

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

Report Period July 1 – July 31, 2019

PMOC Contract No. DTFT60D1400017

Project No. DC-27-5287, Task Order No. 0002, Work Order No. 09

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PMOC Lead: b(6)

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

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Third Party Disclaimer

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

EXECUTIVE SUMMARY

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

Overall Program Status: The Overall Program is 78.4% actual versus 79.0% as-planned (based on invoice cost and April 2018 EAC forecast).

Construction Status: The Construction Status is 82.2% actual versus 83.0% as-planned (based on invoice cost and April 2018 EAC forecast).

Contracts (None)

Awarded/Completed:

Construction Progress Issues: CM014B, CS084, 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)

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: No Issues.

Key Stakeholder Issues: LIRR – Late resolution of CS179, CS084, CS086, and VS086 issues; late completion of Positive Train Control Design. MTACC- Change Order processing issues, GEC CPS support for Contractor Submittals, Redesigns, RFIs, Field Conditions.

Construction Safety: 0.98 – Lost Time (LT) and 0.98 Recordable (RI) BLS Injury ratios during June 2019; LT higher and RI lower than May 2019.

ELPEP Compliance: b(4)

Project Management Plan: MTACC is 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 Monthly Progress Report for May 2019, referenced in this report as the ESA May 2019 MPR, which has a Cost and Schedule data date of June 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.

MONITORING REPORT

1.0 PROJECT STATUS

a. Engineering Design and Construction Phase Services

In the ESA May 2019 MPR, the PMT reported the overall engineering effort at 86.0% complete compared to planned completion of 87.0%. Since the ESA July 2018 MPR, the PMT calculates summary Engineering progress as a percentage of the \$871.8 million April 2018 engineering EAC forecast.

Status of Construction Packages Advertised

CH063 Electric Traction Catenary Work: The RFQ was advertised online on January 4, 2019, and documents were made available on January 14, 2019. Of the seven proposals submitted, four were deemed to be qualified. Proposals are scheduled to be solicited from those 4 vendors in early August 2019, with contract award scheduled for mid-late Q4 2019.

Status of Construction Packages Not Awarded

CM015 – 48th Street Entrance: Design work remained suspended through July 2019. MTA had previously notified the building owner that construction of this entrance has been deferred. Based on code requirements, it was earlier determined that an emergency exit to street level will be needed in the interim. MTA/MTACC-ESA has since achieved significant progress in negotiations with the owners of the buildings at 415 Madison Avenue and 270 Park Avenue regarding the ESA 47th Street and the 48th Street Entrances. Based on the anticipated agreements, there is no longer a need for the interim street level emergency exit. The current plan is for the owner of 415 Madison Avenue to construct the 48th St. Entrance core and shell and to complete the facility fit-out.

FQA33B, Mid-Day Storage Yard Facility – Amtrak F/A, includes provision for what was originally a second west end yard access to the Amtrak mainline through a connection from Sub 3 to Line 4. During March 2019, however, MTACC received CCC approval to pursue this option for the west end MDSY exit. Correspondingly, the funding for the now deferred FQA33A Sub 4 to Line 2 connection option will be transferred to the FQA33B Sub 3 to Line 4 option.

Status of Positive Train Control Design

Positive Train Control: The MTACC-LIRR MOU for the implementation of Positive Train Control (PTC) on ESA was executed including agreement on the associated Technical Concurrence Document. MTACC-ESA 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. PTC design completion was further delayed past January 2019 due to resolving GEC/LIRR comments on the GCT3 and GCT4 application logic submittals and reaching scope concurrence with Contracts VS086, CS086, and CS179. The PTC design was not completed as of July 31, 2019.
- The GEC prepared initial scope design modifications to Contracts CS179, VS086, and CS086, which provide for the LIRR designed PTC overlay onto the ESA systems. The GEC provided LIRR with proposed changes for PTC on these contracts to insure coordination with LIRR PTC requirements. The PMOC notes that these changes cannot be finalized until LIRR completes the PTC design. MTACC has acknowledges that delays to 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 submittals and RFI reviews noted in earlier reports continues to be a significant unresolved issue for the CS179 project team. As of the end of July 2019, MTACC reports that there are 577 contractor submittals awaiting a response from the MTA, with 117 of those submittals (20%) exceeding the contractually required 30-day turnaround time frame for a response. The contractor continues to assert, and MTACC continues to address, that overdue responses on design submittals and RFIs, unresolved NOCs, and numerous SWOs are impacting the completion of design work and delaying the contract schedule. As of the end of July 2019, the number of CPRs agreed to, but not yet issued, remains at nine (9). However, the number of unanswered contractor NOCs was reduced from 14 to 11. The completion of Final Design (FD) for all 10 Control Systems, which was scheduled for completion 39 months ago, has not occurred yet, with two (2) of the Control Systems still under design development and two (2) of the FDs that had already received approval by LIRR now undergoing minor design modifications. Further, the completion of FD for all 19 Non-Control Systems continues to be delayed. The full impact of the Control and Non-Control System FD delays on contract progress remains undetermined at this time.

CS084, Traction Power Systems Package 4: Some design issues related to water remediation methodologies in spaces designated for CS084 equipment and other identified field construction issues remain open. A plan for remediation of specification non-conformance issues related to the track monuments has yet to be developed. Discussions related to cathodic protection are continuing.

VS086, Systems Package 3 – Signal Equipment Procurement: Work on the design to incorporate Positive Train Control (PTC) requires a contract modification that must still be developed and negotiated. In July 2019, MTACC transmitted the MTA's PTC design documents to the contractor, where they remain under review. An issue regarding the software source code for the SCADA software remains under discussion with the contractor and the SCADA designer. Several other recently identified design issues (light-out protection, train departure testing, and changes to Application Logic software) remain under discussion.

CS086, Tunnel Systems Package 2 – Signal Installation: As of the end of July 2019, the only design issues noted by MTACC on this contract revolve around issues related to installation of equipment in the field. Specific problems include the ability to properly install signal cases and signal heads in the designated locations – there are some noted obstructions – and the mounting of impedance bonds to the track bed, where mounting plate attachment points appear to be out of tolerance. A contract modification to address the changes incorporated into the conformed contract documents is still required.

b. Procurement

The ESA May 2019 MPR shows that total procurement for the ESA Program is 86.0% complete, with total awards at [REDACTED] b(4) . Since the ESA July 2018 MPR, the PMT calculates summary procurement progress as a percentage of the [REDACTED] b(4) ESA program April 2018 EAC forecast. Active procurements include:

CH063 Electric Traction Catenary Work, 3rd Party: This will be a negotiated procurement using the RFP process. The scope of work will include ET catenary relocation work for the Mid-Day Storage Yard, catenary construction work for the new W crossover in Harold Interlocking, and other miscellaneous catenary work. The contract was advertised online in January 2019 and responses were received in March 2019. Of the 7 responses received, 4 were deemed “Pre-

Qualified” and will be solicited for the “Cost/Schedule” portion of the procurement. ESA is currently revising the scope of work to include the alternate MDSY track connection, previously included in Contract CH064, and to reduce the catenary work due to continued improvement in Amtrak’s electric traction construction for the ESA project. This solicitation is scheduled to be sent to the 4 vendors in early August 2019, with award and NTP scheduled for mid-to-late Q4 2019.

c. Construction

The ESA May 2019 MPR that the total construction progress reached 82.2% complete compared with 83.0% as-planned. Since the ESA July 2018 MPR, the PMT calculates summary construction progress as a percentage of the \$8,014 million April 2018 construction EAC forecast. The percentage of work complete, as shown throughout this report, is calculated using invoiced costs to represent construction progress. The current contract and force account budgets equal the amounts that are allocated in the MTA Impact accounting system and are used for percentage calculations for individual contracts.

Manhattan Contracts

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

	Current Budget	Appr'd Contract	Rem Budget	Invoice Cost	EAC	Planned Comp	Invoice Comp	Current BL SC	Forecast SC	Notes
CM007	709.3 nc 709.3	666.8 nc 666.8	42.5 nc 42.5	484.4 +18.3 466.1	718.7 (-1.8) 720.5	82.5% +4.4% 78.1%	72.7% +2.8% 69.9%	1/28/20 nc 1/28/20	8/18/20 +12cd 8/6/20	
CM014B	578.2 nc 578.2	529.0 +54.4 474.6	49.2 (-54.4) 103.6	403.8 +10.3 393.5	594.2 +0.7 593.5	80.2% (18.3%) 98.5%	76.3% (6.6%) 82.9%	6/26/20 +678cd 8/18/18	6/26/20 (-13cd) 7/9/20	
VM014	46.9 nc 46.9	34.9 nc 34.9	12.0 nc 12.0	31.1 +0.7 30.4	48.6 (-0.1) 48.7	NA NA NA	89.1% +2.1% 87.0%	10/25/19 nc 10/25/19	3/23/20 nc 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 declared.

