

## **PMOC COMPREHENSIVE MONTHLY REPORT**

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

Report Period September 1 to September 30, 2017



PMOC Contract No. DTFT60D1400017

Task Order No. 0002, Project No. DC-27-5287, Work Order No.5

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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. DTFT60D1400017, Task Order No. 0002. Its purpose is to provide information and data to assist the FTA as it continually monitors the Sponsor's technical capability and capacity to execute a project efficiently and effectively, and hence, whether the Sponsor continues to be ready to receive federal funds for further project development.

This report covers the project and quality management activities on the East Side Access (ESA) Mega-Project managed by MTA Capital Construction (MTACC) with MTA as the Sponsor and financed by the FTA FFGA. The PMOC notes that the FFGA Amendment was fully executed with MTA's sign-off on August 2, 2016. The amended FFGA incorporates the changes in the Baseline Cost Estimate, Baseline Schedule and Revenue Service Date that have occurred since 2006 when the original FFGA was signed.

All Project Sponsor cost and schedule data included in this report is based on the status date of August 1, 2017, that corresponds to MTACC's "East Side Access July 2017 Progress Report" and is referenced as ESA July 2017 Progress Report in this PMOC Report.

## **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 3<sup>rd</sup> Quarter 2017**

### **a. Engineering/Design Progress**

In the ESA July 2017 Monthly Progress Report, MTACC reported that the overall Engineering effort is 99.9% complete compared to planned completion of 100%. The ESA July 2017 Total Cost Report shows that 97.0% of the overall EIS and Engineering budget, and 97.1% of the Design budget, have been invoiced.

### **b. New Contract Procurements**

Contract CS086, Systems Package 2 - Tunnel Systems was advertised on August 10, 2017, with the bid package available on August 21, 2017. The pre-proposal tour was held on August 31, 2017. Proposals are due on October 20, 2017. This will be a negotiated procurement using the RFP process.

### **c. Construction Progress**

In the ESA July 2017 Monthly Progress Report, MTACC reported that total actual construction progress reached 72.0% complete compared with planned progress of 77.3%. The July 2017 Total Cost Report shows that 72.2% of construction has been invoiced.

### **d. Continuing and Unresolved Issues**

#### Potential Funding Constraints through 2020

Identified potential needs include funding for railroad force account cost overruns, continuing OCIP coverage, a number of Owner Initiated Changes to Contract CM014B as well as extensions to the existing PM/CM, CCM and GEC services contracts. The extent and magnitude of possible impacts will be analyzed when the MTACC re-plans their work through 2020. The PMOC anticipates receiving the new plan in October 2017. The PMT will evaluate the ESA program budget and schedule when it is issued for review. This issue is discussed further in Section 5.0, Project Cost, of this report.

#### Harold Re-Sequencing Plan (“ESA First”)

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 into 2016, the PMT had 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. The impacts caused by the insufficient Amtrak support have been reduced through 2016 and 2017 but not yet eliminated and this situation continues to be a challenge for MTACC.

#### Amtrak 2017 Accelerated New York Penn Station Track Work

A new risk emerged during April/May 2017 involving Amtrak’s ability to provide sufficient force account resources to support the planned ESA work in the Harold Interlocking based on Amtrak’s plans to advance and accelerate a project for extensive reconstruction of the NEC track turnout area between New York Penn Station and the existing Amtrak Hudson River tunnels.

This new risk has been realized based on ESA reporting that the Amtrak force account resource availability for the ESA Harold Interlocking work dropped noticeably during May 2017 and continued through the third week in August 2017.

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## Amtrak Preparation for Extended East River Tunnel Outages

### e. New Cost and Schedule Issues

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It is noted that the current program forecast does not include the anticipated additional costs resulting from the Harold Force Account Overrun analysis; additional 3<sup>rd</sup> party costs for extended overhead and indirect costs resulting from Force Account induced delays; projected OCIP cost overrun; additional costs in the GCT Passenger Concourse related to water leaks; OICs for Wi-Fi and cellular service; and, digital advertising. [REDACTED]

[REDACTED] A thorough review will be performed when MTACC provides the new cost plan.

[REDACTED] The current (August 1, 2017) IPS update reflects the assessment of remaining STRTB approval, independent lab testing, and fabrication.

### **3. PROJECT STATUS SUMMARY AND PMOC ASSESSMENT**

#### **a. Sponsor Management Capacity and Capability**

The PMOC continues to have concerns regarding the ability of MTACC to manage the GEC and LIRR to effectively support, timely reviews for systems design submittals by the CS179 Facilities Systems and the CS084 Traction Power contractors and the amount of time required to respond to RFIs and field change requests on both of these contracts. A more detailed discussion of the Sponsor's Management Capacity and Capability can be found in Section 1.1a below.

#### **b. Real Estate Acquisition**

In its ESA July 2017 Progress Report, MTACC reported that it continued negotiations with the owner of 415 Madison Avenue in Manhattan to complete the GCT 48<sup>th</sup> St. Entrance construction within its building and that owner's construction, which is presently on hold, will advance when the negotiations are completed. In Queens, MTACC continued to negotiate two agreements with Amtrak, one a lease agreement to provide space for construction of the Mid-Day Storage Yard and the other an easement agreement for an access road to jointly serve Amtrak's existing High Speed Rail facility and the Mid-Day Storage Yard.

#### **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, the inability to provide definitive requirements and answers to contractor questions in a timely manner, and other issues involving stakeholders.

Although Contract CS086, Systems Package 2 – Tunnel Systems, was advertised on August 10, 2017, the final design completion of the package was significantly delayed due to changing the Plaza Interlocking control from the Penn Station Control Center to the LIRR Train Operations Center in GCT and time required to finalize the decision to procure the work as a separate stand-alone contract using a negotiated procurement, or RFP process.



Additionally, LIRR delayed reviews of the CS179 Facilities Design and CS084 Traction Power systems designs, and late GEC responses to RFIs and Change Requests and long processing durations for Contract Modifications are not supporting the contractor schedules. Details are provided in Section 2.1 of this report.

#### **d. Procurement**

The ESA July 2017 Total Cost Report shows that total procurement for the ESA Program portion of the project is 88.1% complete, with \$8.970 billion awarded of the \$10.178 billion current project budget.

Contract CS086, Systems Package 2 - Tunnel Systems was advertised on August 10, 2017 and will be a negotiated procurement using the RFP method. The bid package was made available on August 21, 2017, and the pre-proposal tour was held on August 31, 2017. Proposals are due October 20, 2017, and the Notice to Proceed is forecast for January 2, 2018.

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

- CM015, 48<sup>th</sup> Street Entrance – In June 2017, the ESA-PMT advised that all design work on this package has been suspended. Total bid advertisement delay through 2016 and into 2017 is thirteen months. There was no change in status during September 2017.
- CS086, Systems Package 2-Tunnel Systems – Advertised on August 10, 2017, with proposals due on October 20, 2017. Total bid advertisement delay through 2016 and into 2017 is sixteen months.

#### **e. Railroad Force Account (Support and Construction)**

During September 2017, LIRR Signal personnel continued to install signal conduits, install, megger, and terminate signal cables, and install snow melt equipment at the “H1”, “H2”, and Location 30 CILs, and began “pre-testing” procedures at the “H1”, “H2”, “H5”, “H6”, and Location 30 CILs. Signal personnel also continued to make circuit revisions at the “H5”, “H6”, and Woodside CILs. LIRR did not, however, perform the two “Pre-cutover weekends” (in preparation of the 2018 CIL cutovers) that were planned for September. These weekends have now been re-scheduled for October and November 2017. LIRR 3<sup>rd</sup> Rail personnel continued to install 3<sup>rd</sup> Rail conduit and cable at the new G02 Substation and miscellaneous turnouts in Harold Interlocking. Amtrak Electric Traction (ET) personnel made modifications at catenary poles B907 and B924 to support future demolition of the Montauk Cutoff and construction of the Westbound Bypass. Amtrak C&S personnel installed case legs and a cable pull box for future installation of the Loop Interlocking CIH.

#### **f. Third-Party Construction and Procurement**

##### **Manhattan:**

**Contract CM006 Manhattan North Structures:** During 3Q2017, the CM006 contractor’s (Manhattan North Structures) focus transitioned to the close-out process – post construction phase for this contract. The contractor activities included: remaining base contract work, punch list work, and NCR work resolution.

**Contract CM007 GCT Station Caverns and Track:** The CM007 contractor continued construction of the North and South Back of House (BOH) facilities at both the East and West Caverns. In both the East and West Caverns during 3Q2017, the CM007 contractor continued to

install precast concrete beams and floor panels at the mezzanine and upper levels. Other activities during this Quarter included: precast element production, concrete placements for the east and west exterior cavern walls, the fabrication of third rail materials, qualification testing of the Resilient Tie Block and Direct Fixation Fasteners (DFF) assemblies, and start of DFF trackwork construction.

**Contract CM014A GCT Concourse & Facilities Fit-Out:** Through September 2017 ConEd had visited the site and the final work of “racking” the repaired breaker was completed. The B-30 Substation construction and testing is complete. Submittal of as-built drawings and general paperwork remain and the Project Office anticipates turnover of the substation to CM014B in October 2017.

**Contract CM014B GCT Concourse & Facilities Fit-Out:** Substantial Completion is being extended to December 24, 2019, from the original August 18, 2018. Structural steel work is now the primary critical path. The Biltmore Room construction is now the secondary critical path. Through September 18, 2017, structural steel progress was approximately 12% complete.

**Contract VM014 Vertical Circulation Elements:** The contractor has completed setting of the 5 escalators in Wellway #1 and is continuing with splicing of sections and overall fit out. Setting of the 4 escalators in Wellway #2 nears completion. Mobilization into Wellways #3 and #4 will begin November/December 2017, starting with erection of rigging steel.

#### **Queens:**

**Contract CQ032 Plaza Substation and Queens Structures:** During 3Q2017, the CQ032 contractor continued to perform commissioning, punchlist work, and clean-up activity in the Yard Services Building (YSB). Contract close-out activity continued including discussion to further effort to deal with water infiltration. ESA continued negotiation for remaining work scope to be transferred to other contracts.

**Contract CQ033 Mid-Day Storage Yard Facility:** The CQ033 contractor completed caisson foundation installation for Yard Lighting poles, continued test pit excavation, and civil site work. The contractor continued to prepare submittals for this contract.

