

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

**Report Period November 1 – November 30, 2016**



PMOC Contract No. DTFT6014D00017

Project No. DC-27-5287, Task Order No. 2, Work Order No. 3

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

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## **THIRD PARTY DISCLAIMER**

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

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

## **REPORT FORMAT AND FOCUS**

This report is submitted in compliance with the terms of the Federal Transit Administration (FTA) Contract No. DTFT6014D00017, Task Order No. 002. 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 management activities on the East Side Access (ESA) Mega-Project managed by MTA Capital Construction (MTACC) with MTA as the Project Sponsor and financed by the FTA FFGA. The PMOC notes that the FFGA Amendment was fully executed with MTA's sign-off of August 2, 2016. The amended FFGA incorporates the changes in the Baseline Cost Estimate and Revenue Service Date that have occurred since 2006 when the original FFGA was signed.

All Project Sponsor cost and schedule data included in this report is based on the status date of October 1, 2016.

## **MONITORING REPORT**

### **1.0 PROJECT STATUS**

#### **a. Engineering Design and Construction Phase Services**

As of the end of September 2016 (October 1 data date), MTACC reported that the overall engineering effort was 99.2% complete, based on Earned Value for Design Deliverables, compared with a planned status of 100.0%. MTACC's Cost Report shows that 94.1% of the overall "EIS and Engineering" category has been invoiced and 94.3% of the "Design" category (including Design Settlement) has been invoiced.

On Contract CM015 (48<sup>th</sup> St. Entrance), the MTA Board had previously approved the design agreement with the building owner. The building owner, Rudin Management Corporation (RMC), agreed to provide the designs for the relocation of the existing interior utilities and to complete some limited structural design. MTA is continuing discussions with RMC and is nearing

completion of the required easements and construction agreements. The GEC completed the 100% design and submitted it on July 12, 2016. RMC and the VM015 contractor review comments were received on August 15, 2016. RMC has made additional comments on the entrance design. Change Order (PCO)-127 work for the GEC has been completed and involves revisions to the entrance façade and provision of fire-rated construction for future basement retail space. Submittal will be made to the NYC Department of Buildings upon incorporation of all comments and issuing the signed and sealed plans. Bid advertisement had been scheduled for September 27, 2016, was then revised to November 29, 2016, and is now forecast for January 5, 2017. Delays through 2016 and into 2017 will be 5 months.

Contract CH058A will include construction of the Tunnel B/C Approach Structure. The 90% design submission was made on June 17, 2016, and the ESA Project Management Team (PMT)/GEC team has received comments from the ESA Construction Manager and LIRR. The 90% package was sent to Amtrak on October 28, 2016. The PMOC notes that Amtrak advised MTACC that Amtrak had committed to reviewing the 90% CH058A package after they had completed their review of the FHA03 package. This will delay Amtrak's review of the CH058A package. As of November 30, 2016, MTACC continued to await Amtrak review comments on the 90% submission.

Contract CH058B will include construction of the East Bound Re-route. Final design has been awaiting the completion of a rail traffic simulation study for Harold Interlocking. The first part of the study, operations without Temporary Eastbound LIRR Passenger (TELP) Track, has been completed, and the results indicate minimal impact to Harold Interlocking under peak load conditions. Based on this result and the fact that construction of the TELP Track would have significant cost and schedule impacts to the planned Central Instrument Location (CIL) cutovers, the PMT has recommended to LIRR that the GEC complete the CH058B design without the TELP Track. The GEC and PMT have recommended that the tunnel be constructed using the cut-and-cover method. LIRR has approved the construction method and the GEC PCO to make this change and it is expected to be finalized in December 2016. LIRR has agreed to the track outages required to support the cut-and-cover construction but has requested additional rail traffic simulations. The simulation proposal was submitted on November 29, 2016, and is currently under review.

The Contract CQ033, Mid-Day Storage Yard Facility, bid package has been completed and the contract was advertised in October 2016. Work continues on resolving remaining issues, which are listed below. Any resultant design or specification changes will be included, as required, in bid addenda.

- Regarding the Arch Street Yard tie-in, resolution is still required between MTACC and LIRR for final determination on the scope of LIRR Force Account (FA) work.
- MTACC continued working with Amtrak regarding coordination of catenary pole relocations.
- The access road provides joint use between LIRR and Amtrak for access to the High Speed Shop, Yard C, and the Penn Lead. All parties, including FDNY, have reached agreement on the access road width.
- ESA-PMT continues to work with LIRR on labor clearance for track and traction power work.
- The CQ033 package requires design variance approvals regarding LIRR track standards and clearances in order to provide sufficient yard capacity to store twenty-

four 12-car train-sets. All track standard and clearance issues with LIRR were resolved in late May 2016, although a waiver is still required from NYSDOT to resolve the track vertical and horizontal clearance issues. In early July 2016, LIRR submitted a waiver request to NYSDOT regarding the substandard clearances required by the design. As of November 30, 2016, however, the NYSDOT response is still pending. The PMOC notes that 5 months have elapsed since MTACC submitted the request.

- GEC has started work on the eight items in PCO-211 that include changes for cost savings as well as LIRR's request to revise the variance package for geometric alignment and vertical track clearance for underground pipelines. The GEC is proceeding with the work under an ESA Direction to Proceed. ESA has requested that the GEC complete the vertical profiles for 11 tracks, change the turnout frogs, relocate the EO turnouts and provide a submittal schedule for the balance of the work items by December 15, 2016.
- The GEC completed work on drawings for approval from NYCT on overhead clearance beneath the No. 7 Line elevated structure over the proposed LIRR tracks. NYCT has provided preliminary approval. The complete document package, including signed and sealed plans, was submitted to NYCT in November 2016 for NYCT's final approval.
- Demolition of 1,300 LF of existing third-rail may be included as a contract option.

The package was advertised on October 20, 2016, with plans available for pick-up on October 24, 2016. Forecast bid due date is December 22, 2016.

Contract CH057D, Harold Track Work, is a new package whose work scope is currently being finalized by the PMT and the CM. Labor clearance has been requested from LIRR.

Contract CS086, Systems Package 2 - Tunnel Systems, is a stand-alone package. The MOU with LIRR for inclusion of Positive Train Control (PTC) in this contract is being finalized. MTACC reports that the Proposed Change Order to the GEC for the addition of PTC was being issued and that the GEC has been meeting with the LIRR to confirm and finalize the PTC-related scope. Another PCO to finalize the package has been approved and the GEC has completed the work. The scope of this change order includes a refresh of the package and changes operational control of Plaza Interlocking from Penn Station Control Center to the GCT Train Operations Center. The ESA-PMT advised that this change originated with LIRR operations acting through the ESA/LIRR Special Projects Group and that the change was approved by the Change Control Committee. The 100% design submission, not including PTC (Positive Train Control), was made in mid-October and forwarded on October 21, 2016, to LIRR for review. The bid advertisement date is now forecast for January 10, 2017, a delay of three months from the previously forecast date of October 11, 2016.

In Contract CS179, Systems Facilities Package No.1, the backlog of submittal and RFI reviews noted in earlier reports was an area of focus for the Contract CS179 project team. There has been some reduction of the backlog of submittal reviews and RFI responses; however, this issue remains as a serious concern to MTACC, the contractor, and the PMOC. At the end of November 2016, there were still 296 submittals out of a cumulative total of 6,627 submitted that required a response from MTACC. The contractor continues to assert that these overdue responses on design submittals and Requests for Information (RFIs) are impacting its ability to complete design work in accordance with the contract schedule. MTACC acknowledges that the response time on many

submittals and RFIs has exceeded the 30-day turn-around time period stipulated in the contract. However, the contractor's assertion that this issue is causing overall contract delays cannot be evaluated until the contractor provides an accurate and comprehensive contract schedule that includes an acceptable Integrated System Test Plan (ISTP) schedule. MTACC indicated in its 3Q2016 Progress Report (3QPR) that the completion of the Control System Designs will occur in December 2016, nine months later than that shown in the baseline schedule. Information presented at the most recent monthly progress meeting indicates that nine (9) of the ten (10) Control System Final Design Review (FDR) meetings occurred by the end of November 2016. The last Control System (CCTV & SMS) FDR meeting has yet to be scheduled. The CS179 CM indicates that there are still some design issues that need resolution before the FDR meeting can occur.

Previously, the PMOC reported that it believes that the December 2016 forecast date for completion of all 10 Control System Designs is achievable as long as MTACC continued to aggressively pursue the closure of design questions. However, any further delay in the resolution of the design issues for the CCTV and SMS systems could jeopardize the successful achievement of that forecast. Additional information regarding specific System designs for the CS179 contract is provided later in Section 1.0c., under CS179.

On Contract CS084, the ESA CS084 CM remains concerned that it is taking far too long to obtain comments and responses to contractor submittals and RFIs; and, along with senior ESA management, continues to address the mitigation of this issue with senior LIRR management. At the mid-November 2016 Monthly Progress meeting, the CS084 CM advised that there had been some improvement in the turn-around time for comments on contractual submittals; but noted that there was still room for significant improvement. The contractor agreed with this assessment and again noted that delays in receiving comments back from the MTA on the design submittals are impacting its ability to meet its own design, fabrication, and installation schedules. The PMOC continues to recommend that the MTACC's senior management work with the LIRR's senior management to formalize an effective and efficient design review process that will enable the MTA to provide timely and productive comments on design documents.

As previously noted, the approval of critical facility designs and the GEC's completion of re-designs to address design issues identified in various locations continue to be items the contractor cites as critical schedule issues. Additionally, the extended length of time taken to approve substation layout and equipment designs, including clarification of Supervisory Control and Data Acquisition (SCADA) requirements, enabled the contractor to assert that contract Milestone Nos. 1, 2, 3, 4, 6, and 7 are already delayed and will continue to be delayed on a day-to-day basis until the designs are approved and the clarifications are determined. The ESA CS084 project controls group will need to perform a detailed analysis of the contractor's schedule to determine the validity of the contractor's assertions. In its July 2016 report, the PMOC advised that the LIRR and MTACC reached an agreement on the required number of SCADA sensors and that the contractor would be requested to submit a cost proposal to modify the SCADA design accordingly. However, at the mid-November 2016 Progress meeting, the ESA CS084 CM advised that the GEC has yet to provide a revised Scope of Work (SOW) to address this contract change. The revised SOW must be finalized before the contractor can submit a proposal for the work and, very importantly, give direction to its substation fabricator regarding equipment requirements.

## **b. Procurement**

As of the end of September 2016, the ESA Cost Report showed that total procurement activity for the project was 83.6% complete, with \$8.51 billion awarded out of the \$10.178 billion current projected budget.

Contract CQ033, Mid-Day Storage Yard Facility, was advertised on October 20, 2016, with bid sets available starting October 24, 2016. The Pre-Bid conference/site tour was held on November 10, 2016. The last addendum is scheduled to be issued no later than December 15, 2016, and bids are due on December 22, 2016. This contract will be an Invitation for Bid (IFB) procurement. Total bid advertisement delay since January 1, 2016, is six months.

MTACC received bids for Contract CH061A, Tunnel A Approach Structure, on August 2, 2016, and subsequently identified an apparent low bidder. MTACC deferred the Notice of Award and Notice to Proceed, however, based on the planned availability for construction site access and protection by limited railroad force account resources. MTACC awarded the contract on November 22, 2016. MTACC forecasts that the NTP date will be February 1, 2017, a three month delay from the previously forecast date of October 28, 2016. Total Notice to Proceed delay since January 1, 2016, is eight months.

The status of the remaining major near-term procurements is summarized below:

- CM015, 48<sup>th</sup> Street Entrance – Advertise January 5, 2017; Bids due on March 14, 2017. Total bid advertisement delay since January 1, 2016, is four months.
- CS086, Systems Package 2-Tunnel Systems – Advertise January 10, 2017; Bids due March 10, 2017. Total bid advertisement delay since January 1, 2016, is nine months.