CM007 – GCT Station Caverns and Track:

Schedule: The ESA May 2019 MPR projects Milestone #4 (Track and 3rd Rail Work Complete) by February 18, 2020 (-195 CDs; the TIA/recovery schedule is still under review); Milestone #5 (Substations US1 and US2 Complete) is forecast for June 21, 20192019 (-140 CDs; not achieved and likely to be delayed again); Milestone #5A (Caverns Ready for Integrated Systems Testing) is forecast for September 16, 2020 (-406 CDs); Milestone #6 (All Caverns and Tunnel Work Complete) is forecast for August 11, 2020 (-239 CDs); and, Milestone #6A (Substantial Completion) is forecast for August 18, 2020 (-203 CDs).

Construction Progress: North and South Back of House, East and West: Continue electrical and MEP work; continue CMU wall installation; continue bathroom tile work (NW and SE).

Cross Passages: Continued glass tile work.

East Cavern: Continue electrical work lower and mezzanine levels; Continue sprinkler piping; Continue miscellaneous framing, duct, and painting; Continue installation of escalators 51, 52, and 55 through 58, and continue installation of elevators 5, 6, and 18.

West Cavern: Continue electrical work lower and mezzanine levels; Continue miscellaneous framing, duct, ceiling, painting, and continue installation of elevator 19.

Track: Continued track construction in the upper level East and West Caverns and Tunnel Track; Continued third rail installation. Continued turnout construction. Continued qualification testing of Special Trackwork DFF assemblies. As of June 30, 2019, ESA reports overall Track Construction at 69.9% completion.

Monuments: Surveying/review of the monuments continues. The CM007 contract reports, in their Weekly Summary ending July 31, 2019, there are 450 total monuments under their survey, covering contracts CM005, CM006, CM007, and CQ032. Of the total 450, 150 remain to be constructed and 231 are out of tolerance.

Architectural: Through July 31, 2019, Architectural Wall work was approximately 21.2% complete. Architectural Ceiling progress was at approximately 20.9%. Architectural Floor progress was approximately 22.1% complete.

MEP – Mechanical: Through July 31, 2019 HVAC Duct Progress remained 78.7% complete; HVAC piping remained at 75.3% complete.

MEP – Fire Protection and Plumbing: Through July 31, 2019 fire protection work remained at 69.5% complete; Plumbing progress remained at 93.1%.

MEP – Electrical: Through July 31, 2019, electric conduit installation remained at 63.1% complete; electric fixtures installation was approximately 87.4% complete.

CM014B – Concourse and Facilities Fit-Out:

Schedule: The ESA May 2019 MPR reports that this contract was 76.3% complete vs. 80.2% planned. This change is the result of the re-baselining reported by MTACC in its April 2019 MPR. The schedule impact is that the contractor is now on a 7-Day Construction Acceleration Plan. The new contract date for Substantial Completion is June 26, 2020, excluding completion of LIRR concourse within the footprint of foundation work for 270 Park Avenue. The Biltmore Room Substantial Completion date is September 30, 2020.

Through July 9, 2019, the structural steel erection remained at 75% complete by piece and 69% by weight. As previously reported, this work not only has been proceeding very slowly and is impacting the schedule and the CS179 contract, but has been at this percentage of completion since December 2018. Cumulative metal ceiling deck progress remained at 28% complete. HVAC Piping (Chilling System) remained at 45% complete.

Construction Progress: Electricians continued with installation of branch and device conduit, Ticket Area systems wiring, Wellway lights, 45th St. Node lights, rough-in, and overhead racks.

Plumbers continue installation of domestic water piping, CCU testing, and installation of gutters/downspouts throughout the Concourse. Mechanical work continues with the installation of air plenums, AHU units, ducts, and sprinkler piping and heads. Chilled water piping continues throughout the Concourse, including re-routing in the 47th St. to 48th St. zone. 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 continues. Forming and placement of concrete encasement of new beams was completed at MNR Tracks 39/40. Installation of the Q deck and new steel for the partial Biltmore slab was completed. Placement of this portion of the Biltmore slab was completed.

Wellways: Wellway escalator maintenance is ongoing, one day every 2 months. In September 2019, all stairs in Wellways #1 and #2 will have to be removed for cleaning before going into In-Contract Maintenance. This is required because the previously agreed to re-sequencing of the work required the escalators to go in first, and the CM014-B contractor will return to work over the escalators to complete architectural and MEP work in Wellways #1 and #2. This will take approximately 9 weeks (1 week per line of stair). In Wellway #1, installation of the glass tile curtainwall is complete. In Wellway #2, installation for glass tile curtainwall is ongoing along with the glass tile along the incline. In Wellway #3, Machine Room installation and escalator build up continues and is scheduled to be completed August 2019. In Wellway #4, Machine Room installation and escalator build up continued and was scheduled to be completed in July 2019. However, this was not achieved.

47th Street Cross Passage: At Elevator #13, installation is complete. Preparations are continuing for turnover of the elevator to MNR. The work at Tracks 36/35 at the MNR Express Track for the construction of the modifications/additions to the Passageway “U Tub”, needed to install Escalator #32, has begun. Construction of the formwork for the new stairs from the Concourse to the Cross Passageway is underway.

270 Park Building: The independent contractor for JPMC is scheduled to begin work on the foundations and shear walls in Q3 2019. This work is between E. 47th and E. 48th St. The CM014B contractor is digging the test pits and re-routing chilled water piping for the JPMC independent contractor.

VM014 – Vertical Circulation Elements (Escalators and Elevators):

Schedule: In its May 2019 MPR, MTACC reports that, through May 31, 89.1% of the contract value was invoiced and 83% 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: For CM007, freight Elevators#18 and #19 have been placed into temporary “construction” service. CM014B, Elevator #13 (47th St. Cross Passage) is being wired into the MNR system and will resume service to MNR. Once Revenue Service starts for LIRR, Elevator #13 will be tied into the ESA system through the TMC.

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	263.6	1.8	261.5	264.6	100.0%	99.2%	9/6/16	3/1/19	1
	nc	nc	nc	nc	nc	nc	nc	nc	nc	
	265.4	263.6	1.8	261.5	264.6	100.0%	99.2%	9/6/16	3/1/19	
CQ033	326.1	314.7	11.4	210.0	350.6	75.4%	66.7%	8/10/20	10/31/20	
	nc	+1.7	(-1.7)	+9.5	+1.3	+6.1%	+2.6%	nc	nc	
	326.1	313.0	13.1	200.5	349.3	69.3%	64.1%	8/10/20	10/31/20	

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. Substantial completion declared.

CQ032 – Plaza Substation and Queens Structures:

Schedule: The ESA Q1 2019 MPR reported that Milestone MS#6, Substantial Completion (SC), was achieved as of March 1, 2019. ESA reported the CQ032 contract will complete corrective action work for open NCRs: tunnel bench repairs, concrete defects, monuments, and water

remediation at the Plaza Structure. Remaining base contract work items were turned over to the CM007 and CS179 contracts. Ten NCRs remain open.

CQ033 – Mid-Day Storage Yard Facility:

Schedule: MTACC reports that Milestones MS#1, MS#2, MS#3, and MS#4 have been achieved. Milestones MS#4A (Start Integrated Testing), MS#5 (YS Track Completion), and MS#6 (Substantial Completion) are impacted by the delay of Access Restraints AR#1 and AR#2. AR#1 is no longer an issue, the rail was removed 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 ESA May 2019 MPR projects Milestone MS#6, Substantial Completion (SC) for October 31, 2020, -82 days.

Construction Progress: The contractor continued the following activities: CAM Platform, Storage Building, and Toilet Service Building CMU wall construction; Personnel Access Bridge fire standpipe installation; Water main, Storm Pipe, Fire Line, and Underdrain installation; Yard Lighting fixtures installation; Traction power installation. Excavation, concrete slab and wall construction work at Tunnel D Approach continued. Under deck light fixture installation: Honeywell Bridge. Preparation work for CIL building installations continued. Track and turnout construction continued.

