PMOC COMPREHENSIVE MONTHLY REPORT

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

Report Period September 1 to September 30, 2016

PMOC Contract No. DTFT6014D00017

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

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Length of time on project: Ten 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 FTA or the project sponsor, in accordance with the purposes as described below:

For projects funded through 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 Grantee's technical capability and capacity to execute a project efficiently and effectively, and hence, whether the Grantee continues to be ready to receive federal funds for further project development.

This report covers the project and quality management activities on the East Side Access (ESA) Mega-Project managed by MTA Capital Construction (MTACC) with MTA as the Grantee and financed by the FTA FFGA.

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

MONITORING REPORT

EXECUTIVE SUMMARY

1. PROJECT DESCRIPTION

The East River tunnels in Manhattan are at capacity. The ESA project is anticipated to improve LIRR tunnel capacity constraints and enable the growth of the overall system. The project comprises a 3.5 mile commuter rail extension of the Long Island Rail Road (LIRR) service from Sunnyside, Queens, to Grand Central Terminal (GCT), Manhattan, utilizing the existing 63rd St. Tunnel under the East River and new tunnels in Manhattan and Queens, including new power and ventilation facilities. The project includes a new eight track terminal constructed below the existing GCT and a new surface rail yard in Queens for daytime train storage. Ridership forecast is 162,000 daily riders (27,300 new riders) in 2020. The project will provide increased capacity for the commuter rail lines of the LIRR and direct access between suburban Long Island and Queens and a new passenger terminal in Grand Central Terminal (GCT) in east Midtown Manhattan, in addition to the LIRR's current Manhattan connection at Penn Station.

2. CHANGES DURING 3rd Quarter 2016

a. Engineering/Design Progress

As of the end of July 2016 (August 1, 2016 data date), MTACC reported that the overall Engineering effort is 99.5% complete, based on the GEC's monthly report. Its Cost Report shows 92.8% of the overall EIS & Engineering category as invoiced and 92.9% of the budgeted section titled "Design" as having been invoiced.

b. New Contract Procurements

MTACC received bids for Contract CH061A, Tunnel A Approach Structure, on August 2, 2016. An apparent low bidder was identified, but MTACC had not awarded the contract as of September 30, 2016. The Notice of Award and Notice to Proceed are being delayed so that MTACC can coordinate them with the limited availability of railroad force account resources to provide access and protection for the contractor. Accordingly, MTACC is forecasting a date of February 1, 2017, for the Notice to Proceed.

c. Construction Progress

The Project Management Team (PMT) reported in its July 2016 Monthly Progress Report that total construction progress reached 64.5% complete, versus 67.6 % planned; the Cost Report also shows 64.5% of construction as having been invoiced.

d. Continuing and Unresolved Issues

[redacted]

With regard to the "ESA First" Harold Re-sequencing Plan developed in December 2014 and implemented in 2015, the PMOC has noted that during 2015 and through 2016 to date, the PMT has been reporting that Amtrak has not been able to provide even the reduced level of force account resources that had been planned in support of the ESA schedule. The Harold Schedule Plan was re-evaluated and further adjusted in early 2016 to account for the recent experience of the project, making work package changes to accommodate the railroad force account resource constraints.

[redacted] By mid-3Q2016, ESA completed a comprehensive study to identify and evaluate the reasons for this continuing problem and to make recommendations with regard to a revised basis for planning and scheduling the remaining work in the Harold Interlocking and a revised cost forecast. The schedule analysis and re-planning were completed earlier and the results were incorporated into the ESA Integrated Project Schedule (IPS) during 2Q2016. The Harold critical path has become the ESA program critical path and now leads the secondary Manhattan/Systems critical path by approximately three months. Cost overruns have been evaluated and the additional costs are estimated to be in the $200-300 million range. Details of the cost analysis and forecast are planned to be presented to the FTA and PMOC in October 2016.

The PMOC has continuing concerns regarding the impact to the ESA Harold work due to the Amtrak program to harden ERT Lines 3 and 4 in preparation for extended outages for ERT Lines 1 and 2 to complete Hurricane Sandy damage-related reconstruction work, now planned for 2019. There is concern, shared by both the PMOC and MTACC, that significant Amtrak Force Account resources will be needed to support the hardening work, which could further reduce the Amtrak resources available to support the ESA Harold Re-Sequencing Plan. During July 2016, Amtrak advised MTACC that it plans to start work on the total track replacement in ERT Lines 3 and 4 during 4Q2016. There is also concern that track outages 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 2021. The PMOC does note, however, that MTACC does not believe that Amtrak's decision about taking ERT Line 2 out of service first, in 2019, for the 18-month reconstruction work will 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. The ESA-PMT has indicated that there is no work-around plan for this situation where ERT Line 1 can be taken out of service in order to begin construction of the Eastbound Re-route.

e. New Cost and Schedule Issues

[redacted] 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 they will request further amendmants to the MTA Capital Plans (both 2010 to 2014 and 2015 to 2019), seeking funding for the OCIP and Force Account related overruns.

ESA's Integrated Project Schedule (IPS) August 1, 2016 Update maintains a forecasted Target RSD of February 23, 2021, and a Late RSD of December 13, 2022. The biggest change over 3Q2016 related to the IPS is that the PMT, working under the Harold Task Force and with LIRR, resequenced Harold Cutover work that is currently on the program ciritical path. This work is now forecasted to start later than previously scheduled, but is planned to take a shorter overall duration, with completion of the H1/H2/Loc 30 cutover expected to be June 2, 2018. The PMOC maintains its concern about the pace of Force Account work and has started tracking important milestones related to this work. Due to the limited resources of Amtrak and LIRR personnel, Force Account work may become a limiting factor that could impact the program's schedule.

3. PROJECT STATUS SUMMARY AND PMOC ASSESSMENT

a. Grantee Technical Capacity and Capability

The PMOC has concerns regarding the ability of the GEC and LIRR to support reviews for systems design submittals by the CS179, Facilities Systems, and the CS084, Traction Power, contractors. In addition, the PMOC is concerned about the inadequate staffing levels for the project Quality staff. A more detailed discussion of the Sponsor's Technical Capacity and Capability can be found in Sections 1.1a and 1.1b, below.

b. Real Estate Acquisition

MTACC did not report any significant real estate changes in its July 2016 ESA Monthly Report. A more detailed discussion about MTACC Real Estate activities for September 2016 are provided in Section 2.6 of this report.

c. Engineering/Design

Progress for remaining design work continues to lag design milestone targets. The GEC and PMT continue to miss target dates for completing remaining design activities on the project due to scope transfers between contract packages as well as other issues. Design completion of the Contract CQ033, Mid-Day Storage Yard, package continues to be delayed due to uresolved coordination issues with Amtrak, late approval of track clearance waivers required from the NYSDOT that were submitted by LIRR in July 2016, as well as approval by NYCT of overhead clearance to the No. 7 Line structure that crosses over the proposed LIRR tracks. The need to accommodate Positive Train Control capability in the LIRR signal design has also caused some delays to other packages. Additionally, GEC and LIRR delayed reviews of the CS179, Facilties Design, and CS084, Traction Power, systems design are not supporting the contract schedules. Details are provided in Section 2.1 of this report.

d. Procurement

MTACC received bids for Contract CH061A, Tunnel A Approach Structure, on August 2, 2016. An apparent low bidder was identified, but MTACC had not issued a Notice of Award as of September 30, 2016. The Notice of Award and Notice to Proceed are being delayed to coordinate with availability of limited railroad force account resources to provide access and protection for the contractor. Accordingly, MTACC is forecasting the NTP on February 1, 2017, a delay of three months from the previous forecast of October 28, 2016.

As noted in Section 3c. above, procurement is being delayed due to late completion and approvals of the designs and bid packages. For the remaining procurements planned for 2016, delays to bid advertisement dates from forecast dates at the beginning of 2016 include:

- CQ033, Mid-Day Storage Yard Facility – 5 months; no forecast bid advertisement date.
- CM015, 48th Street Entrance – 3 months; forecast bid advertisement: November 29, 2016.
- CS086, Tunnel Systems – 9 months; forecast bid advertisement: January 10, 2017.

e. Railroad Force Account (Support and Construction)

During September 2016, LIRR Signal personnel continued to pull, terminate, and meggar signal cables at the "H5", "H6", and Locaton 30 CILs, installed signal heads and cables on new Signal

Bridges 21 and 30, and continued to make signal revisions in existing Harold CIL. LIRR Communications personnel continued to install and terminate communications cables at the "H1", "H2", "H6", and Location 30 CILs. LIRR 3rd Rail personnel continued to install 3rd rail conduit from various locations into electric traction breaker #40. LIRR Track personnel completed raising and aligning the new RPR Track in Harold Interlocking. Amtrak Electric Traction personnel began construction of the catenary wires over the RPR Track, demolished the existing F33 and F11 trolley breakers, and began construction of the new H22 and F11E Full Tension Air Breaks (FTABs) in Harold Interlocking.

f. Third-Party Construction

Manhattan:

During 3Q2016, ESA and the CM005 contractor (Manhattan South Structures) concentrated effort to complete remaining work at the upper 37th St. Vent facility and to complete remaining punchlist work. ESA and the contractor have scheduled remaining work activity to be completed by early October 2016.

The CM006 contractor (Manhattan North Structures) continued the rehabilitation/remediation work at the 63rd St. Tunnels and Structures and expects to complete work here in early October 2016. Archway construction continued at the following locations: GCT 3 East and West Wyes, 50th St. Vent Facility, 55th St. Vent Facility, and Tunnel WB3. Duct bench construction continued at Tunnels EB4 and WB1. The contractor also continued stair construction and completed wall construction at the Westbound Cavern BOH (back of house). ESA and the contractor are using the new CPM schedule to track construction progress.

During 3Q2016, the CM007 contractor continued mobilization, preparation of permit documentation, schedule development, and other submittals for this contract. Monthly Construction Progress Meetings were held each month during 3Q2016. The contractor prepared mock-ups for track and precast concrete element production. On-site work activity and the off-site production of pre-cast concrete beams and panels are scheduled to begin in early 4Q2016.

At the CM014-B contract during 3Q2016 construction of the Terminal Management Center (TMC) area was completed and the CS179 contractor began their scope of work. Installation of the Wellways (4) arch and sidewall finishes continued, in preparation for delivery and installation of the escalator banks in 4Q2016 or 1Q2017. Installation of underslab ductbanks and plumbing neared completion and placement of permenant concrete subfloor continued in various areas of the Concourse. Escalators for the new Dining Concourse Connection to the Concourse were delivered and are being stored on site.

Queens:

During the first month of 3Q2016, the CQ032 contractor (Plaza Substation and Queens Structures) completed the removal of the BMT subway underpinning system on the north side of Northern Boulevard. Plaza site work, finishes work at the Yard Services Building, and punchlist work activity continued. The contractor began water infiltration repairs at the Plaza Interlocking structures in the last month of 3Q2016. Work was delayed through 3Q2016 at the 23rd St. Vent Facility because of unforeseen underground obstructions. ESA is transferring all remaining work at the 23rd Facility to Contract CS179.

Harold Interlocking:

Contract CH057 Harold Structures Part 3: During September 2016, the CH057 contractor continued construction of Tunnel D with placement of the concrete slab and sidewalls in the TBM Reception Pit area, completion of secant pile installation and beginning of excavation in the transition area under 30th St. overhead bridge, placement of approximately 220' of base slab and sidewalls in the East Approach Structure, as well as construction of approximately 50' of concrete roof structure. The contractor also poured the concrete deck and parapets of the new LIRR ML2 bridge over 48th St., continued to install secant piles east of 48th St. for the 48-S2 and under 39th St. for the 39-S6 retaining walls, respectively, and continued miscellaneous catenary pole foundation construction in Harold Interlocking.

Contract CH057A (Westbound Bypass): During September 2016, the CH057A contractor completed excavation and installation of the concrete base slab in West Approach Structure of the Westbound Bypass, and began placement of rebar for sidewalls. The contractor also continued excavation of the East Approach Structure and de-watering the entire work site. The contractor was unable to resume mining of the Westbound Bypass Tunnel, however, as it waited for design revisions and materials to make the necessary modifications to its "box shield". As of September 30, 2016, the ESA PMT anticipates that mining will resume during the 3rd week in October 2016.

Systems:

Contract CS179 – Systems Facilities Package No. 1: During September 2016, the CS179 contractor continued various elements of work (conduit installations, concrete work, temporary power installations, fire stopping installation, etc.) at the B10; Roosevelt; Vernon; 12th St.; 39th St., Queens Plaza; and 63rd St. facilities. In addition, the contractor either began, or continued, the installation of lighting in Tunnel Tracks D and LL; 480 volt cable in Tunnel Track LL; 480 volt switchgear in the 12th Street facility; signal power cable in Tunnel Track A; fire alarm wiring in the Yard Service Building; radio antenna cable in Tunnel Tracks A and LL; as well as demolition of a concrete floor slab in the Vernon facility; and the preliminary testing of the fire standpipe system in Tunnel Track B/C. Five Stop Work Orders (SWOs) for work on this contract are still in effect. The GEC is still working on designs and solutions to these SWOs but no date was given for the rescinding of the SWOs. At present, water infiltration issues have been identified at four locations; Vernon, 12th St., 23rd St. and 29th St.; and, mitigation efforts have started at the Vernon, 23rd St., and 29th St. facilities.

Contract CS084 Traction Power System Package 4: As noted in an earlier PMOC report, the electrical feeders from Consolidated Edison for the L3 electrical service work were energized in August 2016 and the contractor announced its readiness to begin the extra work to ground and test three existing transformers and the MDP-3A panel. It was noted in the mid-September 2016 CS084 Progress meeting that a technical issue related to the operation of one of the transformers has to be clarified and resolved before a contract modification for the extra work can be issued. The contractor continues to perform site surveys and submit design documentation. The PMOC previously reported that the LIRR and the MTACC had 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, the GEC has yet to provide a revised Scope of Work (SOW) to address this contract change to finalize the SCADA point requirements. The contractor continues to report delays in the completion of contract milestones; and, in the narrative accompanying the most recent monthly schedule update (data date September 1, 2016), the contractor indicates that the Substantial Completion (SC) date has slipped to July 20, 2020. This SC date is 14 calendar days later than the July 1, 2016, SC date that the MTACC is carrying in its

July 2016 ESA Monthly Progress Report. The MTACC project controls personnel need to identify the reason and accuracy of this variance.

g. Vehicles

Details of the vehicle procurement (non-federally funded portion) are provided in Section 2.5 of this report.

h. Commissioning and Start-Up

The last Quarterly Operational Readiness (OR) briefing was held on December 17, 2015, and the 1Q2016 and 2Q2016 briefings were postponed due to scheduling conflicts. However, documentation regarding the status of various OR Task Working Groups (TWGs) was provided to the PMOC. A review of that documentation, along with follow up telephone calls, revealed that significant progress is being made on the Safety & Security Certification and Asset Management TWGs. The other TWGs continue to meet to develop documentation and plans to operate ESA when it is ready for revenue service. PMOC concerns are provided in Section 2.4 in this report.

i. Project Schedule

Table 1 provides a summary of critical milestone dates including PMOC and Grantee forecasts:

Table 1: Summary of Critical Dates

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

* Source – Grantee forecast late 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.

***Source – Amended FFGA awarded July 20, 2016

j. Project Cost

Table 2 provides a summary of project cost estimates and expenditures vs. the FFGA forecasts:

Table 2: Project Budget/Cost Table (July 31, 2016)

	FFGA				MTA's Current Baseline Budget CBB		Expenditures	
	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	$11,214.0	100.00 %	$7,022.9	62.63%
Financing Cost	$1,036	$1,116	14.00% original 9.3% amended	$617	$1,036.0	9.24%	$617.6	59.61%
Total Project Cost	$6,350	$10,922	86.00%original 90.7% amended	$4,107	$10,178.0	90.76%	$6,405.3	62.93%
Federal Share	$2,683		36.30% original 22.3% amended	$1,148	$2,699.0	24.07%	$2,228.6	82.57%
5309 New Starts Share	$2,632		35.60% original 21.86% amended	$1,098	$2,436.6	21.73%	$1,966.5	80.71%
Non New Starts Grants	$51		0.70% original 0.42% amended	$50	$67.0	0.60%	$66.7	99.55%
ARRA	0		0.00%	0	$195.4	1.74%	$195.4	100.00 %
Local Share	$3,667		49.60% original 30.46% amended	$2,959	$7,479.0	66.69%	$4,176.7	55.85%

k. Project Risk

The PMOC notes that the projects risk exposure to completion of the remaining work in the Harold Interlocking continued to increase based on new issues that arose during 3Q2016. The PMOC is concerned about this trend because the Harold work is on the ESA program critical path. Details regarding risk management and risk mitigation are provided in Section 6.0 of this report.

l. FTA Quarterly Review Meeting

The next FTA Quarterly Review Meeting for East Side Access and Second Avenue Subway is scheduled for October 20, 2016.

MONTHLY UPDATE

The information contained in the body of this report is in accordance with Oversight Procedure #25, to "inform the FTA of the most critical project occurrences, issues, and next steps, as well as professional opinions and recommendations". Where a section is included with no text, there are no new "critical project occurrences [or] issues" to report this month.

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 level management positions. 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. 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 new ESA Risk Manager started in January 2016 and has worked to re-establish risk management as one of the key inputs to the decision-making process. The PMOC anticipates seeing continued improvements in the risk management area. To assist MTACC with focusing efforts on improving ELPEP compliance in the remaining areas, the PMOC plans to re-evaluate the situation based on the current revisions of the CMP, SMP, and RMP during 4Q2016.
- **Project Management Plan:** The PMOC completed its review and evaluation of the MTACC's revisions and responses and submitted its findings to FTA-RII in 4Q2014. The 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 coordinated with MTACC to arrange working meetings with ESA chapter authors and the corresponding PMOC reviewers to resolve the remaining outstanding FTA/PMOC evaluation comments. Several working meetings were held between June 2015 and 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 expects to provide its evaluation in October 2016.

- [redacted]

The PMOC notes that, since June 2013, the ESA project has not been in full compliance with ELPEP, and is, in the opinion of the PMOC, not meeting some of the more important requirements of the Schedule Management Plan (SMP) and Cost Management Plan (CMP) sub-plans of the PMP. The PMOC believes that this continues to be a deficiency that needs to be resolved. **[Ref: ESA-114-Sep13]** 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 is currently following up with the agreed upon revisions to the SMP and is finalizing their responses in the review comment matrix.
- **Cost Management Plan (CMP)**: The ESA project remains partially non-compliant with requirements for Project Level EAC Forecasting, Project Level EAC Forecast Validation, [redacted] and 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. MTACC is currently following up with the agreed upon revisions to the CMP.

Revisions to the ELPEP Document:

[redacted]

1.0 GRANTEE'S CAPABILITIES AND APPROACH

1.1 Technical Capacity and Capability

a) Organization

During 1Q2016, the project organization was revised. The PMOC has been monitoring this organizational restructuring and has not noted any significant change in the Sponsor's ability to maintain the required level of Management Capacity and Capability. The PMOC does note, however, continuing problems with regard to the GEC and LIRR support of the review and approval process for the contractors' final designs for systems under Contracts CS179 and CS084.

b) Staffing

The ESA Quality group is understaffed at the current time and the Quality Manager, who served in that position for 8 years, resigned in July 2016. See Section 1.6 of this report for details.

1.2 Project Management Plan

a) History of Performance

MTACC re-baselined the ESA Project in May 2012. This re-baseline resulted in a risk adjusted budget of $8.24B (not including rolling stock reserve and finance cost) and a projected RSD in August 2019. During 2013 and 2014, ESA undertook an extensive re-planning effort to revise the Program budget and schedule as a result of the CM012R bid overrun and continuing delays in several other major procurements (e.g., CS179; CM014B). This is the third re-planning effort undertaken by ESA since the FFGA in 2006 (the first re-planning effort took place in 2009). The current re-planned budget ($10.177B) and schedule (RSD(late forecast) in December 2022) were presented to the MTA CPOC in June 2014 and approved. The PMOC notes that ESA has been dealing with schedule performance set-backs primarily in the following areas: earlier funding issues that delayed award of contracts and systems contract options; poor performance by the CM006 contractor; and ongoing delays in the Harold Interlocking work caused by continued lack of adequate railroad force account support.

b) PMP

MTACC submitted PMP Rev. 10 to the FTA and PMOC on July 18, 2014. This revision incorporates changes stemming from FTA/PMOC comments on PMP Rev. 9.0 provided in December 2013 as well as changes that resulted from MTACC's Candidate Revision process. Based on working meetings, dialogue, and additional clarifying review comments from the PMOC, MTACC made additional changes to the PMP and submitted an updated Rev. 10 on September 18, 2014. The PMOC reviewed Rev. 10 and provided its comments to the FTA in 4Q2014. A subsequent update to the Rev. 10 document was submitted on March 13, 2105, reflecting only revisions to the ESA Change Control Committee. 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 continue working toward resolution of the remaining minor comments. MTACC and the PMOC met in June 2016 to review the PMOC's comments on the Cost Management Plan. The PMOC completed its review of the revised Schedule Management Plan in late June 2016. 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 plans to provide its evaluation in October 2016.

1.3 Project Controls

a) Schedule

MTACC presented its new baseline schedule to the MTA CPOC in June 2014 with an RSD of December 2022. [redacted]

b) Cost

MTACC presented its Re-Plan baseline budget of $10.177 billion (excluding Rolling Stock Reserve) to the MTA CPOC in June 2014. [redacted]

1.4 Federal Requirements

a) FFGA

As a result of MTACC's re-baselining of the ESA Project budget and schedule on three separate occasions (2009, 2012, and 2014) since the FFGA was signed in 2006, an FFGA amendment has been developed and has been approved by the FTA. 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. In June 2014, MTACC presented a new project budget of $10.177 billion (excluding the Rolling Stock Reserve and finance costs) to the MTA CPOC that included, and a new schedule with an RSD of December 2022. The ammended FFGA includes a budget of $10.922 billion ($10.459 billion before Rolling Stock Reserve and finance costs) and an RSD of December 2023. The new Baseline Cost Estimate and Revenue Service Date are based on the PMOC analysis that includes considerations of historical ESA performance and future risks.

b) Federal Regulations

As an FTA full funding grant recipient, MTA is required to meet the requirements of the Buy America Act. The PMOC makes note of current and new issues regarding this requirement in this

section and includes additional details in the corresponding contract status in both Section 2.3 and Appendix G.

Contract CS179, Systems Package 1: There are two current issues affecting proposed equipment. Please refer to Appendix G for details.

Track Turnouts:

As the PMOC has noted in its previous Monthly Reports, there remain approximately 41 turnouts that ESA must purchase for future years' installation in Harold Interlocking which must meet "Buy America" requirements. The GEC designed revisions to the Amtrak turnout specifications which Amtrak approved in January 2016, but the GEC was not able to complete revisions for the LIRR turnouts until late September 2016, at which time ESA submitted the revisions to the LIRR for approval. At present, there is no estimate for when the LIRR will complete its review and provide its approval of these revised specifications. The PMOC has also been advised that it will take MTACC 6 to 8 months to obtain approval from the MTA to begin the solicitation for the turnout material. Based on this, the PMOC has revised its estimate that it will be mid-to-late 2Q2017 before MTACC will be in a position to order the "Buy America" compliant turnouts. Nonetheless, the PMOC believes that, barring further delays in the procurement process, LIRR presently has enough turnouts on hand for the entire 2017 production season (although not an aggressive program) and the start of the 2018 season. However, since the MTACC's 2018 turnout installation program is scheduled to be its most aggressive to date, the need for turnouts to be delivered in time for the remainder of the 2018 season is critical. Based on the length of time the entire process is projected to take, any protracted delay in LIRR's approval or in MTACC's procurement process could result in negative schedule impacts from late 2Q2018 through all of 2019. [**Ref: ESA-123-Jun16]**

1.5 Safety and Security

a) Safety Certification Process

In meetings with the Director of ESA Operational Readiness, the PMOC was advised that a schedule showing the completion of construction safety certificates continues to be incorporated into the overall ESA Project IPS. This will link the completion of construction safety certificates to the completion of the various contract construction schedules; especially important if the construction schedules change for any reason. However, the MTACC must still develop and implement a schedule that identifies the process and timing to complete safety certifications for contracts that are, or will be, in the design phase.

b) Project Construction Safety Performance

Through August 2016, ESA project safety statistics for lost time accident and OSHA recordable injuries on active construction contracts are trending below the Bureau of Labor Statistics (BLS) national average with a CY2016 project wide ration of 0.47* versus 1.80 (2015 BLS average) lost time accidents (LTA) per 200,000 work hours (national average). The ESA recordable rate for CY2016 injury rate through August 2016 was 2.22* versus 3.20 (2015 BLS average).

