 of the 10 Control Systems and 3 of the 19 Non-Control Systems continues to be on hold pending the resolution of contract interface coordination issues, Stop Work Orders, and resolution of RFIs and NOCs.

Construction Progress: In February 2019, the CS179 contractor continued to actively 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. Furthermore, the previously noted concern related to environmental conditions regarding water and moisture in the various equipment rooms and the "open" type equipment racks remains an item of discussion between MTACC, LIRR, and the contractor. The contractor has started some testing of installed equipment in the Vernon facility and MTACC has the contractor installing trench drains in several facilities to address water infiltration issues.

**CS084 – Tunnel Systems Package 4 – Traction Power Systems:**

Schedule: The information for CS084 is supplemented by discussions at a mid-February 2019 Progress Meeting that reviewed contract progress up to February 13, 2019. The contractor continued 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 further focus.

Design Progress: The design focus continues to be 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.

Construction Progress: A considerable amount of equipment for 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, water infiltration, access restraints, stop work orders, and differing site conditions as its reasons why work at the various locations cannot progress. Progress on addressing the issues continues to be exceedingly slow, as a significant number of the cited issues involve coordination with other contracts and require the development and issuance of contract modifications to various contracts.

MTA has the contractual obligation to provide 26 Inductive Reactors to the contractor for installation at various locations. The contractor initially refused to accept these reactors based on concerns about apparent damage to some units and notified MTACC of this problem. Considerable discussions regarding the condition and utilization of the reactors ensued and continue; and, as of mid-February 2019, only one of the reactors had been installed. In late-January/early-February 2019, LIRR advised that it did not want the two reactors at the C03 substation to be co-located in the TPSS equipment room. Upon further investigation by the GEC, it was determined that these two (2) reactors at the C03 substation were not required for broken rail protection and did not need to be installed. Later in February 2019, MTACC confirmed that the reactors were still needed at the other originally planned locations.

The PMOC previously reported significant quality issues related to the 2 of the 18 required substation transformers while undergoing hi-pot testing. Repairs were made to one transformer, a re-test was performed, and another failure occurred due to foreign debris in the transformer coil. After significant discussions regarding the viability of the transformer that failed the two tests, the transformer manufacturer agreed to replace all the high-voltage coils in the transformer before repeating the required hi-pot testing. The next round of testing for that re-built transformer is scheduled to take place in April 2019.

The previously identified issue regarding specification non-conformance issues with track monuments (conduit turn ups at track level for routing of traction power cables) continues to be an item of investigation and discussion. There are approximately 453 track monument locations throughout the ESA territory. As of mid-February 2019, 63 of the 453 monument locations were inspected, with results showing that 87% of the inspected monuments were not in conformance with LIRR specifications. Discussions regarding further inspection efforts and remediation solutions continue at a senior level in MTACC.

The PMOC remains concerned about many issues, including:

1. TPSS 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;
6. Possible damage to the MTA-provided inductive reactors due to improper storage and handling by MTA;
7. Extent of non-conformance of track monuments and any needed remediation efforts; and
8. Water infiltration issues in the facilities

**VS086 – Systems Package 3, Signal Equipment Procurement:**

Schedule: The milestones for this contract must still be modified to accurately evaluate progress. It remains unclear when this schedule update will take place. MTACC continues to indicate that the contract modification for incorporation of PTC requirements will impact the contract substantial completion date. MTACC continues to note 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 previous delays in the progression of the work. There are two contract modifications required for incorporation of PTC into the signal design – one for the GEC and the other for the VS086 contractor to incorporate the circuitry into the VS086 signal design. In February 2019, the contractor finally submitted signal Application Logic to the MTA for LIRR review in connection with LIRR's development of its PTC design scope. Once LIRR approves the submitted Application Logic, LIRR can complete its portion of the PTC design scope; and, MTACC can initiate the development of the required contract modifications to incorporate PTC into the ESA signal design.

The previously noted issue of Electro-Magnetic Interference (EMI) with ESA signal and communications equipment remains as an unresolved open issue and the contractor intends to submit a waiver request to delete this contract requirement.

While not causing any current delays to this contract, mainly because the contractor has proceeded with its interpretation of design requirements, the "light-out" protection methodology remains as a serious issue under discussion. The LIRR has indicated that the current proposed methodology to provide this protection is not what was expected and not what it wants. Any decision by the MTA that would require modification of the current methodology to provide this protection will have a significant impact on the overall signal design completion.

Equipment Fabrication and Delivery Progress: The VS086 contractor submitted a plan to repair or replace the Plaza Interlocking equipment that, due to improper packaging, suffered damage in transit from the VS086 factory to the CS086 contractor's storage facility. Three of the more significantly damaged racks were returned to the VS086 contractor and are in the process of being completely re-built. The three other "less significantly" damaged racks would, under the submitted plan, be removed from the CS086 warehouse and brought to some local facility where VS086 personnel would complete the needed repairs. In February 2019, LIRR suggested that, since these racks also required for the installation of ATT-20 track circuit equipment (originally planned to be done as part of a "field modification"), it might be more efficient to return those three less damaged racks to the VS086 factory to effect damage repairs and the factory installation of the ATT-20 equipment with qualified contractor personnel and equipment. That suggestion is under evaluation by MTACC. A Factory Integrated Acceptance Testing (FIAT), which must be performed after the FAT, tests the interlocking designs and equipment as a composite systems package. Design data from the CS179 contractor is required to perform the FIAT, and MTACC continues to indicate that this design data is still under development by the CS179 contractor. Therefore, the forecasted date for the FIAT, which will be conducted at the ESA site, remains undetermined at this time.

**CS086 – Tunnel Systems Package 2 – Signal Installation**

Schedule: As of mid-February 2019, the contractor's baseline schedule remains unapproved and MTACC had many comments on the schedule submitted; so, integration efforts with the VS086, CS179, and CM007 contracts remain to be identified and evaluated. At the mid-February 2019 progress meeting, the contractor announced that it was assigning an entirely new management team to execute this contract. No reason was given for this change; and MTACC advised the contractor of its concerns over this development and requested a meeting to discuss this further.

Design/Construction Progress:

- The contractor continued to advise that the Plaza Interlocking equipment room has a major water infiltration issue that needs to be addressed. MTACC is investigating this concern.
- The contractor continued performing surveys of equipment locations to identify any issues (e.g., water infiltration, obstructions, etc.) at those sites. The contractor has yet to submit its lists of issues to MTACC; and, MTACC requested that a list of the contractor's issues/findings be submitted as the individual surveys are completed.
- The contractor continued to advise that it believes that Room 4G36 is too small to fit all the proposed equipment. If it is ultimately determined that the equipment will not fit in the existing room, a re-design of equipment layouts and cable routing and lengths could be required. The contractor continues to indicate that a determination of whether the proposed equipment will fit in the room must be expedited, as no cable for the contract will be ordered until all cable lengths required for the contract are finalized. MTACC will investigate this concern.

As of mid-February 2019, there were no "conformed" drawings available for this contract. MTACC continues to indicate that it will send a significant amount of revised/additional contract drawings and specifications to the contractor for pricing and inclusion in the contract. As of mid-February 2019, this action remained as an open item. The PMOC remains concerned that cabling for this contract, a long-lead time procurement item, has yet to be ordered by the contractor because the contractor indicates that it needs a final cable plan and conformed contract drawings to develop its cable list.