Systems Contracts

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

	Current Budget	Appr'd Contract	Rem Budget	Invoice Cost	EAC	Planned Comp	Invoice Comp	Current BL SC	Forecast SC	Notes
CS179	690.4	675.3	15.2	523.0	708.2	77.2%	77.4%	6/30/21	6/29/21	1
	nc	+77.9	(-77.8)	+19.9	+0.9	(10.1%)	(6.0%)	+364cd	(-1cd)	
	690.4	597.4	93.0	503.1	707.3	87.3%	83.4%	7/1/20	6/30/21	
CS084	79.7	73.8	6.0	33.6	83.2	92.1%	45.5%	12/2/19	4/28/21	1
	nc	nc	nc	+3.1	(-0.1)	(0.3%)	+4.1%	nc	+26cd	
	79.7	73.8	6.0	30.5	83.3	92.4%	41.4%	12/2/19	4/2/21	
CS086	60.9	53.0	7.9	2.3	61.1	TBD	nc	2/21/21	3/29/21	
	nc	nc	nc	+1.8	nc	NA	nc	nc	+14cd	
	60.9	53.0	7.9	0.5	61.1	TBD	nc	2/21/21	3/15/21	
VS086	21.8	20.2	1.7	17.0	21.6	NA	84.5%	10/14/19	4/9/20	1
	nc	nc	nc	+0.8	nc	NA	+4.1%	nc	+45cd	
	21.8	20.2	1.7	16.2	21.6	NA	80.4%	10/14/19	2/24/20	
VH051	30.2	29.7	0.5	29.6	30.2	NA	99.8%	4/30/15	7/13/21	
	nc	nc	nc	nc	nc	NA	nc	nc	+43cd	
	30.2	29.7	0.5	29.6	30.2	NA	99.8%	4/30/15	5/31/21	

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

CS179 – Systems Package 1 – Facilities Systems:

Schedule: At the April 2019 MTA board meeting, MTACC provided MTA Board members with its Plan to complete the ESA Project. As part of that Plan, MTACC included an Integrated System Test Plan (ISTP) to meet the testing requirements of the Project, which ESA presented to the

PMOC in June 2019. The PMOC was hoping that the presentation would enable it to assess if the new ISTP addresses contractual testing requirements and its concerns previously expressed, including if the schedule:

1. Was based on the premise that all submitted designs are final;
2. Implied that all field work is ready-to-go as currently understood;
3. Took into consideration any impact from the open NOCs; and
4. Addressed any impacts to the contract work from SWOs that remained in effect past the data date of the schedules.

The Incremental ISTP presented, in the PMOC's opinion, did not include details regarding the system tests, the testing methodologies, or testing schedule for all the systems provided under this contract.

Design Progress: The completion of Final Design (FD) for all 10 Control Systems, which was scheduled for completion 39 months ago, has not occurred yet, with two (2) of the Control Systems still under design development and, as of the end of July 2019, two (2) of the FDs that had already received approval by LIRR now undergoing some minor design modifications. 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 continues to contend that the lack of resolution on open items (e.g., the open NOCs and Stop Work Orders) is the primary cause for these delays and that any continued progress on system designs and equipment testing is being severely hampered by unanswered RFIs and unissued CPRs that have the potential to alter existing designs. However, the contractor continues to move forward with the development and submission of test plans.

Construction Progress: In July 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 ventilation and various substation facilities where access was available and conditions warranted. Local testing of installed equipment and cabling also continued. Coordination issues with other contractors, unexpected field conditions, unresolved design issues, water infiltration remediation efforts, open NOCs/CPRs, and numerous Stop Work Orders (16 as of the end of July 2019) continue to impact further and efficient progress. Environmental conditions regarding water and moisture in the various equipment rooms remain unresolved. In response to the PMOC's inquiry about water and moisture remediation, MTACC indicated that its intent was to provide "dry" rooms with adequate environmental controls to preclude any moisture development in the rooms. Further, MTACC indicated that, in areas of the rooms where piping or ducts are above "open" racks, the rooms will have drip pans or insulated piping. Factory testing for the last 4 of the 10 Control Systems and 8 of the 19 Non-Control Systems remains incomplete due to either the lack of a completed design or the lack of approved test procedures for those systems. The contractor contends that the test procedures for these 12 systems are either "on-hold" or still in development pending the resolution of contract interface coordination issues, Stop Work Orders, and resolution of RFIs and NOCs.

CS084 – Tunnel Systems Package 4 – Traction Power Systems:

Schedule: At the latest monthly progress meeting, the contractor indicated an April 2021 substantial completion date, 23 months later than the original SC date of May 2019. The contractor continued to indicate that all of the delays are as a result of late approval of substation designs, unresolved issues, and obstructions in CS084 work areas from other ESA contractors, SWOs, and site access restraints. Currently, the CS084 contract schedule is out of date and contract milestones – and the S/C date – will need to be adjusted after an approved track installation

phasing plan is developed for CM007 and room access and other construction issues are resolved with the CS179 contract.

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. The most significant design issues concern how MTACC will address the remediation and elimination of water in the traction power rooms and the installation of traction power cables at non-compliant track monuments.

One other design related issue remains as an open item – that of agreement between the SCADA software designer and MTA regarding the submission of software “source code” to the MTA. The designer contends that submission of the source code for this proprietary software is neither required nor acceptable to them and MTA (LIRR) insists that it be provided.

Construction Progress: Equipment installations are complete in the C04 and C05 substations and a considerable amount of equipment for the remaining substations has been fabricated and delivered to storage, where it will remain until the TPSS rooms for those substations are ready. The contractor continues to cite coordination issues, water infiltration issues, access restraints, stop work orders (SWOs), and differing site conditions as its reasons why work at the various locations cannot progress. Progress on addressing the issues continues to be 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 had 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, but relented after considerable discussions with MTACC. As of the end of July 2019, only one of the reactors had been installed. The rest of the originally identified reactors are still required and no further inspection of their condition has been made as of the end of July 2019.

The PMOC previously reported significant quality issues related to the failure of two transformers while undergoing hi-pot testing. As of the end of June 2019, both of those transformers had successfully passed additional hi-pot testing, completing all testing of the required transformers. Previously reported discussions and decisions regarding the long-term viability of the 10 transformers manufactured and tested prior to the modification of the fabrication process remain to be finalized between the LIRR and MTACC.

Corrective action to address non-conformance issues with approximately 453 track monuments (conduit turn ups at track level for routing of traction power cables) and 2,100 feeder leads continues to be a significant issue. Based on the findings of initial inspections of some of the existing monuments, MTACC issued an RFP to the contractor to develop “mock-up” jumper cables for three different types of monument layouts identified during the inspections. As of the end of July 2019, joint teams of LIRR, MTACC, GEC, and contractors performed limited field visits to try out the mock-ups at several locations. To date, no solution has been identified that will finally address this major issue.

The contractor has identified a possible solution to the issue noted in previous reports regarding the delivery of traction power equipment to the C01/C02 substations. The contractor’s previously reported plan to install the C01/C02 transformers in mid-June 2019 was not met and is now projected to occur in September 2019. This activity needs to be closely coordinated with the CM007 contractor who is installing the tracks.

Water infiltration issues at the C03 and C06/C07 Substations continue and are being evaluated. Additionally, significant work on conduit repair/re-installation from the C04 substation to the Con Edison manhole is needed. Other issues, caused by other ESA contractors regarding floor levelness and condition, are apparent at several locations, requiring remediation efforts. MTACC wants the CS084 contractor to perform some of this work; however, the CS084 contractor is not in agreement with this plan and negotiations regarding this work continue.

Delivery of the C08 substation pre-fabricated sections commenced in mid-July 2019 and will continue into August 2019. Installation of traction power cables from the C08 substation to the track is dependent on the installation of the previously reported missing manhole and conduit system that is now part of the CH058A contract work.

An additional issue, one related to the installation of transformers at the Plaza (C06/C07) location was identified in July 2019. The CS084 contractor attempted to install the C06/C07 transformers only to find that the shaftway between the upper and lower levels at this location is out of plumb by approximately one (1) foot, causing the transformer casing to hit one of the side walls of the shaftway. The installation of the transformers was halted until a solution to this issue could be identified. MTACC discussions with the contractor and LIRR to resolve this issue continued through July 2019.

The PMOC remains concerned about many issues, including:

1. TPSS equipment delivery methodology (means and methods);
2. Transformer installation at C06/C07;
3. Transformer hi-pot testing failures and long-term viability of the transformers;
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
8. Water infiltration issues in the facilities.