## **c. Construction**

The PMT reported in its 3Q2016 Progress Report that total construction progress reached 65.6% complete versus 69.5% planned.

**CM005 - Manhattan South Structures:** MTACC had retroactively declared Substantial Completion (SC) for April 22, 2016.

Construction Progress: ESA stated that the contractor continued punchlist work activity in November 2016. The contractor completed pressure door installation this month. The project site was turned over to the CM007 contractor in early October 2016.

**CM006 – Manhattan North Structures:** As of October 1, 2016, MTACC slightly decreased its Forecast at Completion for CM006 to \$358,636,955. The MTACC forecast for Substantial Completion remained at June 1, 2017. Actual construction progress for September 2016 was 2.7% versus 2.8% planned. Cumulative progress through October 1, 2016, was 86.4% actual versus 88.9% planned. ESA continued review of the new CPM schedule.

Construction Progress: During November 2016, the CM006 contractor continued rehabilitation/remediation work at the 63<sup>rd</sup> St. Tunnels and Structures, items include: conduit, cable vault, pullboxes, manholes, crash wall extension. The contractor continued arch construction at GCT 3 Crossover and at Tunnel WB3. Duct bench construction continued for Tunnel WB3. The contractor continued BOH (Back of House) stair case construction, in the East and Westbound Caverns. The contractor also continued arch concrete construction at the 55<sup>th</sup> St. Vent Facility,

300 series Tunnels, and 50<sup>th</sup> St. Stairs and wall construction continued at Cross Passages 4, 5, and 6 and the Cross Flue. Contact grouting continued at Tunnel WB1 and the 50<sup>th</sup> St. air tunnel. The contractor completed work train track removal, between the Caverns and the Bellmouth.

**CM007 - GCT Station Caverns and Track:** As of October 1, 2016, MTACC Forecast at Completion for CM007 remained at \$712,311,733. The MTACC forecast for Substantial Completion remained at January 28, 2020. Actual versus planned monthly progress and cumulative progress will be reported when available from MTACC.

Construction Progress: During November 2016, the contractor continued to submit shop drawings and other submittals for review. ESA continued review of the Baseline Schedule and the Composite Schedule. The contractor continued preparation of PAC mockups in LIRR Amityville Yard. The first Track Mock-up was completed and inspected and a second mock-up will be built in the tunnel. MTA and the GEC continued to inspect prototype pre-cast concrete elements at the upstate NY precast manufacturer's facility. Production casting of beams and panels continued this month, and the contractor began to receive precast elements by month's end at the Amityville Yard, and is set to begin installation. Other activities included: continued replacement/repair of rebar couplers and waterproofing, in the East and Westbound Caverns, continued distribution of rail into the Queens tunnels, drainage cleaning, the start of placement of pneumatically applied concrete (PAC), and the completion of site inspection of takeover systems. The fifth monthly Construction Progress Meeting was held on November 10, 2016.

**CM014A – Concourse and Facilities Fit-Out Early Work:** MTACC reports that, through October 1, 2016, the project forecast cost at completion remains at \$57,717,875. MTACC continues to report that Substantial Completion will be retroactively declared for November 15, 2015. The MTACC Project Office has advised the PMOC that this retroactive date is the result of negotiations with the contractor and their bonding company. However, in its 3Q2016 Report MTACC states that this substantial completion date has not been agreed upon by both parties. Cumulative construction progress remained at 97.0% versus 100.0% planned. This has remained the same throughout 3Q2016 and into 4Q2016, and indicates that there has been very little progress since June 2016.

Construction Progress: Through November 30, 2016, progress in completing the remaining equipment testing continued to be very slow. This continues to include SCADA Programming and testing, which is only partially complete. Training of LIRR personnel in the SCADA system took place November 15 – 17, 2016. Through November 2016, the B30 Substation for this project has not been turned over to the follow-on CM014B contractor pending completion of testing. The F6 Breaker in the B30 equipment is designated for temporary/permanent power in the Caverns (CM007). The CM014A contractor continues to provide 2 electricians, 24/7, to man this feed in case there is a trip in the breaker. This is a change order to the contract and will remain in effect until the substation is turned over to CM014B. Another change order is being completed for the CM014A contractor to provide and maintain temporary air conditioning units in the equipment rooms to mitigate the large heat buildup in the rooms from the energized equipment. This issue will be permanently resolved once the CM014B HVAC system is operational. As of November 30, 2016, no date for when the HVAC system would be operational had been established.

**CM014B – Concourse and Facilities Fit-Out:** MTACC reports that, through September 1, 2016, the final Forecast at Completion remains at \$463,617,500. The Substantial Completion date remains January 21, 2019. Ongoing delays impacting the original August 18, 2018, Substantial



Completion date have included late critical structural steel submittals, late removal of existing unforeseen obstructions by MNR, and issues with the availability of subcontractors to perform finish work in the 4 Wellways. Actual construction progress for 3Q2016, was 5.2% versus 16.3% planned. Cumulative progress through October 1, 2016, was 24.4% actual versus 59.5% planned.

Construction Progress: Through November 30, 2016, Surveying in the Concourse continued and will be on-going throughout this contract.

Milestone #1 (Complete Terminal Management Center, Communication Room C-2 & Communication Closet C-5) – Architectural work is complete, along with punch list work. FM200 work still remains to be completed. The mechanical purge system must be designed and installed. This area has been turned over to the CS179 contractor and door locks have been changed.

Milestone #2 (50th St Room CR102, Tunnel Fan Room, Electrical Room #126 & ICC Room), June 4, 2016; now April 2017 – The Elevator #9 shaft corrective work, which was delaying this milestone, nears completion. The affected room is the Tunnel Fan Control Room. Punch List work is complete in the Electrical Room and the ICC. Access to these rooms has been given to the CS179 contractor.

Milestone #3 (Comm. Closets CC-C1, CC-C2, CC-C6, MTAPD and BCS Conduit), August 4, 2016 – Construction of the rooms is complete. FM200 controls installation is complete in all rooms. Fire alarm, power, lighting conduit, and wiring are complete. Punch list work nears completion. Access to these rooms has been given to the CS179 contractor.

Milestone #5A (Completion of 48th St. Entrance) November 25, 2016 – This is being delayed until April 2017 (previously March) due to previous delays in demolition of the MTA Building in the Concourse and transfer of personnel to the new 52<sup>nd</sup> St. Entrance. The personnel transfer is complete and the 48th St. construction access has been closed. Demolition of the MTA Building and access stair is underway. MTACC is considering transferring some of the scope of this milestone to the upcoming CM015 contract.

Concourse (Madison Yard): Stantec Repairs (repairs to MTA and privately owned building columns and related structure in Madison Yard) continue throughout. 3rd Party Inspections continue for concrete, shotcrete, rebar, masonry, bolting, welding, and firestops. Electricians continue with conduit and wiring throughout, where available. Plumbers continue to install overhead piping and rough-in piping in available bathrooms. Placement of CLSM (Controlled Low Strength Material) backfill nears completion, but continues along the UA Wall in various areas.

The contractor completed installation of 4” and 6” sprinkler mains in Service Corridor B3201. Header work continues in Zones 3-5. Placement of the final concrete slab invert is approximately 75% complete throughout the Concourse.

Shaft #3 (Elevators 01, 02 & Stair 22): Scaffolding has been erected and tube steel installed in the shaft. Forming and concrete placement of the head house began.

Biltmore Connection: Conduit relocation continues on the MNR Express Level at night and the Concourse Level during the day.

Wellways: Installation of furring rails was completed in Wellway #1. Installation of pull boxes and wire pulls were completed in Wellways #2, #3 and #4. Installation of furring rails began in Wellways #2, #3 and #4.

Dining Concourse Connection: Installation of permanent steel was forecast to begin November 1, 2016, but continued to be delayed for relocations by MNR.

Elevator T-01: Installation of permanent structural steel and decking nears completion and takes place intermittently at night.

East 48<sup>th</sup> St. Entrance: Work at the northeast corner was completed. Setting of precast concrete Manhole #6 was completed. Installation of 16” sewer pipe and 8” discharge was completed.

44<sup>th</sup> St. Vent Building: Overall fit out of the building continued. Installation of power conduit, the communication system, and ductwork continued in the first basement level. Wire pulling in the stairwell is ongoing. Disassembly, of the Gantry Crane began.

45<sup>th</sup> St. Entrance/Cross Passageway: Installation of rebar, forming and placement of concrete for stairs, and beam encasements was completed. CMU installation began.

East 50<sup>th</sup> St. Vent Building: Cleanup and final chipping from completed demolition was completed in the Elevator #9 shaft. CMU erection and edge of slab modifications began. Installation of feeder conduits from the Concourse to the shaft was completed. Installation of VFDs (Variable Frequency Drive) and conduit began in the 300 Park Building.

North Transfer Station: Excavation for utilities/footings and installation of structures began. Installation of underground plumbing began.

### **Systems Contracts:**

**CS084 – Traction Power Substations:** In its 3Q2016 Progress Report (3QPR), MTACC reports that the Budget and Forecast for the CS084 contract remained at the \$79,717,772 level previously reported. In the MTACC’s 3QPR, the portrayal of the contract’s Substantial Completion (SC) date is inconsistent in that the “Summary Schedule By Area” depicts a SC date of July 1, 2020, whereas, the SC is listed as December 24, 2019, elsewhere in the report. There is no explanation in the 3QPR as to why this inconsistency occurs. As of the mid-November 2016 Monthly Progress meeting, it was noted that some of the design issues continue to remain unresolved and the impact that any additional delay in resolving these design issues will have on the contract SC date is yet to be determined.

In its 3QPR, MTACC shows a progress curve for the CS084 contract that presents actual cumulative contract progress as 11.1% versus a planned 54.2%; numbers that are based on actual versus projected costs, not physical construction efforts. The contractor contends that funds have not been expended as originally projected due to the delays in approving and moving forward with the substation designs and equipment. Thus, the variance in the actual versus projected costs. An analysis of the status of the work activities shown on the approved baseline schedule is necessary to determine the status of the progress of physical work on this contract.

Design Progress: The contractor continued with the transmission of contractual submittals and its design development of the substations. As noted in previous PMOC reports, the contractor continues to assert that previous delays in receiving comments back from the MTACC on the C05 facility switchgear, the number of SCADA point sensors, and the general C08 substation design impacted its ability to meet its own original design, procurement, fabrication, and installation schedules. The ESA CS084 CM previously acknowledged that these comments were taking too long to process and met with LIRR senior management and the General Engineering Consultant

(GEC) to focus on the priority of these designs. While the LIRR took action to reduce this backlog of responses, at the mid-November 2016 Monthly Progress meeting, the CS084 CM advised that there had been some improvement in the turn-around time for comments on contractual submittals; but noted that there was still room for significant improvement. The ESA CS084 CM indicates that there are still 156 (99 of which exceed the contractual 30-day design review turn-around time) out of 1,590 submittals that are outstanding. The PMOC previously reported that the LIRR and MTACC reached an agreement on the required number of SCADA sensors and that the contractor would be requested to submit a cost proposal to modify the SCADA design accordingly. However, at the mid-November 2016 progress meeting, the ESA CS084 CM advised that the GEC has yet to provide a revised Scope of Work (SOW) to address this contract change to finalize the SCADA points. The revised SOW must be finalized and provided to the contractor before the contractor can submit a proposal for the work; and, very importantly, give direction to its substation fabricator regarding equipment requirements. The GEC continues to work on design changes and CPRs to address the penetration to the track level and room beam height issues at the Vernon (C05) facility. Implementation of these design changes must be negotiated with the CS179 contractor and progressed before the CS084 contractor begins work in the C05 facility; however, as of mid-November 2016 Monthly Progress meeting, these design efforts and CPRs remained outstanding. One other previously reported design issue that needs timely resolution is the routing of DC cables at the Vernon (C05) substation facility. The identification of this issue was made several months ago, and the GEC recently developed a re-design to remedy the problem. The MTACC determined that the remediation work will be accomplished under the CS179 contract and negotiations with the CS179 contractor must still be held before a contract change order to proceed with the work can be issued. As of the end of November 2016, a forecasted date for the completion of this remediation work at the Vernon facility remains undetermined. The PMOC continues to have concerns about the various design issues being identified and the length of time it is taking to provide responses and designs to resolve the various issues. MTACC needs to prioritize with the GEC the process to provide timely submittal responses and designs so as to preclude any further delays to the contract.