*These are PMOC calculated rates based on information contained in ESA's "12 Month Rolling Cumulative Profiles of Lost Time and Recordable Injury Rates" for August 2016, although the Grantee uses a 12 month rolling average for its OSHA statistics.

c) Security

The ESA PMT did not report any significant security issues in its July 2016 Monthly Progress Report.

d) Security Certification Process

Operational Readiness Task Working Group No. 7 continues to work on the development and implementation of ESA Security Certifications for the various ESA contracts. Security certifications of contract designs and as-built construction reflect the methodology the MTA will use to address perceived security threats identified in the Threat Vulnerability Assessment made for ESA facilities and operation. It is important that the appropriate elements be "designed into" and incorporated into each contract on the ESA Project. The PMOC continues to follow up on this critical aspect with the Director of Operational Readiness to acquire more information regarding the status of the Security Certification process.

1.6 Project Qualilty

ESA Quality Staff: The PMOC is concerned that there is insufficient quality staff. One year ago, there was a Quality Manager and five quality engineers. One quality engineer resigned and has not been replaced. Another was promoted to the Deputy Quality Manager position in September 2016 so the staff is now down two quality engineers. MTACC Quality Management is actively recruiting qualified individuals to fill the two vacant positions. They have a tentative acceptance to fill one of the positions. [**Ref: ESA-122-Jun16]**

GEC Quality: The ESA Quality Manager conducted an audit of the GEC's Quality System on June 21, 2016, before he resigned and identified the following issues: the GEC's Quality Program has not been signed by GEC's management; there is no internal audit schedule; GEC management is not allocating sufficient time for the GEC Quality Manager to perform his duties; and the GEC is delinquent in providing updated revisions of their quality procedures. The Acting Quality Manager met with the GEC Quality Manager in September 2016 to discuss the quality issues that were identified during the audit. They agreed on a course of action to close all findings. All findings should be closed by the end of 2016.

CM013: A closeout audit on this contract was held to determine whether any quality issues will prevent this contract from closing. There was an open nonconformance report (NCR) for pipes fabricated in China that were installed and are now inaccessible. On September 30, 2016, the FTA accepted MTACC's conclusion that the raw pipes made in China are subcomponents of the condenser water pipes that were fabricated in the United States and so the Buy America provisions have been met. The associated NCR can now be closed.

CM005: The ESA Quality Manager performed a walkthrough with the CM office in April 2016. The CM office still has a punchlist with about 25 underground punchlist items and 18 open NCRs. The CM plans to complete most of the underground punchlist items in early October 2016 with the exception of doors and some items that are the responsibility of the electrical subcontractor. The contractor is working with a skeleton crew to complete these open punchlist items and electrical conduit repairs. Currently, there are some questions regarding survey. The concerns are being evaluated by the CM office and the CM005 surveyor. The PMOC is concerned that there are many actions still to be completed before this contract can be closed.

Quarterly Quality Oversights (QQOs): The Deputy Quality Manager issued a schedule for the third quarter QQOs. The QQOs for the nine active contracts will be conducted during October 2016.

CH057A: On August 3, 2016, ESA issued a Stop Work Order to the CH057A contractor to stop advancing the tunnel shield used to excavate the Westbound Bypass Tunnel. The tunnel shield had "encountered" a corner of the concrete track slab that was placed by the CQ031 contractor in

2013. After investigation, it was determined that this corner of the slab was installed 3 inches lower and 24 inches wider than designed. As a result, there was insufficient clearance for the tunnel shield to proceed. During the weekend of August 20th and 21st, 2016, the CH057A contractor removed the corner by saw-cutting. Additionally, it was determined that the tunnel support frames against which the tunnel shield pushes were also moving, thus making it impossible for the shield to maintain its designed excavation course. The contractor, working with the GEC, is modifying selected tunnel shield components to allow excavation to continue under the conditions encountered. The ESA PMT anticpates that resum[tion of mining operations will begin on October 17, 2016.

1.7 Stakeholder Management

a) Railroads

Based on long standing issues and concerns regarding Amtrak's ability to provide sufficient force account support to the ESA project, especially Electric Traction (ET) resources, ESA completed a Harold schedule re-sequencing in December 2014, also known as "ESA First," that advances work elements required for the new LIRR service to GCT and delays some of the FRA funded High Speed Rail (HSR) work beyond 2017. Railroad construction work prior to development of the "ESA First" schedule was also falling behind schedule due to the overall delays to much of the Harold work. Additionally, the sequence in which Amtrak decides to do its own work to reconstruct its East River (ERT) Line 1 and Line 2 tunnels that were damaged by Superstorm Sandy will have a significant impact on the "ESA First" schedule. Amtrak has notified MTACC that it plans to close ERT Line 2 first in 2019. The selection of Line 2 to close first does not support the current ESA Harold Schedule for work on the Eastbound Reroute track and structure. However, MTACC expects that this will not impact the remaining work in Harold Interlocking that is required to provide service into Grand Central Terminal. Both parties need to continue to work together to develop an ERT Line 1 and Line 2 outage schedule that will have the least negative impact on ESA. At present, Amtrak's work is not planned to begin until 2019, so there should be sufficient time to develop such a schedule.

During 3Q2016, additional issues have arisen with regard to Amtrak support of the remaining work in the Harold Interlocking:

- ESA has been pursuing labor clearance agreements to allow third-party contractors to do work that is normally claimed by the various Amtrak unions. This, however, still requires Amtrak's force account resources, already in high demand for other ESA and regional requirments, to provide access and protection. As a result, the PMOC believes that this effort by ESA to help mitigate some of the schedule delays will not be very effective.
- 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. This change effectively increases the demand for Amtrak track foreman and has impacted the schedule of work in the Harold Interlocking.

MTA continues to work with both the FTA and the FRA to resolve funding drawdown issues with regard to the FRA HSR grant.

b) Others Stakeholders

Although there are other stakeholder issues that ESA must address, at present there is no evidence that any might have a significant negative impact on the project schedule or cost.

1.8 Local Funding

a) MTA/New York State (Capital Plan)

The funding concern that PMOC previously identified was resolved in May 2016 with CPRB approval of the 2015-19 Capital Planning. ESA is now seeking supplemental funding for the forecasted cost overruns related to Harold Force Account work (expected to be in the $200 million to $300 million range), the OCIP cost overrun ($191 million), as well as wireless cellular/WIFI, digital advertising and lead remediation on the CM014B contract. MTACC has already approached MTA about this issue and this is the first of four components of the MTA's proposed (2015-2019) Capital Plan Amendment for the ESA project. [redacted]

b) Other Sources

The total FTA funding commitment, as of July 2016, remained at $2.699 billion, as indicated in Table 2 in the Executive Summary.

1.9 Project Risk Monitoring and Mitigation

a) Risk Management Plan (RMP)

The MTACC RMP, Rev. 2, dated July 2012, is a sub-plan within the ESA Project Management Plan (PMP). The RMP, Rev. 2, was updated and incorporated FTA/PMOC review comments to bring it into compliance with the ELPEP principles and requirements. The FTA formally notified MTACC of its conditional acceptance of the RMP by letter dated March 4, 2013. MTACC plans to update the RMP, if needed, after completion of its current updates of both the Cost Management Plan and the Schedule Management Plan.

b) Monitoring

The ESA Risk Manager held program level risk meetings with the PMOC in March 2016 and June 2016 and plans to have these meetings on a regular basis as he works to update and streamline the risk management process. He has made changes to the updating and tracking of program level risk in the Risk Register and is currently working to resume issuing the Risk Register on a regular basis.

c) Mitigation

Current risk mitigations are discussed in Section 6.3 below.

2.0 PROJECT SCOPE

On Contract CM015 (48th 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. MTA and RMC have signed the utility agreement and the construction contract has been awarded. 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. There remain coordination issues between MTA and RMC. The shear wall design is not completed

and workshops are planned for resolution of remaining issues. Submittal will be made to the NYC Department of Buildings. Bid advertisement had been scheduled for September 27, 2016, but has been revised to November 29, 2016.

On Contract Package CQ033 (Mid-Day Storage Yard), the major remaining issues include: uresolved coordination and approval issues with Amtrak; late approval of track design clearance waivers required from the NYSDOT that were submitted by LIRR in July 2016; and approval by NYCT of overhead clearance to the No. 7 Line structure that crosses over the proposed LIRR tracks. MTACC was unable to meet the forecast date of September 8, 2016 for bid advertisement and a new forecast date had not yet been established as of September 30, 2016.

2.1 Engineering/Design and Construction Phase Services

As of the end of July 2016, MTACC reported that the overall Engineering effort was 99.5% complete, based on the GEC's monthly report, compared with a planned status of 100%. Its Cost Report shows 92.8% of the overall EIS and Engineering category as invoiced and 92.9% of the budgeted section titled "Design" (including Design Settlement) as having been invoiced.

Status of Construction Packages Not Advertised:

Contract CQ033, Mid-Day Storage Yard Facility, continues progress toward package completion:

- Regarding the Arch Street Yard tie-in, agreement between MTACC and LIRR for final determination on the scope of LIRR Force Account (FA) work is near completion.
- The GEC submitted the 90% design for rail access to Amtrak Line 2 from Sub 4 for review on July 6, 2016. This construction work will be by Amtrak. MTACC is awaiting Amtrak comments.
- The GEC has completed incorporation of the catenary pole relocations and MTACC is awaiting Amtrak approval. Amtrak requires completion of the FHA03 catenary update prior to this approval.
- ESA-PMT continues to work with LIRR on labor clearance for track and traction power work.
- Construction sequencing meetings are ongoing to coordinate CQ033 work scope with adjacent site/civil and force account packages. Agreement regarding access restraints and milestones is near completion;
- The GEC submitted the cost estimate to ESA Project Controls in July 2016;
- 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 clearance issues. In early July 2016, LIRR submitted a waiver request to NYSDOT regarding the substandard clearances required by the design. The NYSDOT response is pending;
- GEC completed work on drawings for approval from NYCT on overhead clearance beneath the No. 7 Line elevated structure over the proposed LIRR tracks. MTACC has had several meetings with NYCT and is nearing completion of a final submittal package for NYCT's review and approval.
- Demolition of 1,300 LF of existing third-rail by LIRR remains to be determined. This work may be included as a contract option and will require LIRR labor clearance; and,

- The Intent to Advertise is with MTA for final approval.

The previously forecast bid advertise dates of July 18, 2016, August 18, 2016, and September 8, 2016, were missed and ESA has not yet forecast the new date for bid advertisement.

The work scope for Contract CH058 has been divided and repackaged into two separate contracts: CH058A will include construction of the Tunnel B/C Approach Structure and the Loop Box structure construction will be transferred to CH059; CH058B will include construction of the East Bound Re-route. Current Forecast dates for CH058A include: advertise October 18, 2017; bids due March 18, 2018; NTP June 18, 2018. These revised dates for advertising and bids due represent, respectively, a three month delay and a six month delay from the dates reported in January 2016. The NTP date has been pushed back seven months, driven by schedule requirements to complete the CIL cutovers as planned by 2018. Design work for this package is currently on hold pending approval of the GEC Proposed Change Order for which negotiations have been completed. The 90% design submission was made on June 17, 2016. Comments have been received from the ESA CM and LIRR. Amtrak will provide comments later after their review of FHA03. Additionally, the final design for package CH058B 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 the TELP would have significant cost and schedule impacts to the planned CIL cutovers, the PMT has recommended to LIRR that the GEC complete the CH058B design without the TELP Track. MTA continues to await LIRR's response. The PMOC notes that LIRR's decision regarding the TELP Track would take into consideration the PMT-GEC's EBBR tunneling recommendation.

Contract CS284 (GEC Contract CS086), Tunnel Signal Installation, 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 negotiated and is awaiting MTA approval. The scope of this change order included a refresh of the package and changes control of Plaza Interlocking from Penn Station Control Center to the GCT Train Operations Center. 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 bid advertisement date is now forecast for January 10, 2017, a delay of four months from the previously forecast date.

For Contract VS086, Systems Package 3 – Signal Equipment Procurement, the GEC design was completed but revisions continue to incorporate the requirements of Positive Train Control (PTC).

<u>Status of MTACC and LIRR Review and Approval of Systems Contractors' Final Designs</u>:

The CS179 contractor continues to work on the design development of the various contract required systems. As noted in previous reports, the reduction of the backlog of submittal and RFI reviews remains as a serious issue and, although this continues to be an area of focus for the CS179 project team, very little progress on reducing the backlog has occurred. Discussions on ways to

remedy this issue continue between MTACC-ESA senior management and LIRR management. In its July 2016 ESA Monthly Progress Report, the MTACC indicates that the contractor's Control System Designs will be completed by October 2016; seven months later than originally scheduled. However, as of the end of September 2016, 5 of the 11 Final Design Review (FDR) meetings must still be held with all the stakeholders; and, only 2 of the 5 are scheduled to take place before the end of October 2016. The PMOC believes that a late 2016 forecast date for completion of all 11 Control System Designs is achievable as long as the MTACC continues to aggressively pursue the closure of design questions. **[Ref: ESA-125-Sep16]**

The CS084 contractor continued to transmit contractual submittals and substation design documents. As noted in previous PMOC reports, the contractor continues to assert that previous delays related to design submittals were caused by MTA and have impacted its ability to meet its own original design, procurement, fabrication, and installation schedules. The ESA CS084 CM took measures to mitigate any potential delays associated with submittal reviews; however, there continues to be little improvement. The PMOC recommends that further discussions between senior management at the MTACC and the LIRR take place to remedy this problem. A revised SCADA scope of work must be finalized before the contractor can submit a proposal for modifying the SCADA design. The GEC continues to work on various other design changes that are impacting work efforts. While the ESA CS084 CM acknowledged that these design efforts were taking too long to complete and need to be accelerated to preclude schedule slippage, as of mid-September 2016, these design efforts remained as on-going. **[Ref: ESA-125-Sep16]**

Observation:

The GEC and PMT continue to consistently miss many of the target dates for completion of remaining design activities on the project. These delays, in turn, push back procurement dates. [redacted] Some of the delays are caused by the requirement to add Positive Train Control to the associated systems design and equipment, and other delays involve outside stakeholders. Additionally, the PMOC remains concerned about any potential impacts on the CS179 and CS084 contract schedules that may result from the lack of timely design decisions and the lengthy turn-around time to review and respond to contractor design submittals and contractor inquiries. The PMOC notes that ESA senior management has engaged LIRR management in actively resolving issues that have caused delays in the review and approval of contractors' designs on Contracts CS179 and CS084.

Concerns and Recommendations:

MTACC needs to focus on achieving intermediate milestones in a timely fashion and work closely with the GEC to make this happen. The continual shifting of scope among various packages has made finalizing design documents and drawings extremely difficult. Additionally, MTACC management needs to more actively engage outside stakeholders such as building owners, Amtrak, and the LIRR to resolve lingering design issues. The PMOC notes ESA PMT and senior management's increased efforts to resolve contractors' systems design reviews with GEC and LIRR management. The PMOC recommends that the PMT develop a design milestone tracking process for the remaining design work on the project in order to more effectively manage the design effort.

2.2 Procurement

As of end of July 2016, the Cost Report showed total procurement activity on the project as 82.4% complete, with $8.384 billion in contracts awarded out of the $10.177 billion current reported budget.

Status:

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, however, and neither of these had been issued as of September 30, 2016. MTACC now forecasts that it will issue the NTP on February 1, 2017, a three month delay from the previously forecast date of October 28, 2016.

The status of near-term procurements is summarized below:

- CM015, 48th Street Entrance – Advertise November 29, 2016; Bids due February 6, 2017;
- CQ033, Mid-Day Storage Yard Facility – Advertise (TBD); Bids due (TBD); and,
- CS086, Systems Package 2-Tunnel Systems – Advertise January 10, 2017; Bids due March 10, 2017.

As of the end of September 2016, all but two CS179 Contract Options (Option Nos. 4 and 5) were exercised. All the currently identified CS179 contract Options are part of the original contract work and must be exercised to successfully complete the required contract work. The schedule for exercising the remaining contract options, identified in CS179 Modification No. 18, indicates that the last two options must be exercised by the end of 3Q2017 to meet the revised contract substantial completion date.

Concerns and Recommendations:

The lack of stability in the contracting strategy and Contract Packaging Plan (CPP) remains a concern. The scope shifts among different packages during 2016 have made it difficult to fully understand the impact of these changes to the overall ESA Project. The current CPP update (revision 10.2) was submitted on November 13, 2015. The PMOC continues to recommend that the ESA PMT make the effort to adhere to the current version of the CPP and minimize shifting scope for the remainder of the project.

2.3 Construction

The PMT reported in its July 2016 Monthly Progress Report (August 1, 2016, data date) that the total construction progress reached 64.5% complete vs. 67.6% planned.

Manhattan Contracts

CM005 – Manhattan South Structures

Status: ESA is no longer reporting construction activity for the CM005 contract, therefore PMOC reporting for this contract will cease with this report. MTACC reports the final budget for the completed CM005 contract as $249,800,000. MTACC retroactively declared Substantial Completion (SC) for April 22, 2016.

		1	2	3	4	5	6
		Original Baseline	**Current Approved Baseline**	**Change to Original (2-1)**	**EAC/ Forecast**	**Change to Original (4-1)**	**Change to Current (4-2)**
Contract Cost		$200.6M (Award)	$239.9M	+39.3M +19.6%	$249.8M	+49.2M +24.5%	+9.9M +4.1%
Scheduled SC Date		02/06/16	02/06/16		04/22/16A		
Duration (NTP-SC)		29 mos.	29 mos.	0 mo. 0.0%	32 mos.	3 mos. 10.3%	3 mos. 10.3%
Percent Complete		**Actual – 12 mos.**		**Actual - 6 mos.**		**Avg. Reqd. Progress**	
Plan	**Actual**	**Total**	**Avg./mo.**	**Total**	**Avg./mo.**	**Contract SC**	**Forecast SC**
100.0%	100.0%	13.7%	1.1%	3.7%	0.6%	N/A	N/A

From July 2016 ESA Monthly Report

Construction Progress: During September 2016, the contractor continued work activity at the upper 37th St. facility, which includes canopy reinstallation, utilities, and street/sidewalk restoration. The contractor also continued punchlist work.

Observations/Analysis: ESA and the contractor have scheduled remaining work at the 37th St. facility and punchlist work to be completed by October 7, 2016. ESA reports that if some items are not done, they will be transferred for completion by another contract.

Concerns and Recommendations: ESA and the contractor continue to work well together and must remain diligent to resolve issues and complete contract work prior to turnover of the site to the CM007 contract.

CM006 – Manhattan North Structures

Status: As of July 31, 2016, MTACC increased its Forecast at Completion for CM006 to $358,530,278. The MTACC forecast for Substantial Completion remained at June 1, 2017. Actual construction progress for July 2016 was 3.7% versus 3.7% planned. Cumulative progress through July 31, 2016, was 80.3% actual versus 80.3% planned. ESA continues to review the new CPM schedule, however, ESA is reporting the new schedule as the current baseline.

		1	2	3	4	5	6
		Original Baseline	**Current Approved Baseline**	**Change to Original (2-1)**	**EAC/ Forecast**	**Change to Original (4-1)**	**Change to Current (4-2)**
Contract Cost		$294.2M (Award)	$350.0M	+55.8M +19.0%	$358.5	+64.3M +21.9%	+8.5M +2.4%
Scheduled SC Date		11/30/16	6/01/17		6/01/17		
Duration (NTP-SC)		32 mos.	38 mos.	6 mos. 18.8%	38 mos.	6 mos. 18.8%	0 mo. 0.0%
Percent Complete		**Actual – 12 mos.**		**Actual - 6 mos.**		**Avg. Reqd. Progress**	
Plan	**Actual**	**Total**	**Avg./mo.**	**Total**	**Avg./mo.**	**Contract SC**	**Forecast SC**
80.3%	80.3%	46.8%	3.9%/mo.	23.8%	4.0%	2.0%/mo.	2.0%/mo.

From July 2016 ESA Monthly Report

Construction Progress: During September 2016, the CM006 contractor continued rehabilitation/remediation work at the 63rd St. Tunnels and Structures, walls and duct bench, and expects to finish work here in October 2016. The contractor continued staircase construction at BOH (back of house) in the East and West Caverns. The contractor completed "overbreak" remediation at the 55th St. Vent Facility above Tunnel EB4. The contractor continued archway rebar installation at the upper level air plenum 50th St. Vent Facility. Archway construction continued at GCT 3 Wes Wye Cavern and the contractor began construction of the GCT 3 Crossover duct bench. The contractor continued duct bench construction at Tunnel EB4. Contact grouting continued at GCT 4 East and GCT 5 West. The contractor also continued arch construction at Tunnel WB3.

Observations/Analysis: The new CPM schedule with the new Substantial Completion date in June 2017 remains under review by ESA, and the new schedule is being used to track construction progress.

Concerns and Recommendations: ESA and the contractor continued to work well together, therefore the PMOC has no concerns at this time.

CM007 - GCT Station Caverns and Track:

Status: MTACC issued the Notice of Award and Notice to Proceed to the contractor, Tudor Perini Corporation, on April 11, 2016. MTACC reports that, through July 31, 2016, the forecast cost at completion increased slightly to $713,712,517. The Substantial Completion date is January 28, 2020. Actual monthly construction progress versus planned and cumulative progress through the end of the reporting month, actual versus planned, will be reported when available from MTACC.

		1	2	3	4	5	6
		Original Baseline	**Current Approved Baseline**	**Change to Original (2-1)**	**EAC/ Forecast**	**Change to Original (4-1)**	**Change to Current (4-2)**
Contract Cost		$663.1M (Award)	$663.1M	+$0.00M +0.00%	$713.7M	+$50.6M +7.6%	+$50.6M +7.6%
Scheduled SC Date		1/28/20	1/28/20		1/28/20		
Duration (NTP-SC)		46 mos.	46 mos.	+0 mo. +0.00%	46 mos.	+0 mo. +0.00%	+0 mo. +0.00%
Percent Complete		**Actual – 12 mos.**		**Actual- 6 mos.**		**Avg. Reqd. Progress**	
Plan	**Actual**	**Total**	**Avg./mo.**	**Total**	**Avg./mo.**	**Contract SC**	**Forecast SC**
N/A*	N/A*	N/A*	N/A *	N/A*	N/A*	2.2%	2.2%

From July 2016 ESA Monthly Report

* April 2016 was the first month for which MTACC reported CM007, however MTACC has not generated a progress curve for CM007 yet, therefore there is no historical data to populate these columns.

Construction Progress: During September 2016, the contractor continued to mobilize, prepare permit application documentation, and prepare contract and other submittals. The Baseline schedule has been submitted and is under review. The contractor continued mobilization in the LIRR Amityville Yard in Queens for material staging and storage. Other activities included: preparation of the Mock Demonstration Track, continued 3D survey scans of tunnels and caverns, continued site inspection for takeover systems, and prototype beam production by the precast concrete subcontractor. Production casting of beams and panels is scheduled to begin in early October 2016. After Access Restraint 1, on October 11, 2016, the contractor will begin work activity in the east and west caverns including the distribution of rail in the tunnels. The third monthly Construction Progress Meeting was held on September 8, 2016.

Observations/Analysis: The PMOC has been made aware that the contractor has not yet submitted the Composite Schedule, required by contract, a tool to track the critical interface activities for contracts CM006, CM007, and CS179. The PMOC is also aware that a time impact analysis is being performed to assess the cost and time impacts that changes in the camber values of certain precast concrete elements present.

Concerns and Recommendations: The contractor and ESA need to re-double effort to produce the Composite Schedule and complete the above time impact analysis.

CM014A – GCT Concourse & Facilities Fit-Out

Status: MTACC reports that, through August 1, 2016, the forecast project cost at completion remains $56,887,117. MTACC has advised that it intends to declare Substantial Completion retroactively to November 1, 2015, following negotiations with the contractor and the contractor's bonding company. MTACC reports there was zero actual construction progress for August 2016, as the contractor has had minimum presence on site. Cumulative progress through August 1, 2016 remained 97.0% versus 100.0% planned.