VS086 – Systems Package 3, Signal Equipment Procurement:

Schedule: At present, there is no approved contract schedule by which MTACC or the PMOC can accurately gauge progress on this contract and the milestones for this contract must still be modified to incorporate all the outstanding and added contract work. MTACC continues to indicate that a contract modification for incorporation of PTC requirements and incorporation of construction phase services to assist the CS086 contractor during installation and testing of the signal equipment will extend the October 2019 contract substantial completion date. The current forecast by MTACC shows an April 2020 SC date.

Design Progress: Successful Factory Acceptance Testing (FAT) of all the GCT4, GCT5, and GCT6 Interlocking equipment is complete and the plan is to deliver the equipment by the end of August 2019. Discussions regarding the methodology and scheduling of the Factory Integrated Acceptance Test (FIAT), which is performed after the FAT to test the interlocking designs and equipment as a composite systems package, are scheduled to be held in August 2019 between MTA and the VS086, CS086, and CS179 contractors (the CS179 contractor is providing design data for the testing).

Five design issues continue to need resolution or direction: 1) PTC design and incorporation; 2) direction from MTACC on requested PTC Application Logic changes; 3) Electromagnetic Interference (EMI) testing requirements; 4) direction from MTACC on commercial issues

regarding the “light-out” protection design; and 5) a methodology to protect equipment in “open” type equipment racks from water damage. MTACC provided the contractor with a PTC work scope for review; however, MTA recently identified a request to alter the PTC Application Logic to address a train operation issue. MTACC management needs to determine if this change in Application Logic is warranted and then give the contractor the appropriate direction. The contractor must still provide a justification for an EMI testing waiver for its ATT-20 track circuit equipment. Discussions between the contractor and MTACC continue on the “light-out” protection issue and the contractor and LIRR continue to raise concerns on MTACC’s proposed methodology to deal with any protection required for the “open” type equipment racks.

Equipment Fabrication and Delivery Progress: The contractor has provided a plan to retrofit and/or replace any equipment that was damaged in transit to the ESA staging areas. The damaged equipment will be returned to the VS086 facility for repairs and re-delivered by the end of August 2019. Additionally, three (3) racks of equipment from Plaza Interlocking will be returned to the factory for the installation of the ATT-20 track equipment. The goal is to re-deliver that equipment in August 2019.

CS086 – Tunnel Systems Package 2 – Signal Installation

Schedule: The contractor’s baseline schedule was “conditionally” approved in April 2019 and the last monthly update of the contractor’s schedule indicated an approximate seven-month delay in contract work due to site access issues.

Design/Construction Progress:

- The contractor continued to advise that the Plaza Interlocking equipment room and a number of cable vaults have major water infiltration issues that need to be addressed – MTACC needs to investigate.
- The backlog of submittal responses by MTACC continues to be an issue.
- The contractor and MTACC performed joint surveys of the GCT4, GCT5, and GCT6 areas and agree that, per the contract language, the rooms are not ready for turnover from the other ESA contracts – MTACC needs to set up meetings with the other contractors to identify and develop a plan to resolve the numerous issues regarding site accessibility and equipment layouts that were identified by the contractor as possible items delaying its work on the contract – issues noted include water infiltration, equipment layout conflicts, and other obstructions and misalignments inconsistent with existing contract drawings.
- As a result of some remediation work, the contractor now agrees that Room 4G36, originally identified as too small to fit all the proposed equipment, is now of the correct size to place the required rack equipment in the room.
- The contractor began some surveys with its “mock-up” signal cases and signal heads, but found numerous obstructions precluding the installation of this equipment at the various locations surveyed – only 5 signal head locations surveyed are ready for installation without any modifications – MTACC needs to address obstruction issues, some of which might require re-location of cables and other equipment mounted to the tunnel walls.
- In its June 2019 report, the PMOC reported on one significant issue that was identified during the surveys that could have a negative impact on the timely progression of CS086 contract work – that of the mounting of signal impedance bonds in the track area and the contractor’s contention that there are numerous locations where the pre-installed holes in the track invert for the impedance bond mounting plates do not align with the standard impedance bond mounting plate – MTACC must still investigate the extent of any impact the remediation of this condition will have on this and other ESA contracts.

- MTACC advised that it still must negotiate a contract modification with the contractor to address the contract changes presented in the conformed set of drawings and specifications.
- The contractor continues to advise that it is being impacted by the lack of access to locations and the lack of contractually obligated track time for work site access. MTACC continues to investigate this issue and evaluate contract language to identify the validity of the contractor’s complaint to determine what, if any, further action is required.

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	23.1	6.6	21.3	29.4	100.0%	92.3%	1/31/19	3/10/19	1
	nc	nc	nc	nc	nc	nc	nc	nc	nc	
	29.6	23.1	6.6	21.3	29.4	100.0%	92.3%	1/31/19	3/10/19	
CH058A	66.9	63.9	3.0	14.6	72.9	25.4%	22.9%	3/17/21	3/17/21	
	nc	nc	nc	+3.4	(-0.1)	+12.8%	+5.4%	nc	nc	
	66.9	63.9	3.0	11.2	73.0	12.6%	17.5%	3/17/21	3/17/21	

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. Substantial completion declared.

CH057D – Harold Trackwork Part 3:

Schedule: Although the CH057D contract achieved Substantial Completion on March 10, 2019, the contractor continued to do miscellaneous construction prior to Final Completion, which was originally scheduled for June 7, 2019, but has not been achieved as of July 31, 2019.

Construction Progress: During July 2019, the contractor did not perform any significant construction.

CH058A – Harold Structures – B/C Approach

Schedule: The contractor completed Milestone 2, underpinning and load transfer of the 39th Street overhead bridge, on July 28, 2019, approximately 5 weeks earlier than the contractual date.

Construction Progress: During July 2019, the contractor began excavation west of the 39th Street Bridge to “intervene” with the TBM cutter head, began environmental remediation of the old G02 Substation and surrounding buildings, resumed catenary reconfigurations on the North Runner Track so that the CQ033 contractor could construct Mid-Day Storage Yard tracks, continued to install soldier piles east of the 39th Street Bridge, continued to excavate and install traction power conduit from the C08 Substation to Harold Interlocking, and completed underpinning structural steel installation for and the load transfer of the 39th Street Bridge.

Railroad Force Account Contracts

Costs and substantial completion dates are tabulated below for active Force Account packages. Railroad Force Account agreements do not contain schedule requirements, so the PMOC will not report on schedules in this section. Additionally, since adoption of the “ESA First” schedule, ESA discontinued references to the former “Stages” of Harold construction, although it has not done so for the cost components of Harold work.

	Current Budget	Appr'd Contract	Rem Budget	Invoice Cost	EAC	Planned Comp	Invoice Comp	Current BL SC	Forecast SC	Notes
FHA02	61.4 nc 61.4	61.4 nc 61.4	-- nc --	61.0 nc 61.0	54.7 (-6.7) 61.4	100.0% nc 100.0%	99.4% nc 99.4%	8/15/17 nc 8/15/17	1/24/21 nc 1/24/21	1
FHA03	14.3 +1.6 12.7	5.2 nc 5.2	9.2 +1.7 7.5	6.9 +1.5 5.4	16.6 +2.2 14.4	99.0% nc 99.0%	48.3% +5.5% 42.8%	7/25/18 nc 7/25/18	6/2/25 nc 6/2/25	1
FHL01	34.0 nc 34.0	34.0 nc 34.0	-- nc --	29.5 +0.2 29.3	34.9 nc 34.9	100.0% nc 100.0%	86.8% +0.6% 86.2%	4/9/15 nc 4/9/15	8/31/19 nc 8/31/19	1
FHL02	123.1 nc 123.1	123.1 nc 123.1	-- nc --	119.7 +0.3 119.4	126.6 (-0.1) 126.7	100.0% nc 100.0%	97.3% +0.3% 97.0%	11/25/16 nc 11/25/16	8/30/21 nc 8/30/21	1
FHL03	20.6 nc 20.6	2.7 nc 2.7	17.9 nc 17.9	23.4 +5.4 18.0	47.6 (-0.1) 47.7	100.0% nc 100.0%	65.0% +14.9% 50.1%	8/14/17 nc 8/14/17	4/28/24 nc 4/28/24	1

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

Please refer to the contract narratives for additional information

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

FHA02 and FHA03 – Harold Stage 2 and Stage 3 Amtrak:

Construction Progress: During July 2019, Amtrak ET personnel continued to make catenary modifications on Subs 3 and 4 Tracks in “Q” Interlocking that will eventually enable the CQ033 contractor to construct Mid-Day Storage Yard tracks. ET personnel also continued to make necessary miscellaneous catenary modifications at various locations in Harold Interlocking. Amtrak C&S personnel continued to install signal trough around Loop 2 Track between Loop and “T” Interlockings.