Construction Progress: At the mid-October 2016 monthly progress meeting, MTACC advised that the extra L3 electrical service work, including additional work related to grounding and testing of transformers and electrical distribution panels, was complete. However, it was also noted at the meeting that two design issues, not related to the L3 electrical service contract modification, needed to be addressed before energization of the L3 electrical service to the signal huts takes place. As of the end of November 2016, two of the signal huts (Nos. 2 and 5) are energized, while two more (Nos. 1 and 6) must have the design issues addressed before they can be energized. As noted in previous reports, the contractor continued to advise the CS084 ESA CM that the water infiltration issue at the Vernon facility needs to be permanently mitigated before any equipment is installed. The contractor contends that the continuing water infiltration issue is precluding the commencement of any physical work in the affected substation facilities. At the mid-November 2016 Monthly Progress meeting, MTACC advised the contractor that, although water infiltration remediation efforts were underway at the Vernon facility, the contractor's access to the affected room would be delayed another two months from December 2016 to February 2017. This notification immediately drew a response from the contractor, who asserted that this action would cause further delays to the already impacted contract schedule. The PMOC requested an update on an issue raised in an earlier monthly progress meeting regarding the contractor's inability to

perform “dynamic” testing of the C08 substation because the conduit and manhole from the C08 substation to the track would not be installed by another ESA contractor in time for the testing to occur. The ESA CM indicated that, while this was still under investigation, several options were being considered and the GEC has been tasked to prepare a recommendation.

**CS179 – Systems Package 1:** In its 3Q2016 Progress Report (3QPR), MTACC shows a Budget and Forecast for the CS179 contract of \$606,983,540. MTACC shows a progress curve for the CS179 contract that presents actual cumulative contract progress as 25.7% versus a planned 49.5%; numbers that are based on actual versus projected costs, not physical construction efforts. As presented, these progress numbers continue to imply that the contract is significantly behind schedule. In the August 2016 progress meeting, MTACC requested that the contractor expedite its submission of an updated Integrated System Test Plan (ISTP) and ISTP schedule so that a comprehensive evaluation of the contract schedule could be performed. While MTACC has received a draft ISTP schedule from the contractor, the CS179 CM indicates that MTACC has comments on the draft that need to be addressed before the schedule becomes acceptable. MTACC will be providing comments in early December 2016 to the contractor on the ISTP schedule. Consequently, as of the end of November 2016, the submission of a complete and comprehensive ISTP schedule remains as an open item. As noted in previous PMOC reports, Modification No. 18 to this contract revised the original Milestone, access restraint, Option exercise, and Substantial Completion (SC) dates. The new SC date was established as July 1, 2020, an approximate seven-month delay from the original November 19, 2019, date. In its 3Q2016 Progress Report, MTACC advised that, while the contractor is now showing a September 2020 SC date on whatever monthly schedule update is being referenced, MTACC is confident that the July 2020 SC can still be met. The discussion of any potential delay to the established July 2020 SC date has not taken place at any of the monthly progress meetings attended by the PMOC. As of the end of November 2016, all but two Contract Options (Option Nos. 4 and 5) were exercised. The ESA CS179 CM indicates that these remaining two contract Options will be exercised in 2017 as per the schedule identified in Contract Modification No. 18. MTACC advised that, as of the end of October 2016, the MTA finalized, and sent a letter to the FTA, requesting a waiver from the Buy/Ship America requirements in the contract for the Split System HVAC units proposed for this contract. The finalization of any Buy/Ship America waiver request for the Main Display Panel Monitors proposed for this contract remains as an uncompleted open item that, in the PMOC’s opinion, poses a significant risk to the successful and timely completion of this contract. As of November 30, 2016, MTACC was not able to forecast a date for when the MTA Legal staff will finalize the completion of a waiver request letter for the Main Display Panel Monitors.

Design Progress: MTACC indicated in its 3Q2016 Progress Report (3QPR) that the completion of the Control System Designs will occur in December 2016, nine months later than that shown in the baseline schedule. Information presented at the most recent monthly progress meeting indicates that nine (9) of the ten (10) Control System Final Design Review (FDR) meetings occurred by the end of November 2016. The last Control System (CCTV & SMS) FDR meeting has yet to be scheduled, and the CS179 CM indicates that there are still some design issues that need resolution before the FDR meeting can occur. Previously, the PMOC reported that it believed that the December 2016 forecast date for completion of all 10 Control System Designs was achievable as long as MTACC continued to aggressively pursue the closure of design questions. However, any further delay in the resolution of the design issues for the CCTV and SMS systems could jeopardize the successful achievement of that forecast. The contractor continues to assert

that the backlog of comments from the MTA on design submittals and Requests for Information (RFIs), as well as the extended time being taken to address facility design issues, is causing delays to the timely progression of the contract. MTACC will need to evaluate these assertions against an updated contract schedule that includes both the revised Milestone dates developed as part of contract Modification No. 18 and a complete and comprehensive Integrated System Test Plan schedule.

Construction Progress: New York City's construction moratorium began on November 18, 2016, and extends through the end of 2016. As a result, the contractor can only perform work inside facilities and in the tunnels. At the most recent CS179 Monthly Progress meeting, the contractor claimed that the moratorium was impacting the progression of planned contract work at the 2<sup>nd</sup> Avenue facility. The contractor continued various elements of work (concrete work, installation of conduit, cable, fire standpipe installations, fire stopping, equipment racks, etc.) at the B10; Roosevelt; Vernon; 12<sup>th</sup> St.; 39<sup>th</sup> St.; Queens Plaza; and 63<sup>rd</sup> St. facilities. Cable splicing activities continued in Tunnel Tracks A, B/C, D, and axial fans for the Vernon facility were installed in November 2016. The contractor reported that water infiltration remediation work was continuing at the Vernon facility and that some minor touch up was required for the water infiltration remediation work at the 23<sup>rd</sup> Street and 29<sup>th</sup> Street facilities. Water infiltration remediation will start next at the Roosevelt Island facility. MTACC continued to indicate that it would, on a bi-monthly basis and after every major rainfall, inspect the various locations where water infiltration remediation work was performed to determine if the remediation efforts were effective.

The contractor reported that Kratos, its Systems design subcontractor, has 80 "open-frame" Control System equipment racks assembled in its New Jersey facility and that it is moving forward with the procurement of equipment that will be mounted in the racks. Kratos is moving forward on the procurement of Control Systems equipment based on the Control System final designs presented at the various Final Design Review (FDR) meetings. The PMOC notes that, while the MTACC contends that some of the Control Systems equipment has been "approved" by the LIRR, it has yet to receive any "formal" acceptance" or "approval" of any of the Control Systems final designs from the LIRR. The risk here is that if the LIRR, for whatever reason, does not approve any specific Control System's final design, any equipment already procured for that particular Control System might need to be replaced to meet the LIRR requirements. The PMOC will continue to follow this important aspect of the design process.

There are now seven (7) Stop Work Orders (SWOs) on this contract. With regard to two of the SWOs, one is related to the requirement for an Undercar Deluge System at GCT and the other is related to the requirement for a transformer at 43rd Street. These two original work scope items will be deleted from the CS179 contract via a contract modification. Three SWOs, all of which need to be resolved by MTACC, are comprised of water infiltration issues in the 29th Street Facility Power Room, the Fire Stand pipe installation in the Vernon facility, and condenser pipes and drainage issues at the 2nd Avenue facility. The PMOC requested that the CS179 CM provide the PMOC with information about the remaining two SWOs and a listing of all the SWOs with an updated status of each SWO.

**Contract VS086, Systems Package 3, Signal Equipment Procurement:** The GEC design was completed but is now being revised to incorporate the requirements of Positive Train Control (PTC). Additional issues requiring resolution are as follows:

- Change from incandescent to LED technology for signal unit display.
- Changes to the ATT-20 track circuits in the diamond crossovers. The PMOC notes that this issue is not included in the current MTACC 3Q2016 Report.

### **Queens Contracts:**

**CQ032 – Plaza Substation and Queens Structures:** As of October 1, 2016, MTACC reported the Forecast at Completion for CQ032 remains \$263,913,767. MTACC reports the Forecast for Substantial Completion (SC) slipped to November 18, 2016. In November 2016, ESA advised that the SC has slipped further into January 2017. Cumulative progress through October 1, 2016, was 98.3% actual versus 98.7% planned.

Construction Progress: During November 2016, the CQ032 contractor continued punch list activity. The contractor continued electrical and architectural finishes work in the Yard Services Building. The CQ032 contractor completed Phase 1 water remediation activity in C06 and C07 substation equipment rooms, and is preparing to begin Phase 2 grouting repairs. ESA continued contract de-scoping activity to transfer remaining work items to other contracts: to contract CS179, work at the 23<sup>rd</sup> St., fireproofing of the Amtrak bridge over the substations, and painting in the Plaza facility rooms; to contract CQ033, all yard site work including landscaping, paving and curbs construction. The CQ032 contractor continued preparation of as-built/closeout documentation.

### **Harold Interlocking Contracts:**

**CH057 – Harold Structures Part III:** MTACC’s Forecast at Completion for the CH057 contract remained at \$91,818,885 during September 2016. The MTACC forecast for Substantial Completion was reduced by two weeks to September 27, 2017, although the MTACC did not offer an explanation for the reduction. At the November 30, 2016, CH057 progress meeting, the ESA Construction Manager announced that no additional contract options will be exercised. As a result, only 3 of the original 15 options contained in the contract will be exercised. Actual construction progress for September 2016 was 7.5% versus 15.9% planned. Cumulative progress through September 30, 2016, was 53.3% actual versus 68.9% planned.

Construction Progress: During November 2016, the CH057 contractor continued to place sidewall concrete and shotcrete in the TBM reception pit area of the Tunnel D East Approach Structure, continued to place roof slab concrete in the soldier pile area of the Approach Structure, and began to place re-bar and sidewall concrete in the secant pile area of the Approach Structure under the 39<sup>th</sup> St. bridge. Additionally, the contractor continued to construct trackbed for the LIRR ML2 Track on both sides of the 48<sup>th</sup> St. undergrade Bridge, as well as miscellaneous excavation and conduit installation at the 39-S6 retaining wall.

**CH057A – Part 3 Westbound Bypass:** MTACC’s Forecast at Completion for the CH057A contract remained at \$156,982,212 during September 2016. The MTACC forecast for Substantial Completion remained at November 8, 2017. Actual construction progress for September 2016 was 2.5% versus 3.0% planned. Cumulative progress through September 30, 2016, was 40.0% versus 40.5% (based on cost incurred rather than actual construction).

Construction Progress: The “jacked box” tunnel shield was not able to resume operation during November 2016 while engineering design continued to stiffen the jacking frame in order to prevent the uplift problem that caused the box to veer off its excavation design course. Nonetheless, the CH057A contractor continued to place rebar for the sidewalls in the West Approach Structure,

began placement of rebar for the invert slab and sidewalls for approximately 200' in the East Approach Structure, and completed excavation of and began preparations to install secant piles around the perimeter of the pump station.