		1	2	3	4	5	6
		Original Baseline	**Current Approved Baseline**	**Change to Original (2-1)**	**EAC/ Forecast**	**Change to Original (4-1)**	**Change to Current (4-2)**
Contract Cost		$43.50M (Award)	$58.87M	+$15.37M +35.33%	$56.88M	+$13.38M +30.76%	-$1.99M -3.80%
Scheduled SC Date		4/25/13	9/7/15		11/1/15		
Duration (NTP-SC)		18 mos.	46 mos.	+28 mos. +155.56%	+48 mos.	+30 mos. +166.67%	+2 mos. +4.08%
Percent Complete		**Actual – 12 mos.**		**Actual- 6 mos.**		**Avg. Reqd. Progress**	
Plan	**Actual**	**Total**	**Avg./mo.**	**Total**	**Avg./mo.**	**Contract SC**	**Forecast SC**
100%	97.0%	N/A	N/A	N/A	N/A	N/A	N/A

From July 2016 MTACC Monthly Report

Construction Progress: Through September 30, 2016, progress at the site continued to be very slow with only 1 or 2 electricians present. There is an ongoing issue with the programming of some of the relays in the switchgear. These relay performance requirements come from ConEd and are in the specifications, but the switchgear manufacturer, Siemens, has still not been successful in solving the problem and has missed several dates for reprogramming the relays.

SCADA testing is ongoing but has been experiencing a series of isssues.

Observations/Analysis: The ongoing presence of this contractor at the site is not impacting the CM014B contractor.

Concerns and Recommendations: None at this time.

CM014B – GCT Concourse & Facilities Fit-Out

Status: MTACC reports that, through August 1, 2016, the the forecast project cost at completion decreased slightly to $477,629,668 from the previous $477,913,666. The Substantial Completion date has been extended to January 21, 2019, from the original and previous August 18, 2018. This change is largely due to delays in structural steel at the Dining Concourse and Biltmore Room connectors and delays at the E. 48th St. Entrance. Actual construction progress for August 2016 was 1.4% versus 3.0% planned. Cumulative progress through July 31, 2016, was 20.8% actual versus 27.8% planned.

		1	2	3	4	5	6
		Original Baseline	**Current Approved Baseline**	**Change to Original (2-1)**	**EAC/ Forecast**	**Change to Original (4-1)**	**Change to Current (4-2)**
Contract Cost		$404.62M (Award)	$431.49M	+$26.87M	$477.62M	+$73.00M +18.04%	+$46.13M +10.69%
Scheduled SC Date		8/18/18	8/18/18		1/21/19		
Duration (NTP-SC)		42 mos.	42 mos.	0 mo.	47 mos.	5 mos. 11.90%	5 mos. 11.90%
Percent Complete		**Actual – 12 mos.***		**Actual- 6 mos.**		**Avg. Reqd. Progress**	
Plan	**Actual**	**Total**	**Avg./mo.**	**Total**	**Avg./mo.**	**Contract SC**	**Forecast SC**
27.8%	20.8%	17.00%	1.41%	8.6%	1.43%	3.4%	2.82%

From July 2016 MTACC Monthly Report

Through September 30, 2016, the Surveying in the Concourse is continuous and will be on-going throughout this contract.

Milestone #1(March 5, 2016; now June 1, 2016) Complete Terminal Management Center, Communication Room C-2 & Communication Closet C-5) – Punchlist work is complete. However, FM200 work remains. The FM200 annunciator panel must be supplied, and the mechanical purge system must be designed and installed.

Milestone #2 (50th St Room CR102, Tunnel Fan Control Room, Electrical Room #126 & ICC Room), June 4, 2016, now April 2017 – The delay to this milestone continues to be tied to the Elevator #9 shaft corrective work, in which out of alignment block walls have to be torn out and reconstructed. These walls were constructed by the CM013 contractor. The affected room is the Tunnel Fan Control Room. Punchlist work is underway in the electrical room and the ICC.

Milestone #3 (Comm. Closets CC-C1, CC-C2, CC-C6, MTAPD and BCS Conduit) August 4, 2016 – Construction of the rooms is complete. Installation of door hardware, painting, and application of floor sealer nears completion. Punchlist work is also ongoing.

Milestone 5A (Complete all work at 48th St. Entrance) November 25, 2016, now April, 2017 – This is being delayed until April 2017 (previously March 2017) due to delays in demolition of the MTA Building in the Concourse and transfer of personnel to the new 52nd St. Entrance. Some structural beam work is underway.

Construction Progress: Work Trains are loaded/unloaded at B/N Yard.

Concourse(MadisonYard) – Stantec Repairs (structural repairs to columns in Madison Yard that are both owned by MTA and privately owned) continue throughout. Third Party Inspections continue for concrete, shotcrete, rebar, masonry, bolting, welding and firestops. Electricians continue to chop columns and weld grounds. Grounding can only be made to GCT columns, and not any private building columns. TP1 and TP2 load transfer to CP31 and CP41 continues. Completed installation of ConEd Meter Room Switches and Programmable Logic Controllers (PLC). The contractor began installation of overhead plumbing in the East Corridor and overhead fire standpipe. Painting began in the east corridor. Placement of CLSM (Controlled Low Strength Material) backfill continues throughout in various areas. Header work continues in Zones 3-5. The contractor is continuing to set rebar and place final concrete slab invert in various areas.

3118 Chiller Plant, 3128 Heating Plant - Hangers, supports, 24", 12", and 8" continuous weld pipe continues in the Chiller Plant.

Demolition (MTA Building) - Demolition of the MTA Building remains delayed by MTACC. Relocation of personnel will be to the new trailer park at 52nd St. This relocation began September 30, 2016.

Wellways - Unistrut installation is underway in Wellways #1 & #2. Conduit installation was completed in Wellway #4. Installation of Wellway #4 sprinkler piping continues.

Biltmore Connection – There is existing conduit blocking some to the structural steel work. These must be re-routed by MNR. The Project Office reports that this work is proceeding faster than anticipated.

Dining Concourse Connection – Erection of permanent steel is being delayed due to serious contractor delays developing and submitting steel shop drawings and relocations required to be made by MNR.

Elevator T-01 - Installation of plates is complete. Installation of permanent structural steel is delayed until MNR completes relocation of existing obstructions.

48th St. Entrance – Rock excavation is approximately 85% complete on the street side. Demolition of concrete below the channels began.

44th St. Vent Building - Installation of sprinkler piping is ongoing. Installation of conduit at the 1st Basement Level continues. Forms are being stripped and shores are being set

50th St. Vent Building – Demolition of the Elevator 9 shaft CMU wall has finally begun. This out of alignment wall was built by the CM013 contractor. Installation of communication conduit continues in the Concourse Level. The contractor began demolition of stairs and installation of new door and frame at the 300 Park Ave. building.

Observations/Analysis: The PMOC observes that the contractor has been having issues with completing the finishes in the wellway arches due to conflicts in the means and methods of the escalator contractor (VM014). This is impacting the schedule for delivery of the escalator

components, which may delay removal of the tracks for the work trains and completion of the Concourse concrete sub-floor.

Stantec Repairs are repairs to the Madison Yard structure, including structure owned by both MTA and private building owners. Under a separate contract, Stantec Consulting performed a structural survey and produced drawings and specifications for the repairs of this portion of GCT. These repairs started in the CM014A contract and now are being completed under this contract.

Concerns and Recommendations: The PMOC is concerned about the widening gap between planned and actual construction and recommends that the CCM and the contractor increase their respective efforts to improve the submittal and fabrication process of structural steel for the Dining Concourse and Biltmore Room Connections.

Queens Third-Party Contracts

CQ032 Contract – Plaza Substation and Queens Structures

Status: As of July 31, 2016, the Forecast at Completion for CQ032 decreased slightly to $262,931,232. MTACC Forecast for Substantial Completion slipped from October 6, 2016, to February 28, 2017. ESA reports that this schedule push is primarily due to work at the 23rd St. Vent Facility. MTACC reports actual construction progress for July 2016 was 0.5% versus 0.5% planned. MTACC reports cumulative progress through July 31, 2016, was 98.1% actual versus 97.7% planned.

		1	2	3	4	5	6
		Original Baseline	**Current Approved Baseline**	**Change to Original (2-1)**	**EAC/ Forecast**	**Change to Original (4-1)**	**Change to Current (4-2)**
Contract Cost		$147.4M (Award)	$260.0M	+$112.6M +76.4%	$262.9M	+$115.5M +78.4%	+$2.9M +1.1%
Scheduled SC Date		8/14/14	9/6/16		2/28/17		
Duration (NTP-SC)		36 mos.	61 mos.	+25 mos.	67 mos.	+31 mos. +86.1%	+6 mos. +9.8%
Percent Complete		**Actual – 12 mos.**		**Actual - 6 mos.**		**Avg. Reqd. Progress**	
Plan	**Actual**	**Total**	**Avg./mo.**	**Total**	**Avg./mo.**	**Contract SC**	**Forecast SC**
97.7%	98.1%	12.2%	1.0%/mo	3.1%	0.5%	1.9%/mo.	0.3%/mo.

From July 2016 ESA Monthly Report

Construction Progress: During September 2016, the CQ032 contractor continued architectural finishes work, lighting installation, floor tile, lockers, and casework installation at the Yard Services Building (YSB). The contractor started water infiltration repairs at Plaza Interlocking, grouting at the Q-Tip, grouting around the Early Access Building, and waterproofing at the Amtrak bridge. The contractor continued punchlist work activity throughout the project site.

Observations/Analysis: ESA reported that several contract modifications are being processed: one for the water remediation work, one for the transfer of the 23rd St. facility work to contract CS179, and one for deleting painting scope at Plaza and the Amtrak bridge.

Concerns and Recommendations: ESA and the contractor need to re-double their construction efforts in order to complete construction operations and contract closeout.

CH057 Contract – Harold Structures Part 3

Status: MTACC's Forecast at Completion for CH057 increased to $91,003,943 in July 2016 due to 3 contract modifications that were exercised. MTACC's forecast for Substantial Completion

remained at August 18, 2017. Actual construction progress for July 2016 was 11.0% versus 15.0% planned. Cumulative progress through July 31, 2016, was 44.6% actual versus 53.8% planned.

		1	2	3	4	5	6
		Original Baseline	**Current Approved Baseline**	**Change to Original (2-1)**	**EAC/ Forecast**	**Change to Original (4-1)**	**Change to Current (4-2)**
Contract Cost		$53.4M (Award)	$56.0M	+$2.6M +4.9%	$91.0M	+$37.6M +70.4%	+$35.0M +62.5%
Scheduled SC Date		7/5/17	7/5/17		8/18/17		
Duration (NTP-SC)		19 mos.	19 mos.	0 mo. 0.0%	21 mos.	+ 2 mos. +10.5%	+2 mos. +10.5%
Percent Complete		**Actual – 12 mos.**		**Actual - 6 mos.**		**Avg. Reqd. Progress**	
Plan	**Actual**	**Total**	**Avg./mo.**	**Total**	**Avg./mo.**	**Contract SC**	**Forecast SC**
53.8%	44.6%	N/A	N/A	40.5%	6.8%	5.3%/mo.	5.0%/mo.

From July 2016 ESA Monthly Report

Construction Progress: During September 2016, the CH057 contractor continued construction of Tunnel D with placement of the concrete slab and sidewalls in the TBM Reception Pit area, completion of secant pile installation and beginning of excavation in the transition area under the 39th St. overhead bridge, and placement of approximately 220' of base slab and sidewalls and approximately 50' of concrete roof structure in the East Approach Structure. The contractor also poured the concrete deck and parapets for the new LIRR ML2 Track bridge over 48th St. in Queens, continued to install secant piles for the 48-S2 and 39-S6 retaining walls, and continued miscellaneous catenary pole foundation construction in Harold Interlocking.

Observations and Analysis: The contractor continued its field construction during September 2016 and, continued to keep pace with its monthly construction schedules.

Concerns and Recommendations: ESA and the CH057 contractor continue to work well together and construction continues without incident. As a result, the PMOC has no concerns or recommendations for the CH057 contract at this time.

Contract CH057A – Part 3 Westbound Bypass

Status: MTACC's Forecast at Completion for the CH057A contract decreased slightly during July 2016 to $152,067,379, although MTACC did not provide an explanation for the decrease.

MTACC's forecast for Substantial Completion remained at October 30, 2017. Actual construction progress for July 2016 was 1.2% versus 1.2% planned. Cumulative progress through July 31, 2016, was 36.6% actual versus 36.6% planned. The PMOC notes that the cumulative planned construction percentage is a significant reduction from MTACC's June 2016 Monthly Report and several earlier reports, in which the cumulative planned construction was shown as 100.0%. Although MTACC offered no explanation for the reduction in the planned percentage and has not yet adjusted the contract schedule, the PMOC estimates that CH057A continues to lag at least 10 months behind its original schedule.

		1	2	3	4	5	6
		Original Baseline	**Current Approved Baseline**	**Change to Original (2-1)**	**EAC/ Forecast**	**Change to Original (4-1)**	**Change to Current (4-2)**
Contract Cost		$103.3M (Award)	$116.8M	+13.1%	+$152.1M	+$48.8M +47.2%	+$35.3M +30.2%
Scheduled SC Date		1/31/16	10/30/17		10/30/17		
Duration (NTP-SC)		26 mos.	46 mos.	0 mo.	46 mos.	+20 mos. +76.9%	$0 0.0%
Percent Complete		**Actual – 12 mos.**		**Actual - 6 mos.**		**Avg. Reqd. Progress**	
Plan	**Actual**	**Total**	**Avg./mo.**	**Total**	**Avg./mo.**	**Contract SC**	**Forecast SC**
36.6%	36.6%	10.6%	0.9%	4.6%	0.8%	6.3%/mo.	4.9%/mo.

From July 2016 ESA Monthly Report

Construction Progress: During September 2016, the CH057A contractor completed excavation of the West Approach Structure of the Westbound Bypass (WBY), completed placement of the concrete base slab, and began re-bar placement for the sidewalls. The contractor also continued excavation of the East Approach Structure, installation of secant piles around the WBY Pump Station, and de-watering the entire work site. However, the contractor was unable to resume mining the Westbound Bypass Tunnel as it waited for design revisions and materials to make the necessary modifications to its "jacked box" tunnel shield. As of September 30, 2016, the ESA PMT anticipates that mining will resume during the 3rd week of October 2016.

Observations and Analysis: As the PMOC noted in its August 2016 Monthly Report, MTACC issued a "Stop Work Order" to the CH057A contractor on August 3, 2016, as a result of the incident in which the "jacked box" tunnel shield encountered the concrete slab placed by the CQ031 contractor in 2013. Prior to that, the contractor was also having difficulty keeping the "jacked box" on the design alignment for the tunnel (although it had just begun excavation). The contractor discovered that the frame against which it was pushing the tunnel shield was not sufficiently rigid and was causing the shield to veer off alignment. To rectify this, the contractor made design

revisions to stiffen the frame and, during September 2016, began to make the necessary modifications. ESA and the contractor anticipate resumption of mining during the 3rd week of Ocotober 2016.

Concerns and Recommendations: The PMOC remains concerned about two aspects of CH057A construction which have not gone as planned, i.e. WBY Tunnel mining and construction of the pump station. Both have already caused significant delays to the contract and both potentially could cause further delays. The PMOC does not believe that there are any viable alternatives to the contractor's construction methods that would yield any schedule recovery. The only recommendation that the PMOC can offer is that both ESA and the contractor continue to work together, persevere, and attempt to develop whatever schedule recovery is possible.

Systems Contracts

VH051 (Part 1) – Harold and Point Central Instrument Locations (CILs) and Harold Tower Supervisory Control Ssytem (VH051 Part 2)

Status: VH051 Part 1 and 2 are procurement packages for LIRR Communications and Signal (C&S) system equipment and apparatus for the Harold and Point Interlocking Central Instrument Locations (CILs) (Part 1) and Harold Tower Supervisory Control System (Part 2), respectively. Purchase of all materials has already been made. The Harold Tower Supervisory Control System (Part 2) is in service. To date, both the "H4" and "H3" CILs in Harold Interlocking have been placed in service. Cutovers for the "H1", "H2", "H5", "H6", and Location 30 Central Instrument Locations (CILs) are now scheduled for 2Q2018.

CS179 - Systems Package 1-Base Contract

Status: As of the end of July 2016, the MTACC continues to show an approved Budget of $606,938,540 for this contract. The $612,996,577 Forecast is a $4,683,104 increase from that in the MTACC's June 2016 2Q2016 ESA Progress Report. At the September 29, 2016 Cost and Schedule meeting with ESA, the PMT indicated that the forecast had been incorrectly reported as $613 million, and should have been $607 million. It is noted that in the August 2016 Monthly Progress Report the forecast is shown as $607 million, consistent with the other cost data received from the project, [redacted] In its July 2016 Monthly Report, the MTACC shows a progress curve for the CS179 contract that presents actual contract progress as 25.6% versus a planned 55.4%; 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 moving further behind schedule from previous reports. The MTACC is continuing its evaluation of the contractor's monthly schedule updates to determine if the schedule includes major changes to the contract schedule precipitated by the approval of CS179 contract Modification No. 18 and the incorporation of a workable Integrated System Test Plan (ISTP). The CS179 CM advised that MTACC is evaluating an ISTP that the contractor submitted in September 2016. The reported Substantial Completion date for this contract remains, as previously reported, at July 1, 2020; an approximate seven-month delay from the original November 19, 2019, SC date. As noted by the PMOC in earlier reports, water infiltration issues at several facilities must still be successfully mitigated to progress contract work. Several CS179 contract options, or parts thereof, have been exercised to date as a result of the appropriate funding becoming available. As of the end of September 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. There are still two potential Buy/Ship America issues that pose

schedule risks to the successful and timely completion of this contract. The ESA CS179 CM advised that Buy/Ship America waiver request letters for the HVAC equipment and video display panels are still under review by MTA Legal staff. Once the letters are finalized, they will be submitted to the FTA for consideration. As of August 31, 2016, the CS179 CM was not able to forecast a date for when the MTA Legal staff will complete its review. Only when the MTACC is assured through its evaluation that the contractor's schedule and ISTP submissions are comprehensive and reasonably executable will it be possible to perform an analysis of the contract schedule to validate contractor assertions regarding delays.

	1	2	3	4	5	6
	Original Baseline Award+ Options	**Current Approved Baseline**	**Change to Original (2-1)**	**EAC/ Forecast**	**Change to Original (4-1)**	**Change to Current (4-2)**
Contract Cost	$454.6M	$459.5M	+$4.9M +1.0%	$606.9M	+$152.3M +33.5%	+$147.5M +32.1%
Scheduled SC Date	11/25/19	7/1/20		7/1/20		
Duration (NTP-SC)	68 mos.	68 mos.	0 mo.	68 mos.	0	0

Percent Complete		**Actual – 12 mos.**		**Actual - 6 mos.**		**Avg. Reqd. Progress**	
Plan	**Actual**	**Total***	**Avg./mo.***	**Total**	**Avg./mo.**	**Contract SC**	**Forecast SC**
51.1%	20.4%	NA	NA	5.0%	0.8%	1.5%/mo.	1.6%/mo.

* MTACC did not produce a CS179 progress curve until its November 2015 Monthly Report

Design Progress: The CS179 contractor continues to work on the design development of the various contract required systems. As noted in previous reports, the reduction of the backlog of submittal and RFI reviews remains as a serious issue and, although this continues to be an area of focus for the CS179 project team, only limited progress on reducing the backlog has occurred. Discussions on ways to remedy this issue continue between MTACC-ESA senior management and LIRR management. In its July 2016 ESA Monthly Progress Report, MTACC indicated that the contractor's Control System Designs will be completed by October 2016; seven months later than originally scheduled. The PMOC notes that this October 2016 completion date is unachievable based on information presented at the most recent Contract CS179 Progress Meeting. As of the end of September 2016, 5 of the 11 Final Design Review (FDR) meetings must still be held with all the stakeholders, and only 2 of the 5 are scheduled to take place before the end of October 2016. One is scheduled to take place in November 2016 and the remaining two have no FDR meeting date identified. The contractor contends that the extended FDR meeting dates are a result of the lack of answers to design questions. The PMOC believes that a late 2016 forecast date for completion of all 11 Control System Designs is achievable as long as the MTACC

continues to aggressively pursue the closure of design questions. Additionally, design modifications for equipment room conflicts at the Vernon and other substation locations have yet to be completed or issued by the GEC; raising concerns from the contractor about potential schedule delays.

Construction Progress: During September 2016, the CS179 contractor continued various elements of work (e.g., conduit cleaning and installations, concrete work, temporary power installations, fire stopping installations, etc.) at the B10; Roosevelt; Vernon; 12th St.; 39th St.; Queens Plaza; and 63rd St. facilities. In September 2016, the contractor also continued the installation of lighting in Tunnel Tracks D and LL; 480 volt cable in Tunnel Track LL; 480 volt switchgear in the 12th Street facility; signal power cable in Tunnel Track A; and fire alarm wiring in the Yard Service Building. In September 2016, the contractor began the installation of 480 volt cable in Tunnel Tracks A, B/C, and D; the installation of radio antenna cable in Tunnel Tracks A and LL; the demolition of a concrete floor slab in the Vernon facility as the start of the water infiltration mitigation effort at this facility; and the preliminary testing of the fire standpipe system in Tunnel Track B/C. At present, water infiltration issues have been identified at four locations; Vernon, 12th St., 23rd St. and 29th St. The water infiltration issue at the Vernon substation facility must still be successfully mitigated to progress CS179 Milestone No. 1 work and also work associated with the CS084 contract. The mitigation efforts have started at the Vernon, 23rd St., and 29th St. facilities. There continues to be five Stop Work Orders (SWOs) on this contract. One SWO is related to the requirement for an Undercar Deluge System at GCT and another 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. All three of the remaining SWOs need to be resolved by MTACC. One SWO is related to water infiltration in the 29th Street Facility Power Room, the second is related to the Fire Stand Pipe installation in the Vernon facility, and the third is related to condenser pipes and drainage issues at the 2nd Avenue facility.

Concerns and Recommendations: The PMOC remains concerned regarding the timely delivery and discussion of the contractor's monthly schedule updates. These schedule updates are currently not available for discussion at the monthly progress meetings. Additionally, the PMOC has significant concerns regarding the timely preparation and submission of any Buy/Ship America waiver requests for potentially non-compliant material or equipment on the CS179 contract. Extended delays in providing compliant material or equipment could have a significant impact on the timely completion of this work. Further, the PMOC remains very concerned about the water infiltration issues in the equipment rooms that are identified and whether proposed mitigation remedies will prove out to be successful as no testing method has been identified to validate that any remedy, once implemented, will permanently solve the problem. Lastly, the PMOC continues to be concerned about late completion of systems' design reviews and approvals but acknowledges recent stepped-up efforts between senior management at both MTACC and LIRR to identify issues and implement corrective actions.

CS084 - Traction Power System Package #4

Status: In its July 2016 ESA Monthly Progress Report (MPR), MTACC is reporting a new Forecast of $79,263,901; a reduction of $453,871 from that reported in its 2Q2016 Quarterly Report, with a $79,717,772 Budget figure that has not changed since the 4Q2015. MTACC shows a July 1, 2020, Substantial Completion (SC) date for this contract, while the contractor, in its narrative accompanying the most recent monthly schedule update (data date 9/1/16), indicates that

the Substantial Completion (SC) date has slipped to July 20, 2020. The MTACC project controls personnel need to identify the reason and accuracy of this variance. Actual construction progress for July 2016 was 0.5% versus 2.5% planned, with cumulative progress through July 31, 2016, at 10.6% actual versus 51.0% planned; numbers that are based on actual versus projected costs, not physical construction efforts. The actual versus planned progress numbers contained in the MTACC's July 2016 MPR appear to indicate that this contract is significantly behind schedule. However, the contractor contends that the variance in the actual versus planned costs is because funds have not been expended as originally projected due to delays in approving and moving forward with the substation designs and equipment. 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. To make tracking of actual versus planned progress more useful as a management tool, MTACC and the contractor may want to consider modifying the MTACC's Progress Curve to reflect the current and projected progression of the contract. In a schedule review meeting held after the mid-September 2016 Progress meeting, the contractor advised that its schedule update now shows delays to six of seven contract Milestones (Nos. 1, 2, 3, 4, 6, and 7) as a result of delays associated with the approval of substation designs and the resolution of Supervisory Control and Data Acquisition (SCADA) requirements. Additionally, the contractor asserts that any further delay in the issuance of a SCADA scope of work and the associated contract modification or further delay in the approval of the C08 substation equipment, which is now on the contract's critical path, will result in additional schedule impacts. MTACC indicated that it would review and evaluate the contractor's schedule submission to determine the validity of these assertions.