#### **Harold Interlocking:**

**Contract CH057 Harold Structures Part 3:** ESA declared Substantial Completion for the CH057 contract on June 30, 2017, and the contractor has continued punchlist repairs since then. During September 2017, the contractor continued to install roof material at the Tunnel D headhouse building, install handrails on the LIRR ML4 Track undergrade bridge at 48<sup>th</sup> St., and completed repairs to the 48-S2 retaining wall.

**Contract CH057A (Westbound Bypass):** During September 2017, the CH057A contractor completed installation of stub piles and construction of the secant pile cap in the East Approach Structure of the Westbound Bypass (WBY) and continued to remove the tops of the soldier piles in the West Approach. The contractor also began demobilization of material and equipment from all WBY worksites as it prepared to end its contract by mutual consent with MTACC. This will be explained in greater detail in Section 2.3, Construction, below.

**Contract CH061A – Track A Cut and Cover Structure:** During September 2017, the CH061A contractor continued to demolish the Tunnel A mud slab and excavate at the tunnel portal, continued to excavate, establish support of excavation (SOE), and place a new mud slab in the area immediately west of the 39<sup>th</sup> St. overhead bridge, continued to install secant piles under the 39<sup>th</sup>

St. bridge, and continued to construct catenary pole foundations along the LIRR PW2 Track and at the Montauk Cutoff.

### **Systems:**

**Contract CS179 – Systems Facilities Package No. 1:** During 2Q2017, the CS179 contractor continued with a substantial amount of various elements of work (installation of conduit, cable, fire stopping, fire standpipe, lighting, etc.) in the tunnels and at the various substation facilities. As noted in previous PMOC reports, numerous water infiltration issues at various facilities have significantly impacted the progression of work on this and another Systems’ contract. The LIRR has only provided formal “sign-off” approval for four (4) of the ten (10) Control System designs, the contractor continues to procure and assemble equipment based on its interpretation of the final designs. Additionally, the contractor contends that a significant number of Notice of Change (NOC) submissions that have potential cost and schedule impacts remain as open items.

**Contract CS084 Traction Power System Package 4:** [Note: The information presented for this CS084 contract comes from discussions at a mid-September 2017 Progress Meeting that reviewed contract progress up to September 13, 2017, and from the MTACC’s July 2017 ESA Monthly Progress Report (MPR)]. The contractor performed surveys of the substation locations to determine the status of these areas prior to turnover from other contractors, and found numerous deficiencies that it indicates preclude any turnover. During 2Q2017, the contractor mobilized at the C05 (Vernon) substation; but, de-mobilized once MTACC issued a Stop Work Order (SWO) related to a floor issue in the Traction Power Substation (TPSS) room. In its July MPR, MTACC cites a September 2020 substantial completion date; a nine-month delay when compared to the original December 2019 date identified at the time of contract award.

**Contract VS086, Systems Package 3 – Signal Equipment Procurement:** [Note: The information presented below for the VS086 contract comes from discussions at a mid-October 2017 progress meeting that reviewed contract progress up to October 19, 2017, and from the MTACC’s August 2017 ESA Monthly Progress Report (MPR)]. The contractor continues to raise concerns over the timeliness of responses from MTACC on design submittals and inquiries; asserting that the lack of timely responses is causing day-to-day delays in the progression of the work. Key design decisions by the MTA that have the potential to impact designs already in progress, interim contract milestones, and the overall substantial completion of this contract remain as open items.

### **g. Vehicles**

Details of the federal and non-federal vehicle procurements are provided in Section 2.5 of this report. The PMOC notes that LIRR’s procurement of vehicles for ESA remains behind schedule and continues to fall further behind.

### **h. Commissioning and Start-Up**

The discussion below related to the commissioning and startup of the ESA revenue service is based on information obtained during the 2Q2017 Operational Readiness briefing held on July 20, 2017, and subsequent meetings with LIRR personnel. Commissioning of the work and startup of ESA service is dictated by an ESA Rail Activation Plan (RAP) being developed by the ESA Operational Readiness Group; a group consisting of 11 Task Working Groups (TWGs). The status of the TWGs, and any PMOC concerns regarding them, is noted in Section 2.4 of this report. The 3Q2017 briefing on Operational Readiness is scheduled for October 19, 2017.

### **i. Project Schedule**

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

**Table 1: Summary of Critical Dates**

	FFGA	Amended FFGA***	Forecast (F) Completion, Actual (A) Start	
			Sponsor*	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 – Sponsor 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 (August 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, 2017)**

	FFGA				MTA's Current Baseline Budget (CBB)		Expenditures July 31, 2017	
	Original FFGA	Amended FFGA	Pct. of FFGA	Obligated	CBB	Pct. of Total CBB	Expenditures	Pct. of CBB
Grand Total Cost	\$ 7,386.0	\$ 12,038.0	100.00%	\$ 4,724.0	\$ 11,214.0	100.00%	\$ 7,802.2	69.58%
Financing Cost	\$ 1,036.0		14.03%	\$ 617.0	\$ 1,036.0	9.24%	\$ 617.6	59.61%
		\$ 1,116.0	9.27%					
Total Project Cost	\$ 6,350.0		85.97%	\$ 4,107.0	\$ 10,178.0	90.76%	\$ 7,184.6	70.59%
		\$ 10,922.0	90.73%					
Federal Share	\$ 2,683.0		36.33%	\$ 1,148.0	\$ 2,699.0	24.07%	\$ 2,515.8	93.21%
		\$ 2,683.0	22.29%					
5309 New Starts share	\$ 2,632.0		35.63%	\$ 1,098.0	\$ 2,437.0	21.73%	\$ 2,253.7	92.48%
		\$ 2,632.0	21.86%					
Non New Starts share	\$ 51.0		0.69%	\$ 50.0	\$ 67.0	0.60%	\$ 66.7	99.55%
		\$ 51.0	0.42%					
ARRA	\$ -	\$ -	0.00%	\$ -	\$ 195.0	1.74%	\$ 195.4	100.21%
Local Share	\$ 3,667.0		49.65%	\$ 2,959.0	\$ 7,479.0	66.69%	\$ 4,668.9	62.43%
		\$ 8,239.0	68.44%					

#### k. Project Risk

The PMOC notes that the project's risk exposure to completion of the remaining work in Harold Interlocking continued to increase based on new issues that arose during 2017 and delays completing the predecessor activities to the CIL pre-testing phase. The PMOC is concerned about this trend because the Harold work is on the ESA program critical path. The PMOC notes that completion of the Harold work planned during 2017 and 2018 is critical for the overall ESA program schedule performance. [REDACTED]

[REDACTED] Details regarding risk management and risk mitigation are provided in Section 6.0 of this report.

## 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”.

## ELPEP COMPLIANCE SUMMARY

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

- **Technical Capacity and Capability (TCC):** Several years ago, the FTA requested MTACC to update its TCC Plan in response to the FTA/PMOC comments that were generated as a result of significant changes in key ESA upper management level positions that were made at that time. In response, MTACC submitted its revised Technical Capacity and Capability Plan (ESA and SAS). MTACC has recently indicated that it will review the TCC Plan and propose revisions, if required, to reflect the current status of the Program. MTACC submitted an updated TCC Plan in September 2017 and the PMOC is currently reviewing the plan.
- **Continuing ELPEP Compliance:** The ESA project should continue to make additional improvements in the following areas: Management Decision; Design Development; Change Control Committee (CCC) Process and Results; Stakeholder Management; Procurement; and Risk-Informed Decision Making. The PMOC has noted progress in two previously identified areas – Issues Management and Timely Decision Making, particularly when responding to new issues arising with the railroads’ Force Account resource availability, track outages, and other issues regarding the remaining work in Harold Interlocking.
- **Project Management Plan:** The PMOC completed its evaluation of the current version of the PMP, Rev. 10, concluded that it is acceptable, and provided the FTA with comment close-out details earlier this year. The FTA subsequently notified MTACC that the FTA accepts Revision 10 of the ESA PMP.
- [REDACTED]

The PMOC notes that with completion of the most recent Schedule Management Plan and Cost Management Plan updates as well as the FFGA amendment, the ESA project is better able to generally remain compliant with ELPEP. Therefore, PMOC Concern and Recommendation **ESA-114-Sep13** will now be closed.

- **Schedule Management Plan (SMP):** The ESA project should continue to make additional improvements in the following areas: Integrated Project Schedule (IPS) Updating, Forecasting, [REDACTED] against a current baseline schedule. The PMOC completed its final evaluation of the current revision of the SMP, concluded that the SMP is acceptable, and provided the FTA with comment close-out details earlier this year. The FTA subsequently notified MTACC that the FTA has accepted the current revision, Rev. 2 of the SMP dated September 2016.

- **Cost Management Plan (CMP):** The ESA project should continue to make additional improvements in the following areas: Project Level EAC Forecasting, Project Level EAC Forecast Validation, [REDACTED] and Secondary Mitigation. The PMOC completed its final evaluation, concluded that the CMP is acceptable, and provided the FTA with the comment close-out details late last year. The FTA subsequently notified MTACC that the FTA has accepted the current revision, Rev. 2 of the CMP dated October 2016.

**Revisions to the ELPEP Document:**

[REDACTED]  
[REDACTED]  
[REDACTED]  
[REDACTED] MTACC

submitted an updated ELPEP with suggested revisions in September 2017 and the PMOC is currently reviewing the plan.

## **1.0 SPONSOR'S CAPABILITIES AND APPROACH**

### **1.1 Management Capacity and Capability**

#### **a) Organization**

The ESA project organization was revised significantly almost 2 years ago. Since that time, there have been other changes made to provide more effective management for the current phase of the ESA program. The PMOC has been monitoring this organizational restructuring and has not noted any significant change in the Sponsor's ability to generally 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 and equipment submittals under Contracts CS179 and CS084, as well as the GEC's responsiveness to RFIs and Field Change Requests on these contracts. Management focus on these issues has resulted in some improvements, but PMOC believes that further effort in this area is indicated. These issues have continued into 3Q2017.

#### **b) Staffing**

The PMOC has no specific concerns or recommendations about the Sponsor's staffing at this time. The PMOC notes that correcting issues with regard to GEC and LIRR support of the review and approval of submittals for the CS179 and CS084 contracts may require staffing adjustments.

### **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 in 4Q2012 and continuing delays in several other major procurements (e.g., CS179; CM014B). This was 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 and CM014B contractors; insufficient progress of work on Contracts CS179 and CS084; late award and NTP for Contracts CM007 and CQ033; significant delays to completion of design for CQ033, CM015, and CS086; and ongoing challenges in the Harold Interlocking work caused by continued lack of adequate railroad force account support.