FHL01, FHL02, and FHL03 – Harold Stages 1, 2, and 3 LIRR:

Construction Progress: During July 2019, LIRR ET personnel completed removal of the ConEd equipment from the old G02 Substation (the substation is now ready for the CH058A contractor to begin demolition) installed traction power conduits at various locations and made miscellaneous 3rd rail reconfigurations in Harold Interlocking. LIRR Signal personnel began installation of signal conduits for the future installations of turnouts associated with the B/C Tunnel track reconfigurations and continued to support the CH058A contractor in its construction of the Tunnel B/C Approach Structure.

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 May 2019 MPR. 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. No final resolutions were achieved regarding either issue during July 2019.
2. Potential out of tolerance as-built bench wall clearance for railcars in ESA tunnels. See Section 7.0 (CQ032) for details of survey and remediation.

- 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. See Section 1.0c (CM007; CS084) for details of survey and remediation.

2.0 SCHEDULE DATA

Status and Schedule Contingency

[REDACTED] b(4)

[REDACTED] b(4)

[REDACTED] b(4)

[REDACTED]

Table 2.1: Schedule Contingency – ESA IPS 118 – June 1, 2019

[REDACTED]	b(4)		b(4)	
	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
[REDACTED]				
[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
[REDACTED]		[REDACTED]		[REDACTED]
[REDACTED]		[REDACTED]		[REDACTED]
[REDACTED]			[REDACTED]	
[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
b(4)		[REDACTED]		[REDACTED]
[REDACTED]		[REDACTED]		[REDACTED]
[REDACTED]			[REDACTED]	
[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
[REDACTED]		[REDACTED]		[REDACTED]
[REDACTED]		[REDACTED]		[REDACTED]

Program Primary Critical Path – Manhattan/Systems

The ESA program primary critical path in IPS 118 remains through Manhattan/Systems work and ends on June 29, 2021, as it was reported in IPS 117. Table 2.2 shows the contracts and work that comprise the Manhattan/Systems path as reported in this update.

Table 2.2: ESA IPS Primary Critical Path IPS 118 June 1, 2019

Activity Name	Duration	Start	Finish
CS179 System Package 1 – Facilities Systems			
Resolve CPRs for BCS design and testing	280	12-Apr-19	16-Jan-20
FAT for BCS and communication systems	125	16-Jan-20	19-May-20
West Cavern Mezzanine Comm Room installs and testing	126	19-May-20	21-Sep-20
Field network / BMS IST	71	21-Sep-20	30-Nov-20
IST for BMS and integration with HVAC/FLSS systems	212	30-Nov-20	29-Jun-21
Program Activities			
LIRR FRA Signals and Power Testing †	115	29-Jun-21	21-Oct-21
LIRR Final Testing and Previews ‡	116	21-Oct-21	13-Feb-22
Target Revenue Service Date			14-Feb-22
ESA Program-Level Contingency	■	b(4)	■
Public Revenue Service Date			13-Dec-22

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

‡ Successor Harold Interlocking path.

The IPS schedule is based on MTACC’s plan for Incremental IST, which has been incorporated in the IPS now that contract modifications for CS179 and CM014B were approved in April 2019. Additional schedule adjustments may be made for CM007, VS/CS084, and CS086 when/if contract modifications for IST are issued for these contracts.

Although not on the ESA program critical path through the Manhattan/Systems scope of work, contracts CS007, CS084, CS086, and CM014B all have work activities that have no float and therefore could appear on the critical path.

MTACC has, and continues to add, coordination point milestone activities to the IPS schedule to track and monitor the progress of inter-contract coordination for the ESA program. These activities had experienced month-to-month changes that reduced their usefulness in monitoring progress. At this point in time, MTACC has added milestones and updated its dates to match the syndicated IST schedule, to which the CS179 and CM014B contractors have agreed. MTACC has confirmed that these milestones form its plan for progressing the ESA program and can now be monitored going forward to measure progress. IPS 117 had forecast that 35 coordination points would be completed in May 2019; however, none were completed and the reforecast dates generally showed a one month slip. There remains the risk that the lack of progress through coordination points will result in the need for more concurrent work in the period leading up to and during IST than had been planned, which may further complicate and impede progress.

There is a risk that the lack of progress through coordination points will result in the need for more concurrent work in the period leading up to and during IST than had been planned, which may complicate and impede progress.

Discussion of Progress along the Critical Path

The Manhattan/Systems critical path completion date in IPS 118 is June 29, 2021, unchanged from IPS 117.

The scope that comprises the Manhattan/Systems path in IPS 118 changed from that reported in IPS 117. The path now begins with CS179 work on the design and testing of the Backbone

Communication System, which has replaced the CM007 work on the Universal Support System. After the FAT for the BCS and communications systems is complete, the Manhattan/Systems path leads to: installation and testing in the communications room located at the west cavern mezzanine; integrated systems testing for the field network and BMS; completion of all IST; joint testing at the TOC; and ends with CS179 Substantial Completion on June 29, 2021, as it did in IPS 117. From this point, the path passes through LIRR FRA testing for signals and power; final LIRR testing and previews; and concludes with the Target RSD in February 2022. There are an approximately 10 additional months of float to the Public RSD.

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 118.

Sub Program Longest Path – Harold Interlocking

IPS 118 shows that the Harold Interlocking work path is the second longest ESA program path. The Harold Interlocking work path concludes on July 20, 2021, in IPS 118, the same as in IPS 117. The float on this path is 92 calendar days. The Harold Interlocking work path begins with CH058A completing the work plan for, and installing, soldier piles; fabrication and installation of precast wall panels; and preparation for and completion of track work for RT, VX and WX tracks. This is followed by force account turnout and signal work, CH063 catenary work, and force account cutovers through the end of July 2021. At the completion of the Harold work path, there are 3 months of float to the LIRR final testing activity, at which point the path joins the ESA program critical path.

Sub Program Longest Path – Queens

IPS 118 shows that the Queens (Mid-Day Storage Yard) work path is the longest program path. The finish date for the Queens path is October 31, 2020, in IPS 118, the same as in IPS 117. The float on this path remained constant at approximately 8 months. The Queens path is generally unchanged and currently runs through CQ033 construction of low voltage and traction power duct banks; installation of trackwork for tracks WL and FR; installation of MID-8 CIL signal troughs; cabling and connections; completion and testing of the RFID system; and completion of IST and CQ033 substantial completion on October 31, 2020. From the end of the Queens path, there are approximately 8 months of float to the LIRR FRA testing activity on the ESA program critical path (Manhattan/Systems work).

Upcoming Contract Procurements

Table 2.4 shows the status of current and upcoming contract procurements as reported in IPS 118 (June 1, 2019).

Table 2.4: Procurement Schedule

Contract Description	Advertise Date	Bid Date	NTP	Project Length	Substantial Completion
CH063 ET Catenary Work – 3 rd Party	7/15/19	9/9/19	12/19/19	27 mos.	3/5/22

CH063 Electric Traction Catenary Work, 3rd Party: MTA issued an RFP on January 4, 2019 for the design-build contract. Seven “Qualification” submittals were received in March 2019, after which 4 vendors were selected to be “Pre-Qualified”. Solicitations for the “Cost/Schedule” portion of the procurement are scheduled to be issued in early August 2019, with award and NTP scheduled for mid-to-late Q4 2019.