	1	2	3	4	5	6
	Original Baseline	**Current Approved Baseline**	**Change to Original (2-1)**	**EAC/ Forecast**	**Change to Original (4-1)**	**Change to Current (4-2)**

Contract Cost		$71.2M (Award)	$71.2M	+$0.0 0.0%	$79.7M	+$8.5M +11.9%	+$8.5M +11.9%
Scheduled SC Date		12/3/19	12/2/19		7/1/20		
Duration (NTP-SC)		61 mos.	61 mos.	0	68 mos.	+7 mos. +11.5%	+7 mos. +11.5%
Percent Complete		**Actual – 12 mos.**		**Actual - 6 mos.**		**Avg. Reqd. Progress**	
Plan	**Actual**	**Total***	**Avg./mo.***	**Total**	**Avg./mo.**	**Contract SC**	**Forecast SC**
10.5%	6.1%	N/A	NA	1.9%	0.3%/mo.	1.6%/mo.	2.2%/mo.

* MTACC did not produce a CS084 progress curve until its November 2015 Monthly Report

Design Progress: The CS084 contractor continued to transmit contractual submittals and substation design documents. 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 took considerable action to address this issue; however, there continues to be little improvement. The PMOC recommends that further discussions between senior management at the MTACC and the LIRR take place to remedy this problem. The revised SCADA 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. The GEC continues to work on design changes 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. Another 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, but the GEC has still not produced a re-design to remedy the problems. While the ESA CS084 CM acknowledged that these design efforts were taking too long to complete and need to be accelerated to preclude schedule slippage, as of mid-September 2016, these design efforts remained as on-going. 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 mitigate the various issues. The MTACC needs to prioritize with the GEC the process to provide timely submittal responses and designs so as to preclude any delays to the contract.

Construction Progress: As noted in an earlier PMOC report, the electrical feeders from Consolidated Edison for the L3 electrical service work were energized in August 2016 and the contractor announced its readiness to begin the extra work to ground and test three existing transformers and the MDP-3A panel. This extra work, which is to address the lack of grounding and testing of the items installed earlier on the ESA project by another ESA contractor, or contractors, must be resolved before the transformers and the panel are energized and turned over

to the LIRR. Previously, the ESA CM indicated that efforts would be made to expedite the MTA Legal staff's review of the contract modification. However, it was noted in the mid-September 2016 CS084 Progress meeting that a technical issue related to the operation of one of the transformers has to be clarified and resolved before the contract modification can be issued. The contractor continues to perform site surveys and submit design documentation. The PMOC previously reported that the LIRR and MTACC had 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, the GEC has yet to provide a revised Scope of Work (SOW) to address this contract change to finalize the SCADA point requirements. 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. The contractor continues to report delays in the completion of contract milestones; and, in the narrative accompanying the most recent monthly schedule update (data date August 1, 2016), the contractor indicates that the Substantial Completion (SC) date has slipped to July 20, 2020. This SC date is 19 calendar days later than the July 1, 2020, SC date MTACC is carrying in its July 2016 ESA Monthly Progress Report and the MTACC's project controls personnel need to identify the reason and accuracy of this reported variance. Additionally, field surveys of various other work site locations are on-going; and, interface issues with other contracts have been identified and are under discussion. Water infiltration in several designated equipment rooms remain an issue that MTACC must still resolve to enable the contractor to perform work and install equipment in these rooms.

Concerns and Recommendations: The PMOC encourages MTACC's senior management to work with LIRR's senior management to resolve the issue related to timely completion of design reviews and approvals to prevent potential delays to the completion of the contract work. The PMOC acknowledges recent stepped-up efforts between senior management at both MTACC and LIRR to identify issues and implement corrective actions. The water infiltration issues in the various facilities are, in the opinion of the PMOC, a serious problem that needs to have an acceptable mitigation methodology identified and successfully implemented so as to preclude any serious schedule impact on the CS084 and CS179 contracts. MTACC needs to prioritize the steps to permanently solve this problem.

Harold Stage I Amtrak FA (FHA01)

Status: MTACC's Forecast at Completion for FHA01 remained at $18,824,861 during July 2016. MTACC extended its forecast for Substantial Completion by seven weeks to January 6, 2017. Actual construction progress for July 2016 was 0.0% versus 0.0% planned. Cumulative progress through July 31, 2016, was 98.8% actual versus 100.0% planned.

	1	2	3	4	5	6

	Original Baseline	Current Approved Baseline*	Change to Original (2-1)	EAC/ Forecast	Change to Original (4-1)	Change to Current (4-2)
Contract Cost	$9.5M (Award)	$18.8M	+9.3M +97.9%	$18.8M	+9.3M +97.9%	$0.0 0.0%
Scheduled SC Date	9/30/10	2/4/16		1/6/17**		
Duration (NTP-SC)	39 mos.	103 mos.	64 mos. +164.1%	114 mos.	+75 mos. +192.3%	+11 mos. +10.7%
Percent Complete	**Actual – 12 mos.**		**Actual - 6 mos.**		**Avg. Reqd. Progress**	
Plan / **Actual**	**Total**	**Avg./mo.**	**Total**	**Avg./mo.**	**Contract SC**	**Forecast SC**
100.0% / 98.8%	1.0%	0.1%	0.0%	0.0%	N/A- Past Due	0.03%/mo.

From July 2016 ESA Monthly Report

*The term "baseline" is a misnomer with Force Account work. In Amtrak's case, the "original baseline" has increased to account for scope changes as detailed in the Project Initiations (PIs) that have been executed for Stage 1. It is presented in the table to be consistent with the contract tables contained elsewhere in this report.

**Substantial Completion dates for all Amtrak Force Account Work packages were extended as a result of the MTACC's "ESA First" Schedule re-baseline.

Construction Progress: Amtrak Force Account personnel did not preform any significant Stage 1 construction during September 2016 due to the ESA PMT's on-going emphasis on completion of former Stage 2 and Stage 3 construction.

Observations and Analsis: As a result of the adoption of the "ESA First" construction schedule, MTACC has de-emphasized its previous program of construction by "stages". Consequently, the remaining former Amtrak Stage 1 construction elements and their respective priorities are inter-mingled with other stages.

Concerns and Recommendations: The PMOC has no concerns or recommendations for FHA01 construction at this time.

Harold Early Stage 2 Amtrak FA (FHA02)

Status: MTACC's Forecast at Completion for FHA02 remained at $60,150,231 during July 2016. The MTACC forecast for Substantial Completion was shortened by approximately 21 months to November 18, 2018, by isolating predecessor activities in former Stage 2 from activities in former Stages 3 and 4 and FQA65. Actual construction for July 2016 was 0.2% versus 0.0% planned. Cumulative progress through July 31, 2016, was 84.3% actual versus 75.3% planned.

	1	2	3	4	5	6
	Original Baseline	**Current Approved Baseline***	**Change to Original (2-1)**	**EAC/ Forecast**	**Change to Original (4-1)**	**Change to Current (4-2)**
Contract Cost	$9.70M (Award)	$51.0M	+$41.3M +425.8%	$60.2M	+50.5M +520.6%	+$9.2M +18.0%
Scheduled SC Date	9/30/13	8/15/17		11/18/18**		
Duration (NTP-SC)	58 mos.	105 mos.	47 mos. +81.0%	120 mos.	+62 mos. +106.9%	+15 mos. +14.3%
Percent Complete	**Actual – 12 mos.**		**Actual- 6 mos.**		**Avg. Reqd. Progress**	
Plan / **Actual**	**Total**	**Avg./mo.**	**Total**	**Avg./mo.**	**Contract SC**	**Forecast SC**
75.3% / 84.3%	5.1%	0.4%	0.0	0.0	1.7%	0.06%/mo.

From July 2016 ESA Monthly Report

* The term "baseline" is a misnomer with Force Account work. In Amtrak's case, the "original baseline" has increased to account for the scope changes as detailed in the Project Initiations (PIs) that have been executed for Stage 2. It is presented in the above table to be consistent with the contract tables contained elsewhere in this report.

**Substantial Completion dates for all Amtrak Force Account Work packages extended were as a result of the MTACC's "ESA First" Schedule re-baseline.

Construction Progress: During September 2016, Amtrak Electric Traction personnel transferred messenger wire from Line 2 to Line 4 between catenary poles B829W and B930W, began construction of catenary wires over the new RPR Track, demolished the existing F33 and F11 trolley breakers, and began construction of the new H22 and F11E Full Tension Air Breaks (FTABs).

Observations and Analysis: To shorten the forecast FHA02 Substantial Completion date, MTACC has "re-distributed" Amtrak Stage 2 activities into the overall Harold remaining work program. The PMOC believes that this will have no impact on the eventual completion date of the entire Amtrak Harold work scope.

Concerns and Recommendations: The PMOC has no concerns or recommendations for FHA02 construction at this time.

Loop Interlocking CIL Amtrak FQA65

Status: MTACC's Forecast at Completion for FQA65 remained at $33,287,863 during July 2016. The MTACC forecast for Substantial Completion was extended by 5-1/2 months to October 1, 2023. Actual construction progress for July 2016 was 0.0% versus 0.7% planned. Cumulative progress through July 31, 2016, was 19.8% actual versus 56.2% planned. The MTACC "Hold" on FQA65 construction continued through September 2016, and it does not appear to the PMOC that the "Hold" will be removed any time soon.

	1	2	3	4	5	6
	Original Baseline	**Current Approved Baseline***	**Change to Original (2-1)**	**EAC/ Forecast**	**Change to Original (4-1)**	**Change to Current (4-2)**
Contract Cost	$9.1M (Award)	$21.0M	+11.9M	$33.3M	+24.2M +265.9%	$12.3M +58.6%
Scheduled SC Date	8/12/18	8/12/18		10/1/23**		
Duration (NTP-SC)	55 mos.	55 mos.	No Change	117 mos.	+62 mos. +112.7%	+62 mos. +112.7%

Percent Complete		**Actual – 12 mos.**		**Actual - 6 mos.**		**Avg. Reqd. Progress**	
Plan	**Actual**	**Total**	**Avg./mo.**	**Total**	**Avg./mo.**	**Contract SC**	**Forecast SC**
56.2%	19.8%	7.2%	0.6%	1.0%	0.2%	1.8%	1.4%/mo.

From July 2016 ESA Monthly Report

* The term "baseline" is a misnomer with Force Account work. In Amtrak's case, the "original baseline" has increased to account for the scope changes as detailed in the Project Initiations (PIs) that have been executed for Stage 2. It is presented in the above table to be consistent with the contract tables contained elsewhere in this report.

**Substantial Completion dates for all Amtrak Force Account Work packages extended were as a result of the MTACC's "ESA First" Schedule re-baseline.

Construction Progress: Amtrak personnel did not perform any significant FQA65 construction during September 2016 due to ESA's "hold" on Loop and T Interlocking construction.

Observations and Analysis: FQA65 construction is not a necessary component of the "ESA First" program. MTACC has therefore down graded its priority and extended its schedule.

Concerns and Recommendations: The PMOC has no concerns or recommendations for FQA65 at this time.

Harold Stage 1 LIRR FA (FHL01)

Status: MTACC's Forecast at Completion for FHL01 remained at $24,379,363 during July 2016. The MTACC forecast for Substantial Completion remained at June 22, 2017. Actual construction progress for July 2016 was 0.2% versus 0.0% planned. Cumulative progress through July 31, 2016, was 87.4% actual versus 100.0% planned.

	1	2	3	4	5	6
	Original Baseline	**Current Approved Baseline***	**Change to Original (2-1)**	**EAC/ Forecast**	**Change to Original (4-1)**	**Change to Current (4-2)**
Contract Cost	$28.8M	$24.4M	-$4.4M -15.3%	$24.4M	-$4.4M -15.3%	$0.0 0.0%
Scheduled SC Date	9/30/10	4/9/15		6/22/17		
Duration (NTP-SC)	39 mos.	94 mos.	+55 mos. +141.0%	121 mos.	+82 mos. +210.3%	+27 mos. +28.7%
Percent Complete	**Actual – 12 mos.**		**Actual - 6 mos.**		**Avg. Reqd. Progress**	
Plan / **Actual**	**Total**	**Avg./mo.**	**Total**	**Avg./mo.**	**Contract SC**	**Forecast SC**
100.0% / 87.4%	-29.8%	2.5%	0.6%	0.1%/mo.	0.1%	1.4%/mo.

From July 2016 ESA Monthly Report

* The term "baseline" is a misnomer with Force Account work. In the LIRR's case, the "original baseline" has decreased to account for the scope changes as detailed in the Memoranda of Understandings (MOUs) that have been executed for Stage 1. It is presented in the above table to be consistent with the contract tables contained elsewhere in this report. The negative total actual percent complete since June 2015 indicates that ESA increased FHL01 funding by $3.6M between June 2015 and December 2015.

Construction Progress: LIRR Force Account personnel did not perform any significant Stage 1 FHL01 construction during September 2016 due to the ESA PMT's on-going emphasis on former Stage 2 and Stage 3 construction.

Observations and Analysis: Recent ESA PMT priorities have been on Stage 2 and Stage 3 work. Significant remaining LIRR Former Stage 1 construction includes completion and commissioning of the new signal power separation system and the new G02 Substation. Although LIRR has started work on the signal power separation system, it has been several months since it has done any further construction on the system. The new G02 Substation, which is still under construction by the CH053 contractor, will not be turned over to the LIRR until all Contract CH053 work is complete, which is scheduled to occur in late 4Q2016/early 1Q2017.

Concerns and Recommendations: The PMOC is concerned that, because of MTACC's present emphasis on Stage 2 and Stage 3 construction, the remaining Stage 1 work could be left incomplete until the end of the project. The PMOC believes that work not done when scheduled will tend to accumulate and may eventually delay the project's RSD further. The PMOC recommends that the ESA PMT monitors incomplete or unstarted tasks, develop a master list of critical ones, and develop a plan to address all of them well before the RSD date approaches.

Harold Early Stage 2 LIRR FA (FHL02)

Status: MTACC's Forecast at Completion for FHL02 remained at $92,932,559 during July 2016. MTACC extended its forecast for Substantial Completion by 5-1/2 months to November 22, 2019.

Actual construction progress for July 2016 was 1.3% versus 1.0% planned. Cumulative progress through July 31, 2016, was 92.0% actual versus 05.7% planned.

	1	2	3	4	5	6
	Original Baseline	**Current Approved Baseline***	**Change to Original (2-1)**	**EAC/ Forecast**	**Change to Original (4-1)**	**Change to Current (4-2)**
Contract Cost	$7.40M	$73.0M	+$65.5M +886.5%	$92.9M	+$85.5M +1155.4%	+$19.9M +27.3%
Scheduled SC Date	11/30/15	11/25/16		6/18/18		
Duration (NTP-SC)	75 mos.	87 mos.	+12 mos. +16.0%	106 mos.	+31 mos. +41.3%	+19 mos. +21.8%
Percent Complete	**Actual – 12 mos.**		**Actual - 6 mos.**		**Avg. Reqd. Progress**	
Plan / **Actual**	**Total**	**Avg./mo.**	**Total**	**Avg./mo.**	**Contract SC**	**Forecast SC**
95.7% / 92.0%	17.4%	1.5%	6.6%	1.1%	1.3%/mo.	0.4%/mo.

From July 2016 ESA Monthly Report

*The term "baseline" is a misnomer with Force Account work. In LIRR's case, the "original baseline" has increased to account for the scope changes in the MOUs that have been executed for Stage 2. It is presented in the above table to be consistent with the contractor tables contained elsewhere in this report.

Construction Progress: During September 2016, LIRR Signal personnel continued to pull, terminate, and meggar signal cables at the "H5", "H6", and Location 30 CILs, installed signal heads and wires on new Signal Bridges 21 and 30, continued to make "ESA501" (GEC designation) signal revisions at existing Harold CIL, and removed old signal cables at Harold Tower in order to make room for new cables. LIRR Communications personnel continued to install and terminate communications cables at the "H1", "H2", "H6", and Location 30 CILs. LIRR 3rd Rail personnel continued to install 3rd rail conduit from various locations into the "40" electric traction breaker. LIRR Track personnel completed raising and aligning the new RPR Track.

Observations and Analysis: LIRR completion of the signal power separation system continues to lag, as does the 3rd party contractor turnover of the new G02 Substation to LIRR. Additionally, LIRR construction of the signal system continues on a daily basis, although the major "H5"/"H6"/Location 30 cutover has been rescheduled until May 2018, 10 months later than the previously scheduled date.

Concerns and Recommendations: The PMOC remains concerned that LIRR Stage 2 work may not be completed on schedule and will continue to accumulate along with leftover Stage 1 and Stage 3 work if the LIRR does not pursue its portion of the ESA construction more aggressively. The PMOC recommends that LIRR develop more aggressive Track and Electric Traction

programs in future years and that it develop a master list of incomplete or unstarted tasks to ensure that all critical items needed for RSD are properly addressed.

2.4 Operational Readiness

Status: Due to various scheduling conflicts, no Quarterly Operational Readiness (OR) briefings were held since the one in December 2015. However, documentation regarding the status of various OR Task Working Groups (TWGs) was provided to the PMOC. A review of that documentation, along with follow up telephone calls, revealed that significant progress is being made on the Safety & Security Certification and Asset Management TWGs. The PMOC continues to meet on an ad hoc basis with the Director of Operational Readiness to discuss the status of work in the 11 Task Working Groups (TWGs) of the Operational Readiness (OR) group. In several of those meetings with the Director of ESA Operational Readiness, the PMOC was advised that a schedule showing the completion of construction safety certificates continues to be incorporated into the overall ESA Project IPS; thus, linking the completion of construction safety certificates to the completion of the various contract construction schedules. However, MTACC must still develop and implement a schedule that identifies the process and timing to complete safety certifications for contracts that are, or will be, in the design phase. MTACC must also provide Security Certifications for the various ESA contracts that reflect the methodology that MTA will use to address perceived security threats identified in the Threat Vulnerability Assessment made for ESA facilities and operation. A schedule to show when these security certifications will be completed is under development. Significant progress in the Asset Management TWG continues to be made on compiling the LIRR Asset database and then implementing interim maintenance processes for assets installed on ESA contracts that have reached Substantial Completion. The other TWGs continue to meet to develop documentation and plans to operate ESA when it is ready for revenue service.

Observation: The PMOC notes that the meetings with the Director of Operational Readiness provide the PMOC with the general status of the progress of all the TWGs; and, when necessary, the meetings can focus on specific aspects of the TWG products (e.g., safety and security certifications, fleet readiness, and LIRR staffing and training requirements).

Concerns and Recommendations: The PMOC is concerned about the lack of safety and security certification schedules for the design phase of some of the contracts that are already in construction. The PMOC recommends that MTACC take measures to ensure that safety and security requirements are identified and addressed through the execution of the appropriate certifications for contracts that are, or will be, in the design phase.

2.5 Vehicles

Status:

The LIRR Vehicle Procurement Schedule for the M-9 and M-9A vehicles indicates that the RFP for the M-9A vehicles was supposed to be issued in April 2016. As of September 30, 2016, however, LIRR continued to develop the necessary contract documents, with the intention of issuing the Qualifications portion of the RFP in November 2016.

Observations and Analysis: In addition to completion of the contract documents, LIRR must receive MTA approval to issue the RFP. If both of these occur by the end of November 2016, the procurement of the M-9A vehicles will be 7 months behind the original procurement schedule.

Concerns and Recommendations: Based on the LIRR Procurement Schedule, the start of M-9A vehicle delivery is not required prior to April 2021. The PMOC is concerned, however, that

MTACC and the LIRR do not have a good historical procurement track record and that the 7 month delay already incurred could extend even longer. The PMOC recommends that the LIRR complete development of the contract documents as soon as possible and concurrently solicit MTA's approval to advertise the RFP.

2.6 Property Acquisition and Real Estate

Status/Observations:

The July 2016 ESA Monthly Report indicates that MTA Real Estate continued to work through business, design, and construction issues with the owners of the property at 415 Madison Avenue, developed and submitted the final easement agreement to the owners of the 280 Park Avenue property, and neared completion of legal negotiations with the owners of the 335 Madison Avenue property.

Observations and Analysis: MTA Real Estate continues to perform its real estate responsibilities on behalf of the ESA Project in an entirely effective manner.

Concerns and Recommendations: The PMOC has no concerns or recommendations for MTA Real Estate at this time.

2.7 Community Relations

Status:

The July 2016 ESA Monthly Report indicates that ESA Community Relations issued approximately 30 notifications to communities surrounding ESA worksites of upcoming concrete and other construction activities during the month. Community Relations also contacted management of Sunnyside Towers in Queens to inform them that the vibration monitoring from on-going construction at the 48th St. bridge revealed no impacts. Finally, the reports states that community complaints for July 2016 were the lowest of the year with only 2 minor complaints registered.

Observations and Analysis: The MTACC Community Relations Staff continues to perform its outreach campaign in an entirely effective manner as witnessed by its record low number of complaints in July 2016.

Concerns and Recommendations: The PMOC has no concerns about ESA community relations at this time and recommends that the ESA Community Relations staff continue to perform its duties in the same manner as it has in the past.

3.0 PROJECT MANAGEMENT PLAN AND SUB PLANS

Status:

MTACC submitted PMP Rev. 10 to the FTA and PMOC on July 18, 2014. This revision incorporates changes stemming from FTA/PMOC comments on PMP Rev. 9.0 provided in December 2013, as well as changes that resulted from the MTACC's Candidate Revision process. Based on working meetings, dialogue, and additional clarifying review comments from the PMOC, MTACC made additional changes to the PMP and submitted an updated Rev. 10 on September 18, 2014. 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 PMOC coordinated with MTACC to arrange a series of working meetings through the remainder of 2015 with ESA chapter authors and the corresponding PMOC reviewers to resolve the outstanding FTA/PMOC evaluation comments. MTACC and the PMOC continue working toward resolution of the remaining minor comments. 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 plans to provide its evaluation in October 2016.

Observation: The PMOC is working with MTACC to resolve the remaining issues, mostly minor, with the PMP and will follow up with FTA in finalizing responses.

Concerns and Recommendations: There are no major concerns at this time.

3.1 PMP Sub-Plans

Status:

The status of the key PMP sub-plans is discussed in the ELPEP Compliance Section of this report. MTACC issued updates to its TCC and Cost Management Plans in June 2015. The PMOC provided the FTA with its evaluation of the MTACC responses to the PMOC review comments on both the TCC and the CMP and recommended meeting with MTACC to resolve remaining issues. The FTA subsequently provided MTACC with the TCC and CMP evaluations for their review and action. MTACC responded with a reply for the TCC on September 24, 2015.

MTACC submitted its revised Cost Management Plan (ESA and SAS) on April 13, 2015. The PMOC returned comments to the FTA on May 8, 2015. The MTACC submitted a revised CMP in response to FTA/PMOC comments on June 30, 2015. In August 2015, the PMOC provided the FTA with its evaluation of the MTACC responses to the PMOC review comments and met with MTACC on November 16, 2015. MTACC is working on additional agreed-upon revisions and is evaluating the PMOC's recommendations in six areas. MTACC issued an interim revision update in December 2015 and the PMOC completed its review during 2Q2016. MTACC and the PMOC met on June 22, 2016, to review the PMOC comments. MTACC has been actively working with the PMOC regarding resolution of any remaining issues and required actions.

MTACC issued its revised Schedule Management Plan (SMP), which now includes both the ESA and SAS projects, on October 26, 2015. The PMOC completed its review during 2Q2016. 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 is currently following up with the agreed upon revisions to the SMP and is finalizing their responses in the review comment matrix.

Observations:

MTACC has revised its TCC Plan, Cost Management Plan, and its Schedule Management Plan. The PMOC anticipates updates to the Risk Management Plan.

Concerns and Recommendations:

MTACC needs to ensure that the proper candidate revisions are prepared and presented to the CCC for approval before any changes are incorporated into these plans.

3.2 Project Procedures

Status: Revisions to the CMP and SMP may require updates to the referenced Project Procedures. The PMOC will evaluate the need for any required updates to the Project Procedures in conjunction with the effort to close out all remaining comments on the CMP and SMP.

Observations: None

Concerns and Recommendations: There are no significant concerns at this time.