#### **Railroad Force Account Contracts:**

**FHA01 – Harold Stage 1 Amtrak:** MTACC's Forecast at Completion for FHA01 remained at \$18,824,861 during September 2016. The MTACC forecast for Substantial Completion was extended by approximately 3 weeks to January 24, 2017, although MTACC did not offer an explanation for the extension. Actual construction progress for September 2016 was 0.0% versus 0.0% planned. Cumulative progress through September 30, 2016, was 98.8% actual versus 100.0% planned.

Construction Progress: Amtrak did not perform any significant Stage 1 construction during November 2016.

**FHA02 – Harold Stage 2 Amtrak:** MTACC's Forecast at Completion for FHA02 remained at \$60,150,231 during September 2016. The MTACC forecast for Substantial Completion remained at May 20, 2018. Actual construction progress for September 2016 was 0.7% versus 4.7% planned. Cumulative progress through September 30, 2016, was 84.8% actual versus 81.0% planned.

Construction Progress: During November 2016, Amtrak Electric Traction (ET) personnel completed construction of the new H22 Full Tension Air Break on Line 2 in Harold Interlocking and demolition of the existing H22 air break. Additionally, ET personnel began catenary construction over the new RPR (Relocated Primary Route) in Harold Interlocking and Loop 1A Tracks.

**FQA65 – Loop Interlocking Amtrak:** MTACC's Forecast at Completion for FQA65 remained at \$33,287,863 during September 2016. The MTACC forecast for Substantial Completion remained at July 16, 2023. Actual construction progress for September 2016 was 0.0% versus 1.0% planned. Cumulative progress through September 2016 was 19.8% actual versus 56.8% planned (based on cost incurred rather than actual construction).

Construction Progress: During November 2016, Amtrak Communications and Signal (C&S) personnel completed signal cable trough relocation at the B927 catenary pole along Loop 2. This will allow the CH057 contractor to install the foundation for the new catenary pole at that location.

**FHL01 – Harold Stage 1 LIRR:** MTACC's Forecast at Completion for FHL01 remained at \$24,379,363 during September 2016. The MTACC forecast for Substantial Completion was reduced by 3 months to May 1, 2017. Actual construction progress for September 2016 was 0.3% versus 0.0% planned. Cumulative progress through September 30, 2016, was 88.1% actual versus 100.0% planned.

Construction Progress: LIRR Third Rail personnel completed installation of third rail on the new RPR Track in Harold Interlocking and continued installation of conduit for the #4164, #4183, #4192, and #4195 third rail switches during November 2016.

**FHL02 – Harold Stage 2 LIRR:** MTACC's Forecast at Completion remained at \$92,932,559 during September 2016. The MTACC forecast for Substantial Completion remained at April 15, 2020. Actual construction progress for September 2016 was 1.2% versus 1.1% planned. Cumulative progress through September 30, 2016, was 94.7% actual versus 97.7% planned.

Construction Progress: During November 2016, LIRR Signal personnel continued to pull and terminate signal cables at the “H1” and Location 30 CILs, pull signal cables from the “H2” and “H6” CILs to their respective signal cases, make ESA501 (GEC designation) signal circuit revisions at the existing Harold CIL, make signal revisions at the “H5”, Location 23, and Location 30 CILs, install signal trough along new LIRR ML2 Track at the 48<sup>th</sup> St. bridge, and prepare to remove existing Signal Bridge 24.

#### **d. Quality Assurance and Quality Control (QA/QC)**

**ESA Quality Staff:** The PMOC remains concerned about the adequacy of the ESA quality staff. A new Quality Assurance Manager has been hired and began his assignment in October 2016. The Deputy Quality Assurance Manager went on a six-week leave of absence in mid-November 2016, effectively leaving the staff with two fewer individuals than it had one year ago. ESA is actively recruiting qualified individuals to fill either one or two positions. They are particularly interested in an individual with railroad systems experience.

**Quarterly Quality Oversight (QOQs):** During November 2016, 3Q2016 QOQs were finalized and reports distributed to the ESA contractors. The ESA Quality staff conducted a review and lessons learned workshop after all QOQs were finalized. Findings and supplementary procedures will be developed and distributed based on this workshop. This is the first time that an ESA Quality Manager has taken the initiative to conduct a lessons learned workshop following their staff’s performance of a QOQ for the quarter. The PMOC was invited to attend the workshop and observed that there was a spirited discussion among the ESA Quality Staff. The PMOC believes that the resultant QOQs will be conducted more consistently and with the auditors paying more attention to the questions and the responses that they receive.

**GEC Quality:** An internal audit of the GEC was conducted on November 10, 2016. Thirteen of fifteen findings from the previous audit were identified as “closed”. Potential revisions to quality procedures are ongoing. A calendar of subsequent audits must be prepared. One observation noted during this audit was the lack of a uniform comprehensive tracking mechanism to facilitate identification of all revised design documents to the construction manager during construction. No procedure of this nature is included in the GEC Procedures Manual. This issue may lead to confusion and error during construction and delay during the closeout process. There was no action item assigned to develop such a procedure.

**CM005:** Punchlist work continues at a slow rate. Approximately fifteen (15) NCRs remain open.

**CM007:** The contractor completed construction of a revised track mock-up in the Amityville Yard. The revised track mock-up was constructed using a modified concrete design mix with a lower volume of fiber reinforcing to improve flow characteristics beneath track support blocks. Meetings with LIRR regarding acceptance of the Resilient Tie Blocks are ongoing. The final mock-up will be inspected and approved by ESA and LIRR when it is acceptable.

The following activities are in progress: cavern wall rebar and waterproofing installation; south back of house column rebar and formwork; and cleanout of track drains.

**CS179:** Assembling of switchgear at various facilities continues. The contractor is installing sound attenuators and vent fans at the Vernon Facility and installed rebar, and formwork and placed concrete for the Second Avenue exterior MER Walls.





Harold has changed. Previously, in the September 1, 2016 IPS, this work was reported to be the requisite Signal Power separation work. Currently, in the October 1, 2016 IPS, the controlling critical work is related to the approval of the Ansaldo simulation software. [REDACTED]

[REDACTED] Table 2.2, below, shows the current IPS critical path of work through Harold contracts has changed somewhat since the previous update. The changes are described in further detail below the table.

**Table 2-2: October 1, 2016 IPS Critical Path**

<b>Contract &amp; General Activities</b>	<b>Duration (CDs)</b>	<b>Start</b>	<b>Finish</b>
FHL02: Ansaldo Software/Hardware Revisions, Simulations	76	01-Oct-16	16-Dec-16
FHL02: CIL Cutovers Pre-Testing and Cutovers	520	16-Dec-16	20-May-18
CH057D: NE Quadrant Preparatory Work, Outage, and B/C Approach Preparatory Work	116	21-May-18	14-Sep-18
FHL04: Switch Installation & Removals	71	15-Sep-18	26-Nov-18
CH058A/CH058: Track B/C Approach Work	638	26-Nov-18	25-Aug-20
FHL04: Testing & Cutover of 4C	46	26-Aug-20	11-Oct-20
Train Contract Staffs LIRR Prior to 3 Months Period	30	14-Oct-20	13-Nov-20
LIRR 3 Month Period	90	13-Nov-20	11-Feb-21
<b>Target Revenue Service Date</b>			<b>11-Feb-21</b>
[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
<b>Late Revenue Service Date</b>			<b>13-Dec-22</b>

Discussion of Progress Leading up to Critical Start of CIL Pre-Cutover Testing:

ESA has reported that there are two paths of work controlling the start of critical Harold CIL Cutover pre-testing – completion of CIL software package updates and completion of the signal power separation. The PMOC analyzed these two paths of work over the update period in order to determine progress made and/or delays encountered.

Signal Power Separation:

As of the data date of the previous IPS update, September 1, 2016, work to get Signal Power Separation ready controlled the program’s Critical Path through Harold Interlocking. This work involved the fabrication and installation of transformer hatches that were reported to be necessary for beginning the implementation of the cut-over sequencing plan, as follows:

<b>Activity ID</b>	<b>Activity Name</b>	<b>Remaining Duration</b>	<b>Start</b>	<b>Finish</b>
FHL02-30200	Fabricate hatch - By contractor through CH057	11	26-Aug-16	16-Sep-16
FHL02-30230	Issue PO to Selco By CH057	14	27-May-16	21-Sep-16
FHL02-30240	Install Hatch (2 weekends) - By contractor through CH057	4	17-Sep-16	25-Sep-16
FHL02-30220	Install Transformer	2	24-Sep-16	25-Sep-16
FHL02-2220	Implementing Cut-over Sequencing Plan - Phase 0	20	26-Sep-16	21-Oct-16
FHL02-5140	Implementing Cut-over Sequencing Plan - Phase I	20	24-Oct-16	18-Nov-16
FHL02-30140	Implementing Cut-over Sequencing Plan - Phase II	20	21-Nov-16	19-Dec-16
CH053-2080	LIRR Cutover Signal Power Separation and MG Set	0		19-Dec-16
FHL02-3260	LIRR Cutover MG SPS (SPS Complete) w/o EO Control	0		19-Dec-16
FHL02-CSR300	Pre-Cutover testing - H1/H2/H5/H6/Loc 30	350	20-Dec-16	04-May-18

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Analyzing the progress of this work over the update period shows that no progress was made on the hatch fabrication as of October 1, 2016, and this impacted successor work of the hatch installation. Additionally, there were changes to activity descriptions, such that Phases 0 through II of the Cut-over Sequencing Plans are now referred to as Phases I through III, and it appears that a Phase IV was added. These changes and the comparative analysis is summarized as follows:

Act. ID	Act. Description	IPS Update:		1-Sep-16		1-Oct-16		Delay / (Savings) (CDs)
		Start	Finish	Start	Finish	Start	Finish	
FHL02-30200	Fabricate hatch - By contractor through CH057	8/26/2016	A 9/16/2016	8/26/2016	A 10/17/2016			31
FHL02-30230	Issue PO to Fabricator By CH057	5/27/2016	A 9/21/2016	5/27/2016	A 9/20/2016	A		-1
FHL02-30240	Install Hatch (2 weekends) - By contractor through CH057	9/17/2016	9/25/2016	10/22/2016	10/30/2016			35
FHL02-30220	Install Transformer	9/24/2016	9/25/2016	10/29/2016	10/30/2016			35
FHL02-2220	Implementing Cut-over Sequencing Plan - Phase 0	9/26/2016	10/21/2016	11/16/2016	12/14/2016			54
FHL02-5140	Implementing Cut-over Sequencing Plan - Phase I	10/24/2016	11/18/2016	12/15/2016	1/17/2017			60
FHL02-30140	Implementing Cut-over Sequencing Plan - Phase II	11/21/2016	12/19/2016	1/18/2017	2/14/2017			57
CH053-2080	LIRR Cutover Signal Power Separation and MG Set		12/19/2016		n/a			
FHL02-3260	LIRR Cutover MG SPS (SPS Complete) w/o EO Control		12/19/2016		2/14/2017			57
FHL02-CSR300	Pre-Cutover testing - H1/H2/H5/H6/Loc 30	12/20/2016	n/a	12/19/2016	n/a			(1)

CIL Cutover Software Package Updates:

As of the data date of the previous IPS update, September 1, 2016, the current critical path of work leading up to CIL Pre-Cutover Testing was not critical [REDACTED]. [REDACTED]

[REDACTED] An analysis of this work between the previous IPS update and the current IPS update is as follows:

Act. ID	Act. Description	IPS Update:		1-Sep-16		1-Oct-16		Start Delay / (Savings) (CDs)
		Start	Finish	Start	Finish	Start	Finish	
HCIL11030	Ansaldo CSE Software/Hardware/TSR revision change submittal	9/1/2016	10/14/2016	9/26/2016	10/14/2016			25
HCIL11080-	GEC simulates ASTS H4 submission/ LIRR reviews GEC comments	10/17/2016	11/18/2016	10/17/2016	11/18/2016			0
HCIL11050	ASTS addresses comments and resubmits	11/21/2016	12/19/2016	11/21/2016	12/16/2016			0
HCIL11100	H4 SW ready for H5/H6/L30 Pretesting		12/19/2016		12/19/2016			0
FHL02-CSR300	Pre-Cutover testing - H1/H2/H5/H6/Loc 30	12/20/2016	n/a	12/19/2016	n/a			(1)

Discussion of Changes to Critical Planned Work

The PMOC has identified the following changes to critical forecasted work at Harold contained in the October 1, 2016 IPS compared to the previous month's update:

- As noted above, the controlling critical path of work at Harold, leading up to the CIL Pre-Cutover testing, has changed from Signal Power Separation to Ansaldo Software simulations and approvals.
- The total planned duration of Pre-Cutover testing has remained approximately the same, at approximately 350 work days. However, this work was separated into two different into two separate activities in the October 1, 2016 IPS update, as follows:  
FHL02-CSR300: Localized Pre-testing – H1/H2/H5/H6/Loc 30 and FHL02-CSR1160: Pre-Testing – H1/H2/H5/H6/Loc 30.