#### **b) PMP**

MTACC is using the final version, dated June 2016, of Revision 10.0 to the East Side Access Project Management Plan that was accepted by the FTA earlier this year.

### **1.3 Project Controls**

■ [REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[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 December 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) and a new schedule with an RSD of December 2022 to the MTA CPOC. The amended FFGA includes a budget of \$10.922 billion (\$10.459 billion before Rolling Stock [REDACTED] c and finance costs) and an RSD of December 2023. The Baseline Cost Estimate and Revenue Service Date are based on the PMOC's earlier analysis that included considerations of historical ESA performance and future risks as of the time of the analysis.

**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 currently three potential Buy/Ship America issues affecting proposed equipment. Please refer to Appendix G for details.

Track Turnouts: Both LIRR and Amtrak turnout specifications were revised during 2016 and 2017 in order to make them "Buy America" compliant. MTACC placed the procurement of the Amtrak turnouts "On Hold" in January 2016 because they are no longer needed until much later in the ESA program. The PMOC's previously expressed concern about the procurement of LIRR turnouts needed for the 2018 "Northeast Quadrant (NEQ)" construction, however, was alleviated when LIRR placed the order for the remaining 4 turnouts, which are long-lead items, in August 2017. As a result of the foregoing, the PMOC is no longer concerned about either the "Buy America"



issue or the procurement of these turnouts. The PMOC will therefore remove this from its list of concerns shown in Section 7.0, Concerns and Recommendations, after this report. The PMOC will, however, continue to monitor delivery of all turnout materials required for Harold NEQ construction. [REF: ESA 123 Jun16]

## **1.5 Safety and Security**

### **a) Safety Certification Process**

During 2Q2017, a new chair of ESA Operational Readiness TWG No. 7, the TWG tasked with Safety and Security elements for the ESA Project, was identified and appointed. This new chair of the TWG has been able to re-establish managerial control over the certification process. Security-related certifications were the focus during 2Q2017 and the early part of 3Q2017. Then the focus shifted to ensure that Safety-related certifications are being managed properly. A status of the Safety certification process will be presented at the 3Q2017 Operational Readiness briefing in October 2017.

### **b) Project Construction Safety Performance**

Through July 2017, ESA project safety statistics for lost time accident and OSHA recordable injuries on active construction contracts continued to trend below the Bureau of Labor Statistics (BLS) national average with a CY2017 project wide injury ratio of 0.24<sup>1</sup> versus 1.70 (2017 BLS average) lost time accidents (LTA) per 200,000 work hours. The ESA recordable injury rate for CY2017 through July 2017 was 0.83\* versus 2.80 (2017 BLS average).

### **c) Security**

The ESA PMT did not report any significant security issues in its ESA July 2017 Progress Report.

### **d) Security Certification Process**

As noted in the discussion on the Safety Certification process, a new chair of the TWG responsible for the management of the Safety and Security Certification process focused on managing the Security-related certification process in 2Q2017 and early 3Q2017. The PMOC's previous concern about MTACC's lack of knowledge regarding the status of Security-related certifications has been mitigated to some degree with the additional focus MTACC gave to this process; however, substantial work remains. A status of the Security certification process will be presented at the 3Q2017 Operational Readiness briefing in October 2017.

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<sup>1</sup> 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 2017, the latest information available to the PMOC. The Sponsor, however, uses a 12 month rolling average to calculate its OSHA statistics

## 1.6 Project Quality

**Quarterly Quality Oversight (QQOs):** The 2Q2017 QQO was performed in September 2017. Final Reports are being issued, and the contractors are being advised of their respective audit results and findings prior to formal issuance of the reports. The Reports follow the Quality Audit format established in the 1Q2017, which combines the QQO element-based approach with a task and process-based approach.

Table 3.1 provides a summary of the current Quality Audit results.

**Table 3.1 – 2Q2017 Quality Audit Results**

Contract	Overall Score	Product	Score	Process	Score
CH057	89%	§05650 Track	93%	§01450	87%
CH057A	87%	§03300 CIP Concrete	92%	§01450	84%
CS179	74%	§13916 Fire Sprinkler	71%	§01450	82%
CH061A	87%	§02269 Soldier Piles/Lagging	94%	§01450	85%
CM014B	95%	§05120 Structural Steel	100%	§01450	93%
CM007	92%	§03361 PAC	94%	§01450	91%
CM006	88%	§03300 CIP Concrete	87%	§01450	88%

**Nonconformance Reports (NCRs):** Table 3.2 provides a summary of NCR status on the major active contracts for ESA, as per the September 2017 contractor NCR logs. The total number of NCRs for each contract are tabulated to show closed NCRs, NCRs open for less than 90 days, and NCRs open for over 90 days. The table includes data for the most active construction contracts over the past four quarters.

**Table 3.2 – NCR Aging Summary**

<b>Contract</b>	<b>Criteria</b>	<b>4Q 2016</b>	<b>1Q 2017</b>	<b>2Q 2017</b>	<b>3Q 2017*</b>
CM007	< 90 days Open	2	7	17	37
	> 90 days Open	N/A	1	2	19
	Total Open	2	8	19	37
	Total Closed	--	2	3	12
	Total NCRs	2	10	22	49
CM014B	< 90 days Open	--	--	3	8
	> 90 days Open	7	8	5	6
	Total Open	7	8	8	8
	Total Closed	19	18	22	24
	Total NCRs	26	26	30	32
CQ032	< 90 days Open	5	3	--	13
	> 90 days Open	1	5	15	67
	Total Open	6	8	15	13
	Total Closed	94	95	96	102
	Total NCRs	100	103	110	115
CH053	< 90 days Open	--	--	--	--
	> 90 days Open	--	--	--	82
	Total Open	--	--	--	--
	Total Closed	91	91	94	94
	Total NCRs	91	91	94	94
CH057	< 90 days Open	5	6	--	3
	> 90 days Open	--	1	6	14
	Total Open	5	7	6	3
	Total Closed	11	15	18	23
	Total NCRs	16	22	24	26
CH057A	< 90 days Open	1	1	1	3
	> 90 days Open	3	3	2	2
	Total Open	4	4	3	3
	Total Closed	13	13	16	16
	Total NCRs	17	17	19	19
CS179	< 90 days Open	4	--	3	16
	> 90 days Open	13	15	12	12
	Total Open	17	15	15	16
	Total Closed	18	20	24	28
	Total NCRs	35	35	39	44
CS084	< 90 days Open	--	--	--	--
	> 90 days Open	--	--	--	--
	Total Open	--	--	--	--
	Total Closed	--	--	--	--
	Total NCRs	--	--	--	--

\*Note: 3Q2017 PMOC data is from MTA-ESA NCR Summary for September 2017.

## **1.7 Stakeholder Management**

### **a) Railroads**

#### Amtrak:

As the agency that jointly, with LIRR, operates and maintains the Harold Interlocking in Long Island City, Queens, Amtrak is a key project stakeholder. MTACC's East Side Access Project involves over \$500 million in construction in Harold performed by third-party contractors requiring railroad access and protection provided by both Amtrak and LIRR. In addition, Amtrak and LIRR perform a substantial amount of track, signal and traction power construction work using Direct Force Account labor. Construction progress requires an extraordinary level of detailed planning, coordination and communication. Significant challenges are summarized below.

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 delayed some of the FRA funded High Speed Rail (HSR) work beyond 2017. Railroad construction work prior to development of the "ESA First" schedule had fallen behind schedule due to the overall delays to much of the Harold work. 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. The impacts caused by the insufficient Amtrak support have been reduced but not yet eliminated and this situation continues to be a challenge for MTACC. The basic cause of this issue is competition for force account resources by other regional Amtrak projects.

A new risk that emerged during 2016 involved Amtrak plans to reconstruct its East River Tunnels (ERT) Line 1 and Line 2 that were damaged by Superstorm Sandy in 2012. Amtrak has notified MTACC that it plans to close ERT Line 2 first in 2019. In response to Amtrak's plan, MTACC had to again re-sequence the remaining FFGA scope of work, "ESA First", in Harold Interlocking to complete the critical work in advance of the start of the Amtrak reconstruction of the ERT Line 2 starting in 2019.

During April 2017 and May 2017, Amtrak experienced two significant revenue train derailments in Penn Station New York which changed its construction priorities. As a result of these derailments, Amtrak accelerated reconstruction of several tracks and turnouts between Penn Station and the Hudson River Tunnels, Tracks #2 and #3. This placed a significant demand on the already limited amount of Metropolitan Division force account resources and noticeably reduced the resources available for ESA work in Harold. ESA was able to reduce the impact by re-sequencing and re-planning the critical work in Harold Interlocking. The most significant schedule impact was the delay to the planned eight priority weekend track outages for 2017 required to support the forecast CIL cutovers during May 2018.

The PMOC recognizes MTACC's efforts to actively engage Amtrak to develop some specific mitigations for certain risks and work on strategies for mitigating many of the other identified risks. The PMOC also notes that MTACC has successfully engaged a consultant to develop a resource loaded schedule of Amtrak's force account resources' commitments to regional Amtrak projects, including ESA, to assist with both short-term and long-term resource allocation decisions. However, continued shortcomings in provision of adequate force account resources continues to adversely impact the current Harold schedule and has caused the remaining Harold work to become the ESA program schedule critical path last year.

The PMOC also recognizes that MTACC and ESA have been proactive in dealing with these issues as they arise and also recognizes ESA's efforts to re-baseline the remaining work in Harold Interlocking to reflect more realistic expectations of Amtrak support. However, the situation has not improved and the PMOC recommends that the PMT continue to actively engage executive management in MTACC and MTA to assist with resolution of this problem.

#### Long Island Rail Road:

As the agency that will operate the new ESA facilities, LIRR is the primary project stakeholder. With completion of most of the heavy civil work, the project is now in the next phase of construction to complete the GCT station facility, install all the trackwork and systems, and complete the testing, start-up, and commissioning. LIRR's level of direct involvement with the ESA project has increased and will continue to do so through commencement of revenue service. LIRR will need to commit the resources and management availability to work with MTACC in support of the ESA project needs and to provide timely decisions when requested in response to design or construction issues. The PMOC will continue to monitor and report on any significant issues that result from decisions or actions taken, or not taken, by LIRR regarding critical aspects of the ESA program.