## 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 | 22.8 | 6.8 | 15.2 | 30.7 | 88.3% | 66.4% | 1/31/19 | 3/3/19 | 1 |
| | nc | +0.4 | (-0.4) | +1.7 | +13.8 | +5.1% | +6.0% | nc | (-88cd) | |
| | 29.6 | 22.4 | 7.2 | 13.5 | 16.9 | 83.2% | 60.4% | 1/31/19 | 5/30/19 | |

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. The forecast EAC updated to reflect Regional Investment.

### CH057D – Harold Trackwork Part 3:

Schedule: The CH057D contractor completed Milestone #7, Complete Southeast Quadrant Work, during February 2019.

Construction Progress: The contractor completed installation of the SEQ #6199 crossover and associated other SEQ trackwork during February 2019. The contractor also began installation of the east end of the #3121 crossover on the Westbound Bypass Track during February.

### CH058A – Harold Structures – B/C Approach

Schedule: The CH058A contractor did not complete any specific schedule milestones during February 2019.

Construction Progress: During February 2019, the contractor continued mobilization activities and began clearing and grubbing and survey activities east of 39th Street.

## 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 does 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 |
|---|---|---|---|---|---|---|---|---|---|---|
| FHA02 | 60.9 | 60.8 | 0.1 | 60.8 | 60.9 | 100.0% | 99.9% | 8/15/17 | 1/10/21 | 1 |
| | nc | nc | nc | nc | +0.4 | nc | +0.1% | nc | +345cd | |
| | 60.9 | 60.8 | 0.1 | 60.8 | 60.5 | 100.0% | 99.8% | 8/15/17 | 1/31/20 | |
| FHL01 | 29.1 | 29.0 | 0.2 | 28.4 | 34.8 | 100.0% | 97.3% | 4/9/15 | 3/13/19 | 1 |
| | nc | nc | +0.1 | +0.9 | (-0.1) | nc | +2.8% | nc | nc | |
| | 29.1 | 29.0 | 0.1 | 27.5 | 34.9 | 100.0% | 94.5% | 4/9/15 | 3/13/19 | |
| FHL02 | 114.8 | 113.2 | 1.7 | 113.2 | 123.9 | 100.0% | 98.6% | 11/25/16 | 8/30/21 | 1 |
| | nc | nc | nc | +0.1 | (-0.5) | nc | nc | nc | nc | |
| | 114.8 | 113.2 | 1.7 | 113.1 | 124.4 | 100.0% | 98.6% | 11/25/16 | 8/30/21 | |

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. Invoice percent complete is calculated using the current approved budget.

**FHA02 – Harold Stage 2 Amtrak:**
During February 2019, Amtrak ET personnel removed catenary wires over the LIRR Westward Freight Track between 39th Street and the former #855 turnout and continued to make modifications at the B931 catenary pole prior to its removal in advance of Tunnel B/C construction.

**FQA65 – Loop Interlocking CIL:**

Amtrak resumed FQA65 construction activities during February 2019 when C&S personnel began installation of signal trough adjacent to Loop 2 Track.

**FHL01 – Harold Stage 1 LIRR:**
LIRR successfully completed the 60-day "burn-in" period for the new G02 Substation on February 15, 2019. Afterward, LIRR Electric Traction personnel began to disconnect the third rail track feeders between the existing G02 Substation and the main line tracks.

**FHL02 – Harold Stage 2 LIRR:**
During February 2019, LIRR Signal personnel completed signal equipment installation at the new #6199 SEQ crossover, continued to make signal revisions and install snow melter equipment at the "H2", "H5", and "H6" CILs, and began to install signal trough and conduit at the #3121 crossover on the Westbound Bypass Track. LIRR Third Rail personnel installed 3rd rail at the new #6199 SEQ crossover and removed 3rd rail from the former #811 and #821 crossovers in advance of Tunnel B/C construction. LIRR Track personnel removed the west end of the #811 and east end of the #821 crossovers. LIRR Communications personnel installed 50 pair communications cables at several locations east of the temporary Harold CIL.

**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 Q4 2018 Report. The PMOC continues to monitor developments regarding the following concerns:

1. 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. The contractor is replacing all high voltage coils on the TPSS C03-2 transformer and has installed only one of the inductive reactors as of as of February 28, 2019.
2. Potential out of tolerance as-built bench wall clearance for railcars in ESA tunnels.

3. Potential out of tolerance as-built conditions for the new track monuments that house the conduits for the traction power cables at the track connection locations.

Field surveys and evaluations for Issue Nos. 2 and 3 continued during February 2019.

## 2.0 SCHEDULE DATA

### Status and Schedule Contingency

The schedule information in this report is based on IPS 113 (data date January 1, 2019) and the IPS Progress Report. The forecast for the Target Revenue Service Date (RSD) remained February 14, 2022, and the Public RSD remained December 13, 2022. The IPS schedule was prepared using the MTACC alternative IPS procedure and includes an incremental Integrated Systems Testing (IST) approach.

The remaining program schedule contingency identified in IPS 113 is 302 calendar days to the Public RSD, unchanged from that which was reported in IPS 112. The ESA Program contingency is only 27 CDs above the minimum required FTA ELPEP schedule contingency, and 692 CDs less than the 994 CD duration that was established in the July 1, 2014 IPS re-baseline.

In IPS 113, the Manhattan/Systems work path has no float and remains the ESA program critical path. As shown in Appendix F, ESA Critical Path Chart, the float on the paths through the three main ESA program work areas are: 1) Manhattan/Systems (no float); 2) Harold Interlocking (136 CDs float); and, 3) Queens (155 CDs float). The PMOC notes that float on the Manhattan/Systems and Harold Interlocking paths is measured to the start of LIRR Final Systems Testing and that the float on the Queens (Mid-Day Storage Yard) path is measured to the start of LIRR FRA Testing (signals and power).

Table 2.1 shows dates, remaining durations, and contingencies for the Target, Public, and FFGA Revenue Service Dates.

**Table 2.1: Schedule Contingency – ESA IPS 113 – January 1, 2019**

| | IPS 112 – Dec. 1, 2018 | | IPS 113 – Jan. 1 2019 | |
|---|---|---|---|---|
| | Date | Cal. Days | Date | Cal. Days |
| **Target RSD Contingency** | | | | |
| Duration Remaining to Target RSD | 2/14/22 | 1,171 | 2/14/22 | 1,140 |
| Remaining Target RSD Contingency | | 0 | | 0 |
| Remaining IPS Contingency Percent | | 0.0% | | 0.0% |
| **Public RSD Contingency** | | | | |
| Duration Remaining to Late RSD | 12/13/22 | 1,473 | 12/13/22 | 1,442 |
| Remaining Public RSD Contingency | | 302 | | 302 |
| Contingency Percent of IPS Duration | | 20.5% | | 20.9% |
| **FFGA RSD Contingency** | | | | |
| Duration Remaining to FFGA RSD | 12/31/23 | 1,856 | 12/31/23 | 1,825 |
| Remaining FFGA RSD Contingency † | | 685 | | 685 |
| Contingency Percent of IPS Duration | | 36.9% | | 37.5% |

Notes: †This duration is the difference between the Target RSD and the FFGA RSD.