**90-Day Look-Ahead of Program Critical Milestones:**

Table 2-3, below, shows important 90 day Look-Ahead milestone dates reported in the October 1, 2016 IPS.

**Table 2-3: Critical Milestones 90 Day Look-Ahead (from ESA October 1, 2016 IPS)**

Activity ID	Activity Name	Start	Finish	█
<b>FHL02: Harold Amtrak and LIRR Force Account</b>				
FHL02- CSR290 / HCIL11100	Ready to start testing / revision / H4 SW ready for H5/H6/L30 Pretesting		16-Dec-16	█

**Program Secondary Path – Manhattan/Systems:**

The PMT’s October 1, 2016 IPS Progress Report again noted a change in the Manhattan/Systems longest path of work related to controlling work. The controlling work for these areas is now led by the East Cavern GCT fabrication and erection of precast concrete elements, as it was two IPS updates ago, in the August 1, 2016 IPS update. In the previous IPS update, this work was reported to be Special Track Work (STW) submissions and continued through the STW fabrication and delivery. The PMT noted this in its IPS Report, and indicated that the September 1, 2016 IPS update incorrectly reported the STW as critical. The forecasted completion of CS179 █ remained unchanged at July 1, 2020 and 105 calendar days, respectively.

**Upcoming Contract Procurements:**

Table 2-4, below, shows the status of current and upcoming Contract procurements, as reported in the October 1, 2016 IPS Progress Report, with a discussion of any changes below the table.

**Table 2-4: Future Procurement Schedule**

<b>Contract Description</b>	<b>Advertise Date</b>	<b>Bid Date</b>	<b>NTP</b>	<b>Project Period</b>	<b>Substantial Completion</b>
<b>CH061A Tunnel A</b>	5/23/2016 (A)	08/2/2016 (A)	01/27/2017	16 Months	05/29/2018
<b>CQ033 Mid-Day Storage Yard</b>	10/13/2016	12/30/2016	02/22/2017	40 Months	06/22/2020
<b>CM015 48<sup>th</sup> Street Entrance</b>	01/05/2017	03/14/2017	05/01/2017	30 Months	10/18/2019
<b>CS086 Systems Package 2: Signal Installation</b>	01/10/2017	03/10/2017	05/08/2017	38 Months	07/01/2020
<b>QMP-1 Civil / Neighborhood Beautification</b>	10/20/2016 (A)	11/17/2016	1/10/2017	10 Months	10/31/2017
<b>QMP-2 Lighting / CCTV Security</b>	12/15/2016	2/15/2017	4/15/2017	13 Months	5/15/2018

All forecasted work related to the procurement of CH061A: Tunnel A, has remained unchanged over the update period. The NTP for the CH061A Contract is still planned to occur on January 27, 2017, and have a duration of 16 months.

The forecasted Bid Date for CQ033: Mid-Day Storage Yard improved by eight calendar days over the update period, from December 30 to 22, 2016. The planned remaining milestone dates related to the procurement of CQ033 stayed the same in the October 1, 2016 IPS compared to the previous update.

All forecasted dates for the procurement of CM015: 48<sup>th</sup> Street Entrance remained the same over the update period.

Regarding the forecasted dates for the procurement of future contract CS086 - Systems Package 2, Signal Installation, all milestone dates and Project Period dates remained the same since the previous IPS update.

The PMT added two additional Contract procurements to its IPS Report, as noted above at the end of Table 4-2 – QMP-1: Civil/Neighborhood Beautification and QMP-2: Lighting/CCTV Security.

**PMOC Concerns:**

The following summarizes the PMOC's concerns about the IPS:

1. The PMOC continues to be concerned about the open ends contained within the Critical Path Method (CPM) Schedule network of the IPS. While the PMT has been making progress in logically connecting these activities to predecessors and/or successors, there continue to be activities with open ends. There was no progress made over the update period related to correcting this issue for ESA/LIRR Operational Readiness activities. The PMOC does not understand why this is taking so long to fix (approximately five months) and recommends that the next IPS update contain a complete CPM Network with no exceptions unless specifically identified and explained by the PMT.
2. The PMOC continues to note a trend in Force Account Work not being completed as scheduled, due to a lack of LIRR and Amtrak resource personnel needed to perform the work. Due to the concern that this work may continue to have an adverse impact on the Project, the PMOC has been tracking this work and is planning to incorporate an analysis of any noted delays in future reports.
3. The PMOC is very concerned that the PMT does not have a defined scope of work related to the Program Critical CIL pre-Cutover testing that is forecasted to occur soon. The PMT was not able to tell the PMOC what percentage of this testing would be able to be performed under the new "localized pre-testing" activity compared with the total amount of testing needed. This lack of definition, and the fact that the IPS continues to show changes to this work related to added activities and changed relationships, which causes the controlling critical work leading up to the CIL pre-Cutover testing to change, is a major concern to the PMOC. The PMT has stated that it cannot obtain this information from LIRR, but this does not alleviate the PMOC's concern.
4. The PMOC is concerned with the controlling critical path shift from work related to the signal power separation to the CIL Cutover software. [REDACTED]

[REDACTED] This represents a massive shift over an approximately 30-day update period and is worrisome to the PMOC. Furthermore, while the critical work contains an activity for LIRR review and successor activity for revisions based on any comments, there are no follow-on activities for another round of review and ultimately approval. The PMOC notes that if these may be necessary activities that could have the potential to further impact the start of critical CIL Pre-Cutover testing.

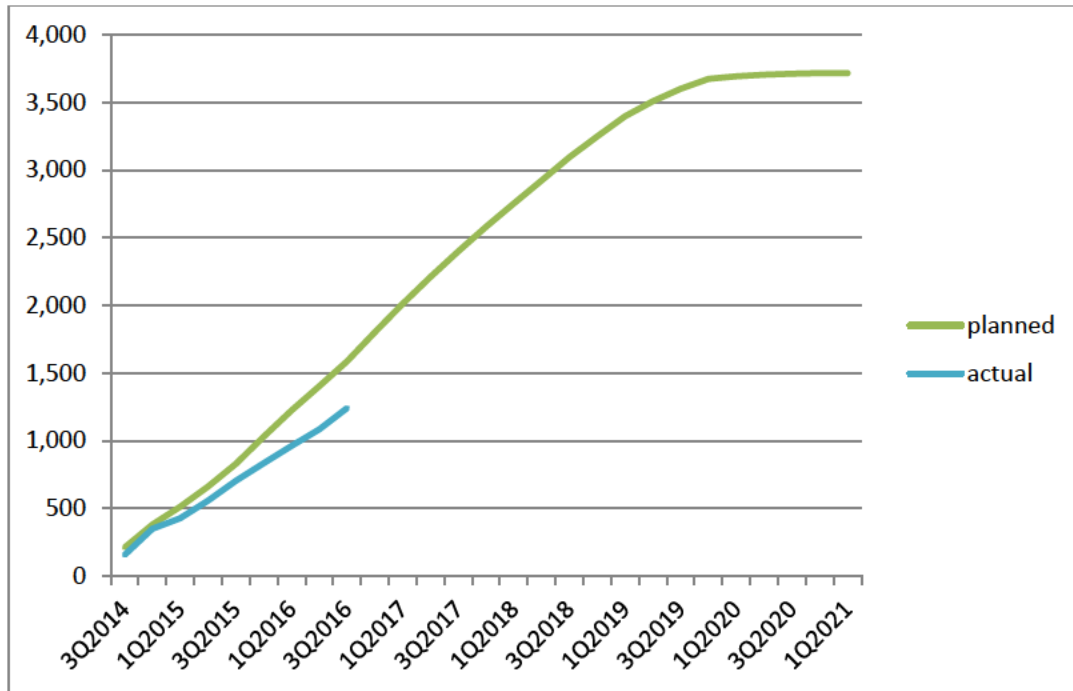
### 3.0 COST DATA

**Funding:** The approval of the 2015 – 2019 Capital Plan has eliminated the cost uncertainty associated with funding interruptions, at least in the near term. ESA indicates that it will request further amendments to the MTA Capital Plans (both 2010 to 2014 and 2015 to 2019), seeking funding for the Owner Controlled Insurance Program (OCIP) and Force Account related overruns and other project scope additions.

**Budget/Cost:** The ESA 3Q2016 Progress Report (October 1 data date) shows that the actual total project progress was 65.9% versus 68.4% planned against the Current Baseline Budget (CBB) of \$10.178 billion. Total actual construction progress was 65.6% versus 69.5% planned based on the total invoiced amount of construction (details of project budget and expenditures are shown in Appendix B, Tables 2 and 3). A PMOC review of the ESA Planned Cash Flow Chart shows that it is based on a February 2021 completion date. This now aligns with the Target Revenue Service date resulting from the July 1, 2016, data date of the IPS. Through 3Q2016, the actual cumulative construction amount invoiced is 94.4% of what was planned. Since the 2014 re-baseline, the actual cumulative construction amount spent is 78.2% of the planned construction spending through 3Q2016. As shown in Table 3-1, the divergence between plan and actual spending is increasing, suggesting a worsening trend. The PMOC is concerned that the continued inability to achieve the planned construction spending rate may impact ESA's ability to achieve their target Revenue Service Date. This spending trend and future projections are shown in Tables 3-1 and 3-2 below.

**Table 3-1: Planned vs Actual Construction Cash Flow**

The "planned" curve shows construction cash flow that was planned by ESA at the 2014 re-baselining in order to reach revenue service by the 1Q2021. The vertical axis is \$million, starting at \$0 at the time of the re-baselining. The "actual" curve, up to the 3Q2016, shows actual construction spending as reported by ESA.