During 3Q2017, several key ESA issues involving LIRR continued to challenge the project:

- The Qualification Testing (QT) for the Standard Resilient Tie Block (RTB) was completed in August 2017 and deliveries of RTB units began in early September 2017. The High Attenuation Direct Fixation Fastener (HADFF) QT continued through September 2017. Special Track Work RTB approvals are still pending.
- Review and concurrence by LIRR of the final designs for the 10 control systems (Contract CS179) has progressed much slower than scheduled. LIRR has formally signed-off on only 4 of these systems.
- Review and approval of the contractor submittals for the Traction Power System (Contract CS084) has progressed much slower than scheduled. Attempts to expedite the process during 2016 resulted in tangible improvements, and, while the backlog of outstanding reviews started to increase again during 2017, MTACC has taken steps to bring the review process back under control. TPSS component fabrication has started but cannot be completed until final design issues regarding SCADA are resolved.
- LIRR's decisions regarding use of LED signal lighting and specialized track circuits provided by the Signal Equipment Procurement contract (Contract VS086) remain unresolved.
- LIRR's plan for Positive Train Control (PTC) design, installation, testing, and commissioning has presented a number of challenges to ESA for planning the remaining work in Harold Interlocking and incorporation of PTC in the ESA tunnels and the GCT station. The PMOC notes that there are several significant cost and schedule risks involved that will influence the decision process. The PMOC notes that LIRR is planning to seek a waiver from the FRA requirement to implement PTC in Harold Interlocking by December 31, 2018, based on Harold Interlocking's continuing status as an active construction area.
- The PMOC observes that the planned work for LIRR during 2018 will be significantly greater than in previous years and will require the commitment of a

substantial level of LIRR Force Account resources. Although not currently a concern, the PMOC notes that the planned work for the LIRR Force Account resources in Harold Interlocking through 4Q2018 is extensive and includes the following major efforts:

- Placing the new GO2 Substation into service (1Q2018)
- Completing all CIL pre-cutover activities (by May 2018)
- Completing cutovers for the remaining 5 CILS (May 2018)
- Completing all Harold NE Quadrant trackwork (June/July 2018)
- Completing all track/turnout/3<sup>rd</sup> rail modifications in preparation for the Tunnel B/C Approach Structure work under Contract CH058A (September/October 2018)

#### **b) Other Stakeholders**

Although there are other external stakeholder issues that ESA must address, at present there are no indications 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)**

Potential and forecasted cost overruns have been identified for the ESA program. [REDACTED]

ESA will follow up with funding adjustments in the 2020–2024 Capital Plan. Cost overruns are related to Harold Force Account work (expected to be \$246 million total not including any 3<sup>rd</sup> Party extended overhead costs; \$111 of total for FFGA scope only); OCIP cost overrun (\$191 million); Owner Initiated Changes (wireless cellular/WIFI, digital advertising, etc.); leak remediation on contract CM014B; and, other forecast funding needs. This remains as a risk that may significantly impact the project. The PMOC is concerned about the potentially significant impacts to the program budget and schedule as well as the target Revenue Service Date.

#### **b) Other Sources**

The total FTA funding commitment, as of September 30, 2017, 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.

The ESA Risk Manager had planned to update the RMP during 3Q2017, but this is now anticipated during 4Q2017.

#### **b) Monitoring**

The ESA Risk Manager has made changes to the updating and tracking of program level risk in the Risk Register and continues to work on issuing the Risk Register updates on a regular basis. The current Risk Register for 1Q2017 was issued on April 2, 2017. A comprehensive risk review

of the remaining ESA work in Harold Interlocking was completed in April 2017 and the results are now expected to be issued in October 2017.

**c) Mitigation**

Current risk mitigations are discussed in Section 6.3 below.

## **2.0 PROJECT SCOPE**

### **2.1 Engineering/Design and Construction Phase Services**

In the ESA July 2017 Monthly Progress Report, MTACC reported that the overall Engineering effort is 99.9% complete vs. 100% planned. MTACC's July 2017 Total Cost Report shows 97.0% of the overall EIS and Engineering category as invoiced vs. budgeted, and 97.1% of the "Design Subtotal" as having been invoiced.

#### **Status of Construction Packages Advertised:**

Contract CS086, Systems Package 2 - Tunnel Systems, was advertised on August 10, 2017, with proposals due on October 20, 2017. This will be a negotiated procurement using the RFP method. Based on when LIRR completes the design for Positive Train Control (PTC), the PTC scope will be added to the CS086 contract either by addendum before proposal submission or by contract modification after award. See the Procurement section below for more details.

#### **Status of Construction Packages Not Advertised:**

On Contract CM015 (48<sup>th</sup> St. Entrance), MTA had been meeting with the building owner to advance and finalize the Work and Easement Agreements, but discussions were temporarily suspended pending the building owner's evaluation of the impacts that the new Midtown Manhattan zoning changes may have on the owner's 415 Madison Avenue Building. The parties were reportedly near final agreement, however, the owner has again requested that significant additional work be included in the design scope. Discussions between MTA/MTACC and building owner have resumed, but further changes to the NYC East Midtown Zoning regulations have apparently shifted the cost of the 48<sup>th</sup> Street Entrance facility back to MTA. Final disposition will be based on the outcome of MTA/MTACC negotiations with building owner and subsequent MTA/MTACC management level decisions. Design work on this package remained suspended through September 2017.

Contract CH058A, Harold Structures – Part 3A, B/C Approach will include construction of the Tunnel B/C Approach Structure. During September 2017, NYCDOT continued its review of the updated package, plans and specifications that was revised to incorporate the alternate support of excavation involving maintenance and support of the piers for the existing 39<sup>th</sup> Street Bridge. The scope of the required catenary work for Amtrak Force Account FHA04A has been finalized and is included in PCO 222. GEC has started work on this PCO based on a retro-active authorization. PCO 222 (R3) was issued to the GEC and they are preparing the technical proposal. The 100% design package is due on December 15, 2017.

Contract CH058B, Harold Structures – Part 3B, Eastbound Re-route, will include construction of the Eastbound Re-route tunnel. The GEC has been developing the scope of work for finalizing the tunnel design based on a cut-and-cover construction method. LIRR agreed to the track outages required to support the cut-and-cover construction, but requested additional rail traffic simulations, now in progress from their consultant. The rail traffic simulation outcomes will not impact the design for Contract CH058B. MTACC had previously directed ESA to proceed with design finalization of CH058B based on using the cut-and-cover tunnel construction method and without the Temporary Eastbound LIRR Passenger (TELP) Track. Two months ago, the ESA-PMT

advised that this package has been temporarily put on hold pending issuance of PCO to GEC for updated scope of work. There was no change in status during September 2017. The PMOC notes that this contract provides Regional Investment work scope in Harold Interlocking and is considered to have independent utility that is not specifically required to provide the connection for LIRR service to GCT that is part of the FFGA scope of work.

Contract CH057D, Harold Track Work, is a new package that includes completion of all the remaining track work in the Harold Interlocking Northeast and Southeast Quadrants. The package scope of work has been finalized by the PMT and the CM. MTACC has obtained labor clearance from LIRR for track work only. ESA continues to seek labor clearance for third-rail work. The 90% design package was submitted on August 1, 2017. The 100% design milestone is now scheduled for October 6, 2017.

Package FQA33A, Mid-Day Storage Yard Facility – Amtrak F/A, includes provision for yard access to Amtrak via Sub 4 to Line 2.

Amtrak has requested that ESA develop the full scope of exiting routes from the Mid-Day Storage Yard (MDSY) for review of the required associated changes to Penn Station Control Center. ESA met with LIRR to discuss Option C, an alternative MDSY exit route. The GEC is also evaluating another MDSY exit route alternative, Option D. ESA has met with LIRR to present all exiting schemes and an LIRR decision is expected in October 2017. Upon completion of the reviews and a decision by LIRR, ESA/LIRR will meet with Amtrak to review all of the exit schemes from the Mid-Day Storage Yard to Penn Station – the four MDSY exiting schemes are configured as follows:

1. Original design with Amtrak and LIRR diamond crossovers
2. Option A + Option B
3. Option C
4. Option A + Option D

Option C replaces both Options A and B, deletes the Amtrak diamond crossover and provides access to ERT Lines 2 and 4. Option D requires Option A to access ERT Lines 2 and 4; deletes both the Amtrak and LIRR diamond crossovers.

Package FQA33B, Mid-Day Storage Yard Facility – Amtrak F/A, includes provision for yard access to Amtrak via Sub 3 to Line 4. Amtrak, LIRR, and ESA have met to discuss the diamond crossover proposed in the design package. An earlier study about this proposed track alignment was completed. The GEC developed an alternative track alignment that does not include the diamond crossover. The GEC is now reviewing an additional exit scheme, Option D. ESA has met with LIRR to present all exiting schemes and an LIRR decision is expected in October 2017. Upon completion of the reviews and a decision by LIRR, ESA/LIRR will meet with Amtrak to review all of the exiting schemes from the Mid-Day Storage Yard to Penn Station. The 100% design package is temporarily on hold awaiting a final decision based on the exiting option study. See “FQA33A, Mid-Day Storage Yard Facility – Amtrak F/A”, above for a summary of the four MDSY exit options and the four exiting schemes.

### **Positive Train Control Design by LIRR**

The PMT had previously advised that the MOU between MTACC and LIRR for the implementation of Positive Train Control (PTC) on ESA has been modified to move the technical portions into a separate “Technical Concurrence Document” and to leave only the agency administrative and legal agreements in the MOU itself. The MOU has been executed, and the



“Technical Concurrence Document” has now been agreed upon by both MTACC and LIRR. LIRR continues to advance the PTC design. LIRR has provided the GEC with “advanced design” documents for their use in starting to prepare for modifications to contracts CS179, VS086 and CS086 to provide for overlay of the LIRR designed PTC onto the ESA systems.

The GEC is ready to begin work on designs to enable the LIRR-designed PTC system to be incorporated into ESA territory. Once the LIRR and GEC finish the respective designs, MTACC will need to issue contract modifications to the CS179 and VS086 contracts – and possibly the CS086 contract, depending on the timing of the completion of the designs and the award of the CS086 contract. The VS086 contractor already raised concerns about the delay in identifying technical PTC requirements; indicating that any LIRR requirements that might cause a change in the “current direction (unspecified)” of the VS086 design, could have an adverse impact on design, equipment, and schedule.