### Program Primary Critical Path – Manhattan/Systems

The ESA program primary critical path in IPS 113 remains through Manhattan/Systems work and ends on November 25, 2021. Table 2.2 shows the contracts and work that comprise the Manhattan/Systems path as reported in this update. The scope that comprises the Manhattan/Systems path changed in IPS 113, and its end date was one day later than in IPS 112.

The IPS schedule is based on MTACC's proposed plan for Incremental IST, which does not have final acceptance by either the LIRR or the contracts that could potentially be impacted (CM007, CM014B, CS179, VS/CS084). The IST dates and durations in IPS 113 are subject to the execution of contract modifications so that: 1) incremental testing can begin as early as practical; 2) activities have sufficient durations; and, 3) resources are leveled. The ESA program schedule contingency could be impacted if the Incremental IST schedule is not incorporated in the program schedule and Phase 3 testing is not started in the forecasted timeframe, currently July 2020.

**Table 2.2: Primary Critical Path – IPS 113, January 1, 2019**

| Activity Name | Duration | Start | Finish |
|---|---|---|---|
| **CM014B GCT Concourse & Facilities Fit-Out** | | | |
| Coord. with ConEd & approval of B20 Short Circuit Study | 234 | 23-Nov-18A | 14-Jul-19 |
| B20 Testing, approvals, energize and power distribution | 257 | 15-Jul-19 | 27-Mar-20 |
| **CS179 System Package 1 – Facilities Systems** | | | |
| GCT Zone 1 local testing of systems & network | 111 | 27-Mar-20 | 15-Jul-20 |
| GCT Phase 3 Zone 1 IST for BCS & connected systems | 73 | 15-Jul-20 | 25-Sep-20 |
| GCT Phase 3 IST for Fire Alarm& connected systems | 117 | 25-Sep-20 | 19-Jan-21 |
| b(4) | | | |
| **Program Activities** | | | |
| LIRR Final Testing and Previews † | 81 | 25-Nov-21 | 13-Feb-22 |
| **Target Revenue Service Date** | | | **14-Feb-22** |
| b(4) | | | |
| **Public Revenue Service Date** | | | **13-Dec-22** |

Notes: † Successor to Manhattan/Systems, Queens, and Harold Interlocking paths.

**Discussion of Progress along the Critical Path**

The Manhattan/Systems critical path completion date in IPS 113 is November 25, 2021, one day later than in IPS 112. The path still runs through CM014B and CS179 as it did in IPS 111; however, the path now begins with substation B20 approvals, testing, energization and power distribution, rather than the completion of MEP and finishes in the GCT concourse as previously reported. Completion of the B20 substation is necessary to provide sufficient power during testing. The path continues with CS179 Phase 3 Zone 1 local testing for systems and network connections. From this point, testing is performed for all Zone 1 systems to achieve completion of Phase 3 IST, first for the backbone communication system (BCS) and then for the fire alarm system. A CS179 Issue Contingency activity, which represents specific work from the syndicated schedule, comprises the final 10 months of the Manhattan/Systems path, ending in November 2021. From this point, the path runs through LIRR final testing and previews and concludes with the Target RSD on February 14, 2022.

The IPS contains coordination point activities to monitor contract interfaces needed for IST. IPS 112 contained 14 coordination points for Manhattan/Systems work that were scheduled for December 2018. Of these, IPS 113 reports that 5 were achieved (3 were backdated to mid-2018) and 9 were rescheduled to January 2019. Another 2 coordination points scheduled for mid-2019 were also noted as completed and backdated to mid-2018.

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 finalized, negotiated, and accepted by the LIRR; executed in a CS179 contract modification; and, then subsequently incorporated in modifications for the interfacing contracts, as may be necessary. b(4)

[redacted] Although not on the critical path, CS084 work is only two weeks behind the Manhattan/Systems critical path and has been experiencing delays.

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

Appendix B, Table 6, shows the ESA Program activities on the primary critical Manhattan/Systems work path that are planned for the next 90 days, as forecast in IPS 113.

**Sub Program Longest Path – Harold Interlocking**

Harold Interlocking work continues to have the second longest work path of the three ESA program areas in IPS 113. The Harold path ends on July 13, 2021, the same date as shown in IPS 112.

The Harold Interlocking path now begins with work by CH057D and LIRR and Amtrak forces to release Access Restraint (AR) 1, which will open up the work area for the B/C approach structure. After release of AR 1 in April 2019 (unchanged from IPS 112), the path runs through 39th Street underpinning, construction of the approach structure, backfilling, and completion of civil and track work for the B/C approach. The path continues with release of Access Restraint 2 that will allow CH063 to perform critical catenary work at the Amtrak 2 to Westward LIRR Passenger track connection (W crossover) above the B/C approach location. The Harold path then shifts to FHL04 LIRR Force Account to cut over the W crossover and B/C approach track, third rail and signals. At the end of the Harold construction on July 13, 2021, there are 136 CDs of float (unchanged from IPS 112) to the LIRR final testing activity on the ESA program critical path (Manhattan/Systems work).

**Sub Program Longest Path – Queens**

The Queens (Mid-Day Storage Yard) has the shortest work path of the three ESA program areas in IPS 113. The Queens path changed during this update period, and ends on February 15, 2021, 105 CDs later than in IPS 112, which reduced the float on the path to 155 CDs.

Progress along the beginning of the Queens path is constrained by CQ033 work necessary to resolve a conflict between an existing Amtrak signal trough and a proposed catenary pole. Additionally, work was added to the schedule to relocate catenary wires at Q tower by Amtrak force account that pushed the AR 2 release date back approximately 4 months to mid-July 2019. The CQ033 contractor has performed work out of sequence to mitigate field issues that prohibit the installation of the AC/YS track to the Arch Street Shop. The Queens path then runs through CQ033 work for the TRT3 track; RFID antennas and system installation, testing and commissioning; and, ends in February 2021 at the conclusion of Mid-day Storage Yard integrated systems testing. From the end of the Queens path there are 155 CDs of float to the LIRR FRA testing activity, which is followed by the LIRR final testing activity on the ESA program critical path (Manhattan/Systems work).

**Upcoming Contract Procurements**

Table 2.3 shows the status of current and upcoming contract procurements as reported in IPS 113 (January 1, 2019).

**Table 2.3: Procurement Schedule**

| Contract Description | Advertise Date | Bid Date | NTP | Project Length | Substantial Completion |
|---|---|---|---|---|---|
| CH058A: Harold Structures - Part 3A B/C Approach Structures | 5/4/18 A | 8/9/18 A | 12/7/18 A | 27 mos. | 3/1/21 |
| CH063: ET Catenary Work 3rd Party | 1/4/19 | 4/15/19 | 7/31/19 | 24 mos. | 6/23/21 |

**CH063 Electric Traction Catenary Work, 3rd Party**: MTA issued an Expression of Interest on November 9, 2018, for the design-build contract. The receipt of bids and Notice to Proceed are forecasted as April 15, 2019, and July 31, 2019, respectively. The RFP was advertised on January 4, 2019, documents were made available on January 14, 2019. RFP responses were originally due on February 27, 2019, but MTACC extended the deadline until March 13, 2019, due to many vendor questions.