PMOC Concerns

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

1. Progress on the Manhattan/Systems work path has improved as a result of modifications to rebase contracts CM014B and CS179. The planned and actual completion percentages are much closer now that the planned cost projection has been updated.
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 scope on the critical path continues to shift, which is more due to changes to schedule logic than to schedule progress. While MTACC has reduced the uncertainties concerning the Incremental IST schedule with contract modifications to CM014B and CS179, further agreements are needed with secondary contractors. Risks due to the redevelopment of 270 Park Avenue have been reduced due to the MTACC-JPMC construction agreement. While MTACC has reached agreement with the CS179 and CM014B contractors for the Incremental IST schedule, other Manhattan/Systems contracts remain near critical and may exert a significant influence on the critical path.
3. The ESA program schedule contingency is 302 CDs, which is only 27 CDs above the minimum required FTA ELPEP schedule contingency. The ability of the MTACC to maintain the FTA minimum until the next ELPEP hold point (95% constructed; Q4 2020) is at risk due to the uncertainties about the Manhattan/Systems schedule, the greatest of which is execution of the approved plan for the Incremental IST.
4. Progress on CS084, Tunnel Systems Package 4 – Traction Power, is slow and is currently reported as 45.6% complete compared with as-planned progress of 92.1%. The PMOC observes that work on CS084 continues to be delayed each quarter. With five out of the eight substations still requiring equipment submittal approvals, fabrication is being delayed, impacting installation and energization. While many of the delays appear to have been absorbed and/or mitigated in the schedule, float to the program is being lost to this important sub-critical work. It is noted that MTACC continues to work with the contractor to develop a realistic and updated schedule and 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.
5. The PMOC has been concerned about the lack of progress to advance IST as indicated by not achieving the scheduled coordination point completion dates. With the incorporation of the syndicated schedule for IST into the ESA IPS, the MTACC reestablished the coordination point activities. While additional coordination points will continue to be added to the plan as contract modifications are set for other contracts, they now form the backbone of a reliable execution plan. If not addressed, the lack of progress will result in the need to perform more concurrent work leading up to and during IST than had been planned, which will further complicate and impede progress.
6. The PMOC questions the CM014B contractor's capability to complete the 24% of its remaining work in the 12 months prior to the forecast SC in June 2020. The PMOC believes that the revised schedule is overly optimistic based on its historic construction performance.

3.0 COST DATA

Budget/Cost

In the ESA May 2019 MPR, MTACC reported that the ESA program is 78.4% complete compared to planned progress of 79.0% of the \$11,133 million April 2018 EAC forecast. The report also shows that construction progress reached 82.2% complete compared with planned progress of 83.0%. Since the ESA July 2018 MPR, the PMT calculates summary construction progress as a percentage of the \$8,014 million April 2018 construction EAC forecast.

Contingency

b(4)

b(4)

b(4)

Table 3.1: ESA Cost Contingency (Costs shown in millions)

b(4)	b(4)	b(4)	b(4)	b(4)	b(4)
b(4)	b(4)	b(4)	b(4)	b(4)	b(4)
b(4)	b(4)	b(4)	b(4)	b(4)	b(4)
b(4)	b(4)	b(4)	b(4)	b(4)	b(4)
b(4)	b(4)	b(4)	b(4)	b(4)	b(4)
b(4)	b(4)	b(4)	b(4)	b(4)	b(4)
b(4)	b(4)	b(4)	b(4)	b(4)	b(4)

Change Orders/Budget Adjustments

The ESA May 2019 MPR lists 11 change orders with magnitudes greater than \$100,000 that were executed in May 2019. The net value of these change orders was \$127.9 million.

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

Contract	Description / Mod No.	Amount
CM014B	Resolution Outstanding of Claims and Disputes, Deletion of North Transfer Station and Acceleration of Work (mod. 210)	54,124,210
CM014B	B20, B30 Surge Arrestors, B30 F1 & F6 Setting (CPR-155; mod. 248)	213,400
CQ033	West End Camera Changes (mod. 36)	1,550,000
CS084	Replacement of PVC Conduit (re-lining; mod. 15)	169,688
CS179	Public Address System Clarifications and Changes (mod. 175)	2,163,594
CS179	Two-Way radio Cables - Concourse (mod. 194)	766,312
CS179	Recovery Schedule, Revised Access Restraints and Milestones (mod. 197)	67,000,000
CS179	MHTN Security System Update (mod. 200)	682,985
CS179	GCT Caverns Security Systems Update (mod. 201)	352,535
CS179	Queens Security Systems Update (mod. 202)	252,500
CH057D	Northeast Quadrant Delays - Equitable Adjustment (mod. 6)	582,559

Funding

Budget Amendment 3 to the 2015–2019 Capital Plan has been incorporated into the ESA program budget established funding of \$10,335 million for the ESA program through December 2020. MTACC anticipates requesting an additional approximately \$800 million in September 2019 to fund the ESA program through completion.

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 June 1, 2019.

Local Funding: The budget for Local Funding is \$7,636.4 million, of which \$6,025.8 million has been expended through June 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 is an overstatement of both the contract completion percentages and the total value of unallocated contingencies. While this strategy retains maximum flexibility for MTACC, it differs from the generally accepted practice of committing to budgets for known program costs, 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 additional major contract modifications are executed and after the 2020–2024 Capital Plan is adopted.
2. MTACC is preparing its 2020–2024 Capital Plan, which is anticipated to include approximately \$800 million to complete the ESA program and replenish contingencies. MTACC anticipates submitting the capital plan request to the MTA board in September 2019. The MTACC cost plan forecasts drawing contingencies down to approximately \$117 million at the end of December 2020, which, should it occur, would be less than the ELPEP minimum. This future potential funding constraint could be a major risk.
3. MTACC has executed modifications for contracts CS179 and CM014B to resolve the major open cost and schedule issues and to incorporate Incremental IST. MTACC is working with CM007 to incorporate the schedule changes in that contract. The implications of the changes

on contracts CS084, VS/CS086, and CQ033 are yet to be determined. Additionally, ongoing and possible future delays may result in increasing costs for the following contracts:

- 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 July 2019, MTACC continued to adjust the “ESA First” Harold Re-Sequencing plan, as required, to accommodate any identified railroad force account constraints. The PMOC notes that the noticeable improvements for LIRR direct Force Account work and Amtrak ET support that have been recently reported appeared to have been sustained through July 2019.

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. During March 2019, MTACC indicated that Amtrak may advance ERT 2 reconstruction to 2023, although this has not yet been confirmed. 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 such an event would impact the FFGA RSD of December 2023.

LIRR Positive Train Control (PTC) Risk

This risk has two distinct elements, as discussed here.

- a.) 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.
- b.) MTACC-ESA will be installing, testing, and commissioning PTC for all of the new track and signal systems built under the ESA Program. 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 and reaching scope concurrence with Contracts VS086, CS086, and CS179. This delay continued through July 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. MTACC acknowledges that delays to incorporation of PTC requirements will impact the substantial completion date for Contract VS086.

Capital Funding Risk

MTACC has forecasted a need for approximately \$800 million in the 2020–2024 Capital Plan. The PMOC remains concerned that – until the 2020-2024 Capital Plan is approved – this potential future funding constraint may significantly impact the program budget and schedule as well as the

start of Revenue Service. MTACC will request the additional funds for the ESA program in September 2019.

ESA Vehicle Risk

The PMOC remains concerned about the schedule slippage of the LIRR federal vehicle procurement program for the M-9A vehicles because it has the potential to significantly impact delivery of the vehicles and, hence, MTACC's Revenue Service Date. Through July 2019, the LIRR continued to evaluate proposals for the vehicles during the second of its two-step RFP procurement process, the contract for which it originally expected to award in June 2019. During July 2019, however, ESA informed the PMOC that the award is not expected until October 2019 and that delivery of the first vehicle would not be until April 2023. This would be after MTACC's Target (February 14, 2022) and Public (December 13, 2022) RSD dates, but before the FFGA RSD date of December 31, 2023. If that is the case, MTA will need to determine how to supply vehicles from its existing fleet in order to begin LIRR service to Grand Central Terminal.

Manhattan/Systems Performance Risk

The Manhattan/Systems path is at risk for future open/unresolved issues. Contract modifications for CS179 and CM014B have been issued to address Incremental IST, which needs to be incorporated in the IPS and in contract modifications for interfacing contracts, as necessary. Although not on the ESA program critical path through the Manhattan/Systems scope of work, contracts CS007, CS084, CS086, and CM014B all have work that has no float and therefore could appear on the critical path.

JP Morgan Chase Redevelopment at 270 Park Avenue

The foundation and substructure systems required for the planned new JP Morgan Chase (JPMC) building at 270 Park Avenue will impact the ongoing construction of the new LIRR Concourse at Grand Central Terminal. Ongoing MTA, MTACC-ESA, and JPMC discussion continued through July 2019. All MTA costs-to-date have been reimbursable by JPMC and all related MTACC-ESA work is being performed by a dedicated team so not to impact the management and technical services being provided for the ESA program. MTACC has taken the position that there will be no schedule delays to the forecast RSD and no additional costs to MTA as a result of this work. The MTA/MTACC – JPMC Memorandum of Understanding was executed by both parties on March 31, 2019. The follow-on MTA/MTACC-JPMC Construction Agreement, previously forecast by ESA to be completed by May 31, 2019, was approved at the July 2019 MTA Board meeting and executed by both parties on July 31, 2019. With this action, MTACC believes that it has mitigated the risks of schedule delays and additional costs.