### **Status of MTACC and LIRR Review and Approval of Systems Contractors’ Final Designs:**

#### **Contract CS179, Systems Facilities Package No.1**

The CS179 contractor continues to work on the design development of the various contract required systems. The contractor continues to assert that untimely or lack of responses to design questions and issues, along with the lack of action by MTACC on numerous Notices of Change (NOCs), are causing negative schedule impacts to the design process. MTACC continues to assert that all ten Control System Final Designs (FDs) are approved. However, the PMOC believes this assertion to be inaccurate, as the CCTV and SMS Control System final design review (FDR) meeting has yet to occur and the contractor has advised that changes need to be made to at least two other systems. Additionally, the LIRR has formally approved only four of the ten FDs as of the end of September 2017. [Ref: ESA-125-Sep16]

#### **Contract CS084, Traction Power Systems Package 4**

[Note: The information presented below for the CS084 contract comes from discussions at a mid-September 2017 Progress Meeting that reviewed contract progress up to September 13, 2017, and from the ESA July 2017 Progress Report (PR)]

The CS084 contractor continued to transmit contractual submittals and substation design documents. 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. As previously noted by the PMOC, the MTA’s inability to reach timely decisions on design items that have potential schedule impacts continues to be an issue that is an impediment to MTACC’s ability to effectively manage this contract. The contractor continues to contend that the contract Milestones are delayed due to unresolved SCADA issues.

#### **Contract VS086, Systems Package 3 – Signal Equipment Procurement**

[Note: The information presented below for the VS086 contract comes from discussions at a mid-September 2017 Progress Meeting that reviewed contract progress up to September 21, 2017, and from the ESA July 2017 ESA Progress Report (PR)].

In its ESA July 2017 Progress Report, the forecasted SC date is shown as November 11, 2017, one month later than the October 14, 2019, date established at contract award. The contract involves the design and fabrication of signal equipment, with interim and final milestones for various elements of the work. The PMOC previously reported on delays encountered on this contract that negatively impacted the interim milestones. In late-July 2017, MTACC issued a modification to the contract to re-align the interim milestones so as to increase MTACC’s ability to more

effectively manage the contract. The PMOC, however, continues to note that there are several other unresolved design issues which have the potential to impact the contract completion date that are not being considered yet in the adjustment of the interim milestones. The continued absence of an accurate and comprehensive schedule that shows all contemplated contract activities is an impediment to the MTACC's ability to effectively manage this contract. The contractor continues to raise concerns over the timeliness of responses from the MTA on design submittals and inquiries.

#### **Overall Engineering/Design/CPS Observations:**

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, have pushed back procurement and construction completion dates. [REDACTED]

[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, VS086, 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 acknowledges that while ESA senior management has engaged LIRR management to resolve issues that have caused delays in the review and approval of contractors' designs on the Systems contracts and some improvements have been noted, additional improvement is needed.

#### **Overall Engineering/Design/CPS Concerns and Recommendations:**

MTACC needs to focus on achieving intermediate milestones in a timely fashion and to work closely with all parties 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 issues related to Systems design reviews with GEC and LIRR management; however, more improvement and continued focus is needed. The PMOC continues to recommend 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. [Ref: ESA-125-Sep16].

## **2.2 Procurement**

The ESA July 2017 Total Cost Report shows that total procurement for the ESA Program portion of the project is 88.1% complete, with \$8.970 billion awarded of the \$10.178 billion current project budget.

#### **Status:**

Contract CS086, Systems Package 2 - Tunnel Systems was advertised on August 10, 2017, and will be a negotiated procurement using the RFP method. The bid package was made available on August 21, 2017, and the pre-proposal tour was held on August 31, 2017. Proposals are due on October 20, 2017 and the Notice to Proceed is forecast for January 2, 2018. Total bid advertisement delay through 2016 and into 2017 is sixteen months. The delays were caused by changing the Plaza Interlocking control from the Penn Station Control Center to the LIRR Train Operations Center in GCT and the time required to finalize the decision to procure the work as a separate stand-alone contract using a negotiated procurement, or RFP process.

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

CM015, 48<sup>th</sup> Street Entrance – In June 2017, the ESA-PMT advised that all design work on this package has been suspended. Total bid advertisement delay through 2016 and into 2017 is thirteen months.

- CS086, Systems Package 2, Tunnel Systems – was advertised on August 10, 2017 with proposals due on October 20, 2017. This will be a negotiated procurement using the RFP method. Total bid advertisement delay through 2016 and into 2017 is sixteen months.

As of the end of July 2017, all of the CS179 Options have been executed.

#### Concerns and Recommendations:

The lack of stability in the contracting strategy and Contract Packaging Plan (CPP) remains a concern. Scope shifts among different packages during 2016 and into 2017 have made it difficult to fully understand the impact of these changes to the overall ESA Project. The current CPP update (Revision 11.0) was issued in April 2017. 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 2017 Monthly Progress Report that the total construction progress reached 72.0% complete vs. 77.3% planned.

#### Manhattan Contracts

##### **CM006 – Manhattan North Structures**

Status: As of August 1, 2017, MTACC increased slightly its Forecast at Completion for CM006 to \$355,689,398. The MTACC forecast for Substantial Completion (SC) remained August 31, 2017. ESA reported that SC remains dependent on the contractor's preparation of a detailed list of base contract work items, open NCRs, and all open commercial issues. Actual construction progress for July 2017 was 0.1% versus 0.3% planned. Cumulative progress through August 1, 2017, was 98.7% actual versus 99.7% planned.

#### Construction Progress:

During September 2017, the CM006 contractor continued to complete remaining base contract work elements. The contractor continued punch list work items and completion of NCR work throughout the project.

**Please see Appendix J for current Cost performance.**

Observations/Analysis: The contractor continued to work open items required to declare Substantial Completion. ESA reported there is no impact to other contracts due to the delay in achieving the Substantial Completion date.

Concerns and Recommendations: The contractor and ESA must remain diligent to complete contract requirements for substantial completion and contract close-out. As reported previously, the PMOC observes that ESA and the contractor continued to work well together.

##### **CM007 - GCT Station Caverns and Track**

Status: As of August 1, 2017, the MTACC forecast project cost at completion remained \$712,311,733. MTACC reports in the ESA July 2017 Progress Report that the cumulative impact of the delays in the RTB (Resilient Tie Block) submittal approvals, was 6 months. This has extended the Substantial Completion forecast date to July 17, 2020 from the original January 28,

2020. Actual construction progress for July 2017 was 2.0% versus 4.8% planned. Cumulative progress through August 1, 2017, was 19.6% actual versus 36.0% planned.

Schedule:

TPC reported that the precast concrete fabrication is approximately 99% complete. The large crane will be demobilized the first week of October 2017 in the West Cavern and in November 2017 at the East Cavern. Work in the West Cavern is the ongoing priority and the East Cavern work is, trailing by approximately 2 months in accordance with the schedule. The Qualification Testing (QT) for the Standard RTB (Resilient Tie Block) was completed in August 2017 and deliveries of RTB units began in early September 2017. The High Attenuation Direct Fixation Fastener (HADFF) QT continued through September 2017.

Milestone #4 (Track & Third Rail Work Complete), August 7, 2019, now December 27, 2019 – Impacts to this milestone are due to delays in LIRR review and approval of the Resilient Tie Block (RTB) submittals. Also impacted by this delay is Milestone #6, Substantial Completion and Contract CS084, Traction Power Systems. Through June 2017 the RTB submittals and assembly mockup have been approved and Qualification Testing is underway.

Construction Progress:

Precast Concrete Installation Overview – Through September 24, 2017, 36.4% of the precast had been set and completed (945 pieces out of an approximate 2,774). This percent complete reflects precast pieces set (including beams and deck), rebar installed, post tensioning/grouting complete, and concrete closure pours. Precast fabrication was approximately 99% complete.

South Back of House, East: Installation of rebar and placement of sections of the upper slab continues.

South Back of House, West: Placement of the last section of the upper slab was completed. Stripping of the Mezzanine and Upper Level shoring began.

North Back of House, East: Installation of electrical conduit continues throughout. Installation of HVAC piping is ongoing. Erection of CMU walls continues.

North Back of House, West: Installation of electrical conduit continues throughout. Installation of HVAC piping is ongoing. Erection of CMU walls continues.

West Cavern: Waterproofing continues throughout wherever final rebar and lining is not complete. Setting of Upper Level precast beams and precast panel decking is ongoing. Post tensioning, removal of shoring, and closure pours continue after setting the beams. The contractor is completing the remaining sectors of PAC (Pneumatically Applied Concrete) wall lining. Work is underway for the erection of the Lower Level Platform walls and under-platform conduits.

East Cavern: Waterproofing continues throughout wherever final rebar and lining is not complete. Erection of Upper and Mezzanine Level beams, grouting beam pads, post-tensioning, grouting and installation of precast floor panels continue and forming/placing closure concrete follows.

Track: At Track A, the mobilization of RTB track materials to the site is ongoing. Installation of track lubricators bench and setting of ties is underway between Stations 1196+20 and 1190+25. At Track D, installation of RTB track lubricators nears completion between Stations 1184+64 and 1182+66.

**Please see Appendix J for current Cost performance.**

Observations/Analysis: As of September 24, 2017, ESA reported that the precast installation is trending slightly above the Late Finish baseline progress, 36.4% actual versus 35.3% planned.

Concerns and Recommendations: The PMOC remains concerned that, the delays in the RTB track assembly (the work finally began during August/September 2017) will continue to impact the overall Milestone #4 (Track & 3rd Rail Complete) and Milestone #6 (All Caverns and Tunnel Work Complete).

#### **CM014A – GCT Concourse & Facilities Fit-Out**

Status: MTACC reports that, as of August 1, 2017, the forecast project cost at completion remains at \$58,124,328. MTACC continues to advise that it intends to declare Substantial Completion retroactively to November 1, 2015, following negotiations with the contractor and the contractor's bonding company. Turnover of the B30 Substation to CM014B will initiate declaration of substantial completion. However, MTACC also reports that, as of its ESA July 2017 Progress Report, there is still no signed agreement on this point between MTACC and the contractor. MTACC reports that as of August 1, 2017 there was 0.20% actual construction progress versus 0.0% planned, resulting in accumulative progress of 96.3% versus 100% planned.

#### Construction Progress:

Through September 2017, ConEd had visited the site and the final work of “racking” the repaired breaker was completed. The B30 Substation construction and testing is complete. Submittal of as-built drawings and general paperwork remain and the Project Office anticipates turnover of the substation to CM014B in October 2017. The planned LIRR redesign of portions of the SCADA system and removal of EPO push button switches will now be added scope to CM014B. This work will include removing the existing stranded wire connections and replacing them with twisted wire. This will require shutting down the B30 Substation for an undetermined period of time.

**Please see Appendix J for current Cost performance.**

Observations/Analysis: The ongoing presence of this contractor at the site has continued to impact the CM014B contractor, who requires turnover of the B30 Substation.