**PMOC Concerns**

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

[redacted] b(4)
through the uncertainties concerning Incremental IST and redevelopment of 270 Park [redacted]

2. The PMOC has ongoing concerns about the significant schedule changes that resulted in shifts in scope on the Manhattan/Systems schedule path, which drives the ESA Program Critical Path. The fundamental issue is that the MTACC does not have a final 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. The MTACC and CS179 contractor have reached preliminary agreement on a syndicated IST schedule, which will be incorporated in the IPS after a contract modification is executed. [redacted] b(4) [redacted]
3. Progress on CS084, Tunnel Systems Package 4 – Traction Power, is slow and is currently reported as 29.5% complete compared with as-planned progress of 90.4%. The PMOC observes that this work has had delays in each IPS update period and is only two weeks off the Manhattan/Systems critical path. The PMT is working with the contractor to develop 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 continue to analyze options to recover the schedule with a focus on major electrical equipment submittals and layouts, identifying major issues, and, determining corrective measures.
4. The PMOC is concerned about the lack of progress indicated by coordination point activities not achieving scheduled completion dates to advance IST. This indicates the evolving nature of the schedule, which needs to be finalized so that it can be a reliable management tool. If not addressed and corrected, the lack of progress will result in the need to perform more work concurrently leading up to and during IST than had been planned, which will further complicate and impede progress.

## 3.0 COST DATA

**Budget/Cost**

In the ESA Q4 2018 Report, the PMT reported that the total project progress is 76.0% complete compared to as-planned progress of 76.0% of the $11,133 million April 2018 EAC forecast. The report also shows that construction progress reached 79.0% compared with planned progress of 79.6% 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 for the budget.

**Contingency**

The ESA Q4 2018 Report shows that contingencies in the current budget total $737.0 million, which includes unallocated contingencies of $551.0 million and allocated contingencies of $186.0 million. Refer to Table 3.1. The total contingency is $477.0 million above the ELPEP contingency amount of $260 million.

Unallocated contingencies decreased by $6.5 million and allocated contingencies decreased by $0.2 million (post-award contingencies) for a total decrease of all contingencies of $6.7 million. These revisions are in line with the EAC forecast that was presented to the MTA board in April 2018. The high value of the Project-Wide Reserve reflects MTACC's strategy of holding significant funds as contingencies and then releasing them to specific projects on an as-needed basis, commensurate with construction progress. This approach tends to artificially inflate the program contingency and reduces the accuracy of contract completion percentages. The MTACC cost plan anticipates drawing total contingencies down to $117 million by the end of December 2020 and then replenishing the contingencies and the balance of the ESA program budgets with funds from the 2020-2024 Capital Plan.

The PMOC remains concerned about future demands on the program's contingencies until the MTA 2020–2024 Capital Plan is funded and the related budget adjustments are performed.

b(4)

**Change Orders/Budget Adjustments**

The ESA Q4 2018 Report lists 10 change orders with magnitudes greater than $100,000 that were executed in December 2018. The net value of these change orders was $34.8 million. No significant budget adjustments were made in December 2018.

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

| Contract | Description / Mod No. | Amount |
|---|---|---|
| CM014B | Shaft 4 Wireless Conduits (CPR-099) (mod. 189) | 485,150 |
| CH053 | Time Impact Resolution (mod. 170) | 2,043,800 |
| CH057D | Installation of Turnouts at ML1 and ML3 Tracks (mod. 3) | 444,800 |
| CS084 | VRN Duct Banks (mod. 13) | 245,104 |
| CS179 | Tunnel SCADA Clarifications and Changes (mod. 89) | 2,815,865 |
| CS179 | RSVI Modifications to Stair Pressurization Fans (mod. 130) | 116,788 |
| CS179 | Plaza Trolley Beams (mod. 134) | 277,500 |
| CS179 | Fire Detection Devices in Power Substations (mod. 136) | 254,376 |
| CS179 | GCT Shaft #1 Fire Rated Pull Box Covers (mod. 155) | 160,000 |
| GEC | Additional Funding for Construction Phase Services (mod. 151) | 28,000,000 |

## 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 all of the funds have been effectively drawn down as of January 1, 2019.

Local Funding: The budget for Local Funding is $7,636.4 million, of which $5,758.4 million has been expended through January 1, 2019. Financing costs are funded 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. While this strategy retains maximum flexibility for the MTACC, it differs from the generally accepted practice of committing to budgets for known program costs and tends to artificially inflate the program contingency and reduces the accuracy of contract completion percentages. The PMOC anticipates that the budgets will be updated after major contract modifications are executed and when the 2020–2024 Capital Plan is adopted.

[redacted]The MTACC needs to prepare its 2020–2024 Capital Plan, which is anticipated to include approximately $800 million to complete the ESA program, which is less than the $956 million previously reported. The lower figure takes into account that the restoration of the $157 million borrowed from the Regional Investment program will be made directly from the MTA. [redacted]

b(4)

3. The PMOC recommends that MTACC accelerate and conclude 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 finalized. 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 potential damage to some of the 26 inductive reactors provided by MTACC.
- VS086 and CS086 – incorporation of Positive Train Control into the ESA signal system and technology issues.

## 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 February 2019, MTACC continued to adjust the "ESA First" Harold Re-Sequencing plan to accommodate railroad force account constraints. As a result, the impacts caused by 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 February 2019 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. The risk remains that tunnel systems reliability or safety issues might require Amtrak to make emergency repairs on either Line 1, 2, or 4 at any time between now and the RSD of December 2022. Should this occur, the remaining ESA construction work in Harold Interlocking, as well as the systems testing, start-up, and commissioning for Tracks A, B/C, and D, could be delayed and potentially impact the MTACC RSD of December 2022. There is less likelihood, however, that this could impact the FFGA RSD of December 2023.

### 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 PTC in Harold Interlocking may have on the Harold Critical Path work, especially the successor activities to the CIL cutovers completed in July 2018. Although LIRR originally submitted a waiver request to the FRA in early October 2017 to have the December 31, 2018, deadline extended and subsequently submitted a revised request in late December 2017, the possibility exists that FRA might not grant the waiver. If the waiver is denied, PTC installation may take precedence over the ESA work in Harold. In its letter of May 2, 2018, FRA requested that LIRR resubmit an alternate PTC implementation plan and revised schedule by August 2, 2018. LIRR submitted its proposed revised PTC implementation schedule on November 29, 2018. MTACC reported the following as of February 25, 2019:
   - FRA has apparently not commented on the LIRR revised PTC implementation schedule.
   - FRA approved the LIRR test waiver for Harold Interlocking and Construction Zone Transponders will be used in the interim.

- MTACC and LIRR will coordinate installation of PTC in Harold to mitigate risks to the remaining ESA construction work in the interlocking.
- MTACC concludes that there is currently no known risk to the ESA Program due to this issue. Accordingly, the PMOC will delete this risk as a concern going forward.

b.) LIRR may divert some force account resources away from support for the ESA work to provide support for LIRR's system-wide, i.e., non-ESA, PTC work currently underway.

c.) LIRR did not complete PTC design in either Q1 2018, as earlier projected, or January 2019, as more recently projected, due to resolution of GEC/LIRR comments on the GCT3 and GCT4 application logic submittals. This delay continued through February 2019. The GEC acknowledges that the required associated design changes for ESA Contracts VS086, CS086, and CS179 cannot be completed until the PTC is finalized. The PMOC continues to monitor this situation regarding schedule risk to the three cited ESA contracts and also to finalization of the CS179 Integrated System Testing Plan and Schedule. MTACC has already acknowledged that the contract modification for incorporation of PTC requirements will impact the substantial completion date for Contract VS086.