4.0 PROJECT SCHEDULE

4.1 Integrated Project Schedule

Status:

This report is based on the submitted ESA IPS file entitled "BR09-UPDT84-08-2016-FINAL" which has a data date of August 1, 2016, and incorporates progress over the month of July 2016 (July 2016 IPS). The IPS and its associated report track two different Revenue Service Date (RSD) milestones – the Target RSD and the Late RSD, which the PMT now also refers to as the Public Date. [redacted]

[redacted]

[redacted]

The PMT reports that this change was a result of the Harold Task Force, which agreed to allow pre-testing to occur after Phase 0 through II Sequencing Plans, which eliminated the previous LIRR requirement to approve all Ansaldo software prior to performing any Cutover pre-testing. The longest path of the July 2016 IPS update goes through the following contracts and tasks, leading to the Late RSD of December 13, 2022:

- FHL02 – Fabrication and Installation of the Power Case Transformer Hatch and Transformer Installation;
- FHL02 – Implementation of Cut-over sequencing plans (phases 0, I, and II);
- FHL02 – H5/H6/Loc 30 and H1/H2/Loc 30 CIL Cutover Pre-testing and Cutovers;
- CH057D – NH1/PW1 Outage electrical work and Substantial Completion;
- FHL04 – Electrical work;
- CH058 – Civil work on the B/C Approach Structure;
- FHL04 – Electrical work;
- FHL03 – Electrical work (Tie-in, Testing, and Cutover of 4C);
- [redacted]
- Train Contract Staffing and LIRR Final 3 Months Period;
- [redacted]
- Late RSD (Begin LIRR Revenue Service to GCT).

Observations, Analysis, and Concerns:

The PMOC continues to note and has noted the following observations and concerns resulting from its analysis of the ESA IPS Updates over the last quarter, 3Q2016.

1. The PMOC has observed that the IPS contains a large amount of open-ended activities. An open-ended activity is defined as an activity that is not logically connected to the rest of the CPM schedule network – i.e. that it does not have a predecessor and/or successor activity. This results in an incomplete network within the IPS. Good scheduling practices require that the only activity in a CPM schedule without a predecessor is the first activity or milestone, and the only activity that should not have a successor is the last activity or milestone. FTA requires that the schedule be "mechanically correct and complete," which the PMOC takes to include a complete logic network throughout the IPS.

    a. The PMT has been actively working to address this issue and has included in its July 1, 2016 IPS Report the following table, showing its progress on completing its IPS network on a month-to-month basis over the last quarter:

	Completed Activities					In-Progress Activities					Not-Started Activities				
IPS Update	1-May	1-Jun	1-Jul	1-Aug	Trend	1-May	1-Jun	1-Jul	1-Aug	Trend	1-May	1-Jun	1-Jul	1-Aug	Trend
ESA															
Manhattan	87	91	95	43		21	21	18	5		41	42	46	15	
Queens	77	77	77	60		6	6	6	5		23	23	18	13	
Harold	160	164	167	85		8	8	10	3		89	76	69	27	
Systems	9	11	15	2		5	7	6	5		28	28	12	0	

The PMOC notes the good progress being made to ensure a complete CPM network exists within the IPS. The most pressing focus at this time should be ensuring proper logic ties exist for in-progress and not-started activities, and the PMOC has observed this trend moving in the right direction thanks to the PMT's work and reporting.

2. The PMOC continues to observe changes in the Late RSD controlling Harold's longest path, with regard to durations, logic, and sequencing of activities. The PMOC previously recommended that the PMT explain any changes to the program's critical path in detail in its IPS report, and this has begun to be addressed. The PMOC will continue to monitor and report changes to the Program longest path and appreciates the information provided by the PMT in its IPS Report.
3. The PMOC is concerned about the lack of Amtrak Force Account (FA) support being received by current contracts. The PMOC has prepared an analysis that identified upcoming contracts that will require these resources, and attempted to model what impact, if any, would be had on the Program schedule if these resources remained at their current levels.
4. The July 2016 IPS is reported to contain revisions to the CM006 schedule data, which represents the recovery schedule submitted by the Contractor. The PMT reports no change to the forecasted Substantial and Final Completion milestones of June 1, 2017, and August 30, 2017, respectively, over the July 2016 update period. The PMT notes that the revisions caused the critical path of CM006 to have changed, and that it now goes through work at the GCT3 West Wye and Crossover, and the GCT3 Crossover CIR room.

4.2 180-Day Look-Ahead of Important Activities

Table F-2 in Appendix F shows a contract specific 180-day Look-Ahead, which reports milestones and significant activities that are forecasted to occur in the next 180 days. Table 4.2 below is a list

of upcoming Contract procurement milestones forecasted to occur in the next two quarters as reported by the PMT.

TABLE 4.2 – 4Q2016 and 1Q2017 Upcoming Contract Procurement Milestones

Contract Description	Advertise Date	Bid Date	NTP	Project Period	Substantial Completion
CM015 48th Street Entrance	11/29/2016	2/6/2017	5/1/2017	30 Months	10/18/2019
CQ033 Mid-Day Storage Yard	9/8/2016	12/11/2016	2/15/2017	41 Months	6/15/2020
CH061A Tunnel A	5/23/2016A	8/2/2016	2/1/2017	16 Months	5/28/2018
CS086 Systems Package 2: Signal	1/10/2017	3/10/2017	5/7/2017	38 Months	7/1/2020

The above Upcoming Contract Procurement Milestones have shifted significantly over the last quarter. The forecasted Substantial Completion of CM015 has seen the most impact, moving from January 1, 2019, in the May 2016 IPS to October 18, 2019, in the July 2016 IPS – a delay of approximately 10 months. The PMOC observes that this is the result of a combination of the delay to the forecasted NTP (from January 2017 to May 2017) and an increase in the forecasted project duration (from 24 months to 30 months). The PMT reports that the "delay is due to owner requirements for structure reinforcement for future overbuild."

The next largest impact shown over 3Q2016 with regard to upcoming Contract procurements is the forecasted delay of almost three months to the NTP and Substantial Completion of CH061A. The PMT reports that the "adjustment in the NTP is an effort to balance the availability of Amtrak Access and Protection resources with work needs of CH057 and CH057A." The PMOC finds this explanation reasonable, and does note the scheduled concurrency of contracts requiring Amtrak Access and Protection resources, as described below. However, the PMOC recommends that the PMT be aware that the delay shown to the NTP for CH061A will still have this work concurrent with CH057 and CH057, and also CQ033, all requiring the same limited Amtrak personnel.

4.3 Critical Path Activities

The ESA Critical path has changed since its re-baseline of July 2014. Table 4.3 below shows the changes:

TABLE 4.3 – August 1, 2016 IPS Critical Path

Activity Name	Original Duration	Start	Finish
CM007 Contract	1115	01-Aug-16	21-Aug-19
[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]
Train Contract Staffs LIRR / LIRR Final 3 Months Period	119	15-Oct-20	11-Feb-21
Target Revenue Service Date			**12-Feb-21**
FHL02 Contract	670	01-Aug-16	02-Jun-18
CH057D Contract	71	02-Jun-18	12-Aug-18
FHL04 Electrical Work	83	13-Aug-18	04-Nov-18
CH058 Track B/C Approach Work	506	05-Nov-18	25-Mar-20
FHL04 Electrical Work (Continued) & FHL03 Electrical Work	130	25-Mar-20	02-Aug-20
[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]
LATE - Begin LIRR Revenue Service To GCT	0		13-Dec-22
Late Revenue Service Date			**13-Dec-22**

Note: The PMT no longer tracks an Early RSD milestone.

As the PMOC tracked progress along the program's critical path, changes were noted between the forecasted remaining work along the June and July 2016 IPS Harold longest paths. The PMOC notes the following significant changes to the forecasted Harold longest path, which controls the Programs Late RSD:

1. As of the July 1, 2016 IPS, the controlling critical work leading up to the start of Cutover pre-testing was the re-wiring, testing, and cable termination of the Harold MG Function. As shown in the August 1, 2016 IPS, this work was replaced by the purchase, fabrication, and installation of a transformer hatch and transformer needed prior to the implementation of the cut-over sequencing plans. The previous critical electrical work related to the the Harold MG Function has made no progress over the update period.
2. As discussed briefly above, the major change in this month's IPS (August 1, 2016) is the revised logic and sequencing for the Harold CIL Cutovers. Previously, the H5/H6/Loc 30 and H1/H2/Loc 30 Cutover pre-testing were scheduled to occur separately and for a total duration of approximately 699 calendar days. The July 2016 IPS shows the H5/H6/Loc 30 and H1/H2/Loc 30 cutover pre-testing work as one activity with a total duration of approximately 445 calendar days. This change appears to have mitigated a forecasted delay from the LIRR requirement to approve all Ansaldo software prior to starting any of the Cutover pre-testing and was the reported to be the result of the Harold Task Force.

While it appears that the continuing forecasted delay to the start of critical Harold cutover pre-testing has been mitigated in theory by the Harold Task Force re-planning effort, the PMOC is concerned that the start of these lengthly pre-testing activities will continue to slip

and also that the durations may change in a way that would negatively impact the program's critical path. The PMT has stated in its August 1, 2016 IPS Report that:

> ESA and LIRR are presently re-evaluating the schedule to validate the durations and sequencing acitivites regarding Civil Speed Enforcement and the implementation of Positive Train Control (PTC). These programs affect the sequencing and durations required for the design and testing of the CIL cutovers. These cutover activities and the associated track switch installations impact the start of excavation and structural work for the B/C Tunnel approach, which is required for the completion both of the ESA Revenue Service work and overall Harold Completion.

The PMOC will continue to track the development of these critical activities and looks forward to ESA reporting the results of their re-evaluation of the Civil Speed Enforcement and PTC programs to determine what impact, if any, they will have on the current plan of critical Harold work.

4.4 CS179 Systems Package 1 – Facilities Systems

ESA provided several Milestone Date Tables in the IPS. Table 4.4, below, is a sample of the table provided for CS179 Systems Package 1 – Facilities Systems in the PMT's July 2016 IPS report:

TABLE 4.4 - CS179 Contractor Milestone Dates

Milestone	Description	Contract Date	Last Month	Current Month	*Delta (CD)
MS #1	Complete All Work in TPSS C05 at Vernon Blvd Ventilation Facility	12/31/2016	12/31/2016	9/20/2016	102
MS #3	Complete All Work Plaza Rooms (CIR, Signal Reactor, Interlocking 1D, TPSS C06 & C07)	12/31/2016	12/31/2016	12/28/2016	3
MS #4A	Complete All Work in Traction Power S/S C04 on Level P1 in 2nd Ave. Vent Facility	2/1/2017	2/1/2017	3/1/2017	-28
MS #5	Complete All Work in GCT-6 CIR to Room Ready Condition	4/30/2017	4/30/2017	2/9/2017	80
MS #6	B10Complete All Work in Bulk Power Substation for Energization of 13.2 kV Cables	1/31/2017	1/31/2017	3/1/2017	-29
MS #7	Complete All Work in GCT-5 CIR to Room Ready Condition	4/30/2017	4/30/2017	3/10/2017	51
MS #8	Complete All Work in GCT-4 CIR to Room Ready Condition	4/30/2017	4/30/2017	4/30/2017	0

MS #9	Complete All Work in Traction Power Substations C01 and C02 - Tail Tracks	6/8/2017	6/8/2017	6/10/2017	-2
MS #10	Complete All Work in GCT-3 CIR to Room Ready Condition	9/6/2017	9/6/2017	7/27/2017	41
MS #11	Complete All Work in Traction Power Substations C03 at 55th Street Vent Facility	3/25/2018	3/25/2018	1/26/2018	58
MS #12A	Complete All Work in the TMC, TOC, BCS, and FON to Commence IST	9/1/2018	9/1/2018	11/21/2018	-82
MS #12B-1	Complete Integrated Testing of all equipment installed under Contract CM007	3/23/2020	3/23/2020	10/23/2019	152
MS #12B-2	Complete Integrated Testing of all equipment installed under Contract CM014A	3/23/2020	3/23/2020	10/23/2019	152
MS #12B-3	Complete Integrated Testing of all equipment installed under Contract CM014B	3/23/2020	3/23/2020	10/23/2019	152
MS #13	Substantial Completion	7/1/2020	11/25/2019	7/1/2020	0

Over the July 2016 update period, the PMT reported a forecasted savings to Milestone Nos. 1, 5, 7, 10, 11, 12B-1, 12B-2, and 12B-3. The PMT also reported a forecasted delay to Milestone Nos. 4A, 6, and 12A over the July 2016 update period. The PMT has reported no or almost no change over the July 2016 update period to the forecasted Milestone Nos. 3, 8, and 13, which represents Substantial Completion.

The PMOC is concerned about the continued delay of the contractor's Control System Design packages, which could have the potential to impact the Integrated Systems Testing (IST) schedule. The IST schedule has not yet been developed as the Integrated Testing Plan was returned to the contractor to address comments. Multiple submittal and review rounds related to the Control System Design and Integrated Testing Plan risk keeping the current IST schedule. Already, the PMT has reported that the forecasted start of IST has been delayed almost three months since the last IPS Report, from September 1, 2018 to November 21, 2018. While the current IPS shows the completion of IST has been forecasted to improve, from February 23, 2020 to Ocotber 23, 2019, the PMOC is concerned that the CS179 contractor may not be able to achieve the planned IST duration of 11 months shown in the August 1, 2016 IPS.

4.5 Force Account Work

The PMOC has noted a trend in Force Account Work not being completed as scheduled, due to a lack of resources within LIRR and Amtrak personnel needed to perform the work. Due to the concern that this work may begin to have an impact on the Project, the PMOC has been tracking this work.

The following three factors have been noted to have been occurring or are expected to occur, and could have a negative impact on the Harold schedule:

1. Lack of requested Amtrak FA ET Personnel;
2. Lack of priority weekend outages; and
3. Lack of Amtrak FA Foreman Personnel area coverage.

During September 2016, the PMOC performed an analysis to model what impact, if any, the above factors related to Amtrak FA resources would have on the Harold schedule. This analysis is provided as a supplement to this report, and found that the current forecasted period of March 2017 to December 2018 represents the most critical period during which work requiring those resources could be impacted. During this period, the current IPS is forecasting work to occur on the following Contracts, all of which require Amtrak FA personnel as resources: CQ033, CH057, CH057A, CH058A, and CH061A.

The PMOC's analysis determined that there could be an impact to the completion of some of the above contracts from an extended duration, and that some of those impacts could also affect the start (and therefore completion) of follow-on contracts. A summary table of the results of this anlaysis is provided below. Please note that these results are based on a methodology and model developed by the PMOC and is one of many interpretations of a potential impact.

		1JUL16 IPS Construction Summary Dates*			1JUL16 Impacted IPS Construction Dates*		Unimpacted Duration	Impacted Duration	Extension
Contract	Contract Description	Start	Finish	Finish Act.	Start	Finish	(Months)	(Months)	(Months)
FMM19	Manhattan Structures Part 1 - MNR F/A	7/1/2016	2/21/2020	FMM019SUM	7/1/2016	2/21/2020	44	44	0
CM014B	GCT Concourse and Facilities Fit Out	7/1/2016	1/21/2019	CM014B-MS08	7/1/2016	1/21/2019	31	31	0
VM014	Vertical Circulation - Escalators & Elevators	7/1/2016	11/25/2019	VM014-SC	7/1/2016	11/25/2019	41	41	0
CM015	48th Street Entrance	7/1/2016	8/20/2019	CM015-MS1000	7/1/2016	8/20/2019	38	38	0
CM006	Manhattan North Structures	7/1/2016	6/2/2017	CM006-SC	7/1/2016	6/2/2017	11	11	0
CM007	GCT Caverns	7/1/2016	1/27/2020	CM007-MS08	7/1/2016	1/27/2020	44	44	0
CQ032	Plaza Substation & Queens Structures	7/1/2016	11/20/2016	CQ032-1010TO	7/1/2016	11/20/2016	5	5	0
CQ033	Mid Day Storage Yard	7/1/2016	7/1/2020	CQ033YS10	7/1/2016	7/1/2020	49	49	0
CH057	Harold Structures Part 3 - Tunnel D, RPR, Others	7/1/2016	8/17/2018	CH057-007	7/1/2016	11/26/2018	26	29	3
CH057A	Harold Structures Part 3 - Westbound Bypass	7/1/2016	10/31/2017	CH057A-5190	7/1/2016	5/8/2018	16	23	6
CH057D	Track and Switch Installation - WBY/NH1/PW1	9/22/2018	12/3/2018	CH057D-SC	9/22/2018	6/18/2019	2	9	7
CH058A	Harold Structures - B/C Approach	6/18/2018	8/12/2020	CH058-SC	6/18/2018	3/2/2021	26	33	7
CH058B	Harold Structures - Eastbound Reroute (EBRR)	8/12/2020	10/20/2022	CH058-1050	3/2/2021	4/25/2023	27	26	-1
CH059	Harold Structures Part 4 - Amtrak Car Washer	5/13/2022	3/10/2023	CH059-1020	12/2/2022	9/22/2023	10	10	0
CH061A	Tunnel A Cut and Cover	10/28/2016	2/28/2018	CH061A-8210	10/28/2016	1/7/2019	16	27	10
CS179	Systems Package 1 - Facilities Systems	7/1/2016	7/1/2020	CS179-M13	7/1/2016	7/1/2020	49	49	0
CS084	Tunnel Systems Package 4 - Traction Power Procurement and Installation	7/1/2016	7/1/2020	CS084-MS007	7/1/2016	1/18/2021	49	55	7

*Construction Summary dates: Start = Mobilization / Construction start. Finish = Substantial Completion.

Based on this analysis, the PMOC has concluded that the continuing and new restrictions related to Amtrak FA work have the ability to negatively impact the ESA Program. The PMOC notes that ESA has stated that it has adjusted future NTP dates for CH061A in an effort to mitigate this potential impact. The PMOC recommends that ESA analyze whether it is possible to resequence other Amtrak FA resource-dependent contracts in an effort to minimize the amount of these contracts that may proceed concurrently in order to further minimize this risk. The PMOC notes

that it may not be possible to move upcoming contract schedules around enough to completely remove this potential risk due to the logic of the work sequence.

[redacted]

5.0 PROJECT COST

Note: All references to expenditures in this report are with respect to the current cost baseline that was agreed upon at the MTA CPOC meeting in June 2014.

5.1 Budget/Cost

On June 23, 2014, MTACC presented a budget for the ESA project of $10,178M (excluding the $463M Rolling Stock Reserve and financing cost) to the MTA CPOC. Table 5.1, below, shows the changes in the SCC budget breakdown between the FFGA Baseline budget, the Amended FFGA budget, and the 2014 re-planned budget.

Observations: ESA has indicated that the results of the Harold Schedule Status update and the Force Account Overrun Analysis will increase project costs in the range of between $200 million and $300 million. In addition, ESA reports that OCIP costs will overrun by $191 million. There will also be an unknown, but highly likely further demand on, Amtrak resources when their own "hardening" work in the East River Tunnels commences. In addition, the detailed results of the in-depth risk assessment for Contract CQ033 have not yet been reported.

Concerns and Recommendations: The current forecast of Force Account costs does not include any amounts from this analysis. [redacted] The current budget forecast must therefore be considered as highly optimistic.

Table 5.1: Comparison of Standard Cost Categories: FFGA vs. CBB

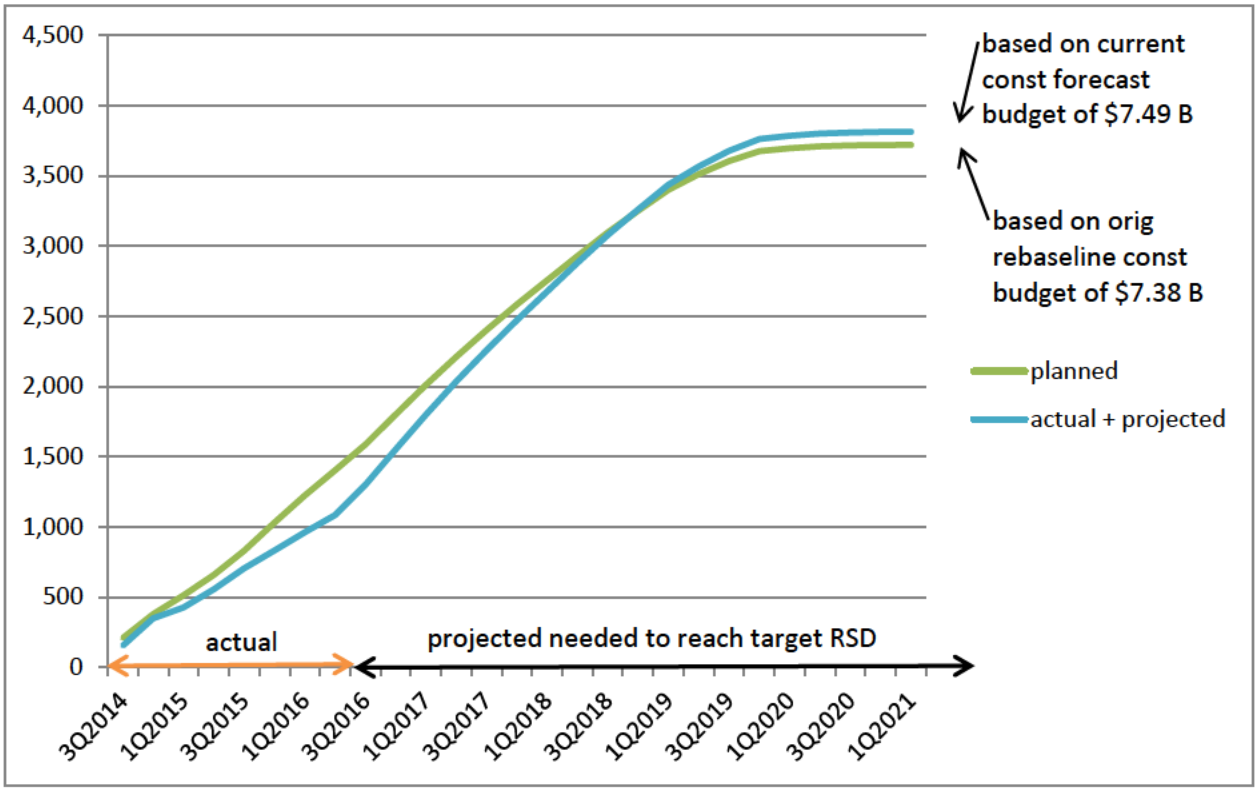
Standard Cost Category (SCC) No.	FFGA SCC baseline (YOE $) M	Amended FFGA SCC baseline (YOE $) M	June, 2014 Re-Plan (YOE $)	Q3 2015	Q4 2015	Q1 2016	Q2 2016	CBB Variance from FFGA %	CBB Variance from Amended FFGA %
10	1,989	3,353	3,405	3,421	3,420	3,443	3,467	**74.31%**	**3.40%**
20	1,169	2,327	2,238	2,339	2,338	2,314	2,326	**98.97%**	**-0.04%**
30	356	451	474	473	472	472	473	**32.87%**	**4.88%**
40	205	562	611	593	593	594	594	**189.76%**	**5.69%**
50	619	628	606	565	566	569	568	**-8.24%**	**-9.55%**
60	165	192	220	219	218	216	215	**30.30%**	**11.98%**
70	957	880	210	210	210	210	210	**-78.06%**	**-76.14%**
80	1,184	1,809	1,975	1,975	1,976	1,977	1,978	**67.06%**	**9.34%**
[redacted]									
100	1,036	1,116	1,036	1,036	1,036	1,036	1,036	**0.00%**	**-7.17%**
[redacted]									

5.2 Project Cost Management and Control

Status:

The PMT has reported that, as of July 31, 2016, the actual total project progress was 64.7% vs. 66.8% planned progress resulting from the June 2014 re-baseline (based on the total amount invoiced compared to the total current budget). In addition, construction progress was reported as 64.5% actual vs. 67.6% planned. Table 5.2 shows the planned construction spending through completion at the target RSD vs. actual spending through 2Q2016, and projected required spending.

Table 5.2: Planned, Actual & Projected Construction Cash Flows to Target RSD



Construction Cash Flow Starting at 2014 Rebaseline

Table 5.2 - 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 1st quarter of 2021. 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 the 2nd quarter of 2016, shows actual construction spending as reported by ESA. The "projected" portion of that curve, from the 2nd quarter of 2016 through the 1st quarter of 2021, shows the PMOC's projected construction spending rate to reach the current $7.49 billion final construction budget by the 1st quarter of 2021.

Table 5.3 shows the budget status of contracts awarded to date and paid amounts to date.