Concerns and Recommendations: The PMOC is concerned that the previously noted equipment issues and apparent necessity to redesign portions of the SCADA system may duplicate itself with the same equipment purchased and recently installed in the B20 Substation for CM014B.

#### **CM014B – GCT Concourse & Facilities Fit-Out**

Status: MTACC reports that, through August 1, 2017, the forecast project cost at completion has decreased to \$485,533,777 from the previous \$486,904,902. The Substantial Completion date has been further extended to December 24, 2019 (-493 days) from the previous June 17, 2019. The original substantial completion date was August 18, 2018. Ongoing delays impacting the substantial completion date have included late critical structural steel submittals, fabrication, and delivery; late removal of existing unforeseen obstructions by MNR; availability of subcontractors to perform finish work in the 4 Wellways, the number of change orders and the long time it takes to process them. Actual construction progress for July 2017 was 2.8% versus 1.6% planned. Cumulative progress through August 1, 2017, was 40.9% actual versus 73.4% planned.

Through August 1, 2017, surveying in the Concourse continued and will be on-going throughout this contract.

Schedule – Substantial Completion is being extended to December 2019. Structural Steel work is now the primary critical path. The Biltmore Room construction is now the secondary critical path.

Milestone #4 (Comm. Closets CC-C3, CC-C7, & Room B3265) was originally March 5, 2017; extended to May 25, and then August 25, 2017; now April 1, 2018. This milestone was further extended due to FM200 issues and for increase in the room size for Communications Closet CC-C7. There is a stop work order issued, and the change order has still not been processed.

Milestone #5 (44th St. Vent Building) June 4, 2017; extended to December 13, 2017; now April 1, 2018. The CCM has temporarily placed installation to the ground level storefront on hold in order to allow for the CS179 contractor to deliver and install the fans. Fit-out of the interior is ongoing.

Milestone #5A (Completion of 48<sup>th</sup> St. Entrance) November 25, 2016; extended to October 2, 2017; now April 3, 2018. The elevator shaft work is progressing. The elevator head house has been approved. There is still discussion underway to possibly transfer some of this scope to the future CM015 contract.

### Construction Progress:

#### Concourse (Madison Yard)

Safety walkthroughs take place weekly and housekeeping, dust control and safety items are addressed daily and are ongoing. Flagging is ongoing where the work interfaces with MNR track operations. Tracks #115, #123 and #125 are used for material/equipment/services into and out of the site. Stantec repairs continue throughout and near completion. 3rd Party Inspections continue for concrete, shotcrete, rebar, masonry, bolting, welding and firestops. Structural steel deliveries are ongoing and steel erection continues from south to north with a focus on the East Corridor. Through September 18, 2017, structural steel progress was approximately 12% complete. Electricians neared completion of grounding at Unit Substations #5 and #6. Continuing to work on available boxes for electronic doors. Mechanical work continues in the East Corridor with piping and fire wrap. Painting of block walls and columns continues throughout Zones 1-4. Placement of the final concrete slab invert remains approximately 85% complete throughout the Concourse.

#### Wellways

Splicing and fit-out of escalators continue in Wellway #1. Removal of rigging has begun. In Wellway #2, 3 (ES 40, ES 41 & ES 42) have been set. Rigging of ES 43 is underway. Wellway #3 ceiling grid installation continues and curtain wall installation has begun in Wellway #4, installation of glass tiles nears completion.

#### 3 - Story Building

This is another area that is significantly affected by the structural steel fabrication and delivery delay.

#### Biltmore Connection

Conduit and relocation work continues at the Express Level at night. Installation of conduits and pull box at Track #39 nears completion. This work continues on the critical path for the contract.

#### Biltmore EL #22

The contractor has access to the 335 Madison Ave. building. Excavation of rock at the Concourse Level continues.

#### Dining Concourse Connection

Preparation for upcoming testing is underway. This contractor is responsible for the outside cladding to these escalators (2), which ties into the adjacent wall finishes.

#### Shaft #2

Installation of lighting nears completion but the contractor is experiencing access issues.

#### Shaft #3

Installation of Stair #22 pressurization nears completion.

#### Shaft #4

Installation of Stair #23 continues.

#### Elevator T-01

Installation of Elevator #14 continues.

#### 44<sup>th</sup> St. Vent Building

Installation of conduit, wire tags and fire stopping continues at the 1st Basement Level. Completed breakdown of the scaffolding in the shaft. Relocation of the Siamese connection to its permanent location was completed. Installation of Elevator #12 continues. Storefront façade is on hold, pending installation of fans.

#### 45<sup>th</sup> Street Cross Passageway (CPW)

Installation of Elevator #21 continues. Installation of conduit/racks is ongoing in the Machine Room.

#### 47<sup>th</sup> Street Cross Passageway

At Elevator #13, a Stop Work Order continues to be in effect because the contractor previously uncovered unforeseen conditions. The elevator shaft does not extend as far down as expected and needs to be extended to the Concourse. The contractor must correct this by shoring up the existing shaft walls and extending the shaft and the shaft walls. This work is also held up in the MTACC change order process.

#### 48<sup>th</sup> Street Entrance

Excavation of rock from the Express Level to the Concourse is complete. Waterproofing of the walls is complete. Formwork, rebar and preparation for the elevator shaft walls is ongoing.

#### 50<sup>th</sup> Street Vent Building

The Vent Building continues in full fit-out mode. Work includes installation of outlet wires, pull boxes, light conduit and light fixtures.

**Please see Appendix J for current Cost performance.**

Observations/Analysis: The PMOC observes that the delays in structural steel, starting in the submittals phase, and now in the fabrication/delivery/erection phases, is also impacting the CS179 contractor, who can't pull overhead wiring until overhead conduit is installed.

Concerns and Recommendations: The PMOC continues to be concerned that the slow change order process will result in further pushback of the date for substantial completion.

### **VM014 –Vertical Circulation Elements (Escalators & Elevators)**

Status: MTACC reports that through August 1, 2017, the forecast project cost at completion remains \$45,589,023. Substantial Completion remains July 1, 2020. There is no progress curve included in the report for this contract, or milestones. MTACC reports that, through August 1, 2017, the contractor completed 48.1% of the work, however, like the substantial completion date, this Phase 3 installation phase of the contract is highly dependent on access from the CM014B and CM007 contracts.

Construction Progress:

During June 2017, the contractor continued with the Phase II fabrication work and Phase III installation work for the CM014B contract. There are 47 total escalators and 21 total elevators. Through September 30, 2017, there were 12 escalators fabricated and either stored at the contractor's storage facility or on site. These 12 are for CM014B. There were 35 in engineering, engineering complete, or in fabrication. Of those 35, 10 are for installation in CM014B, 16 are for installation in CM007 and 9 for future installation in CM015. Eleven (11) elevators have been fabricated and either stored at the contractor's storage facility or on site. Those 11 are for installation in CM014B. Nine (9) elevators are in engineering complete, or in fabrication. Of the 9, 3 are for installation in CM014B and 6 for installation in CM007. Each escalator for the wellways consists of 11 sections covering an approximate 91' rise and 200' plus length.

Elevator #10:

LIRR has advised that there will not be a need for recall programming for this elevator/lift. LIRR Security is deciding whether they prefer to use a card reader control. PMOC Note: Elevator #10 is a non-personnel unit located in the through driveway in the 50th St. Vent Building and operates more like a street lift than a standard elevator.

Elevator #12:

This is the freight elevator in the 44th Vent Building, which opens to the street. Field dimensions taken by the contractor indicate that the existing degree of slope in the sidewalk will impede construction of a level door sill for the elevator. This issue is being turned over to CM014-B for action.

Fabrication & Delivery:

The contractor confirmed the following delivery dates: EL #17 (44th St. Vent Bldg.) – January 18, 2018; EL #22 (Biltmore Rm) – February 18, 2018; First escalators for CM007 – July 18, 2018.

Wellways: The contractor has completed setting of the 5 escalators in Wellway #1 and is continuing with splicing of sections and overall fitout. Setting of the 4 escalators in Wellway #2 nears completion. Mobilization into Wellways #3 and #4 will begin November/December 2017, starting with erection of rigging steel.

**Please see Appendix J for current Cost performance.**

Observations/Analysis: The PMOC observes that the contractor is currently performing 3 of the 5 phases of the contract; Phase 1-Design, Phase 2- Fabrication, and Phase 3-Installation. For some reason, MTACC decided to have payments during Phase 3 come directly through the general contractor instead of directly from MTA. This has caused cash flow issues with the contractor under the CM014B contract.

Concerns and Recommendations: The PMOC is concerned that, even though the VM014 contractor has resumed fabrication of the Biltmore Room escalators, this contractor is advising the CCM that the CM014B contractor is not providing any assistance in access to the area for the



required rigging to install the escalators. This could impact not only the fabrication, but also the schedule.

### **Queens Third-Party Contracts**

#### **CQ032 Contract – Plaza Substation and Queens Structures**

Status: As of August 1, 2017, MTACC reported that the Forecast at Completion for CQ032 increased slightly to \$264,175,577. MTACC reports the Forecast for Substantial Completion (SC) slipped from September 5, 2017 last month to September 29, 2017. ESA reported SC remains dependent on the contractor completing contract work items, and the contractor preparation of a detailed current punch list and list of all open commercial issues. Actual construction progress for July 2017 was 0.2% versus 0.0% planned. Cumulative progress through August 1, 2017, was 99.3% actual versus 100.0% planned.

Construction Progress: During September 2017, the CQ032 contractor continued punch list work and clean-up activity in the Yard Services Building (YSB) and the preparation of close-out deliverables. ESA reported that SC also remains dependent on completing these items: as-built information, O&M Manuals, training, NCR resolution, etc. ESA also reported discussion to further remediation effort to deal with the ongoing water infiltration at the previously designated Early Access Chamber (EAC) and TBM Launch Block areas.

**Please see Appendix J for current Cost performance.**

Observations/Analysis: ESA reported that several work items remain in negotiation to be deleted and/or transferred to follow-on Contracts CS179 and CQ033.

Concerns and Recommendations: The contractor and ESA must remain diligent to complete contract requirements for substantial completion and contract close-out.

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

Status: As of August 1, 2017, MTACC reported the Forecast at Completion for CQ033 remained \$308,045,850. The Forecast for Substantial Completion remained at August 10, 2020. MTACC has not established a progress curve for CQ033, and is pending approval of the contractor's Detailed Cost Breakdown.

Construction Progress: During September 2017, the CQ033 contractor completed caisson foundation installation for Yard Lighting and pole installation prep began, continued test pit excavation to locate underground utilities, continued Track fencing/barrier installation, and continued to prepare submittals.