**Capital Funding Risk**

MTACC is currently forecasting a need for approximately $800 million in the 2020–2024 Capital Plan, which is less than the $956 million previously reported. The lower figure takes into account that the restoration of the $157 million borrowed from the Regional Investment program will be made directly from the MTA. 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 continued 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, possibly, MTACC's Revenue Service Date. During February 2019, LIRR awaited vendors' responses to the second phase ("Cost/Technical") of its two step RFP procurement, which were originally due in March 2019. There were many questions from the prospective vendors, however, which resulted in extension of the response date until mid-April 2019. Nonetheless, LIRR continues to anticipate a June 2019 award date for this procurement. The PMOC considers this date to be overly optimistic based on previous LIRR vehicle procurements, but cannot fully evaluate the risk until MTA develops a revised ESA Rail Service Plan (RSP), which will determine how many new M-9A vehicles will be required to meet opening day RSD requirements.

**Manhattan/Systems Performance Risk**

The Manhattan/Systems path is at risk for future open/unresolved issues. The schedule includes the MTACC proposal for an Incremental IST, which needs to be accepted by the LIRR; executed in a contract modification for CS179; and then subsequently incorporated in contract modifications for interfacing contracts, as necessary. The process to incorporate the Incremental IST is progressing, but is taking much longer than earlier anticipated. b(4) [redacted] Without better definitions of the scopes of work, schedule impacts cannot be accurately forecast. Finally, Contract CS084 TPSS C08 is near critical with only 15 CDs of float in the fabrication and testing for SCADA and continues to experience delays.

b(4) [redacted]

b(4)

[redacted]

## 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 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 updated the TCC Plan in Q3 2017. In April 2018, FTA advised MTACC to incorporate its current updates and commence with a subsequent revision that addresses management changes resulting from the MTACC Six-Point Plan for ESA. All aforementioned updates will be consolidated in a draft that was anticipated, but not met, in December 2018. The draft TCC Plan update is now expected during Q1 2019.
- **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 continues to note 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 in 2017.
- **Cost/Schedule Contingency:** MTACC, the FTA, and the PMOC are in agreement on the ELPEP minimum cost and schedule contingency hold points, levels, and drawdowns. MTACC continues to report the cost and schedule contingency levels against the ELPEP minimums in its quarterly reports to the FTA. The PMOC notes that MTACC has reported that the Schedule Contingency remains only 27 CDs above ELPEP minimum.

The PMOC notes that, with completion and approval 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. An updated draft was issued in December 2018.
- **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. An updated draft was issued in December 2018.

- **Risk Management Plan:** ESA submitted the updated Risk Management Plan in Q4 2017. 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. An updated draft was issued in December 2018.
- **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 preparing draft updates of the Project, Cost, Schedule, Risk Management, Contract Packaging, and Technical Capacity and Capability Plans. These will document the changes called for by the incorporation of the MTACC Six-Point Plan for ESA to reduce future programmatic risks. MTACC issued updated drafts for the CMP, SMP, and RMP in December 2018 as well as the CPP in January 2019. Updates for the PMP and TCC will follow in the late Q1 2019 to early Q2 2019 timeframe.

**Revisions to the ELPEP Document**: MTACC submitted an updated ELPEP with suggested revisions in Q3 2017. 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 to reduce risk on the ESA project.

## 6.0 SAFETY AND SECURITY

Based on safety information supplied by MTA, the PMOC-calculated ESA Injury Ratios for January 2019 were 1.04 for Lost Time Injuries and 1.04 for Recordable Injuries (RI). Both were below the 2019 Bureau of Labor Statistics (BLS) Safety Guidelines of 1.5 for LTI and 2.5 for RI. Additionally, MTACC did not report any significant security issues during January 2019.

## 7.0 ISSUES AND RECOMMENDATIONS

**Design**: The PMT design management team needs to focus on the timely achievement of time-critical intermediate milestones and work closely with the GEC to provide the required Construction Phase Services for schedule critical construction/procurement efforts as determined by the PMO Analytics Group. 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.

**Procurement:** The PMOC had previously recommended that the ESA PMT 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 the remaining third-party contracts and railroad force account packages, along with all additional scope/scope transfers and a procurement timeline. In January 2019, ESA issued the draft Rev.13.0 to the CPP.

**Water Infiltration Concerns Regarding Contracts CS179, CS084, VS086, CS086, 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 otherwise available and the CS086 contractor continues to cite its concern over identified water issues in the Plaza Interlocking facility rooms. Discussions continue regarding VS086 equipment rack configurations and a potential water infiltration/moisture issue. Water conditions remain in three main areas under CQ032: the former Launch Block area of the Plaza, the Amtrak Bridge area, and the former Early Access Chamber area. MTACC has executed contract modifications for additional waterproofing work and continued review to consider the transfer of remaining work to another contract.

**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 contractor's monthly schedule submissions;
- Resolution and implementation of coordination issues;
- ESA PMT responses to contractor NOCs and issuance of CPRs; and,
- Timely design review comments 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;
6. Possible damage to the MTA-provided inductive reactors due to improper storage and handling by MTA;
7. Extent of non-conformance of track monuments and any needed remediation efforts; and,
8. Water infiltration issues in the facilities.

**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. Issues regarding the acceptability of "open-type" racks and PTC design incorporation need to be expeditiously resolved.

**Contract CS086:** MTACC and the contractor need to address the noted water infiltration issues and expeditiously conduct inspections of other work sites to determine if water issues, or any other issues, will preclude the expedient progress of the contract work. The contractor needs to prepare and submit an acceptable baseline schedule so that MTACC can evaluate it and the coordination issues that will be necessary with other ESA contractors.

**Contract CQ032:** The PMOC remains concerned about the resolution of seven NCRs regarding as-built tunnel duct bench track clearance deviation from plan. Probe information at several duct bench ladder recess locations to help determine embedded conduit locations was sent to GEC for review and determination. These deviations have the potential to impact continuing track construction. As-built field survey work completed pending as-built submissions from the contractor.