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. MTACC provided the draft TCC Plan during May 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

[REDACTED]

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[REDACTED]

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, 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.

The updates of the Project, Cost, Schedule, Risk Management, Contract Packaging, and Technical Capacity and Capability Plans 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, the CPP in January 2019, as well as the TCC in May 2019. The PMP will be updated based on changes made to the revised Sub-Plans.

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 June 2019 were 0.98 for Lost Time Injuries (LTI) and 0.98 for Recordable Injuries (RI). Both were below Bureau of Labor Statistics (BLS) 2019 Safety Guidelines of 1.5 for LTI and 2.5 for RI. Additionally, MTACC did not report any significant security issues in its May 2019 MPR.

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.

Water Infiltration Concerns Regarding Contracts CS179, CS084, 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. The CS179, CS086, and CS084 contractors continue to advise MTACC of additional water infiltration issues in areas where work access has come available, including Plaza Interlocking facility rooms and equipment rack configurations. In addition, water and PAC remediation issues remain in several areas under Contract CQ032: the former Launch Block area of the Plaza, the Amtrak Bridge area, the Plaza, and the former Early Access Chamber area.

Contract CQ032: There are now seven NCRs related to potential out of tolerance as-built railcar clearances in newly constructed ESA tunnel bench walls that require remediation in order to meet minimum train clearance requirements. Current status: Draft contractor proposals are under MTACC review for repair work.

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 and approvals to the contractor's design submittals and Requests for Information.

Contract CS084: The PMOC remains concerned about the following issues:

- Equipment delivery methodology (means and methods);

- Transformer installation at C06/C07;
- Transformer hi-pot testing failures and long-term viability of the transformers;
- Verification of existing conduit and manholes in several substations;
- Coordination with other contractors;
- Possible damage to MTA-provided inductive reactors due to MTA storage/handling;
- Extent of non-conformance of track monuments and potential remediation; and,
- 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. The PMOC recommends that MTACC expedite completion of discussions regarding the development of such a schedule that addresses all the issues currently identified on this contract. Issues regarding the acceptability of MTACC’s proposed solution to the protection of the “open” type racks and PTC Application Logic design incorporation need to be expeditiously addressed.

Contract CS086: MTACC and the contractor need to address the noted water infiltration issues and expeditiously correct any deficiencies noted during inspections of the work sites to enable the timely progression of the contract work. The completion of a track installation phasing and usage plan with the CM007 contract needs to be expedited to avoid any further access restraint delays. The extent of the contractor-noted issue regarding the impedance bond mounting plates must be quantified by MTACC and a resolution, if any is needed, must be expeditiously identified and implemented.

Project Funding: The project is at risk due to the anticipated 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. MTACC plans to request additional funds for the ESA program in September 2019.

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:

[REDACTED]

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Additionally, Manhattan/Systems contracts that are not on the critical path include CM014B, 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. 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 achieving any meaningful schedule recovery 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 July 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; and,
12. Foundation systems required for the new JP Morgan/Chase (JPMC) building at 270 Park Avenue will impact construction of the new LIRR Concourse at GCT.

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

1. Funding: Funding constraints (risk realized in Q2 2017; short-term risk resolved through December 2020; long-term risk remains).
2. Amtrak Support: Ongoing/future Regional Projects requiring extensive Amtrak support.
3. Reconstruction of Existing Amtrak ERT Lines 1 and 2: Earlier deferred until 2025 after the ESA program; now possibly rescheduled to 2023, just after ESA RSD. The risk now is from the impact of unplanned emergency tunnel repairs.

APPENDIX A – ACRONYMS

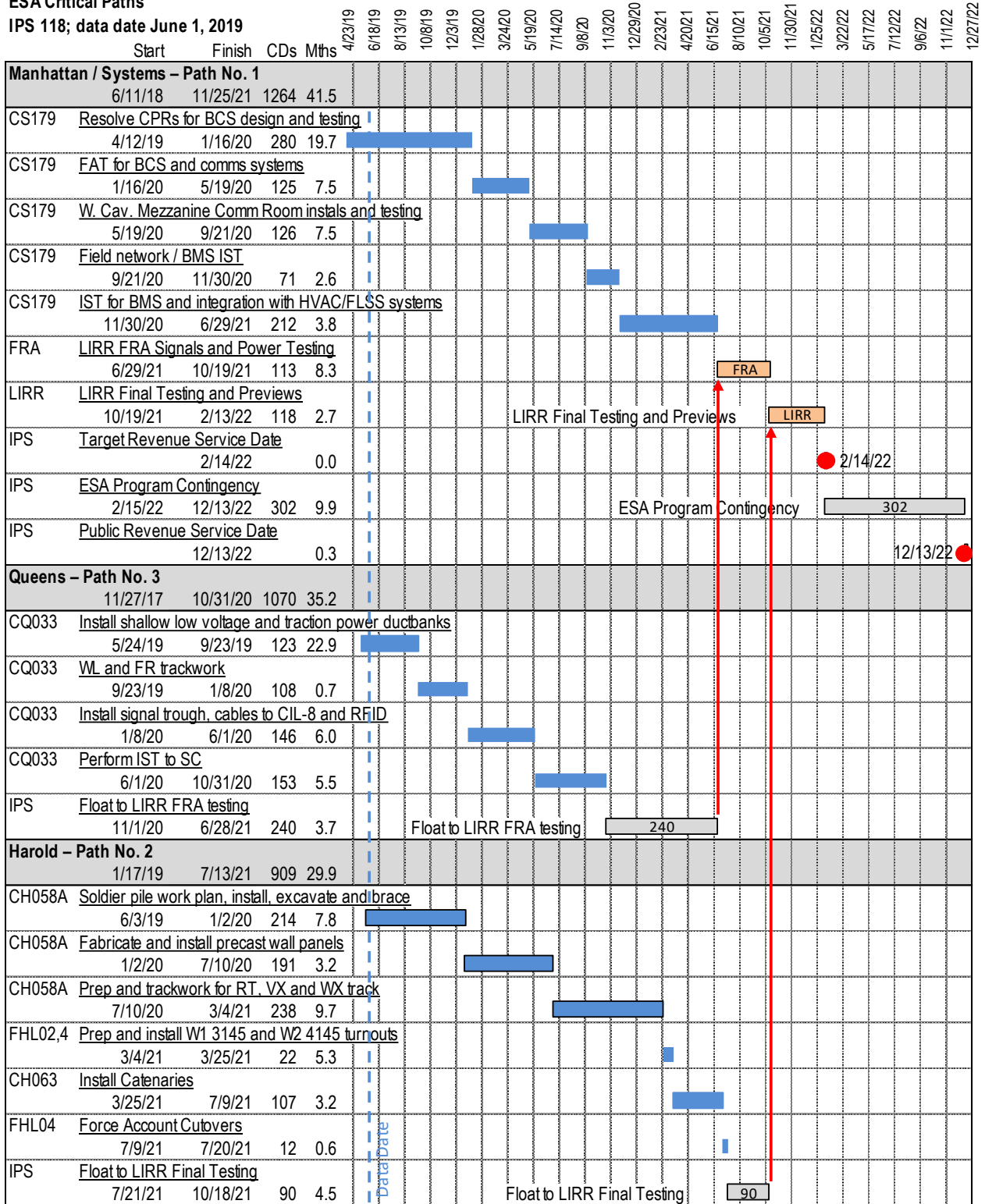
AFI	Allowance for Indeterminates	IPS	Integrated Project Schedule
ARRA	American Recovery and Reinvestment Act	IST	Integrated System Test
AWO	Additional Work Order	JPMC	J. P. Morgan Chase
BIM	Building Information Model	LIRR	Long Island Rail Road
BLS	Bureau of Labor Statistics	LSZH	Low Smoke Zero Halogen
BSA	Buy/Ship America	MNR	Metro-North Railroad
C&S	Communication and Signals	MOD	Contract Modification
CBB	Current Baseline Budget	MPR	Monthly Progress Report
CCC	Change Control Committee	MTA	Metropolitan Transportation Authority
CCM	Consultant Construction Manager	MTACC	Metropolitan Transportation Authority Capital Construction
CCTV	Closed Circuit Television	NCR	Nonconformance Report
CD	Calendar Day	NOC	Notice of Change
CIL	Central Instrument Location	NTP	Notice to Proceed
CIR	Central Instrument Room	NYCT	New York City Transit
CM	ESA Construction Manager assigned to each contract	OCIP	Owner Controlled Insurance Program
CMP	Cost Management Plan	PAC	Pneumatically Applied Concrete
CMU	Concrete Masonry Unit	PCO	Proposed Change Order
ConEd	Consolidate Edison Company	PLC	Program Logic Control
CPOC	Capital Program Oversight Committee	PMOC	Project Management Oversight Contractor (Urban Engineers)
CPP	Contract Packaging Plan	PMP	Project Management Plan
CPR	Contractor Proposal Request	PMT	ESA Project Management Team
DC	Direct Current	QA	Quality Assurance
DCB	Detail Cost Breakdown	QPR	Quarterly Progress Report
DFF	Direct Fixation Fastener	RFI	Request for Information
EAC	Estimate at Completion	RFP	Request for Proposal
ELPEP	Enterprise Level Project Execution Plan	RMP	Risk Management Plan
ERT	East River Tunnel	ROD	Revenue Operations Date
ESA	East Side Access	ROW	Right of Way
ET	Electric Traction	RPR	Relocated Primary Route
F/A	Force Account	RSD	Revenue Service Date
FAT	Factory Acceptance Testing	RTB	Resilient Tie Block
FD	Final Design	SC	Substantial Completion
FFGA	Full Funding Grant Agreement	SCADA	Supervisory Control and Data Acquisition
FIAT	Factory Integrated Acceptance Testing	SDR	Second Design Review
FRA	Federal Railroad Administration	SLCS	Signal Local Control System
FTA	Federal Transit Administration	SMP	Schedule Management Plan
GCT	Grand Central Terminal	SMS	Security Management System
GEC	General Engineering Consultant	SWO	Stop Work Order
HVAC	Heat, Ventilation and Air Conditioning	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 118 – June 1, 2019