Observations/Analysis: The delay to Milestones MS#1 and MS#2 was alleviated by Amtrak provision of support and the right-of-entry permit.

Concerns and Recommendations: None at this time.

#### **CH057 Contract – Harold Structures Part 3**

Status: MTACC declared Substantial Completion for the CH057 contract on June 30, 2017, and discontinued reporting its progress in its Monthly Report as of that date. As a result, and because remaining punchlist repairs are minor, this will be the last PMOC Monthly Report for the CH057 contract.

Construction Progress: During September 2017, the CH057 contractor continued to make punchlist repairs, which included installation of roof material at the Tunnel D headhouse building,

installation of handrails on the LIRR ML4 Track undergrade bridge at 48<sup>th</sup> St., and repairs to the 48-S2 retaining wall.

**Please see Appendix J for Current Cost Performance**

Observations/Analysis: The ESA PMT and the contractor worked well together throughout the life of this contract and achieved Substantial Completion on the date noted above. The PMOC notes, however, that the original baseline scope contained significantly more base and option work that was deleted from the contract as it progressed.

Concerns and Recommendations: The PMOC has no concerns or recommendations about the CH057 contract.

**Contract CH057A – Part 3 Westbound Bypass**

Status: MTACC's Forecast at Completion for CH057A remained at \$152,186,199 during July 2017. The ESA July 2017 Progress Report forecast for Substantial Completion indicates that it was extended by 5 weeks to November 30, 2018, but MTACC subsequently announced that, due to circumstances mainly concerning lack of tunnel excavation progress, MTACC now intends to declare Substantial Completion much earlier, perhaps as early as October 2017. Actual construction progress for July 2017 was 0.9% versus 5.6% planned. Cumulative progress through July 31, 2017, was 54.9% actual versus 94.0% planned (based on cost incurred rather than actual construction progress).

Construction Progress: During July 2017, the CH057A contractor continued to extend the West Approach Structure of the Westbound Bypass (WBYP) to grade and completed installation of stub piles and continued installation of temporary tie backs of the soldier pile wall in the East Approach Structure. Due to the lack of excavation in the Westbound Bypass Tunnel and lack of construction progress for the WBYP pump station, neither of which have progressed since early August 2016, MTACC announced that it began negotiations with the contractor to terminate the CH057A contract. Subsequently, the contractor began demobilization procedures during September 2017 and MTACC announced that the remaining CH057A work will be transferred to a future (as yet unnamed) contract and that it intends to declare Substantial Completion for CH057A in October 2017.

**Please see Appendix J for Current Cost performance**

Observations/Analysis: It became apparent during July and August 2017 that MTACC and the contractor were not going to be able to successfully negotiate conditions for the contractor to resume mining excavation of the WBYP Tunnel. As a result, the parties began to negotiate terms to terminate the contract and MTACC made the announcements noted in the Construction Progress section above. The PMOC notes that this contract provides Regional Investment work scope in Harold Interlocking and is considered to have independent utility that is not specifically required to provide the connection for LIRR service to GCT that is part of the FFGA scope of work. The CH057A contract does, however, impact the FFGA efforts because it places additional demands on limited Amtrak and LIRR force account resources.

Concerns and Recommendations: In view of the foregoing, the PMOC's concerns about the CH057A contract are limited to the use of Amtrak and LIRR force account resources. The PMOC recommends that MTACC conclude arrangements to terminate the contract as soon as possible so that it can develop a procurement package for the follow-on contract to complete the unfinished CH057A scope of work.

## **CH061A – Track A Cut and Cover Structure:**

Status: MTACC's Forecast at Completion for the CH061A contract increased slightly to \$42,504,688 during July 2017. The MTACC forecast for Substantial Completion remained at May 28, 2018. Actual construction progress for July 2017 was 6.1% versus 7.5% planned. Cumulative progress through July 31, 2017, was 18.3% actual versus 48.1% planned (based on cost incurred rather than actual construction progress). This discrepancy is largely due to an approximate 4 month delay to the beginning of secant pile installation under the 39<sup>th</sup> St. overhead bridge. The project had originally received NYCDOT approval to install the secant piles, but the contractor and the ESA PMT later determined that the bridge needed to be underpinned due to prevailing soil conditions before secant pile installation could begin. The underpinning required re-approval by NYCDOT and the delay was incurred as the engineering and administrative details for this were worked out. Once the secant pile installation began, it progressed ahead of schedule and allowed the contractor to recover approximately three of the four months it lost during the re-approval process.

Construction Progress: During September 2017, the CH061A contractor continued to excavate the west end of the Tunnel A Approach Structure, continued to excavate, lag, and install support of excavation (SOE) immediately west of the 39<sup>th</sup> St. overhead bridge, completed installation of secant piles under the 39<sup>th</sup> St. bridge, and continued to pour concrete catenary foundations for the Montauk Cutoff demolition and LIRR's Port Washington #2 Track.

Observations/Analysis: The PMOC observes that the MTACC project staff and the CH061A contractor continue to work very well together and have been able to successfully overcome the construction challenges to date. The remaining construction work for the Track A Cut and Cover Structure is standard construction work which should be able to proceed without further interruption.

Concerns and Recommendations: After the initial delay with the underpinning of 39<sup>th</sup> St. overhead bridge, CH061A construction has proceeded smoothly. As a result, the PMOC has no concerns or recommendations at this time.

## **Systems Contracts**

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

Status: VH051 Parts 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 May 2018.

Observations/Analysis: All signal equipment necessary for the cutovers of the 5 CILs is on hand.

Concerns and Recommendations: At present the PMOC has no concerns about or recommendations for the VH051 procurement package.

### **CS179 - Systems Package 1-Base Contract**

Status: In its July 2017 Monthly Progress Report (MPR), the MTACC notes that the contract forecast exceeds the current contract budget, with the Forecast at \$607,499,688, versus a

\$606,938,540 Budget. MTACC indicates this \$0.6M variance is mainly driven by the potential contract modifications for water infiltration mitigation, as well as trough cover procurement and installation efforts. In its July 2017 MPR, MTACC shows a progress curve for the CS179 contract that presents actual contract progress as 56.4% versus a planned 75.8%; numbers that are based on actual versus projected costs, not physical construction efforts. While these progress numbers continue to imply that the contract is significantly behind schedule; the contractor made more progress in July 2017 than was planned. In an early-September 2017 CS179 Progress meeting, MTACC indicated that, for various (unspecified) reasons, MTACC had rejected the contractor's latest monthly schedule update. The new update was forecast for delivery several days after the Progress meeting. This is not the first time MTACC rejected the contractor's schedule update; and, MTACC indicates in its July MPR that it is working with the contractor to develop a comprehensive schedule so MTACC can better evaluate the progression of the work. The completion of the contract is now shown by MTACC as occurring in October 2020, three months later than the contractual date of July 2020. As of the end of September 2017, all the CS179 Contract Options have been executed. There are still three potential Buy/Ship America issues on this contract that remain unresolved, as noted in the "Design Progress" discussion below.

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 on a bi-weekly basis between MTACC-ESA senior management and LIRR management. The CS179 contractor continues to work on the design development of the various contractually required Control and Non-Control Systems. As of the end of September 2017, the completion of the final designs of the last of the 10 Control Systems is, in the opinion of the PMOC, still an open item that is already 19 months late. A Final Design Review (FDR) meeting between MTACC, the contractor, the GEC, and the LIRR on the CCTV and Security Management System (SMS) must still be scheduled; and, the contractor continues to indicate that holding this FDR meeting and getting approval of the final design is a critical item needed to prevent any further delay in the completion of the contract work. Further, the contractor advises that some elements of the final design for two other Control Systems (the FLSS and BMS systems) are not "approved". Additionally, as of the end of September 2017, the LIRR has only formally acknowledged the approval of four of the ten Control System Final Designs. Thus, the PMOC's contention that MTACC's assertion that all ten of the Control System Final Designs are approved is inaccurate. The risk here continues to be that if the LIRR, for whatever reason, does not approve any specific Control System's final design, any equipment already procured for that particular Control System might need to be replaced to meet the LIRR requirements. In addition to the "Control" system designs, the contractor is also responsible for the design, fabrication, installation, and testing of 19 "Non-Control" Systems. In 2Q2017, the contractor, following a suggestion from the PMOC and subsequent direction from MTACC, developed a chart to show the status of the progress of the 19 Non-Control Systems designs. While some clarifications and improvements to this Non-Control System status chart are needed, MTACC acknowledges that it will enable the MTACC to more closely monitor the progress of these designs. Complicating the completion of the contract's designs is the resolution of issues identified in numerous Notices of Change (NOCs) from the contractor. The contractor continues to state that other design and coordination issues continue to cause schedule delays; and, that any further delay in the responses to NOCs, the resolution of the design issues, and/or the approval of final designs could jeopardize the timely completion of this contract. The two previously reported Buy/Ship America issues that

pose schedule risks to the successful and timely completion of this contract (HVAC units and video monitor display panels) remain as unresolved items and one other potential Buy/Ship America issue (public address system speakers) remains under investigation. The waiver request letter for the video monitor display panels continues to remain under development by MTACC with no forecasted completion date. The other potential Buy/Ship America issue concerns Public Address (PA) system speakers that are no longer manufactured in the United States. An investigation into PA speakers that meet all the specification requirements has not, to this date, found a suitable speaker that will fit in the pre-fabricated mounting fixture being provided by another contractor.

Construction Progress: During 2Q2017, the CS179 contractor continued with a substantial amount of various elements of work (installation of conduit, cable, fire stopping, fire standpipe, lighting, etc.) in the tunnels and at the various substation facilities. As noted in previous PMOC reports, numerous water infiltration issues at various facilities severely impacted the progression of work on this and other Systems' contracts. Water infiltration remediation work was performed at the Vernon, 23<sup>rd</sup> St., and 29<sup>th</sup> St. facilities. MTACC continues to insist that water remediation work for the C05 (Vernon) Traction Power Substation (TPSS) room was successful and that the room is ready for turnover to the CS084 contractor. The CS084 contractor, after performing a turnover inspection of the C05 facility, asserts that there are numerous issues, including water infiltration, that preclude it from working in the C05 TPSS room. Additionally, while the remediation work for the 23<sup>rd</sup> and 29<sup>th</sup> Street facilities initially appeared to be effective, new water infiltration areas in the 23<sup>rd</sup> Street and 29<sup>th</sup> Street facilities are now apparent. As previously reported, the subcontractor responsible for system designs and equipment fabrication, assembly, and testing advised that it continues to move forward on the procurement of Control Systems equipment; and, assembly of equipment racks in the subcontractor's off-site facility continues. This procurement and fabrication effort is based on the Control System final designs presented at the various Final Design Review (FDR) meetings. Currently, there are a number of Stop Work Orders (SWOs) on this contract for various reasons (water infiltration, differing site conditions, work scope transfers from other contracts, etc.). The PMOC has requested, but MTACC has yet to provide, a verified listing of those SWOs, along with a status of when the SWOs will be rescinded.