**Project Funding:** The project is at risk due to the anticipated future need for approximately $800 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:** b(4) IPS 112 shows that Manhattan/Systems work is the primary critical path for the ESA program, which has unresolved issues for Incremental IST, b(4) Additionally, Manhattan/Systems contracts that are not on the critical path include CS084, 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 has been, and will continue to be, very challenging and represents a significant MTACC-retained risk. The PMOC believes that any meaningful schedule recovery, especially for Contracts CM014B, CS179, and VS084, 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 (long term risk realized in Q2 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 and effectiveness of Incremental IST;
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 (Improved performance noted through February 2019);
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 transformers, 3 hi-pot test failures, and final resolution of concerns about MTACC provided inductive reactor equipment;
12. b(4)

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, LIRR submitted the revised PTC schedule on November 29, 2018. Based on the February 25, 2019, update, MTACC has concluded that there is currently no known risk to the ESA Program due to this issue. [No longer a risk as of February 28, 2019]

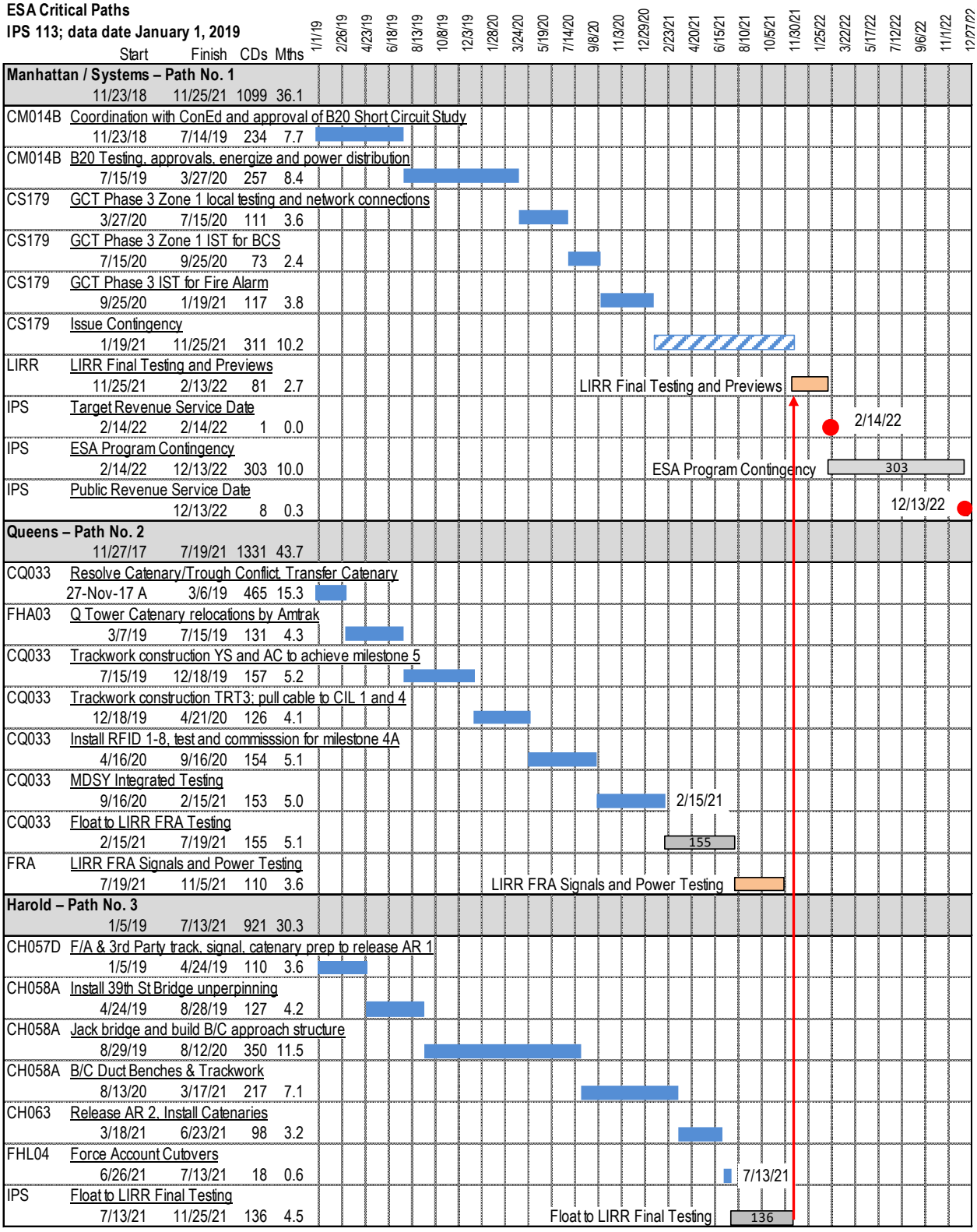
2. LIRR Force Account Performance: Ability of LIRR force account resources to provide both a very high level of support for third-party contractor access and protection and adequate productivity for significantly increased direct labor work involving track, 3rd rail, and signals, in accordance with the current ESA schedule. [Risk now lower]
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. [No longer a risk as of January 31, 2019]
6. Funding: Funding constraints (risk realized in Q2 2017; long-term risk remains).
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 |
| ARRA | American Recovery and Reinvestment Act |
| AWO | Additional Work Order |
| BIM | Building Information Model |
| BLS | Bureau of Labor Statistics |
| BSA | Buy/Ship America |
| C&S | Communication and Signals |
| CBB | Current Baseline Budget |
| CCC | Change Control Committee |
| CCM | Consultant Construction Manager |
| CCTV | Closed Circuit Television |
| CD | Calendar Day |
| CIL | Central Instrument Location |
| CIR | Central Instrument Room |
| CM | ESA Construction Manager assigned to each contract |
| CMP | Cost Management Plan |
| CMU | Concrete Masonry Unit |
| ConEd | Consolidate Edison Company |
| CPOC | Capital Program Oversight Committee |
| CPP | Contract Packaging Plan |
| CPR | Contractor Proposal Request |
| DC | Direct Current |
| DCB | Detail Cost Breakdown |
| DFF | Direct Fixation Fastener |
| EAC | Estimate at Completion |
| ELPEP | Enterprise Level Project Execution Plan |
| ERT | East River Tunnel |
| ESA | East Side Access |
| ET | Electric Traction |
| F/A | Force Account |
| FAT | Factory Acceptance Testing |
| FD | Final Design |
| FFGA | Full Funding Grant Agreement |
| FIAT | Factory Integrated Acceptance Testing |
| FRA | Federal Railroad Administration |
| FTA | Federal Transit Administration |
| GCT | Grand Central Terminal |
| GEC | General Engineering Consultant |
| HVAC | Heat, Ventilation and Air Conditioning |
| IPS | Integrated Project Schedule |
| IST | Integrated System Test |
| LIRR | Long Island Rail Road |
| LSZH | Low Smoke Zero Halogen |
| MNR | Metro-North Railroad |
| MOD | Contract Modification |
| MPR | Monthly Progress Report |
| MTA | Metropolitan Transportation Authority |
| MTACC | Metropolitan Transportation Authority Capital Construction |
| NCR | Nonconformance Report |
| NOC | Notice of Change |
| NTP | Notice to Proceed |
| NYCT | New York City Transit |
| OCIP | Owner Controlled Insurance Program |
| PAC | Pneumatically Applied Concrete |
| PCO | Proposed Change Order |
| PLC | Program Logic Control |
| PMOC | Project Management Oversight Contractor (Urban Engineers) |
| PMP | Project Management Plan |
| PMT | ESA Project Management Team |
| QA | Quality Assurance |
| QPR | Quarterly Progress Report |
| RFI | Request for Information |
| RFP | Request for Proposal |
| RMP | Risk Management Plan |
| ROD | Revenue Operations Date |
| ROW | Right of Way |
| RPR | Relocated Primary Route |
| RSD | Revenue Service Date |
| RTB | Resilient Tie Block |
| SC | Substantial Completion |
| SCADA | Supervisory Control and Data Acquisition |
| SDR | Second Design Review |
| SLCS | Signal Local Control System |
| SMP | Schedule Management Plan |
| SMS | Security Management System |
| SWO | Stop Work Order |
| TCC | Technical Capacity and Capability |
| TPSS | Traction Power Substation |
| TSR | Track and Signal Route |
| WBY | Westbound Bypass Tunnel |