Table 5.3: Project Budget and Invoices As of July 1, 2016

Elements	Baseline Total Budget (June 2014)	Current Baseline Budget (July 2016)	Actual Awards (July 2016)	Paid to Date (July 2016)	Actual % Budget Paid
Construction	$7,379,296,706	$ 7,490,547,527	$ 6,454,525,547	$ 4,650,096,655	62.08%
Soft Costs Subtotal	**$2,798,474,304**	**$2,687,223,483**	**$1,930,210,009**	**$1,755,155,444**	**65.31%**
Engineering	$720,615,810	$723,521,828	$689,664,119	$671,091,498	92.75%
OCIP	$282,613,620	$282,613,620	$282,613,620	$258,277,177	91.39%
Project Mgmt.	$972,168,644	$972,168,644	$840,465,601	$709,898,625	73.02%
Real Estate	$182,076,230	$178,049,776	$117,466,669	$115,888,144	65.09%
Rolling Stock	$202,000,000	$202,000,000	$0	$0	0.00%
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]

Concerns and Recommendations:

The PMOC recommends that ESA present the Harold and Force Account Overrun Analysis to the FTA and PMOC in short order, and incorporate the impacts into the cost forecast. The current cost forecast shown in ESA's Monthly Progress Report remains misleading until the significant overruns of force account and OCIP are shown. The ESA PMT has stated that it continues to have a critical shortage of Amtrak resources and has indicated that it will escalate these concerns to high level Amtrak officials. The ESA PMT has also indicated that the future cutovers of CILs will require increased resources from LIRR.

5.3 Change Orders

Table 5.3 below shows the executed mods greater than $100,000 during July 2016:

Table 5.4: ESA's Change Order Log in July 2016 (>$100,000)

Contract	Mod #	Description	Executed Date	Amount
Harold Structures Part 1-CH053	161	L3 Service Credit	07/15/16	($105,664)
Harold Structures Part 3 WBBP – CH057A	5	Revised Pump Station Design	07/21/16	$3,899,500
Harold Structures Part 3 WBBP – CH057A	21	Demolition of 12KV ductbank & other issues	07/15/16	$808,300
Harold and Point CILs – VH051A	13	H1/H2 CIL resequencing & civil speed control	06/23/16	$350,000
GCT Concourse/Facilities fit-out – CM014B	17	50th St Vent building – electrical revisions	06/30/16	$458,000
GCT Concourse/Facilities fit-out – CM014B	24	CS179 Coordination – fire alarm & communications	07/08/16	$123,000
GCT Concourse/Facilities fit-out – CM014B	25	CS179 Coordination – security	07/08/16	$411,720
GCT Concourse/Facilities fit-out – CM014B	30	Crash Wall Survey – NOC	07/27/16	$792,438
GCT Concourse/Facilities fit-out – CM014B	32	300 Park Avenue Roof Grate & Stair	07/27/16	$202,000
GCT Concourse/Facilities fit-out – CM014B	35	Elevator EL-09 Shaft & Entrance modifications	07/28/16	$890,000
Manhattan Structures South – CM005	27	Additional grounding conductors	07/19/16	$116,000
Manhattan Structures South – CM005	24	Composite schedule, tunnel alignment, other issues	07/07/16	$25,422,629

Status/Observation:

The information in Table 5.3, above, is taken from the ESA Monthly Progress Report of July 2016.

5.4 Project Funding

a) Federal Funding

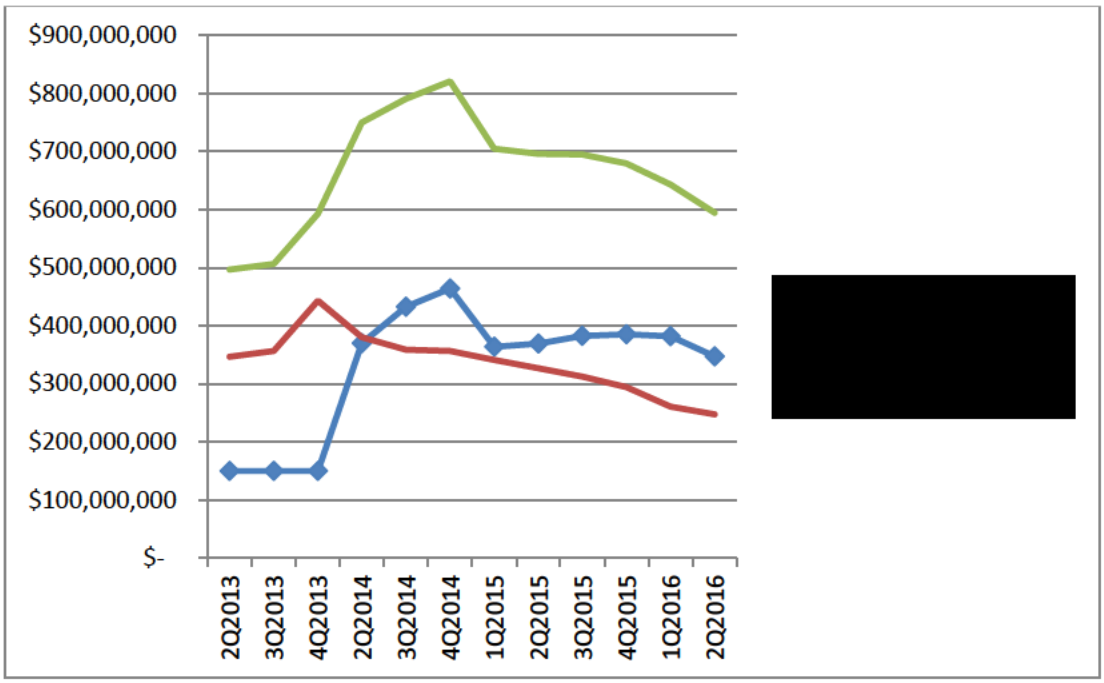
As shown in Table 5.3, above, as of July 31, 2016, the PMT has awarded a total of $8.2 billion in contract work. The Federal share of awarded contracts is $2.226 billion. The total Federal funding commitment, as of July 31, 2016, remained at $2.699 billion.

b) Local Funding

The obligated local share was $5,065M. There has been a $617,607,000 incurred finance cost (for local share) to date.

5.5 Cost Variance Analysis

[redacted]



6.0 RISK MANAGEMENT

Based on long standing issues and concerns regarding Amtrak's ability to provide sufficient force account support to the ESA project, especially Electric Traction (ET) resources, ESA completed a Harold schedule re-sequencing in December 2014, also known as "ESA First," that advanced work elements required for the new LIRR service to GCT and delays some of the FRA funded High Speed Rail (HSR) work beyond 2017. Railroad construction work prior to development of the "ESA First" schedule was also falling behind schedule due to the overall delays to much of the Harold work. MTA continues to work with both the FTA and the FRA to resolve funding drawdown issues.

With regard to the implementation of the "ESA First" Harold Re-sequencing of late 2014, the PMOC notes that, through 2015 and into 2016, Amtrak has not been able to provide even the reduced level of force account resources that was planned in support of the schedule. [redacted]

[redacted] ESA has completed a comprehensive study to identify and evaluate the reasons for inadequate level of force account resources required to support the Harold schedule and to make recommendations to revise the schedule and to plan for the increasing force account costs. Based on the outcome of the study, the revised project schedule indicates that the Harold critical path has now become the ESA program critical path and leads the secondary Manhattan/Systems critical path by approximately three months. Cost impacts have been evaluated and ESA estimates the additional Amtrak and LIRR force account cost to be $200-300 million for support of all remaining Harold Interlocking work to complete the Revision 14-4M Alignment.

The PMOC has continuing concerns regarding the impact to the ESA Harold work due to the Amtrak program to harden ERT Lines 3 and 4 in preparation for extended outages for ERT Lines 1 and 2 to complete Hurricane Sandy damage-related reconstruction work, earlier scheduled to commence in 2018, but now planned for 2019. There is concern, shared by both the PMOC and MTACC, that significant Amtrak Force Account resources will be needed to support the hardening work, which could further reduce the Amtrak resources available to support the ESA Harold Re-Sequencing Plan. During July 2016, Amtrak advised MTACC that it plans to start work on the total track replacement in ERT Lines 3 and 4 during 4Q2016. There is also concern that track outages 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. The PMOC does note, however, that Amtrak's decision about taking ERT Line 2 out of service first, in 2019, for the 18-month resconstruction 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. 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.

6.1 Risk Process

Status/Observations:

The PMOC observes that the new ESA Risk Manager continues working to re-establish the ESA risk management process as a key element for the PMT's decision making process. He has resumed the program risk meetings with the PMOC and held meetings in March 2016 and June 2016. He has revised the ESA Risk Register procedures and reporting to streamline the procees to improve its usefulness as a practical management tool.

Concerns and Recommendations:

The 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. Should delays start to accumulate, recovery will likely not be possible. Managing inter-contract handoffs and interfaces will be challenging and represents significant MTACC-retained risks. The PMOC does recognize 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 that result from 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 with regard to the construction and testing interface management for the systems work. When combined with the extensive scope re-configuration changes associated with the Harold Interlocking work, the PMOC believes that this may create significant changes to the overall project risk profile.

6.2 Risk Register

Status/Observation:

Due to the lack of continuity in leadership for the risk management process caused by the resignation of the ESA Risk Manager in October 2015, the PMT had not been able to update the risk register on a regular basis. This situation is being resolved by the new ESA Risk Manager, who started work on the ESA project in January 2016. He issued a draft updated program Risk Register during 2Q2016 and is working on some revisions to the register to streamline the risk review and tracking process. He plans to issue the next Risk Register update in early 4Q2016.

Concerns and Recommendations:

ESA needs to continue regularly scheduled updates of the Risk Register as called for in the RMP. The ESA Risk Manager is actively working to resume this process.

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

- Program Funding (2015-19 Capital Plan issue resolved in May 2016; current forecast cost growth funding will rely on Capital Plan amendment and other sources);
- Successful execution of dozens of hand-off interfaces across multiple contracts;
- Contractor access and work area coordination in Manhattan;
- Duration of integrated systems testing;
- Continued availability of adequate Amtrak and LIRR force account resources for both construction and third-party contractor support in Harold Interlocking [increasing risk trend noted in 4Q2015, through 3Q2016]; and,
- Continued availability of required track outages in the Harold Interlocking [Increasing risk trend noted in 3Q2016].

6.3 Risk Mitigations

Current Risk Mitigation Efforts:

The PMOC notes that the PMT is implementing mitigation strategies for a number of identified risks. Examples include advancing procurement of the eight CILs for the Mid-Day Storage Yard, actively engaging Amtrak to develop some specific strategies to mitigate many of the identified risks, and to pursue labor agreements that will provide flexibility and additional resources to allow more third-party work in Harold Interlocking. Implementation of the Harold schedule re-sequencing to support the "ESA First" approach of advancing work elements required to provide LIRR service into GCT was done to mitigate some of the schedule delay risks. However, implementation of the Harold re-sequenced schedule has not met the established goals because Amtrak has not been able to provide the necessary force account support to the third-party

contractors and complete their own force account construction work elements on schedule. As a result, MTACC has reviewed the 2015 Harold schedule re-sequencing plan to determine the detailed causes of the schedule slippage. MTACC has revised the Harold schedule to reflect the current status and expected level of support from Amtrak and LIRR. The associated revision to the Intergrated Project Schedule shows that the remaining work in the Harold Interlocking is now on the program critical path. MTACC re-evaluated the cost of force account support going forward and has forecast the cost growth to be in the range of $200-300 million.

Concerns and Recommendations:

MTACC has completed several programmatic risk assessments and multiple package level risk reviews. The PMOC believes that MTACC is capable of developing effective mitigation strategies for the risks identified, tracking and reporting on them on a regular basis as required by the RMP. MTACC has demonstrated its capabilities in address many evolving risks in the past, especially with regard to Harold Interlocking, and needs to continue to focus on developing, updating, and implementing effective mitigation plans for both the currently identified major risks and for future potential risks.

The PMOC notes that, although MTACC has actively engaged Amtrak to develop some specific mitigations for certain risks and continues to work on strategies for mitigating many of the other identified risks, continued shortcomings in provision of adequate force account resources have adversely impacted the current Harold schedule and have caused the remaining Harold work to become the ESA program schedule critical path. The developments made known to the FTA and the PMOC during 2Q2016 and 3Q2016 with regard to the schedule performance of the remaining work in the Harold Interlocking are certainly not encouraging. 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 essential to completion of the project.

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 inadequacy of Amtrak support with regard to force account resources and track outages for ESA work. The results of the study, along with the recent Amtrak decision about the ERT tunnel program, do not provide any basis for optimism going forward, especially considering that the situation has deteriorated so quickly since the current baseline was established only 26 months ago:

- [redacted]
- The Harold critical path has now become the ESA Program Critical Path and leads by three months, the secondary Manhattan/Systems critical path; and,
- 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.

During 3Q2016, ESA continued to experience a worsening trend of insufficient Amtrak Force Account personnel, now including track foreman as well as Electric Traction (ET), to properly support its 3rd Party contractors currently working in Harold Interlocking, CH053, CH057, and CH057A.

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 recently became the critical path of the ESA Project. The PMOC recognizes ESA's efforts to rebaseline the remaining work in Harold Interlocking to reflect more realistic expectations of Amtrak support. However, the situation continues to deteriorate and the PMOC recommends that the PMT engage senior management in MTACC and MTA to assist with resolution of this problem **[Ref: ESA-124-Jun16]**.

New issues that developed during 3Q2016 include:

- ESA has been pursuing labor clearance agreements with Amtrak to allow third-party contractors to do work that is normally claimed by the various Amtrak unions. The demands on Amtrak's force account resources are currently so high, however, that they will be unable to provide access and protection to third-party contractors for performing work for which labor clearance has been granted. As a result, the PMOC believes that this effort by ESA to help mitigate some of the schedule delays will not be as effective as expected.
- Amtrak has advised MTA that ESA should limit the number of critical weekend outages.
- Amtrak is 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. [redacted]

7.0 PMOC CONCERNS AND RECOMMENDATIONS

Priority in Criticality column

1 – Critical 2 – Near Critical

Number/ Date Initiated	Section	Issues/Recommendations	Criticality
ESA-114-Sep13	3.0 ELPEP Compliance	ELPEP Compliance: With MTACC's submission of its East Side Access FTA Quarterly Report (Apr, May, June '13) and then continuing with all subsequent reports through July 2016, the PMOC notes that the ESA project continues to be partially non-compliant with ELPEP and is not meeting some of the more important requirements of the SMP and CMP sub-plans to the PMP. Status Update: Specific areas of non-compliance were provided to MTACC at the September 12, 2013, ELPEP Quarterly Review Meeting and additional details provided on October 30, 2013. MTACC provided preliminary draft responses (partial) to the PMOC list of ELPEP non-compliances at the December 12, 2013, ELPEP Quarterly Compliance Meeting. MTACC and the PMOC met on February 27, 2014, to discuss the FTA and PMOC's concerns. At that meeting, MTACC acknowledged the need for more transparency/clarity in documenting the cost/schedule management processes to support traceability in the decision making process. Since that time, the PMOC has endeavored to engage the ESA Project Controls in productive discussions regarding improvements to cost and schedule reporting during the monthly cost and schedule review meetings. MTACC noted that both Cost and Schedule Management Plans will be revised, after completion of the PMP update, to improve the management processes and reporting. MTACC submitted the revised CMP on June 30, 2015, and two review cycles culminated in a working meeting on November 16, 2015, to review outstanding PMOC issues/concerns. MTACC issued an interim revision update of the CMP in December 2015 and the PMOC completed its review and met with MTACC in June 2016. The revised SMP was submitted by MTACC on October 26,2015 and the PMOC completed its review in June 2016. MTACC is actively working with the PMOC to finalize the current revisions to the SMP and CMP.	1

Number/ Date Initiated	Section	Issues/Recommendations	Criticality
		The PMOC notes that the updated TCC Plan was expected earlier in 2014 but was submitted on June 11, 2015, based on finalization of the role, responsibilities, and level of authority of the ESA Change Control Committee. The FTA has provided MTACC with the PMOC review comments on both the TCC and the CMP. The PMOC continues the process of resolving all remaining issues with MTACC via working level meetings. Recommendation: The PMOC will continue to work with MTACC at the monthly cost and schedule review meetings, as well as dedicated meetings as needed, to advance progress in this area. Although some improvements to the transparency/clarity and traceability of the decision-making process with regard to cost and schedule have been noted, the PMOC's opinion is that MTACC's continued efforts to improve are still needed.	
ESA-122-Jun16	1.6 Project Quality	Quality Staff Insufficient and Quality Manager has resigned: The original Quality Staff in 2015 consisted of Quality Assurance Manager and a staff of five Quality Managers/Engineers. Status Update: Since then, a Quality Manager/Engineer left in July 2015 who covered CS179 and CS084 and the Quality Assurance Manager resigned as of Friday July 15, 2016. This left a Quality Staff of four. Out of the remaining staff, one quality representative covers CM007 and CS179, a second representative covers CM005 and CM006, a third representative is covering CQ014B and CH057A, and the final representative is covering CH053 and CH054 contracts (which are closing) and CQ032 and CH057. The Quality Assurance Manager was covering CS084 and VM014, which will now need to be covered. No word has been received for the replacement of the Quality Assurance Manager nor any replacement of staff. Recommendation: The PMOC recommends that MTACC fill these vacant positions as soon as possible to return to it's original staff level.	1
ESA-123-Jun16	1.4b	Track Turnouts for LIRR – continued delays to finalizing specification. Status Update: There are approximately 41 turnouts remaining (from former Stages 3 and 4) to be installed in Harold Interlocking. These turnouts need to be "Buy	2

Number/ Date Initiated	Section	Issues/Recommendations	Criticality
	Federal Regulations	America" compliant. During 3Q2015, the ESA PMT authorized the GEC to develop compliant specifications for, and in coordination with, the LIRR. During the 3rd week of September 2016, the GEC completed its development of draft compliant specifications and transmitted them to the LIRR for review and approval. As of September 30, 2016, the LIRR had not yet approved the specifications. Recommendation: The PMOC recommends that LIRR complete its review of the specifications and issue its approval to ESA as quickly as possible and that ESA concurrently prepare all necessary preliminary documentation for its solicitation of these turnouts in order to minimize the time required for the procurement process.	
ESA-124-Jun16	6.3-Risk Mitigations	Continued issues with insufficient Amtrak FA support of third-party contractors and lack of required track outages. Status Update: During 3Q2016, ESA continued to experience a worsening trend of insufficient Amtrak Force Account personnel, track foreman and Electric Traction (ET), to properly support its 3rd Party contractors currently working in Harold Interlocking, CH053, CH057, and CH057A. 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 recently became the critical path of the ESA Project. Additional issues arose during 3Q2016 that contributed to the problem,including reduced availability of priority weekend track outages and increased demand for track foreman to cover individual construction work activities. Recommendation: The PMOC recognizes ESA's efforts to rebaseline the remaining work in the Harold Interlocking to reflect more realistic expections of Amtrak support and to more effectively engage Amtrak at the management level. However, the situation continues to deteriorate and the PMOC recommends that the PMT engage senior management in MTACC and MTA to assist with resolution of this problem.	2

Number/ Date Initiated	Section	Issues/Recommendations	Criticality
ESA-125-Sep16	2.1 Engineering/ Design and CPS	On Contracts CS179 and CS084, there are continued issues with late completion of review and approval of contractors' final systems designs and closure of RFIs. Current Status: The PMOC has been reporting delays in the process of GEC and LIRR review and approval of the contractors' final systems designs and closure of RFIs. Schedule impacts have been significant on both contracts. Contributing factors include technical capacity and capability shortcomings as well as coordination issues between the CM, GEC, and LIRR. Efforts by ESA PMT to resolve issues have been ongoing but, to date, have not been sufficient to correct problems and reverse the poor trending. ESA senior management has recently elevated discussions involving ESA PMT and CM, the GEC and LIRR. Recommendation: The PMOC recognizes MTACC's efforts, especially recently, to resolve the many issues and to engage higher levels of management for all the involved parties. It is recommended that these efforts continue, on a critical priority basis, until the contributing issues are resolved, the work backlog is significantly reduced and there are no longer delays to the systems' design review and approval.	1

8.0 GRANTEE ACTIONS FROM QUARTERLY AND MONTHLY MEETINGS

Priority in Criticality column 1 – Critical 2 – Near Critical

Number with Date Initiated	Section	Grantee Actions	Criticality	Projected Resolution Date
ESA-A46-Dec12	Section 4.2	The ESA PMT agreed at a meeting held with FTA/PMOC on July 30, 2012, to develop a set of critical metrics jointly with the FTA/PMOC and MTA IEC that would be used as an early indicator of issues that need to be addressed by senior management. The need to do this was reiterated at the November 8, 2012, ESA/SAS mini-quarterly meeting. Critical metrics cannot be properly updated until approved baseline schedules are fully incorporated into their respective IPSs. At present, ESA has incorporated the latest Harold Re-Sequencing, developed in 2Q2016, into the IPS schedule. MTACC needs to check the schedule baseline related to the activity ID numbering so that an accurate comparison can be completed between the July 2014 baseline and the current monthly IPS updates. MTACC started this effort in 2015, but new issues have arisen that require resolution.	2	11/30/16

APPENDIX A - LIST OF ACRONYMS

ARRA	American Recovery and Reinvestment Act
CBB	Current Baseline Budget
C&S	Communication and Signals
CCC	Change Control Committee
CCM	Consultant Construction Manager
CM	ESA Construction Manager assigned to each contract
CMP	Cost Management Plan
CPOC	Capital Program Oversight Committee
CR	Candidate Revision
CIL	Central Instrument Location
CPRB	Capital Program Review Board
CPP	Contract Packaging Plan
DCB	Detailed Cost Breakdown
ELPEP	Enterprise Level Project Execution Plan
ERT	East River Tunnel
ESA	East Side Access
ET	Electric Traction
FA	Force Account
FFGA	Full Funding Grant Agreement
FTA	Federal Transit Administration
GCT	Grand Central Terminal
GEC	General Engineering Consultant
HTSCS	Harold Tower Supervisory Control System
IEC	Independent Engineering Consultant (to MTA)
IFB	Invitation for Bid
IPS	Integrated Project Schedule
IST	Integrated System Testing
LIRR	Long Island Rail Road
LTA	Lost Time Accidents
MEP	Mechanical/Electrical/Plumbing
MNR	Metro-North Railroad
MTA	Metropolitan Transportation Authority
MTACC	Metropolitan Transportation Authority Capital Construction
N/A	Not Applicable

NTP	Notice to Proceed
NYCT	New York City Transit
NYSPTSB	New York State Public Transportation Safety Board
OR	Operational Readiness
PE	Preliminary Engineering
PEP	Project Execution Plan
PMOC	Project Management Oversight Contractor (Urban Engineers)
PMP	Project Management Plan
PMT	Project Management Team
PQM	Project Quality Manual
PWE	Project Working Estimate
QA	Quality Assurance
RAMP	Real Estate Acquisition Management Plan
RAP	Rail Activation Plan
RFP	Request for Proposal
RMP	Risk Management Plan
ROD	Revenue Operations Date
ROW	Right of Way
RSD	Revenue Service Date
SC	Substantial Completion
SCC	Standard Cost Category
SMP	Schedule Management Plan
SSMP	Safety and Security Management Plan
SSOA	State Safety Oversight Agency
SSPP	System Safety Program Plan
TBD	To Be Determined
TBM	Tunnel Boring Machine
TCC	Technical Capacity and Capability
WBS	Work Breakdown Structure
WBY	Westbound Bypass Tunnel

APPENDIX B - PROJECT OVERVIEW AND MAP

Project Overview and Map – East Side Access

East Side Access Project Map

MTA/LIRR East Side Access Project

Scope

Description: This project is a new commuter rail extension of the Long Island Rail Road (LIRR) service from Sunnyside, Queens to Grand Central Terminal (GCT), Manhattan, utilizing the existing 63rd Street tunnel under the East River and new tunnels in Manhattan and Sunnyside yard. Ridership forecast is 162,000 daily riders (27,300 new riders).

Guideway: This two-track project is 3.5 route miles long, it is below grade in tunnels and does not include any shared use track. In Harold interlocking, it shares ROW with Amtrak and the freight line.

Stations: This project will add a new 8 track major terminal to be constructed below the existing GCT. The boarding platforms and mezzanines of the new station will be located approximately 90 feet below the existing GCT lower level. A new passenger concourse will be built on the lower level of the terminal.