ESA Critical Paths

IPS 118; data date June 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 June 1, 2019	
	Original FFGA	Amended FFGA	Pct. of FFGA	Obligated	CBB	Pct. of Total CBB	Expenditures	Pct. of CBB
Grand Total	7,386.0	12,038.5	100.0%	10,189.9	11,451.5	100.0%	9,141.1	79.8%
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%	9,572.3	10,335.1	90.3%	8,523.5	82.5%
		10,922.0	90.7%					
Federal Share	2,683.0		36.3%	2,698.8	2,698.8	23.6%	2,698.8	100%
		2,698.8	22.4%					
5309 New Starts share	2,632.0		35.6%	2,436.7	2,436.7	21.3%	2,436.7	100%
		2,436.7	20.2%					
Non New Starts share	51.0		0.7%	66.6	66.6	0.6%	66.6	100%
		66.6	0.6%					
ARRA	0.0	195.4	1.6%	195.4	195.4	1.7%	195.4	100%
Local Share	3,667.0		49.6%	6,873.5	7,636.2	66.7%	5,824.7	76.3%
		8,223.2	68.3%					

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

Elements	Baseline Budget June 2014	April 2018 EAC Forecast	June 1, 2019			
			Current Budget (interim)	Actual Awards	Invoiced Costs	Inv. Pct. of Budget
Construction Subtotal	7,379.3	8,014.1	7,610.8	7,380.1	6,585.0	86.5%
Soft Costs Subtotal	2,359.5	2,852.2	2,724.3	2,192.2	2,139.6	78.5%
Engineering	720.6	871.8	795.3	766.6	750.1	94.3%
OCIP	282.6	457.4	379.2	379.2	372.6	98.2%
Project Mgmt.	972.2	1,117.3	961.8	924.4	898.9	93.5%
Real Estate	182.1	203.7	124.9	119.2	117.9	94.4%
Rolling Stock	202.0	202.0	7.5	2.7	0.2	3.1%
b(4)						
Total w/o Financing	10,177.8	11,133.3	10,335.1	9,572.3	8,724.6	84.4%

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

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

Standard Cost Category	FFGA	June 2014 Project Budget	Amended FFGA	Mar 2019 CBB	Apr 2019 CBB	May 2019 CBB	CBB / FFGA Var.	CBB / Amend FFGA Var.
10 - Guideway & Track Elements	1,988.7	3,405.5	3,353.4	3,401	3,448	3,409	71.4%	1.6%
20 - Stations, Stops, Terminals, Intermodal	1,168.7	2,238.2	2,326.8	2,287	2,378	2,378	103.5%	2.2%
30 - Support Facilities (Yards, Shops, Admin)	356.3	474.2	450.8	559.7	565.9	565.9	58.9%	25.6%
40 - Site Work and Special Conditions	205.1	610.6	562.5	530.6	530.9	499.8	143.7%	-11.1%
50 - Systems	619.3	605.6	627.7	713.6	737.0	712.7	15.1%	13.5%
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	2,146	2,152	2,136	80.4%	18.1%
b(4)								
Subtotal	6,349.9	10,177.8	10,922.0	10,335	10,335	10,335	62.8%	-5.4%
100 - Finance Cost	1,036.1	1,036.1	1,116.5	1,116	1,116	1,116	7.8%	0.0%
Total	7,386.0	11,213.9	12,038.5	11,452	11,452	11,452	55.0%	-4.9%

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

Standard Cost Category	FFGA	June 2014		June 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	3,408.6	3,340.6	3,040.7
20 - Stations, Stops, Terminals, Intermodal	1,168.7	2,238.2	2,326.8	2,378.5	2,297.1	1,931.3
30 - Support Facilities (Yards, Shops, Admin)	356.3	474.2	450.8	565.9	554.3	420.3
40 - Site Work and Special Conditions	205.1	610.6	562.5	499.8	474.2	486.4
50 - Systems	619.3	605.6	627.7	712.7	668.7	469.4
60 - ROW, Land, Existing Improvements	165.3	219.4	192.2	162.3	156.6	155.2
70 - Vehicles	494.0	209.9	879.5	15.4	10.6	5.8
80 - Professional Services	1,184.0	1,975.4	1,809.0	2,136.3	2,070.2	2,014.4
b(4)						
Subtotal	6,349.9	10,177.8	10,922.0	10,335.1	9,572.3	8,523.5
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 118 – June 1, 2019

Act. Id.	Name	Start	Finish	Float
CS179	Systems Package 1 – Facilities Systems			
Issue-496-130	MTACC Resolve Scope of CPR-203	12-Apr-19A	29-Jun-19	2
Issue-230-180	CPR-095 – Kratos draft/submit updated BCS System Design Document	01-Jul-19	26-Aug-19	1
Issue-230-190	CPR-095 – MTACC Review/Approve	27-Aug-19	25-Sep-19	1

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	78.4% actual vs. 79.0% planned (ESA calc. †)		
Project Performance Rate Since 2014 ESA Re-Plan		Based on Earned Value	83.0% (PMOC calculation of construction spending at Q1 2019 planned vs. actual since re-baselining)		
Contracts	Total contracts awarded to date		\$9,572.3 m	86.0% (PMOC calculation†)	
	Total construction contracts awarded to date		\$7,380.1 m	92.1% (PMOC calculation†)	
Major Issue	Status		Comments		
Project Funding and Budget	b(4)		b(4)		
Project Cost	The ESA PMT updated the ESA program budgets based on the approval of Budget Amendment 3 for the 2015-2019 Capital Plan. The April 2018 EAC is \$11,133 million, not including Rolling Stock Reserve. The Amended FFGA Baseline Cost Estimate is \$10,922 million and includes full cost of Rolling Stock.		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: <ul style="list-style-type: none"> Manhattan/Systems – no float (critical path) b(4) 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) The PMOC is concerned that, until uncertainties related to Incremental IST performance and redevelopment of 270 Park Avenue are addressed, future schedules may show the shifts in the critical path, further delays, and may impact the program schedule contingency.		
Manhattan/Systems Schedule Path	IPS 118 shows that the ESA Program Critical Path runs through the Manhattan/Systems contracts. This work path has several major areas where contractor performance may have 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 June 29, 2021, in IPS 118 Acceptable work progress along this schedule path relies heavily on the effectiveness of MTACC/ESA coordination efforts across the seven area contracts for IST and coordination with the redevelopment of 270 Park Avenue.		

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b(4)

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[REDACTED]