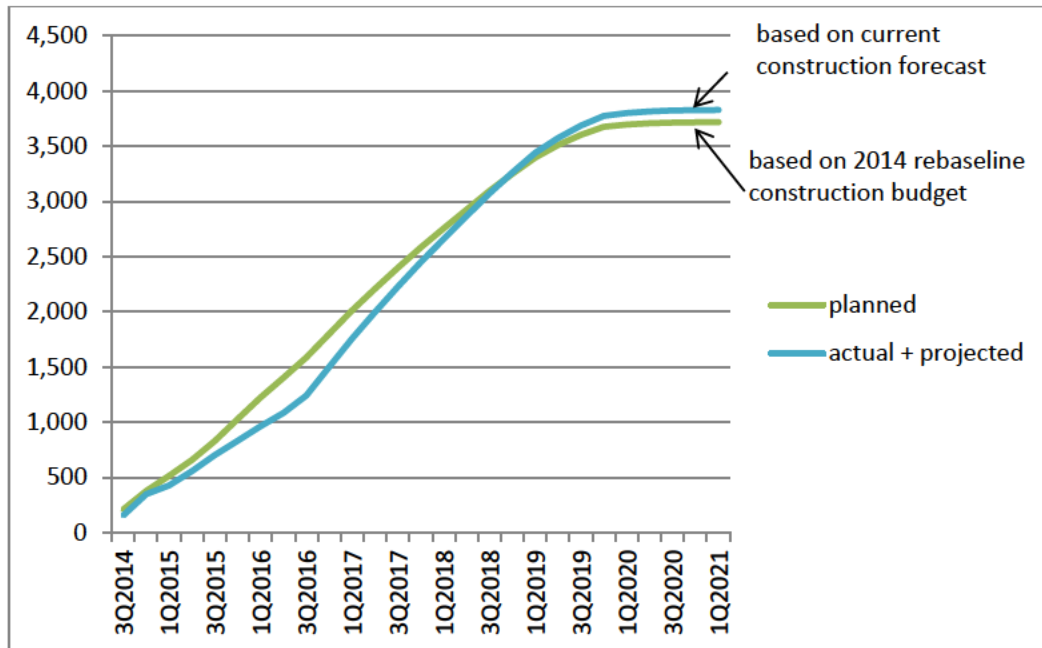


**Construction Cash Flow at 3Q2016 – Starting at 2014 Rebaseline**



**Table 3-2: Actual & Projected Construction Cash Flow to Early RSD**

The "planned" curve shows construction cash flow that was planned by ESA at the 2014 re-baselining in order to reach revenue service by the 1Q2021. At that time, the total construction budget was \$7.38 billion. The vertical axis is \$million, starting at \$0 at the time of the re-baselining. The "actual" curve, up to 3Q2016, shows actual construction spending as reported by ESA. The "projected" portion of that curve, from 1Q2016 through 1Q2021, shows the PMOC's projected construction spending rate to reach the current \$7.48 billion final construction budget by the 1Q2021.



**Construction Cash Flow - Starting at 2014 Rebaseline**

Several significant items were discussed at the Monthly Cost Review meeting on November 28, 2016. As related to the previously reported cost increases, the ESA study indicates that \$111.4 million in additional Amtrak and LIRR Force Account costs will be required to complete the ESA FFGA scope (Revenue Service), while \$245 million in additional FA costs to complete the full Harold Rev. 14-4M Alignment, including the Regional Investment scope. This study does not include any Third Party contract delay costs for extended overhead and indirect costs resulting from the lack of required force account resources. It has been previously reported that there will also be an increase in OCIP costs of approximately \$191 million to fund the insurance program through February 2022. ESA indicated that it will pursue recovery of the increase in Force Account and OCIP costs through MTA funding by seeking amendments to the Capital Plan. ESA indicated that it is their understanding that MTACC will present these additional costs to the MTA Board in December 2016. It should be noted that ESA has not yet incorporated the additional amounts for either FA construction or OCIP in their budget forecasts, indicating that MTACC approval for the forecast change has yet to occur. The PMOC noted that this delay in reporting known future cost increases may not be in accordance with the ESA/SAS Cost Management Plan. Additional costs for potential design changes (leak remediation, cellular/Wi-Fi, and digital

advertising) on Contract CM014B have not been included in the budget forecast, and these additions will also be presented to the Board in December 2016.

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]

**PMOC Concerns:**

The following summarizes the PMOC’s concerns regarding cost and budget issues:

- [REDACTED]
- [REDACTED]
- [REDACTED]
- [REDACTED]
- Current contract delays, and potential future delays, may result in cost increases on the following contracts:
  - CS179 – Late completion of final design and resulting schedule compression to hold start of Integrated Systems Testing.
  - CS086 – Incorporation of Positive Train Control into ESA signal system.
- 3. The divergence between planned and actual construction spending continues to grow, which may impact ESA’s ability to achieve the Target Revenue Service Date.

**Change Orders/Budget Adjustments:** The PMT reported that, during September 2016, four (4) construction Change Orders greater than \$100,000 were executed. These were:

- Systems Facility Package No. 1 – Mod # 19 - CS179 \$217,049.
- Harold Structures Part 3 – Mod # 6 - CH057 \$1,895,000.



required for the hardening work may conflict with ESA needs to support completion of the planned Harold work, including the High Speed Rail scope, by 2020. However, no noticeable impacts to availability of Amtrak force account resources during November 2016 were observed due to work in ERT Lines 3 and 4. The PMOC does note, however, that according to the ESA-PMT, Amtrak's decision about taking ERT Line 2 out of service first, in 2019, for the 18-month reconstruction work is not expected to directly impact the completion of the Harold work needed to commence LIRR service into GCT. Amtrak's decision will, however, impact Contract CH058B, Harold Structures – Part 3B, Eastbound Re-Route - a Regional Investment initiative that is not required to provide the connection to GCT for LIRR service. The ESA-PMT has indicated that there is no work-around plan for this situation, during which ERT Line 1 would have to be taken out of service in order to construct the Eastbound Re-Route.

## 5.0 ELPEP COMPLIANCE SUMMARY

The current status of each of the remaining main ELPEP components is summarized as follows:

- **Technical Capacity and Capability (TCC):** The FTA requested MTACC to update its TCC Plan in response to the FTA/PMOC comments that were generated in November 2013 as a result of significant changes in key ESA upper management level positions. The MTACC submitted its revised Technical Capacity and Capability Plan (ESA and SAS) on April 13, 2015. The PMOC returned comments to the FTA on May 7, 2015. The MTACC submitted a revised TCC Plan in response to FTA/PMOC comments on June 12, 2015. In August 2015, the PMOC provided the FTA with its evaluation of the MTACC responses to the PMOC review comments and recommended a meeting with MTACC to resolve remaining issues. The FTA subsequently provided MTACC with the evaluation. MTACC responded with a reply on September 24, 2015.
- **Continuing ELPEP Compliance:** The following ELPEP components continue to need improvement: Management Decision; Design Development; Change Control Committee (CCC) Process and Results; Stakeholder Management; Procurement; and Risk-Informed Decision Making. The PMOC has noted progress in two previously identified areas – Issues Management and Timely Decision Making, particularly when responding to new issues arising with the railroads’ Force Account resource availability, track outages, and other issues regarding the remaining work in the Harold Interlocking. The ESA Risk Manager continues to work towards re-establishing risk management as one of the key inputs to the decision-making process. To assist MTACC with focusing efforts on improving ELPEP compliance in the remaining areas, the PMOC plans to re-evaluate the ELPEP compliance situation during 4Q2016 based on the current revisions of the PMP, CMP, SMP, and RMP.
- **Project Management Plan:** The PMOC completed its review and evaluation of MTACC’s revisions and responses and submitted its findings to FTA-RII in 4Q2014. MTACC subsequently submitted a revised Rev. 10 on March 13, 2015, that included updated information on the Change Control Committee. The revised Rev. 10 of the PMP was reviewed by the PMOC against the PMOC’s evaluation in 4Q2014. The PMOC continues to coordinate with MTACC, arranging working meetings with ESA chapter authors and the corresponding PMOC reviewers to resolve the remaining outstanding FTA/PMOC evaluation comments. Several working meetings have been held since June 2015 and continued through December 2015. MTACC and the PMOC are working to schedule the few remaining meetings with ESA chapter authors required to complete this process. MTACC submitted the next revision to the PMP in June 2016 that reflects ESA organizational changes along with some additional updates and revisions to certain sections. The PMOC is currently reviewing these changes and is nearing completion of its evaluation.

- [REDACTED]

[REDACTED]

The PMOC notes that, since June 2013, the ESA project has continued to be non-compliant with ELPEP and is not meeting some of the more important requirements of the Schedule Management Plan (SMP) and Cost Management Plan (CMP) sub-plans to the PMP, as noted above. The PMOC believes that this continues to be a deficiency and needs to be corrected. The PMOC does note, however, progress in certain areas. The PMOC's major areas of concern include:

- **Schedule Management Plan (SMP):** The ESA project remains partially non-compliant with requirements for Integrated Project Schedule (IPS) Updating, Forecasting, [REDACTED] against a current baseline schedule. The revised SMP was submitted in 4Q2015 and the PMOC completed its review in June 2016. Review comments were forwarded to MTACC on July 15, 2016, and a working meeting was held on August 25, 2016, to review, discuss, and resolve the comments. MTACC has followed up with the agreed upon revisions to the SMP and has completed their responses in the review comment matrix. During October 2016, MTACC submitted the completed review comment matrix and a revised SMP. The PMOC has completed its evaluation, found no significant issues and provided its findings, including the remaining comments requiring resolution, to the FTA in November 2016.
- **Cost Management Plan (CMP):** The ESA project remains partially non-compliant with requirements for Project Level EAC Forecasting, Project Level EAC Forecast Validation, and MTACC [REDACTED] Secondary Mitigation. The PMOC has noted some improvement in a number of areas, but more work is needed in other areas. After progressing with resolution of many PMOC comments, the PMOC met with MTACC in November 2015 to focus on the remaining issues. MTACC continued working on additional agreed upon revisions and evaluated the PMOC's recommendations in six areas. MTACC provided an initial draft of the revised CMP on December 15, 2015, and the PMOC completed its review in early June 2016. MTACC and the PMOC met on June 22, 2016, to review the PMOC comments. During October 2016, MTACC submitted the completed review comment matrix and a revised CMP. The PMOC has completed its evaluation concluded that the CMP is acceptable and provided the FTA with the comment close-out details in November 2016.

**Revisions to the ELPEP Document:** [REDACTED]

[REDACTED] The PMOC's recommendations were presented at several meetings with the MTACC in 2015. [REDACTED]

[REDACTED] The PMOC continues work on a draft revision to the ELPEP document that reflects these agreements.

## 6.0 SAFETY AND SECURITY

Table 6-1, below, shows the PMOC Calculated and ESA Reported Lost Time and Recordable injury ratios through October 31, 2016. The PMOC developed this table to demonstrate the effectiveness of ESA's most recent safety efforts rather than its cumulative safety record, which ESA uses to report in each of its monthly reports. The PMOC believes that this provides a more accurate measure of ESA's current safety performance than its cumulative record does.

**Table 6-1: ESA 2016 Lost Time and Recordable Injury Ratios**

	Lost Time Ratio	Recordable Ratio
2016 BLS Ratios (used by OSHA)	1.7	3.0
PMOC Calculated ESA October 2016 Ratios	0.93	0.93
PMOC Calculated ESA CY2016 Ratios	0.65	2.15
ESA Reported Ratio (Cumulative since beginning of project as of September 30, 2016)	1.87	ESA does not report cumulative Recordable Injury Rates

Additionally, the ESA PMT did not report any significant security issues during November 2016.

## 7.0 ISSUES AND RECOMMENDATIONS

**Design:** The PMT design management team needs to focus on achieving intermediate milestones in a timely fashion and working closely with the GEC to facilitate finalization of the scope of work for the remaining procurement and construction packages. The continued shifting of scope between packages has made finalizing design documents and drawings very challenging and time consuming.

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 expected; and,
- LIRR is making changes that alter the design basis and results in time-consuming and costly re-design work by the GEC.

All of the above factors contribute to the continuing delays in completing the bid documents for the near term contract procurements. The PMOC recommends that the PMT engage the upper level management of stakeholders involved to assist in resolution of the more serious issues.

The GEC continues to be challenged to meet the schedule requirements for review of design submittals from the CS084 and CS179 contractors. The PMT needs to address this continuing problem and to also better coordinate the associated LIRR reviews. These shortcomings point to insufficient technical capacity and capability in the particular design support areas. The PMOC acknowledges the recent efforts by senior management to resolve these issues, but notes that more improvement is needed.