Support Facilities: New facilities will include: the LIRR lower level at GCT, new passenger entrances to the existing GCT, the East Yard at GCT, the Arch Street Shop and Yard, a daytime storage and running repair/maintenance shop facility in Queens, and ventilation facilities in Manhattan and Queens.

Vehicles: The scope and budget for the ESA project include the procurement of 160 new electric rail cars to support the initial service.

Ridership Forecast: MTA projects that, by 2020, the ESA project will handle approximately 162,000 daily riders to and from GCT. This Ridership projection is based on a 2005 study performed by DMJM/Harris (AECOM).

Original Schedule

9/98	Approval Entry to PE	12/10	Estimated Rev Ops at Entry to PE
02/02	Approval Entry to FD	06/12	Estimated Rev Ops at Entry to FD
12/06	FFGA Signed	12/13	Estimated Rev Ops at FFGA
08/19	Revenue Service Date at date of this report (MTA schedule)		

Cost ($)

4,300 million	Total Project Cost ($YOE) at Approval Entry to PE
4,350 million	Total Project Cost ($YOE) at Approval Entry to FD
7,386 million	Total Project Cost ($YOE) at FFGA signed
11,936.0 million	Total Project Cost ($YOE) at Revenue Operations
11,972.1 million	Total Project Cost ($YOE) at date of this report including $ 1,036.1 million in Finance Charges & Regional Investment Program
6,827.3 million	Amount of Expenditures as of April 30, 2016, based on the Total Project Budget of $10,177.8 million
62.8	Percent Complete, based on the Re-plan budget of $10,177.8 million and invoices in the April 2016 report
[redacted]	[redacted]
62.8*	Construction Percent Complete vs.65.1% planned
62.8	Overall Project Percent Complete vs. 64.4% planned

*****As of November 30, 2015, based on the June 2014 ESA Re-plan Budget and excluding $463 million for Rolling Stock Reserve, as provided by ESA in its December 2015 Report.

[redacted]

APPENDIX C – LESSONS LEARNED

#	Date	Phase	Category	Subject	Lessons Learned
1	Dec-12	Construction	Construction	Muck Handling	During cavern excavation, the CM019 contractor became muck-bound, which caused a project delay of several months. The PMOC recommended that the contractor make extraordinary effort to evacuate the muck. After several months, it finally did, but the schedule time could not be recovered by that point. Lesson learned was to develop a well thought out muck handling plan (including establishment of proper haul roads) before work begins and to follow it during excavation.
2	Dec-12	Construction	Management	Stakeholder Management	The CH053 contractor incurred many months of initial construction delay because Amtrak did not approve the Electric Traction design documents on the project's schedule. A major contributing factor to this was because the MTACC had not established a contractual working relationship with Amtrak prior to letting the CH053 contract. The PMOC recommended that the MTACC and its GEC more closely design the project in accordance with the comments that Amtrak was submitting. To date, the MTACC has exhibited some improvement in this matter, but there are still 2+ Stages to construct, and improvement has not been fast enough or consistent over time. Lesson learned was to develop good working relationships with all project stakeholders before any contracts are let.
3	June-13	Construction	Planning/ Construction	Haul Roads	Haul roads to remove muck need to be passable (preferably paved with a mud slab) with locations pre-determined in areas of confined space such as caverns and tunnels.

#	Date	Phase	Category	Subject	Lessons Learned
					Deep, muck-filled haul roads contributed to the contractor's slow progress in removal of muck during construction. Lesson learned was to plan haul roads in advance and ensure that the muck haulers can travel at a specific rate of speed in order to meet production goals.
4	June-13	Construction	Training	Operator Skill with drill rigs	Lack of proper operator training contributed to inconsistent drilling of 10' deep blast holes which resulted in under/overbreak of excavated material, thus requiring rework to achieve desired results. Lesson learned was to ensure that drill rig operators are properly trained before being allowed to operate a production drill rig.
5	June-13	Procurement	Contract Development	Contract Packaging	Access to work sites, interface with other contracts, and contract staging must be considered when projects employ multiple contractors that may conflict with each other, particularly in confined spaces such as tunnels and caverns. Lesson learned is to carefully consider the access that each contractor may require, perhaps developing a scale model of the expected operation, so that expected operation of each contractor is included in its contractual requirements.
6	June-13	Administration	Quality	Submittals	Identification and resolution of quality issues (e.g. As-Built drawings, NCRs, etc.) must be managed on a daily basis to avoid creation of a backlog. Lesson learned is for the owner to have a well-trained staff with a consistent, coordinated approach (including appropriate pre-approved corrective action) when obtaining contractually required documents from contractors.

#	Date	Phase	Category	Subject	Lessons Learned
7	June-13	Contract Specs/ Construction	Construction	Pneumatically Applied Concrete (PAC)/ Shotcrete	Mismanagement of PAC/Shotcrete application has many different aspects which could adversely affect a project. Lesson learned is that all projects which anticipate use of PAC/shotcrete should carefully examine all aspects of its use and that a careful engineering analysis of the expected use be made so that the approved use can be included in the contract documents for the project.
8	June-13	Procurement/ Construction	Procurement	Qualified Personnel	Ensure that project key personnel are properly qualified and experienced for the positions they will fill on the project. Lesson learned is that personnel not properly qualified, experienced, or possessing the requisite credentials can do more harm than good. The owner should ensure that it is getting the contractor's best personnel when excavating a tunnel or cavern.
9	June-13	Scheduling	Construction	TBM Production	Project management should ensure that accurate, up-to-date, production rates for machinery are used when project schedules are developed. PMOC analysis has revealed that ESA schedules for the Manhattan Tunnel Boring Machines were based on a planned excavation rate of 53 linear feet/day. Actual TBM excavation averaged 34 LF/day, a difference of 35%. Lesson learned is that, depending on the length of excavation, inaccurate estimates can have a large negative impact on project schedule.

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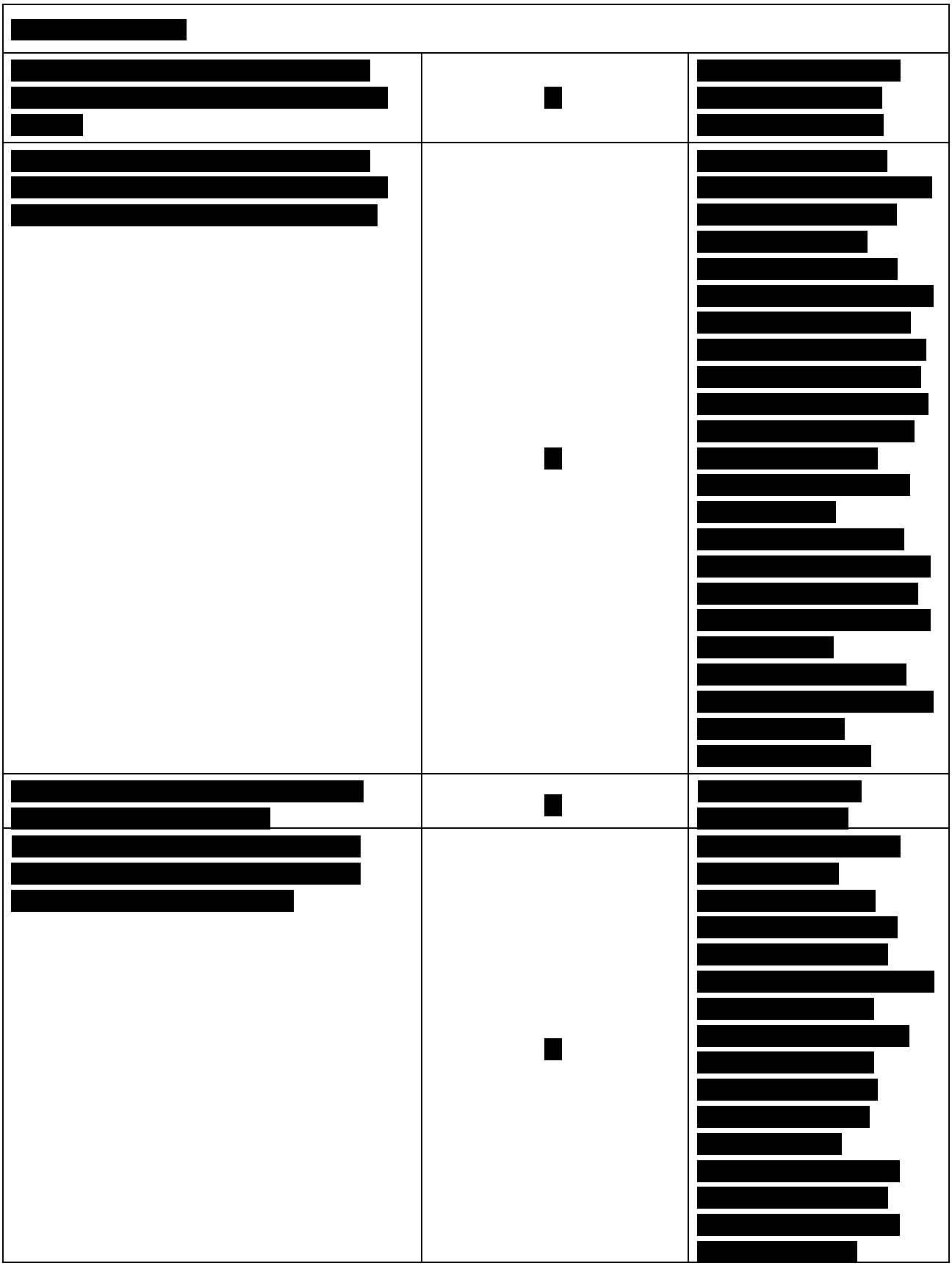
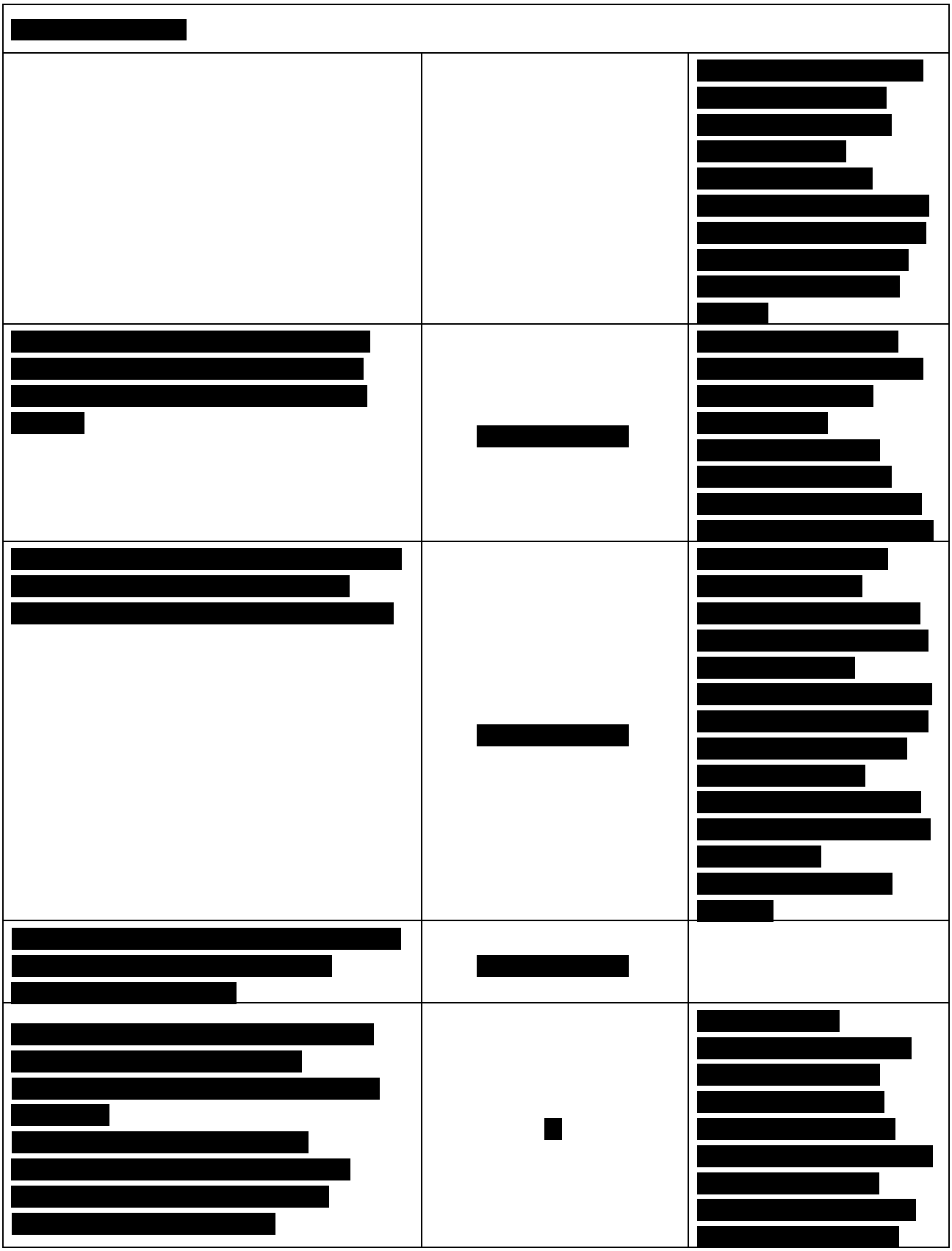
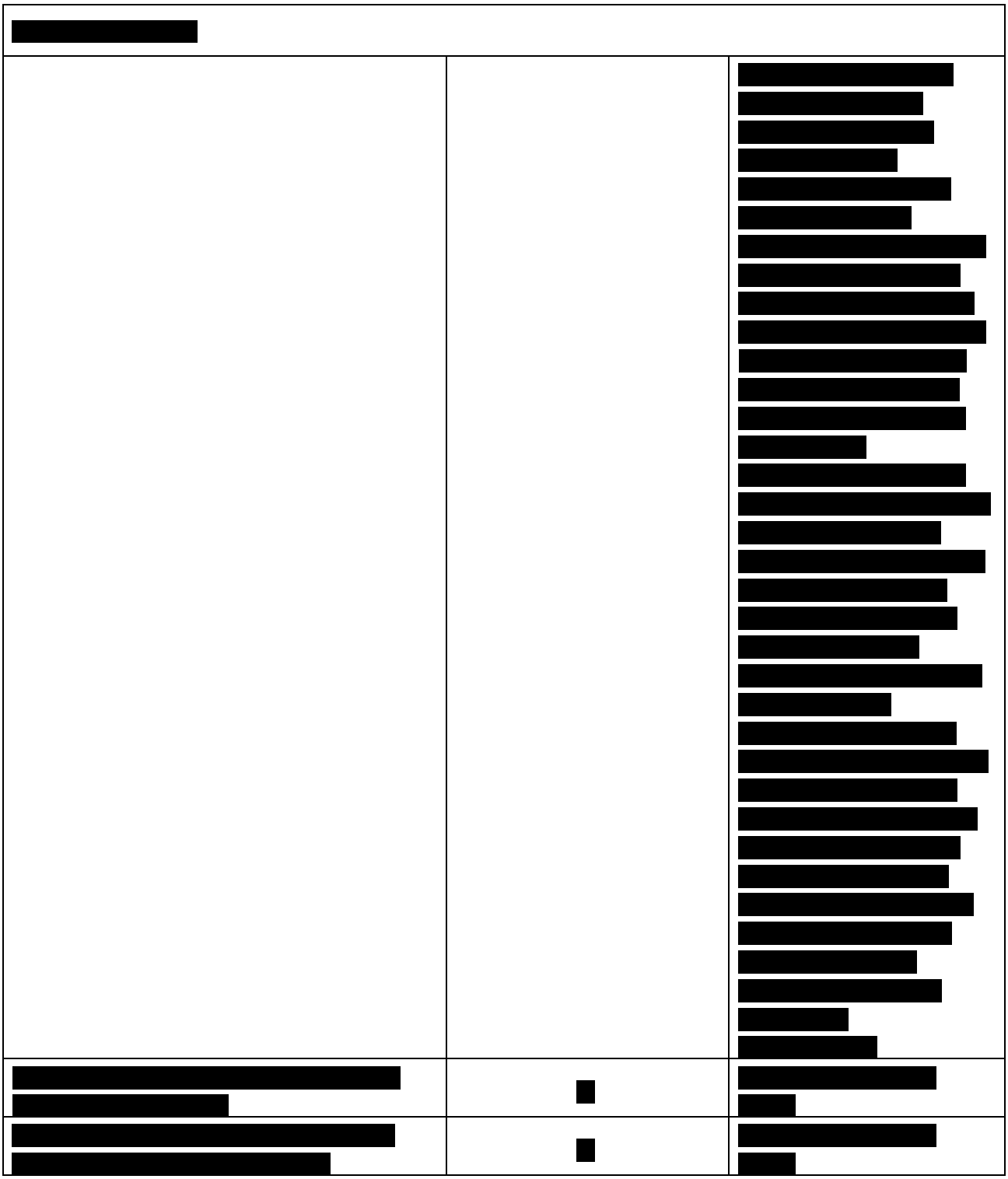






APPENDIX E – ON-SITE PICTURES
(TRANSMITTED AS A SEPARATE FILE)

APPENDIX F - COST AND SCHEDULE ANALYSIS TABLES

Table F-1: ESA Planned vs Actual Construction Cash Flow as end of 2Q2016

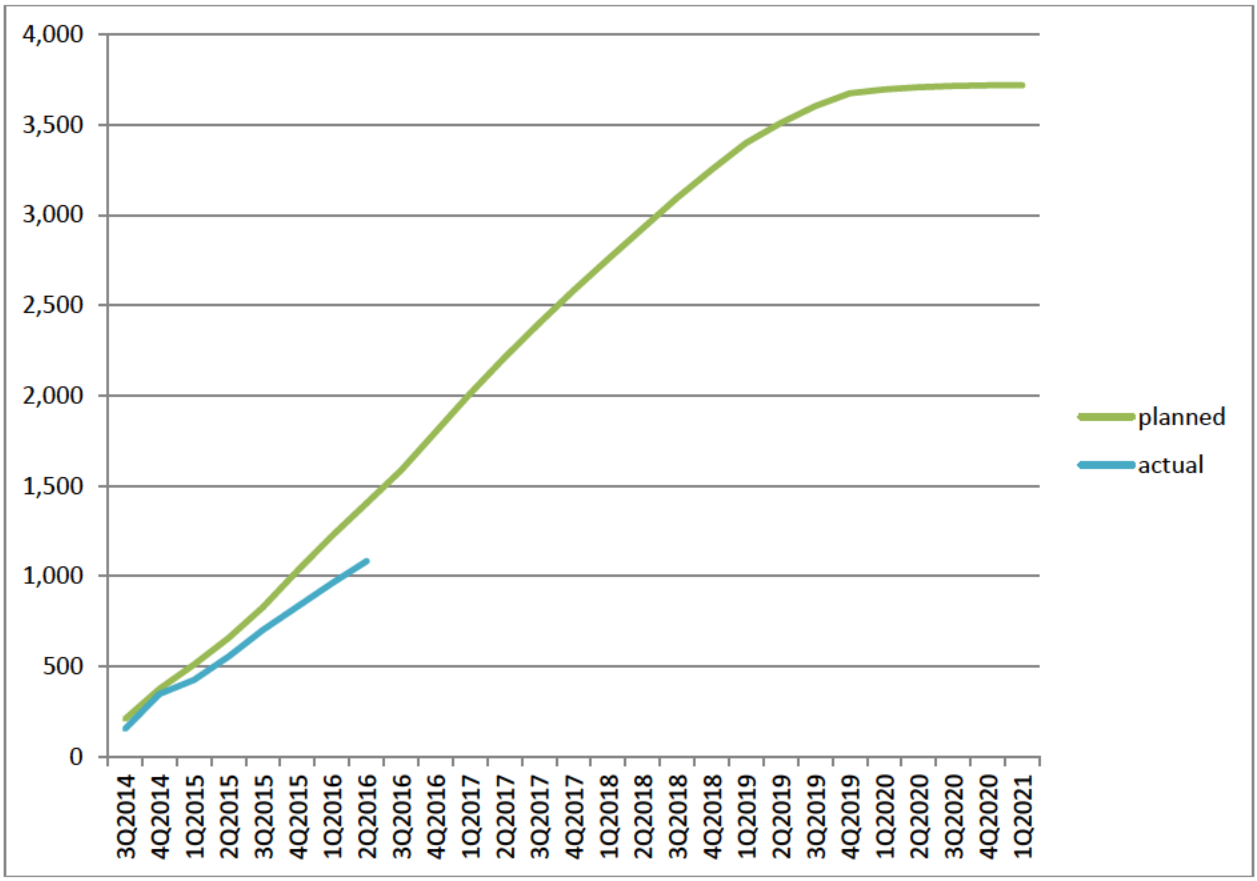


Table F-1 - The "planned" curve shows construction cash flow that was planned by ESA at the 2014 re-baselining in order to reach revenue service by the 1st quarter of 2021. The vertical axis is $million, starting at $0 at the time of the re-baselining. The "actual" curve, up to the 2nd quarter of 2016, shows actual construction spending as reported by ESA.