# APPENDIX B – CHARTS AND TABLES

## Chart 1: ESA Critical Paths – IPS 113, January 1, 2019



## 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 Jan. 1, 2019 | |
|---|---|---|---|---|---|---|---|---|
| | Original FFGA | Amended FFGA | Pct. of FFGA | Obligated | CBB | Pct. of Total CBB | Expend-itures | Pct. of CBB |
| Grand Total | 7,386.0 | 12,038.5 | 100.0% | 10,034.1 | 11,451.5 | 100.0% | 8,913.6 | 77.8% |
| 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% | 9,416.5 | 10,335.1 | 90.3% | 8,296.0 | 80.3% |
| | | 10,922.0 | 90.7% | | | | | |
| Federal Share | 2,683.0 | | 36.3% | 2,698.8 | 2,698.8 | 23.6% | 2,698.8 | 99.9% |
| | | 2,698.8 | 22.4% | | | | | |
| 5309 New Starts share | 2,632.0 | | 35.6% | 2,436.7 | 2,436.7 | 21.3% | 2,436.8 | 99.9% |
| | | 2,436.7 | 20.2% | | | | | |
| 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% | 6,717.7 | 7,636.2 | 66.7% | 5,597.2 | 73.3% |
| | | 8,223.2 | 68.3% | | | | | |

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

| Elements | Baseline Budget June 2014 | April 2018 EAC Forecast | January 1, 2019 | | | |
|---|---|---|---|---|---|---|
| | | | Current Budget (interim) | Actual Awards | Invoiced Costs | Inv. Pct. of Budget |
| Construction Subtotal | 7,379.3 | 8,014.1 | 7,536.8 | 7,239.1 | 6,332.9 | 84.0% |
| Soft Costs Subtotal | 2,359.5 | 2,852.2 | 2,798.3 | 2,177.3 | 2,124.3 | 75.9% |
| Engineering | 720.6 | 871.8 | 770.2 | 766.4 | 745.2 | 96.8% |
| OCIP | 282.6 | 457.4 | 379.2 | 379.2 | 372.0 | 98.1% |
| Project Mgmt. | 972.2 | 1,117.3 | 965.4 | 909.8 | 889.1 | 92.1% |
| Real Estate | 182.1 | 203.7 | 124.9 | 119.2 | 117.9 | 94.3% |
| Rolling Stock | 202.0 | 202.0 | 7.5 | 2.7 | 0.2 | 2.7% |
| b(4) | [redacted] | [redacted] | [redacted] | [redacted] | [redacted] | [redacted] |
| Total w/o Financing | 10,177.8 | 11,133.3 | 10,335.1 | 9,416.5 | 8,457.2 | 81.8% |

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 | Oct 2018 CBB | Nov 2018 CBB | Dec 2018 CBB | CBB / FFGA Var. | CBB / Amend FFGA Var. |
|---|---|---|---|---|---|---|---|---|
| 10 - Guideway & Track Elements | 1,988.7 | 3,405.5 | 3,353.4 | 3,403.1 | 3,403.1 | 3,403.3 | 71.1% | 1.5% |
| 20 - Stations, Stops, Terminals, Intermodal | 1,168.7 | 2,238.2 | 2,326.8 | 2,290.9 | 2,290.9 | 2,290.4 | 96.0% | -1.6% |
| 30 - Support Facilities (Yards, Shops, Admin) | 356.3 | 474.2 | 450.8 | 558.6 | 558.6 | 558.6 | 56.8% | 23.9% |
| 40 - Site Work and Special Conditions | 205.1 | 610.6 | 562.5 | 525.6 | 525.6 | 525.6 | 156.3% | -6.5% |
| 50 - Systems | 619.3 | 605.6 | 627.7 | 713.1 | 713.1 | 713.6 | 15.2% | 13.7% |
| 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 | 2,114.8 | 2,114.8 | 2,114.8 | 78.6% | 16.9% |
| b(4) | [redacted] | [redacted] | [redacted] | [redacted] | [redacted] | [redacted] | [redacted] | [redacted] |
| 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 | 1,116.5 | 1,116.5 | 1,116.5 | 7.8% | 0.0% |
| Total | 7,386.0 | 11,213.9 | 12,038.5 | 11,451.6 | 11,451.6 | 11,451.6 | 55.0% | -4.9% |

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

| Standard Cost Category | FFGA | June 2014 | | January 1, 2019 | | |
|---|---|---|---|---|---|---|
| | | Project Budget | Amended FFGA | Current Budget | Awarded Value | Paid to Date |
| 10 - Guideway & Track Elements | 1,988.7 | 3,405.5 | 3,353.4 | 3,403.3 | 3,292.5 | 2,999.2 |
| 20 - Stations, Stops, Terminals, Intermodal | 1,168.7 | 2,238.2 | 2,326.8 | 2,290.4 | 2,212.2 | 1,807.4 |
| 30 - Support Facilities (Yards, Shops, Admin) | 356.3 | 474.2 | 450.8 | 558.6 | 540.4 | 369.6 |
| 40 - Site Work and Special Conditions | 205.1 | 610.6 | 562.5 | 525.6 | 493.1 | 506.4 |
| 50 – Systems | 619.3 | 605.6 | 627.7 | 713.6 | 655.9 | 460.9 |
| 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 | 2,055.4 | 1,991.6 |
| b(4) | [redacted] | [redacted] | [redacted] | [redacted] | [redacted] | [redacted] |
| Subtotal | 6,349.9 | 10,177.8 | 10,922.0 | 10,335.1 | 9,416.5 | 8,296.0 |
| 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 Critical Dates 90 Day Look-Ahead – IPS 113 – January 1, 2019**