**Procurement:** The lack of stability in the contracting strategy and Contract Packaging Plan remains a concern. Scope shifting among different packages delays completion of the required design packages, has caused significant delays to the procurement schedules during 2016, and makes it difficult to fully understand the impact of these changes to the overall ESA Program. The PMOC continues to recommend that the ESA PMT should make an effort to adhere to the current version of the Contract Packaging Plan (CPP) and minimize shifting scope for the remainder of the project.

**Water Infiltration Concerns Regarding Systems Contracts CS179 and CS084:** The PMOC remains concerned about the numerous water infiltration issues in the equipment rooms and the remediation efforts that need to be (and are currently being) implemented to provide permanent water infiltration mitigation in rooms with electronic equipment. The GEC's proposed remediation methodologies for the various locations should, in theory, mitigate the water infiltration issues. However, as was already experienced at the Vernon facility, theoretical solutions do not always work under actual field conditions. The successful mitigation of the water infiltration problem can only be validated after remediation work is complete. If, after implementation, one of the water infiltration remediation methodologies is not entirely successful in preventing water infiltration, it may be necessary to develop another strategy; which could further impact the design and construction processes on the Systems contracts.

The PMOC remains concerned about the long-term effectiveness of the water infiltration remediation efforts currently being undertaken at the Vernon, 23<sup>rd</sup> Street, and 29<sup>th</sup> Street facilities. To determine the effectiveness of the remediation efforts, MTACC plans to inspect the affected



facilities on a bi-monthly basis and after each significant rainfall. The PMOC believes that this is a positive approach.

**Contract CS179:** As noted in previous reports, the PMOC remains highly concerned that Buy/Ship America compliance issues remain as significant risks to the timely and successful completion of this contract. MTACC needs to quickly move forward with its intent to request any Buy/Ship America waivers for the potential non-compliance issues so as not to adversely impact the CS179 and overall ESA project schedule. To date, only one of the two waiver requests has been submitted to the FTA.

The Buy/Ship America waiver request process can be a lengthy one, with no guarantee that a waiver will be granted. The sooner the waiver request documentation is finalized and submitted to the FTA, the sooner the MTA will know if alternative strategies and/or equipment are required to fulfill the contract’s operational functionality requirements.

The PMOC is concerned that late completion of reviews of contractor design submittals by ESA has caused the design completion date to slip nine months and is especially concerned that resolution of design issues for the CCTV and SMS systems, as detailed in section 1.0c, CS179, above, could jeopardize successful achievement of the forecasts for those systems. The ESA-PMT, working with the GEC and LIRR, needs to effectively manage the remaining design reviews to prevent any further schedule slippage.

Further, of the nine (9) Control System designs that were presented at the FDR meetings, four (4) are stauted by MTACC as “Proceed as Noted”, while five (5) are stauted as “Proceed as Noted – Resubmit”. This means that the MTA had some comments on the designs and is requiring the contractor to make some type of corrections or modifications to the design as presented. At this time, the LIRR has not provided any “formal” notification to MTACC that any of the Control System final designs are “accepted” or “approved”.

**Contract CS084:** The PMOC continues to have concerns about the length of time it is taking to provide responses and designs to mitigate the various issues and approve substation and equipment designs that the contractor continues to assert are delaying the completion of contract Milestones. Lastly, ESA, the GEC, and LIRR need to continue to aggressively reduce the backlog of contractor design submittals under review.

**Project Budget:** [REDACTED]

[REDACTED] This forecast does not incorporate the results of the study of Force Account overruns, the anticipated additional costs for OCIP, or the additional anticipated project scope items. As noted in Section 3.0 above, the Force Account forecasts and OCIP increases will likely add \$300 million to the budget, without consideration of Third Party contract extended overhead costs. [REDACTED]

**Project Schedule:** The PMOC is still concerned that, as stated by the PMT, Amtrak is not providing enough resources to support the ESA’s scheduled critical work. The PMT has stated that it will continue to meet with Amtrak and has obtained clearances to transfer Amtrak work to 3<sup>rd</sup> parties to try to partially mitigate schedule delays. The PMOC is also concerned about the lack of definition to the IPS activity representing CIL pre-cutover testing, as this consumes

approximately 1.5 years of the Program critical path. The PMT has stated that it does not have this information from LIRR. The PMOC primary concerns include: no progress made over the update period related to correcting IPS mechanical issues (open ends); continued delay trending on force account work completion; and changes to what is driving the Program's critical path.

### **Risk Management:**

This segmentation of construction packages has created multiple inter-contract interfaces and milestones. In the PMOC's opinion, the probability of successfully achieving all of them is low, and leads to the possibility of a ripple effect of delays and coordination difficulties between contracts. There is very limited opportunity, at best, for the contractors to make up any of the time lost to interface delays due to work site time and access constraints, especially because the majority of the work is underground. Should delays start to accumulate, recovery will not likely be possible. The PMOC is particularly concerned about delays to the completion of final systems designs on both Contracts CS179 and CS084 and the potential schedule and cost impacts. Managing inter-contract handoffs and interfaces will be challenging and represents significant MTACC-retained risks. The PMOC has recognized the PMT's efforts to mitigate some of the potential cost exposure by negotiating adjustments to schedule constraints across the four ESA contracts currently held by the same contractor (CM006, CM007, CS179, and CQ032). These mitigations, however, are not necessarily effective in solving the productivity challenges presented by the CM007 schedule that the PMOC considers very aggressive.

The PMOC remains concerned about the coordination risk retained by MTACC on the completion of the work in Manhattan, especially construction and testing interface management for the systems work. When combined with the extensive scope re-configuration changes associated with Harold Interlocking work, the PMOC believes that this may create significant changes to the overall project risk profile.

The PMOC considers the major remaining risks for the East Side Access Program to be:

- Successful execution of multiple hand-off interfaces across several contracts;
- Contractor access and work area coordination in Manhattan;
- Duration of integrated systems testing;
- Continued availability of adequate Amtrak and LIRR force account resources [increasing risk trend noted from 3Q2015 through November 2016];
- Continued availability of required track outages in Harold Interlocking. [Starting in September 2016, fewer priority weekend track outages have been available]; and,
- Maintaining adequate schedule performance of the remaining work in Harold Interlocking, now the ESA program critical path, that is dependent on a very high level of planning and coordination between third-party contractors and the LIRR and Amtrak force account management for both access and protection and direct labor work.

Although MTACC continues to actively engage Amtrak to develop some specific mitigations for certain risks and work on strategies for mitigating many of the other identified risks, the PMOC notes that continued shortcomings in provision of adequate force account resources continues to adversely impact the current Harold schedule and have caused the remaining Harold work to become the ESA program schedule critical path. Many external stakeholder issues with Amtrak

and LIRR will remain beyond MTACC's direct control, however, and are likely to complicate development and acceptance of the specific problem resolutions that are essential to completion of the ESA project. Although MTACC and ESA have been proactive in dealing with these issues as they arise, the PMOC believes that most of these issues require resolution at the executive management level.

The PMOC notes that ESA has been unable to develop a sustainable schedule for the remaining Harold Interlocking work that can be achieved despite the most recent full re-plans in 2013-2014 and again in 2015 as the "ESA First" Harold Re-Sequencing. Based on insufficient support from Amtrak during 2015 and into 2016, ESA has undertaken another Harold re-plan effort that reflects the continued deterioration of Amtrak support with regard to force account resources and track outages for ESA work. The results of the study, along with the Amtrak's commencement of its extensive ERT program and the continuing emergence of new challenges, significantly raises the risk profile for the remaining work in the Harold Interlocking. The PMOC notes, that the situation has deteriorated quickly since the current baseline was established just 28 months ago in July 2014:

- [REDACTED]
- [REDACTED]
- The Harold critical path has now become the ESA Program Critical Path and leads the secondary Manhattan/Systems critical path by approximately three months;
- Amtrak's decision to take ERT Line 2 out of service first for an extended outage of one year or more will not support the current ESA planning to complete all of the remaining Harold work, including the High Speed Rail work, by 2020. The PMOC does note, however, that MTACC believes that Amtrak's decision about ERT Line 2 will not impact the remaining work in Harold Interlocking required to provide LIRR service to Grand Central Terminal;
- Amtrak plans to commence total track replacement in ERT Lines 3 and 4 structures during 4Q2016 in preparation for the extended outages for ERT Lines 1 and 2 starting in 2019; this situation may adversely impact the availability of force account resources for the remaining ESA work; and,
- Recent developments during 3Q2016 involving less availability of future priority weekend track outages and increasing demand for track foremen to provide access and protection to the third-party construction contractors.

Beginning in 3Q2016 and into November 2016, ESA continued to experience problems due to insufficient Amtrak Force Account personnel, predominately Electric Traction (ET), to properly support its 3<sup>rd</sup> Party Contracts CH057 and CH057A currently working in Harold Interlocking. Additionally, the ESA PMT has reported that it does not receive all the track outages it requires to do the work that it schedules. The ESA PMT has stated that both of these conditions have been major factors for why Harold construction has become the critical path of the ESA Project. The PMOC recognizes ESA's efforts to re-baseline the remaining work in Harold Interlocking to reflect more realistic expectations of Amtrak support. However, the situation has not improved and the PMOC recommends that the PMT actively engage executive management in MTACC and MTA to assist with resolution of this problem.

During 3Q2016 and into 4Q2016, the PMOC was advised of new situations that will likely result in additional delays and costs for completion of the remaining work in the Harold Interlocking:

- ESA has been pursuing labor clearance agreements with Amtrak to allow third-

- party contractors to do work that is normally claimed by various Amtrak unions. The demands on force account resources are currently so high that Amtrak will be unable to provide access and protection for third-party contractors to perform work for which labor clearance has been granted.
- Amtrak has advised MTA that ESA should limit the number of critical weekend outages.
- Amtrak is now requiring that each Amtrak track foreman be assigned to cover only a single construction operation. Previously, a single track foreman was permitted to cover more than one operation provided that the work locations were contiguous and all required safety measures could be properly employed. This change now significantly increases the demand for the Amtrak track foreman and has impacted the schedule of work in the Harold Interlocking

## **APPENDIX A - ACRONYMS**

AFI	Allowance for Indeterminates
ARRA	American Recovery and Reinvestment Act
BLS	Bureau of Labor Statistics
BOH	Back of House
BAFO	Best and Final Offer
C&S	Communication and Signals
CCC	Change Control Committee
CCM	Consultant Construction Manager
CIL	Central Instrument Location
CLSM	Controlled Low Strength Material
CM	ESA Construction Manager assigned to each contract
CMP	Cost Management Plan
CMU	Concrete Masonry Unit
ConEd	Consolidate Edison Company
CPM	Critical Path Method
CPOC	Capital Program Oversight Committee
CPP	Contract Packaging Plan
CPR	Contractor Proposal Request
CPRB	Capital Program Review Board
ELPEP	Enterprise Level Project Execution Plan
ERT	East River Tunnel
ESA	East Side Access
ET	Electric Traction
FA	Force Account
FDR	Final Design Review
FFGA	Full Funding Grant Agreement
FRA	Federal Railroad Administration
FTA	Federal Transit Administration
GCT	Grand Central Terminal
GEC	General Engineering Consultant
HSR	High Speed Rail