Table F-2: 90 Day Look-Ahead Schedule – August 1, 2016 ESA IPS Schedule

ACTIVITY ID	ACTIVITY DESCRIPTION	START	FINISH
CQ033-2446	Substantial Completion CM005		30-Sep-16
CS084-MS11	CS084 Milestone LOE	29-Oct-14 A	01-Jul-20
HAROLD CONTRACTS			
CH057: Harold Structure - Part 2/3 Loop Box Approach, & EBRR West Approach & Tunnel			
CH057-3040	Procure Catenary material (12 Weeks)	16-Feb-16 A	04-Aug-16
CH057-3110	Complete Catenary / Signal Tower Relocation for L & T CIH Cutover		01-Aug-16
CH057-3370	Construct "D" Pit (Incl TBM Recovery) - For Cutover New Main Line 4	14-Dec-15 A	21-Feb-17
CH057-3420	Install Excavation Support for Tunnel D Reception Pit	13-Apr-16 A	24-May-16 A
CH057A - Westbound Bypass Structure (exclude Slab)			
CH057A-1050	Procure Catenary material for LP1A & 747 (12 Weeks)	11-Dec-15 A	22-Jul-16 A
CH057A-1390	(CH057 Jack) Install Jacking Frame To Secants	05-Apr-16 A	16-May-16 A
CH061A: Tunnel A			
CH061A-2100	CH061A Legal / Procurement Review/Intent to Advertise Approved	01-Sep-15 A	28-Apr-16 A
CH061A-2130	CH061A - Bid Due Date		1-Aug-16
CH061A-CONT	CH061 - Prepare for Advertisement	01-May-16 A	23-May-16 A
CH058A: Harold Structures - B/C Structure/ Catenary Structure			
CH058A-0000	Develop/Finalize 90% Design Documents - CH058A	01-Apr-15 A	21-Jun-16 A
CH058A-0020	Develop/Finalize 100% Design Documents - CH058A	22-Jun-16 A	30-Aug-16
CH058B: Harold Structures - Eastbound Reroute Structure			
CH057-MS1000	Remove Signal Hut "B" - after H3 CIL cutover		01-Aug-16
FHL01: Harold Stage 1 - LIRR F/A			
FHL01-1150	Complete Trough H2 to H3 (Track A)		04-Nov-16

ACTIVITY ID	ACTIVITY DESCRIPTION	START	FINISH
FHL01-1400	12 KV Cutover + Demo existing (CH053)		02-Dec-15 A
FHL02: Harold Stage 2 - LIRR F/A			
FHL02-5160	Cutover Harold Emergency Generator		06-Sep-16
FHL02-SI5010	Install Remaining Conduit and Pull boxes in H5-CIL Location	07-Sep-16	12-Sep-16
FHL02.MS.00095	Cutover #L-2 Service for H3, H4 CIL's		8-Aug-16
FHL02.TK.00700	Fabricate Panels For Two No. 20 Turnouts 6176W(K3) & The 5 Degree 43'42" Diamond To Complete The Hx2-Kx2 No. 20 Double C	13-Oct-16	21-Oct-16
FHL03: Harold Stage 3 - LIRR F/A			
FHL03500710	Signal Works for Removing 843 Switch	23-Jan-17	03-Feb-17
FHA01: Harold Stage 1 - Amtrak F/A			
FHA01-1050	ET-Catenary: Thomson to Queens for Loop 1A Track (ESA)	17-Feb-14 A	26-Aug-16
FHA02: Harold Stage 2 - Amtrak F/A: Balance Work			
FHA02-1060	CH054A - Completed SMUS 1 & 2 / Install New RTU		08-Aug-16
FHA02-1220	Cutover F1/F2 Crossover (771): **WITH NEW SNOW MELTER CASE**	17-Sep-16	18-Sep-16
FHA02-1230	Cutover ZJ1/ZJ2 Crossover (747) **WITH OUT NEW SNOW MELTER**	06-Aug-16	07-Aug-16
FHA02-1350	Cutover DN2 (743B)	18-Mar-17	19-Mar-17
FHA02-1540	Cutover: ZJ1/ZJ2 (747) (signal)	06-Aug-16	07-Aug-16
FHA02-1730	Circuit Revision and Testing for LP1A cutover	28-Nov-16	23-Dec-16
FHA02-1780	Cutover New RTU with SMUS 1&2	22-Aug-16	02-Sep-16
SUMFHA02-1540	Cutover - ZJ1/ZJ2 (747)		07-Aug-16
SUMFHA02-1560	Cutover - DN2 (743B)		19-Mar-17
FHA03: Harold Stage 3 - Amtrak F/A			
FHA03-1210	Remove Existing Cables and Cases after Cutover Stage 2	06-Jun-14 A	19-Oct-16
VH051A (Part 1): Harold & Point CILs			
VH51C0340	FIAT COMPLETED (w/HTSCS Contract)		26-Sep-16

ACTIVITY ID	ACTIVITY DESCRIPTION	START	FINISH
VH051B (Part 2): Harold Tower SCS			
VH51H0300	As-Built Drawings	01-May-15 A	13-Oct-16
VH051C: 250 Hertz Misroute/ Tunnel Collision Avoidance			
VH051C	VH051C - 250 Hz Track Circuits	1-Aug-16	18-Jun-23
VH052: Cab Simulator			
VH052	VH052 - Cab Simulator	1-Aug-16	18-Jun-23
VHA03: Procure Materials for Harold Stage 3 - Amtrak F/A			
VHA03	VHA03 -Procure Amtrak Materials - Harold Stage 3	05-May-14 A	14-Dec-22
VHA04: Procure Materials for Harold Stage 4 - Amtrak F/A			
VHA04-1000	NTP VHA04 - Procure Materials Stage 4 - Amtrak	01-Jul-18	
VHL02: Procure Materials for Harold Stage 2 - LIRR F/A			
VHL02-1010	Procure ZE Crossover	30-Jul-14 A	01-Aug-16
VHL03: Procure Materials for Harold Stage 3 - LIRR F/A			
VHL03-1000	VHL03 - Procure LIRR Materials - Harold Stage 3	01-Jun-14 A	27-Feb-22
VHL04: Procure Materials for Harold Stage 4 - LIRR F/A			
VHL04-1000	NTP VHL04 - Procure Materials stage 4 - LIRR	23-Dec-17*	
FML-LIRR	FML05, FML06, FML07 - Cavern,63rd Tunnel Rehab & Bellmouth-LIRR	09-Sep-13 A	30-Jan-20
CM005: Manhattan South Structures			
[redacted]	[redacted]	[redacted]	[redacted]
CM005-1040	Milestone 4 Complete Balance of Project (Substantial Completion) - MS60 - (February 6 2016)		22-Apr-16 A
CM005-TO25	CM005 MS #1 Turnover to CM014B AR5a-5d (Bottom of Wellways 1 thru 4)	15-May-15 A	19-Jun-15 A

*Constrained date by contract schedule

ACTIVITY ID	ACTIVITY DESCRIPTION	START	FINISH
CM005-TO30	CM005 MS #4 Turnover to CS179 AR05 (LL Tail Tracks)	22-Apr-16 A	25-Apr-16 A
CM005-TO35	CM005 MS #4 Turnover to CS179 AR05 (UL Tail Tracks)	22-Apr-16 A	25-Apr-16 A
CM005-TO40	CM005 MS #4 Turnover to CS179 AR05 (38th St Facility)	22-Apr-16 A	25-Apr-16 A
CM005-TO45	CM005 MS #4 Turnover to CS179 AR05 (GCT 1/2)	22-Apr-16 A	25-Apr-16 A
CM005-TO50	CM005 MS #4 Turnover to CS284 AR (LL Tail Tracks)	01-Jul-16	29-Nov-16
CM005-TO55	CM005 MS #4 Turnover to CM007 Unlimited NTP	22-Apr-16 A	10-Oct-16
CM005-TO60	CM005 MS #4 Turnover to CM014B AR03 (44th St Vent Pant & Connex Boxes)	22-Apr-16 A	10-Jul-16 A
CM005-TO65	CM005 MS #4 Turnover to CS179 AR11 (Access Tunnel #1)	22-Apr-16 A	05-May-16 A
CM005-1650	West Cavern - Install Concrete & Strip Forms (S. End Wall Remaining)	10-Aug-15 A	16-Feb-16 A
CM013A: 55th Street Vent Facility			
CM014B-2410	CM014B - EL-01 and EL-02 - Prep Site/Prelim Work - Incl Provision of Shaft, Hoist Beams , Machine Rm & Temp Utilities	01-Aug-16	02-Sep-16
CM004: 245 Park Ave. Entrance & 44th Street Vent Structure			
CM04-C0940	CM004 Contractual Final Completion (ML#2 Date 820 CDs from NTP)		30-Sep-16
CM006: Manhattan North Structures			
CM006-MS2A	CM006 Milestone #2A (55th Street Vent Facility Complete - 702 days from NTP (3/2/16)		13-Apr-17
CM006-MS5	CM006 Milestone #5 (GCT 4 Facility Room - 460 CD from NTP (7/4/2015)		12-Aug-16
CQ032: Plaza Substation & Queens Structures			
CQ032-MS11	Milestone #11 Complete YLT Ductbench Work Between Station 1181+89--1225+10		31-May-16 A

ACTIVITY ID	ACTIVITY DESCRIPTION	START	FINISH
CQ032-TO20	CQ032 MS #2 Turnover to Other Contracts: YL Track Level Complete	12-Sep-16	12-Sep-16
FQA65: Loop Interlocking - Amtrak F/A			
FQA65-3010	CH057: Complete Catenary Structure for Loop and T CIHs (65-0) Part 2		01-Aug-16
VQ065: Loop Interlocking CIL (Amtrak)			
VQ065RI	VQ065 RI - Loop Interlocking	12-Sep-12 A	14-Jun-20
CQ033: Mid-Day Storage Yard Facility (Procurement Status TBD)			
CQ033-1020	CQ033 Ready for Procurement	11-Jul-16 A	08-Sep-16
CQ033-1015	LIRR/DOT Permit to Demo Montauk Cutoff Structure - 4 MONTHS COMPLETE BY NTP	01-Aug-16	29-Nov-16
SYSTEM-WIDE CONTRACTS/WORK PACKAGES			
CS084: Tunnel Systems Package 4 – Traction Power Systems			
CS084-MS001	MILESTONE # 1- Energize Traction Power Substation C08		05-Feb-19
CS084-MS002	MILESTONE # 2- Energize Traction Power Substation C04 and C05		04-Aug-19
CS084-MS003	MILESTONE # 3- Energize Traction Power Substation C06 and C07		24-May-19
CS084-MS004	MILESTONE # 4- Energize Traction Power Substation C01 and C02		02-Apr-19
CS084-MS005	MILESTONE # 5- Energize Traction Power Substation C03		13-Feb-19
CS084-MS006	MILESTONE # 6- Complete Local testing of all substation/Start Integration		20-Feb-20
CS084-MS007	MILESTONE # 7- Substantial completion & Final Completion		01-Jul-20
CS179: System Package 1 - Facilities Systems			
CS079-B6450	CR-125 @ Yard Services Bldg. - Complete Equip Installation	09-Nov-15 A	14-Sep-16
CS079-B6530	CR-125 @ Yard Services Bldg. - TEST - Start of Subsystem Testing (SST)	15-Sep-16	

ACTIVITY ID	ACTIVITY DESCRIPTION	START	FINISH
CS179	CS179 - Facilities Systems Construction	31-Mar-14 A	01-Jul-20
CS179-AR27A	CS179 AR 10A.1 - Access to GCT Concourse Zone 1	01-Aug-16*	
CSU99: Systems Utility Relocations			
CSU99	CSU99 - Systems Utilities Relocations	30-Sep-14 A	03-Aug-20
VS086: System Package 3 - Signal Equipment Procurement			
VS086-1005	Prepare/Furnish Signal Equipment Catalog Cuts	12-Dec-14 A	08-May-17
FSA79: Communication, Controls, Security and Fire Detection - Amtrak F/A			
FSA79	FSA79-Power, Signals, Comm & Security Systs	31-Mar-14 A	01-Aug-16
FS099: Force Account Support			
FS099	FS099 - Force Account Support	30-Sep-14 A	03-Aug-20
LIRR 3.3.7	Take Over Preparation for GCT Building Management System (BMS)	30-Sep-16	25-Feb-19

*Constrained date by contract schedule

APPENDIX G – MTA EAST SIDE ACCESS PROJECT – BUY AMERICA STATUS SUMMARY

TABLE G – CONTRACT CS179 (As of September 30, 2016)

Equipment	Current Status
Radiax Cable	The contractor advised that the proposed cable, originally only produced in Germany, would be fabricated in a facility in Connecticut. A piece of the cable, installed in the WSA tunnels, is under evaluation to determine if the cable meets the contract's functionial requirements. The MTACC indicates that this cable is approved for use; so, this item will be dropped from any future PMOC reports.
Small HVAC Units for Equipment Rooms	The contractor asserts that the specified low-profile HVAC unit is not available from any US-based HVAC manufacturer and that the manufacturer of the specified unit (Mitsubishi) cannot manufacture the unit in the USA. The MTACC advised that documentation to substantiate a Buy America waiver request to the FTA is being assembled.
Video Display Panels	The contractor reports that, despite an exhaustive search, there is no USA-based manufacturer of the main video display panels that will be used in the various control rooms. The MTACC advised that documentation to substantiate a Buy America waiver request to the FTA is being assembled.

APPENDIX H - ESA CORE ACCOUNTABILITY ITEMS

Table H – ESA Core Accountability Items

Project Status:		Original at FFGA	Amended FFGA	Current*	ELPEP **
Cost	Cost Estimate	$7.368B	$10,922B	$10.178B	$8.119B
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
Schedule	RSD	December 31, 2013	December 31, 2023	December 2022	April 30, 2018
Total Project % Complete	Based on Invoiced Amount			64.7% (ESA Figure)	
Project Performance Rate	Based on Earned Value***			91.4% of Re-Baselined Construction Plan (PMOC Calculation)	

Major Issue	Status	Comments
[redacted]	[redacted]	• The Harold critical path has now become the ESA Program Critical Path and leads, the secondary Manhattan/Systems Critical Path by three months; and, 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.
Harold Re-planning	Based on continuing issues with inadequate railroad force account support, ESA completed a Harold schedule re-sequencing in December 2014, also known as "ESA First", that advances work elements required for the new LIRR service to GCT and delays the FRA funded High Speed Rail Work beyond 2017. The 2015 Harold Re-Sequenced schedule advanced completion of ESA elements but did not achieve goals due to insufficient Amtrak force account support. Schedule has again been re-evaluated and the ESA Program Critical Path now passes through the remaining work in the Harold Interlocking.	Work in Harold Interlocking is subject to influences outside of the control of ESA. Continuing issues with the level of Amtrak force account support, currently providing only 60% of required resources, to support the "ESA First" schedule, has further delayed completion of the Harold Interlocking work and has forced it onto the ESA Program Critical Path. Recent additional issue is decreased availability of priority weekend track outages.

* Current Budget was approved by MTA CPOC in June 2014.

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

***In this case, Earned Value refers to the PMOC 's calculation of actual Construction Cost (paid to date) versus ESA's planned Construction Cost at Q22016 based on planned payments established at the rebaselining of 2014.

APPENDIX I – AMTRAK REMAINING ESA ELECTRIC TRACTION CONSTRUCTION*

Table I – Remaining Catenary Construction Start and Finish Dates from IPS Data Date August 1, 2016

Last Activity in IPS ID# String	Scope	IPS Start	IPS Finish	Status
FHA03-3150	Install 1,100 LF CA RPR Track	10/28/16	10/30/16	Amtrak began preliminary catenary construction on RPR Track during September 2016.
CH057A-6280	Install 7,100 LF CA WBY Track (or FHA02-1830)	5/18/17	5/19/17	CH057A has not started any predecessor catenary construction yet.
FHA03-1200	Install 2,500 LF CA ELIP Track from #4164 TO to #747 TO (or FHA02-1040-3)		10/31/16	Amtrak has begun preliminary catenary construction on ELIP Track in conjunction with work on RPR Track. CH057 needs to install catenary pole B911-3/4 to complete catenary pole installation.
CH057A-2050	Install 6 CAs LIRR/3rd Party Crossovers	6/18/18	6/22/18	None of the predecessor Crossovers have been installed yet.
CH057-C1740	Relocate cross catenary east of 39th St. as result of construction of Tunnels A, B/C, and D	12/12/16	12/12/16	Tunnel B/C predecessor construction has not started yet. Amtrak will install CAs during and after construction is complete.
FHA04-1030	Install 1,000 LF (est.) CA MDSY Sub 4 to Line 2 Connection	11/29/19	1/17/20	CQ033 not awarded yet. CQ033 to install catenary poles prior to Amtrak installation of CAs.
FHA04-1050	Install 3,600 LF CA EBRR Track	6/5/21	10/9/21	CH058B not awarded yet. CH058B to install catenary poles prior to Amtrak installation of CAs.
FHA02-1850	Install CAs 5 other locations FHA02	8/6/15	2/5/21	#771 and #747 crossovers are complete. Remainder not started.
FHA03-1490	Install CAs 11 other locations FHA03		4/11/19	Not started yet.
FHA04-1020	Install CAs 3 other locations FHA04	11/13/20	12/5/20	Not started yet.
FHA02-1280	Cutover Loop 1A	5/13/17	5/14/17	Loop 1A Track construction partially complete. No ET CA construction started yet.
CH057-CPR4-55101	Wire Transfer for demolition of Montauk Cutoff Platform	3/1/17	4/6/17	CQ033 not awarded yet. CQ033 to install catenary poles prior to Amtrak installation of CAs.
FQA65-1092	Install CAs 24 Turnouts in Loop and T Interlockings - FQA65	5/24/23	5/25/23	Loop and T Interlocking construction on "hold" by MTACC. Not required until late in program.

CA = Catenary Assembly, CP = Catenary Pole, TO = Turnout, XO= Crossover

* This table is a high level summary of the remaining Electric Traction construction program. The PMOC will maintain details for FTA review.

APPENDIX J – REMAINING HAROLD INTERLOCKING CONSTRUCTION PROGRESS SCHEMATICS

The purpose of Appendix J is to depict, in schematic fashion, the major ESA Force Account and 3rd Party construction elements that remain in Harold Interlocking. At present, three such items will be included in the PMOC's Quarterly Comprehensive Reports. As additional elements are identified, they will be added to the reports. The original three are:

Schematic #1: Remaining Amtrak Harold Overhead Contact System (OCS) to be Installed

This diagram depicts the tracks, crossovers, and turnouts over which Amtrak Force Account Electric Traction personnel will install catenary system components (overhead contact system) in order to operate Amtrak trains through the reconfigured Harold Interlocking. New overhead catenary to be installed is shown in bold red.

Schematic #2: Remaining Harold Third Rail System (3rd Rail) to be Installed

This diagram depicts the tracks, crossovers, and turnouts adjacent to which LIRR and 3rd Party contractors will install Third Rail and components in order to operate expanded LIRR service into the new Grand Central Terminal (GCT). New 3rd Rail to be installed is shown in bold red.

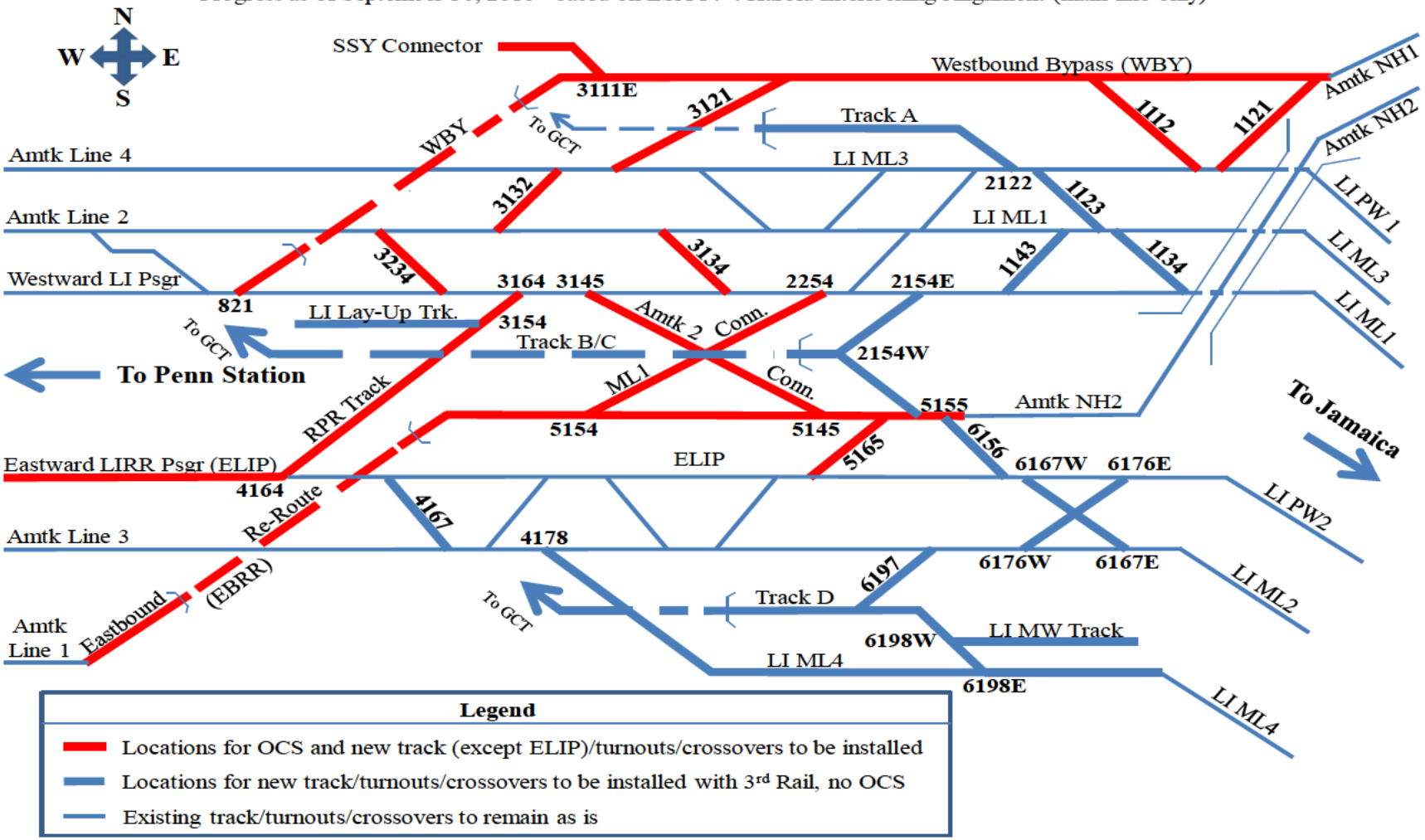
Schematic #3: Status of Harold Interlocking Turnouts and Crossovers to be Installed

This diagram depicts, along with existing tracks, crossovers, and turnouts that will not be renewed, the present construction status ESA constructed tracks, crossovers, and turnouts that have been or will be installed to make LIRR service into GCT possible. Existing trackage that will not be renewed is shown in non-bold, new crossovers and turnouts already installed by LIRR ESA forces are shown in bold green, and new tracks, crossovers, and turnouts scheduled, but not yet installed, are shown in bold red.

The information shown on these schematics will be updated with each PMOC Quarterly Comprehensive Report and will trace construction progress for that quarter.

Schematic #1: Remaining Amtrak Harold Overhead Contact System (OCS) to be Installed

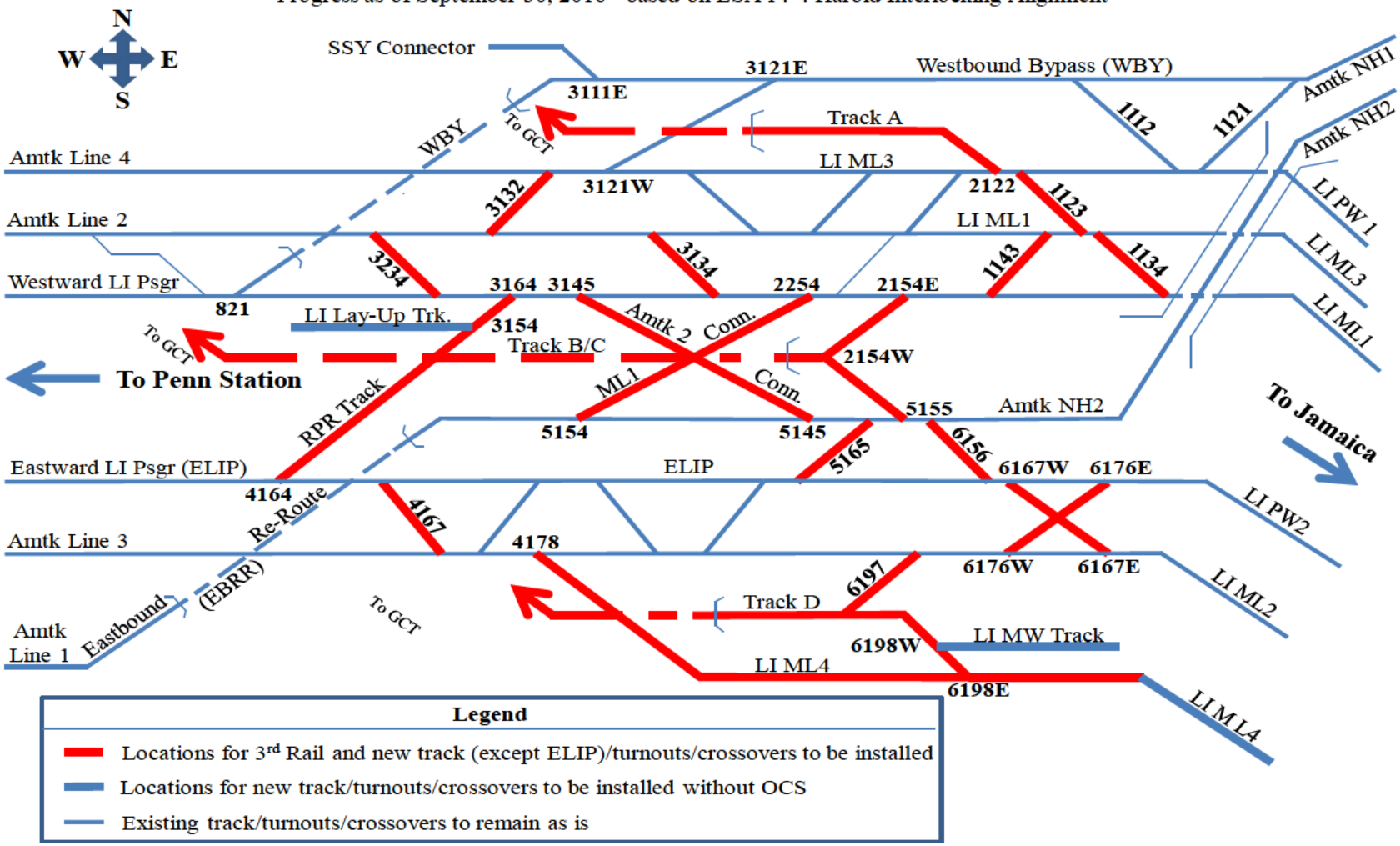
Progress as of September 30, 2016 - based on ESA 14-4 Harold Interlocking Alignment (main line only)



Appendix J: Harold Progress Monitoring Schematic

Schematic #2: Remaining Harold Third Rail System (3rd Rail) to be Installed

Progress as of September 30, 2016 - based on ESA 14-4 Harold Interlocking Alignment



Schematic #3: Status of Harold Interlocking Turnouts and Crossovers to be Installed

Progress as of September 30, 2016 - based on ESA 14-4 Harold Interlocking Alignment (main line only)