| Act. Id. | Name | Start | Finish | Float |
|---|---|---|---|---|
| **CM014B** | **Concourse and Facilities Fit-Out** | | | |
| P1093A | Submit Overcurrent Protective Device Coordination (2) | 23-Nov-18A | 19-Jan-19 | 0 |
| P1093B | MTA -Review/Approve Overcurrent Protective Device Coordination (short circuit study) (2) | 20-Jan-19 | 18-Feb-19 | 0 |
| P1093C | ConEd -Review/Approve Overcurrent Protective Device Coordination (Short Circuit Study) (1) | 19-Feb-19 | 20-Mar-19 | 0 |
| P1093D | ConEd -Relay Setting Submitted to MTA | 21-Mar-19 | 31-Mar-19 | 0 |
| P1093E | MTA -Review Relay Files (1) | 1-Apr-19 | 30-Apr-19 | 0 |
| **CH057D** | **Harold Trackwork Part 3** | | | |
| CH057D-B2020 | BC Prep 1/3 -Demo 855W, 863W, and PW2 (PW2ML2 Extended Outage) | 5-Jan-19 | 6-Jan-19 | 10 |
| CH057D-B2030 | Build 5165 Switch (PW2ML2 Extended Outage) | 7-Jan-19 | 11-Jan-19 | 30 |
| CH057D-B2040 | BC Prep 2/3 -Build 5165 Switch (PW2ML2 Extended Outage) | 12-Jan-19 | 13-Jan-19 | 10 |
| CH057D-B2050 | Surface PW2 (PW2ML2 Extended Outage) | 14-Jan-19 | 18-Jan-19 | 30 |
| CH057D-B2080 | BC Prep 3/3 -Surface 5165 (PW2ML2 Extended Outage) | 19-Jan-19 | 20-Jan-19 | 10 |
| CH057D-B2100 | BC Prep: Straight rail 855E and Cutover 3C/3D | 26-Jan-19 | 27-Jan-19 | 10 |
| CH057D-B2120 | BC Prep: Demo LI FRT Track | 23-Feb-19 | 24-Feb-19 | 8 |
| CH057D-B2140 | BC Prep: Demo 813 Switch | 2-Mar-19 | 3-Mar-19 | 8 |
| **FHL04** | **Harold Stage 4 LIRR** | | | |
| FHL04-1270 | NTP FHL04 -LIRR Harold F/A Const. Stage 4 | 1-Jan-19 | | 39 |
| FHL04-1970 | Signal Works for Removing 813 Switch | 4-Mar-19 | 6-Mar-19 | 20 |
| FHL04-2090 | Signal Works for Removing 811E Switch | 7-Mar-19 | 11-Mar-19 | 20 |
| **FHA03** | **Harold Stage 3 Amtrak** | | | |
| FHA03-CA4500 | ET Catenary -B947C to B947-3/4C Collapse HSSI | 28-Jan-19 | 28-Jan-19 | 34 |
| FHA03-CA4510 | ET Catenary -B929-3/4W Install DE Tail Messenger Assemblies WP | 29-Jan-19 | 29-Jan-19 | 34 |
| FHA03-CA4520 | ET Catenary -B919ELA to B920EA Pu-out Cat #WP DE Mssgr, Trolley & Wire-lock at B930 | 30-Jan-19 | 30-Jan-19 | 34 |
| FHA03-CA4530 | ET Catenary -B929-3/4W to B947-3/4C Remove Hangers between Auxiliary & Mssngr | 31-Jan-19 | 31-Jan-19 | 34 |

| Act. Id. | Name | Start | Finish | Float |
|---|---|---|---|---|
| FHA03-CA4610 | ET Catenary -B930W B946C to B947C Collapse HSSI | 3-Feb-19 | 3-Feb-19 | 34 |
| FHA03-CA4620 | ET Catenary -B929-2/3W Install Guy Strand & DE Tail Mssgr Assemblies for Cat 3A | 4-Feb-19 | 4-Feb-19 | 34 |
| FHA03-CA4630 | ET Catenary -B928W to B929-2/3W Pullout Cat #WP DE Mssgrs/Trolley & Wire-lock @ B929-2/3W | 5-Feb-19 | 5-Feb-19 | 34 |
| FHA03-CA4660 | ET Catenary -B929-3/4W to B949-3/4C Demo Cat WP Trolley and Messenger | 6-Feb-19 | 6-Feb-19 | 34 |
| FHA03-CA4100 | ET Catenary -B947C to B947-3/4C Collapse HSSI | 7-Feb-19 | 7-Feb-19 | 34 |
| FHA03-CA4130 | ET Catenary -B929-3/4W to B949-3/4C Demo Cat 831A Messenger and Auxiliary | 10-Feb-19 | 10-Feb-19 | 34 |
| **FHL02** | **Harold Stage 2 LIRR** | | | |
| FHL02.MS.235 | CIL decommissioning (LIRR-FHL02) | 12-Mar-19 | 8-Apr-19 | 20 |
| FHL02.MS.255 | Release the Area for Tunnel BC Structure Construction | 8-Apr-19 | 24-Apr-19 | 28 |
| **CH058A** | **Harold Structures – B/C Approach** | | | |
| CH058A0030 | AR#1 Access to Tunnel BC Structure Area | | 24-Apr-19 | 20 |
| CH058A1040 | Salvage Existing Harold CIL and remove Signal Trough Line | 25-Apr-19 | 5-Jun-19 | 20 |
| **CQ033** | **Mid-Day Storage Yard Facility** | | | |
| CPR-025-10 | CPR-025: Catenary B-918 1/2N and B-914W Guy Anchor + Amtrak Signal Trough Resolution | 27-Nov-17A | 12-Feb-19 | 128 |
| CPR-025-40 | CPR-025: B-918 1/2N Foundation & Erect Pole + B-914W Guy Anchor | 13-Feb-19 | 6-Mar-19 | 128 |
| CP-CQ033-10-FHA03 | CQ033: Complete B-918 1/2N & Erect Pole/B-914W Guy Anchor | | 6-Mar-19 | 129 |
| FHA03-CA8147 | (Q Tower) Static Wire, Cat Sub 4, Cat 105 DE Tail, Cat 106 DE Tail | 7-Mar-19 | 28-Mar-19 | 126 |
| FHA03-CA4915 | Q Tower Cat 102 DE Tail, Demo Cat 106 Tail B-914 Cross Track Demo | 31-Mar-19 | 25-Apr-19 | 126 |
| FHA03-CA4925 | B-914 Mod, B-914 1/2W Catenary Wire Transfer/Reprofile (Sub1-3/SSY throat nights) | 28-Apr-19 | 9-Jun-19 | 126 |

## Table 7: 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 | 76.0% actual vs. 76.0% planned (ESA calc.†) | | | |
| **Project Performance Rate Since 2014 ESA Re-Plan** | Based on Earned Value | 81.6% (PMOC calculation of construction spending at Q4 2018 planned vs. actual since re-baselining) | | | |
| **Contracts** | Total contracts awarded to date | $9,417 M | 84.6% (PMOC calculation†) | | |
| | Total construction contracts awarded to date | $7,239 M | 90.3% (PMOC calculation†) | | |

| Major Issue | Status | Comments |
|---|---|---|
| Project Funding and Budget | The total program budget is $10,335.1 million, b(4) [redacted] | The MTACC needs an additional approximately $800 million in the 2020-2024 Capital Plan to complete the ESA program, which is less than the $956 million previously reported. The lower figure takes into account that the restoration of the $157 million borrowed from the Regional Investment program will be made directly from the MTA. b(4) [redacted] |
| 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. The Amended FFGA Baseline Cost Estimate is $10,922 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. Concerns remain about the time elapsed in resolving the open Cost and Schedule issues and, ultimately, their cost impacts. |
| Project Schedule | The primary critical and near-critical paths to target RSD, including float, are:<br>▪ Manhattan/Systems – no float (critical path) b(4) [redacted]<br>The target RSD forecast remains on February 14, 2022. The public RSD remains December 13, 2022. The Amended FFGA Revenue Operations Date is December 2023. | b(4) [redacted] |
| Manhattan/ Systems Schedule Path | IPS 113 shows that the ESA Program Critical Path runs through the Manhattan/Systems contracts. This work path has several major open/unresolved issues having potentially significant schedule impacts: incremental IST; and, the major redevelopment of 270 Park Avenue. | Concerns continue for the ESA program Manhattan/-Systems critical path. The Manhattan/Systems path completion date is November 25, 2021, in IPS 113. This schedule has significant unresolved issues. 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 $8,014.1 million; Engineering $871.8 million; Soft Cost $1,980.4 million b(4) [redacted]; and, Total $11,133 million.