IEC	Independent Engineering Consultant (to MTA)
IFB	Invitation for Bid
IPS	Integrated Project Schedule
IST	Integrated System Testing
ISTP	Integrated System Test Plan
LIRR	Long Island Rail Road
MNR	Metro-North Railroad
MOD	Contract Modification
MPR	Monthly Progress Report
MTA	Metropolitan Transportation Authority
MTACC	Metropolitan Transportation Authority Capital Construction
N/A	Not Applicable
NTP	Notice to Proceed
NYAR	New York and Atlantic Railroad
NYCT	New York City Transit
OCIP	Owner Controlled Insurance Program
PAC	Pneumatically Applied Concrete
PCO	Proposed Change Order
PDR	Preliminary Design Review
PEP	Project Execution Plan
PMOC	Project Management Oversight Contractor (Urban Engineers)
PMP	Project Management Plan
PMT	ESA Project Management Team
PQM	Project Quality Manual
PVS	Plaza Vent Structure
PWE	Project Working Estimate
QA	Quality Assurance
QPR	Quarterly Progress Report
RAMP	Real Estate Acquisition Management Plan
RFI	Request for Information
RFP	Request for Proposal
RMC	Rudin Management Corporation

RMP	Risk Management Plan
ROD	Revenue Operations Date
ROW	Right of Way
RPR	Relocated Primary Route
RSD	Revenue Service Date
RTU	Remote Terminal Unit
SC	Substantial Completion
SCADA	Supervisory Control and Data Acquisition
SCC	Standard Cost Category
SDR	Second Design Review
SMP	Schedule Management Plan
SMU	Snow Melter Unit
SOE	Support of Excavation
SSMP	Safety and Security Management Plan
SWO	Stop Work Order
TCC	Technical Capacity and Capability
TELP	Temporary Eastbound LIRR Passenger
WBY	Westbound Bypass Tunnel
YSB	Yard Services Building

**APPENDIX B – TABLES**

**Table 1: Summary of Critical Dates**

	FFGA	Forecast (F) Completion, Actual (A) Start	
		Project Sponsor*	PMOC**
Begin Construction	September 2001	September 2001(A)	September 2001(A)
Construction Complete	December 2013	December 2022 (F)	September 2023(F)**
Revenue Service	December 2013	December 2022 (F)	September 2023 (F)

\* Source – Project Sponsor forecast Revenue Operations Date per information presented to the MTA CPOC in June 2014.

\*\*Source –Based on PMOC 2014 schedule trending analysis representing a medium degree of mitigation.

**Table 2: Project Budget/Cost Table**

	FFGA				MTA's Current Baseline Budget CBB		Expenditures Sept 30 2016	
	Original FFGA (Millions)	Amended FFGA (Millions)	(% of Grand Total Cost)	Obligated	(Millions)	(% of Grand Total Cost)	(Millions)	(% of CBB)
Grand Total Cost	\$7,386	\$12,038	100.00%	\$4,724	\$ 11,214	100.00%	\$ 7,229.1	64.46%
Financing Cost	\$1,036		14.00%	\$617	\$ 1,036	9.24%	\$ 617.6	59.61%
Financing Cost		\$1,116	9.27%					
Total Project Cost	\$6,350		86.00%	\$4,107	\$ 10,178	90.76%	\$ 6,611.5	64.96%
Total Project Cost		\$10,922	90.73%					
Federal Share	\$2,683		36.30%	\$1,148	\$ 2,699	24.07%	\$ 1,965.6	72.83%
Federal Share		\$2,683	22.29%					
5309 New Starts share	\$2,632		35.60%	\$1,098	\$ 2,437	21.73%	\$ 1,703.5	69.91%
5309 New Starts share		\$2,632	21.86%					
Non New Starts grants	\$51		0.70%	\$50	\$ 67	0.60%	\$ 66.7	99.55%
Non New Starts grants		\$51	0.42%					
ARRA	0	0	0.00%	0	\$ 195	1.74%	\$ 195.4	100.00%
Local Share	\$3,667		49.60%	\$2,959	\$ 7,479	66.69%	\$ 4,645.9	62.12%
Local Share		\$8,239	68.44%					



**Table 3: Project Budget and Invoices as of September 30, 2016**

Elements	Baseline Total Budget (June 2014)	Current Baseline Budget (May 2017)	Actual Awards (May 2017)	Paid to Date (May 2017)	Actual % Budget Paid (May 2017)
Construction	\$7,379,296,706	\$7,542,563,955	\$6,939,848,008	\$5,125,868,369	67.96%
Soft Cost Subtotal	\$2,798,474,304	\$2,635,207,055	\$2,015,534,524	\$1,899,244,579	72.07%
Engineering	\$720,615,810	\$732,721,828	\$730,301,173	\$704,340,476	96.13%
OCIP	\$282,613,620	\$307,613,620	\$300,793,953	\$299,668,768	97.42%
Project Mgmt.	\$972,168,644	\$972,168,644	\$865,278,130	\$777,982,782	80.03%
Real Estate	\$182,076,230	\$178,049,776	\$119,161,268	\$117,252,553	65.85%
Rolling Stock	\$202,000,000	\$202,000,000	--	--	--
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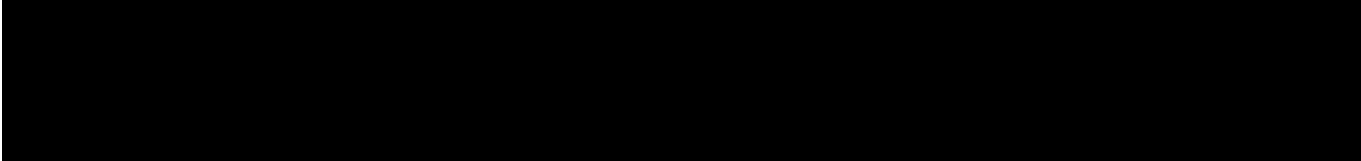
Note: ESA is currently carrying the Rolling Stock Reserve as an off-line cost, not in the Budget.

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

Standard Cost Category (SCC) No.	FFGA SCC baseline (YOE\$) M	Amended FFGA SCC baseline (YOE\$) M	June, 2014 Re-Plan (YOE \$)	3Q 2015	4Q 2015	1Q 2016	2Q 2016	3Q 2016	CBB Variance from FFGA %	CBB Variance from Amended FFGA %
10	1,989	3,353	3,405	3,421	3,420	3,443	3,467	3,475	74.71%	3.64%
20	1,169	2,327	2,238	2,339	2,338	2,314	2,326	2,325	98.89%	-0.09%
30	356	451	474	473	472	472	473	472	32.58%	4.66%
40	205	562	611	593	593	594	594	592	188.78%	5.34%
50	619	628	606	565	566	569	568	582	-5.98%	-7.32%
60	165	192	220	219	218	216	215	215	30.30%	11.98%
70	494	880	210	210	210	210	210	210	-57.49%	-76.14%
80	1,184	1,809	1,975	1,975	1,976	1,977	1,978	1,978	67.06%	9.34%



100	1,036	1,116	1,036	1,036	1,036	1,036	1,036	1,036	0.00%	-7.17%
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**Table 5: Quarterly ESA Planned Cash Flow- Actuals to Date and Actuals Remaining (as of 3Q2016)**

Quarter/year	Construction \$(000)	Engineering \$(000)	OCIP \$(000)	Project Mgmt. \$(000)	Real Estate \$(000)	Rolling Stock \$(000)
<b>Paid To Date</b>	<b>3,660,194,771</b>	<b>646,377,892</b>	<b>155,604,955</b>	<b>580,041,291</b>	<b>112,634,547</b>	<b>0</b>
<b>Remaining</b>	<b>3,719,144,273</b>	<b>74,237,918</b>	<b>127,008,665</b>	<b>392,127,353</b>	<b>69,441,683</b>	<b>202,000,000</b>
3Q2014	209,340,620	-3,311,163	4,774,951	16,667,454	0	0
4Q2014	168,280,817	-3,290,689	4,774,951	16,667,454	75,948	0
1Q2015	134,568,200	-3,183,384	4,619,246	16,123,950	4,506,241	0
2Q2015	147,357,357	-3,290,689	4,774,951	16,667,454	4,658,137	0
3Q2015	169,688,509	-3,290,689	4,774,951	16,667,454	4,658,137	0
4Q2015	201,239,698	-3,290,689	4,774,951	16,667,454	4,658,137	0
1Q2016	193,275,933	-3,219,153	4,671,147	16,305,118	4,556,873	0
2Q2016	180,854,738	-3,290,689	4,774,951	16,667,454	4,658,137	8,666,545
3Q2016	181,988,455	-1,983,850	4,774,951	16,652,320	4,658,137	13,070,855
<b>Remaining Planned</b>	<b>2,132,549,946</b>	<b>102,388,913</b>	<b>84,293,615</b>	<b>243,041,241</b>	<b>37,011,936</b>	<b>180,262,600</b>
<b>Remaining Actual</b>	<b>2,704,296,244</b>	<b>47,441,129</b>	<b>16,499,229</b>	<b>246,922,443</b>	<b>62,142,125</b>	<b>202,000,000</b>
4Q2016	214,173,807	6,728,414	4,774,951	15,971,281	4,658,137	13,070,855
1Q2017	210,556,624	6,509,009	4,619,246	15,450,479	4,506,241	12,644,631
2Q2017	199,737,103	6,728,414	4,774,951	15,971,281	4,658,137	13,070,855
3Q2017	189,382,506	6,728,414	4,774,951	15,971,281	4,658,137	13,070,855
4Q2017	182,084,699	6,728,414	4,774,951	15,971,281	4,658,137	13,070,855
1Q2018	174,210,593	6,509,009	4,619,246	15,450,479	4,506,241	12,644,631
2Q2018	170,524,739	6,728,414	4,774,951	15,971,281	4,658,137	13,070,855
3Q2018	168,497,619	6,728,414	4,774,951	15,971,281	4,658,137	14,014,767
4Q2018	155,245,094	6,728,414	4,774,951	15,971,281	50,632	14,014,767
1Q2019	148,441,548	6,509,009	4,619,246	15,450,479	0	13,557,764
2Q2019	110,893,994	6,728,414	4,774,951	15,971,281	0	14,014,767
3Q2019	93,559,944	6,728,414	4,774,951	15,971,281	0	14,014,767
4Q2019	71,649,848	6,728,414	4,774,951	15,971,281	0	14,014,767
1Q2020	20,704,406	6,582,144	4,671,147	15,624,080	0	5,043,553
2Q2020	11,682,057	6,728,414	4,774,951	15,971,281	0	943,912
3Q2020	7,573,078	2,267,183	4,947,825	5,381,627	0	0
4Q2020	2,750,374	0	5,035,679	0	0	0
1Q2021	881,913	0	3,256,771	0	0	0
2Q2021	0	0	0	0	0	0

**Table 6: MTA ESA Project Summary by FTA Standardized Cost Categories  
2014 Re-plan (\$ in Thousands)**

\$1,000s

Standardized Cost Category	FFGA	Amended FFGA	May 2012 Re-Baseline	June 2014 Re-Plan	Awarded Value (September 2016)	Paid To Date (September 2016)
10- Guideway & Track Elements	\$1,988,742	\$3,353,399	\$2,943,165	\$3,405,463	\$3,205,253	\$2,501,899
20- Stations, Stops, Terminals, Intermodal	\$1,168,655	\$2,326,752	\$1,513,998	\$2,238,235	\$2,166,389	\$1,266,504
30- Support Facilities, Yards, Shops, Admin Buildings	\$356,264	\$450,757	\$384,583	\$474,177	\$230,535	\$209,910
40- Site Works and Special Conditions	\$205,105	\$562,461	\$491,341	\$610,570	\$476,921	\$469,729
50- Systems	\$619,343	\$627,657	\$698,296	\$605,592	\$448,050	\$327,427
60-ROW, Land, Existing Improvements	\$165,280	\$192,225	\$203,639	\$219,397	\$154,788	\$153,274
70- Vehicles	\$493,982	\$879,530	\$674,372	\$209,938	\$7,838	\$5,549
80- Professional Services	\$1,184,000	\$1,808,989	\$1,648,606	\$1,975,398	\$1,843,199	\$1,677,164

Estimated Financing Cost	\$1,036,100	\$1,116,454	\$1,116,000	\$1,036,000	\$617,607	\$617,607
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