**Please see Appendix J for current Cost performance.**

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. The PMOC still has concerns about the water infiltration issues in the equipment rooms that are identified and whether proposed mitigation remedies will prove to be successful. The PMOC is also concerned about the recent comments from the contractor regarding the significant number of Notice of Change (NOC) submissions that remain as open items impacting the timely progression of the contract work. The PMOC believes that MTACC needs to focus on addressing those NOCs and quickly issue contract modifications where appropriate. Lastly, the PMOC continues to be concerned about late completion of systems' design reviews and approvals, but acknowledges recent stepped-up efforts by MTACC's senior management to identify issues and implement corrective actions.

**CS084 - Traction Power System Package #4:** [Note: The information presented for this CS084 contract comes from discussions at a mid-September 2017 Progress Meeting that reviewed contract progress up to September 13, 2017, and from the ESA July 2017 Progress Report (PR)].

Status: In its ESA July 2017 Progress Report (PR), MTACC reports that the Budget and Forecast for the CS084 contract remained at the \$79,717,772 level previously reported. In its ESA July 2017 Progress Report, MTACC cites a September 2, 2020, SC date. This is a one-week improvement from that reported by MTACC in its June 2017 MPR, and a nine-month delay when compared to the original December 2, 2019, SC date established when the contract was awarded. MTACC reports that the contractor's schedule shows an April 2020 SC date; a three-month recovery from that previously reported. However, MTACC, due to uncertainty of future contract CH058A, a contract that MTACC now indicates will install ductbank and manholes for substation C08, is pushing the SC date to September 2020. In its ESA July 2017 Progress Report, MTACC shows a progress curve for the CS084 contract that presents actual progress as 13.0% versus a planned 73.0%; numbers that are based on actual versus projected costs, not physical construction efforts. The actual versus planned progress numbers contained in MTACC's ESA July 2017 Progress Report indicate that this contract is significantly behind schedule; and, falling further behind schedule on a month-to-month basis. The contractor continues to contend that the variance in the actual versus planned progress is because: 1) funds have not been expended as originally projected due to delays in approving the substation designs and equipment; 2) fabrication of the substations and procurement of equipment cannot progress to completion until designs are approved; and, 3) the lack of access to substation rooms precludes the contractor from performing construction activities. The PMOC previously recommended that, to make tracking of actual versus planned progress more useful as a management tool, MTACC and the contractor might want to consider modifying MTACC's Progress Curve to reflect the current and projected progression of the contract. The contractor continues to advise that six of seven contract Milestones (Nos. 1, 2, 3, 4, 6, and 7) are delayed as a result of delays associated with the approval of substation designs and the resolution of Supervisory Control and Data Acquisition (SCADA) requirements.

Design Progress: The contractor continued with the transmission of contractual submittals and its design development of the substations. The contractor continues to assert that previous delays in receiving comments back from MTACC on the C08 facility switchgear, SCADA requirements, PLC information, and general C08 substation design impacted its ability to meet its own original design, procurement, fabrication, and installation schedules. However, at the last two monthly progress meetings, it was noted that the GEC's submittal/comment review period improved as a result of continued focus by MTACC. MTACC continues to report and have concerns about the timeliness of LIRR comments on design submittals. While the design of the C08 Substation continues to be the primary critical path for the contract, the continuing delay in finalizing SCADA requirements is, per the contractor, causing delays in the overall contract schedule. Per the contractor, there are two other design elements that need a timely closure to effectively progress the design and fabrication work. These two items, Blue Light programming details and foundation and support requirements for the C08 substation, require further discussions with, and information from, MTACC and the LIRR. The PMOC continues to have concerns about the length of time it is taking to address the various design approval issues.

Construction Progress: During 2Q2017, the contractor mobilized its forces at the C05 (Vernon) substation to begin its work. Because of an issue with the floor of the TPSS room at this location, MTACC issued a SWO until a contract modification for additional work could be issued. The modification is to install an additional epoxy coating on the floor before the di-electric padding is installed. Also, during 2Q2017, the contractor performed inspections of various substation areas

being prepared by other contractors for turnover and provided MTACC with a significant list of what the CS084 contractor termed “deficiencies” that would preclude any turnover of the areas to the CS084 contractor. As a result, the contractor has not started any construction work in these locations. MTACC will review the contractor’s lists and take whatever action is deemed appropriate. As previously reported, a modification for the completion of the extra L3 Electrical Service work was issued and the contractor started making preparations to begin the work. The work requires an electrical service outage of approximately two days to those new signal huts/cases that are already being fed by the original L3 electrical service; and, coordination with LIRR to schedule that outage is required. Both MTACC and the contractor wanted to perform the work in August 2017; however, the scheduling of the outage was elusive. MTACC indicates that it wants to complete the work by the end of fall 2017; and, suggested that it might be possible to do that if the contractor is willing to perform the work on the 2<sup>nd</sup> shift (early/late evening). One other significant issue, the installation of cabling between the C08 substation and the tracks, remains as an open item with the potential to impact the contract schedule. The PMOC previously reported that the manhole and duct bank system between the substation and the tracks, a system that was contractually supposed to be existing and turned over to the CS084 contractor to facilitate cable installation and substation testing, is not in place. To remedy this problem, MTACC, in its ESA July 2017 Progress Report, indicates that this manhole and duct bank system will be provided under the CH058A contract. The award of that contract has yet to occur; and, any delay in the projected scheduling of that work will negatively impact the CS084 contract completion.

**Please see Appendix J for current Cost performance and Appendix K for current Schedule performance.**

Concerns and Recommendations: The PMOC encourages MTACC’s senior management to continue to work with LIRR’s senior management to ensure the timely completion of design reviews and approvals to prevent potential delays to the completion of the contract work. At various CS084 meetings, the PMOC has inquired about the presence of manhole and conduit systems at all the other substation locations under the CS84 contract. It appears from those discussions that the viability of any of the manhole and conduit systems at the various substation locations has yet to be confirmed by any type of survey. In light of the issue at the C08 substation location regarding these types of systems, the PMOC continues to recommend that a survey be performed at all the substations to determine the availability of manholes and conduit from the substations to the tracks.

### **VS086 – Systems Package 3 – Signal Equipment Procurement**

[Note: The information presented below for the VS086 contract comes from discussions at a mid-September 2017 Progress Meeting that reviewed contract progress up to September 21, 2017, and from the MTACC’s ESA July 2017 Progress Report (PR)].

Status: In its ESA July 2017 Progress Report, MTACC once again incorrectly indicates that the Forecast of \$22,099,475 is within the \$21,835,022 Budget. The forecasted SC date is shown as November 12, 2019, one month later than the October 14, 2019, date established at contract award. At the end of July 2017, MTACC issued a contract modification that adjusted six of the interim milestone dates in the contract. However, as it did in previous reports, the PMOC notes that there are several other significant issues, ones that could potentially impact the contract completion date, that are not included in the modified contract milestones. While the re-baselined schedule can theoretically be used by MTACC to more effectively manage the contract, the absence of activities that have the potential to further impact the contract schedule results in an incomplete schedule and a diminished ability for effective managerial control by MTACC.

Design Progress: As has been observed on other ESA Systems contracts being managed by MTACC, the contractor continues to raise concerns over the timeliness of responses from the MTA on design submittals and inquiries and asserts that this lack of timely responses caused, and continues to cause, day-to-day delays in the progression of the work. The contractor continues to indicate that the design of the Plaza Interlocking Central Instrument Room (CIR) is a critical design that needs to be completed without delay and that there are several other design issues that require a resolution or direction from the MTA. These other design issues include: 1) Light Emitting Diodes (LEDs) for tunnel signal units; 2) use of TRU-III track circuit equipment; 3) inclusion of Positive Train Control (PTC) in the signal design; 4) design and use of ATT-20 track circuit equipment; and 5) use of Low-Smoke-Zero-Halogen (LSZH) case wiring.

- 1) LEDs: As previously reported, the LIRR requested that the contractor replace the incandescent lights in the tunnel signal units with Light Emitting Diodes (LEDs); a change to the contract requirements and to designs already underway. The contractor based its design on the use of standard incandescent bulbs in the tunnel signal lighting units and a decision requiring the use of LED lighting for the tunnel signal lighting will require re-design efforts. The LIRR has yet to issue a corporate decision regarding which type of lighting will be required.
- 2) TRU-III Track Circuit: The PMOC previously reported that another different type of track circuit was proposed to conform to FRA standards. This type of track circuit, designated as a TRU-III track circuit, has not been used before on the LIRR and the LIRR indicated that, before it could approve the use of this type of track circuit, it needed to ensure that it worked properly and seamlessly on its right of way (ROW). The contractor provided the LIRR with some of the TRU-III equipment and the LIRR was to use that equipment to perform a bench test and then field test the equipment by installing the equipment on its ROW. After some undetermined amount of time, the LIRR would evaluate the results of the testing before deciding on its acceptability for LIRR use. At the mid-September 2017 progress meeting, the LIRR reported that, while a location for the field testing was identified, the testing had not commenced; and, field testing might last as long as six months. A date for reaching a decision about the use of this type circuit remains undetermined; and, even though it could pose a significant risk to the timely completion of the VS086 contract, this entire activity is not incorporated into any VS086 contract schedule
- 3) PTC: The contractor must incorporate any PTC design into its overall signal design. While a Memorandum of Understanding (MOU) between the LIRR and MTACC was established to address administrative elements of the incorporation and implementation of PTC, the technical requirements that need to be incorporated into various ESA Systems are included in the “Technical Concurrence Document” that is currently in review and needs to be agreed upon by all parties. In its ESA July 2017 Progress Report, MTACC indicates that, if the current direction (not specified) is changed per the MOU, it would impact the design, equipment, and schedule of the VS086 contract. More information on the incorporation of PTC into the ESA Project can be found in Section 2.1 of this report.
- 4) ATT-20 Track Circuit: The contractor has, for several months, advised that the addition of the ATT-20 track circuit may impact interim milestone dates for delivery of equipment; a risk the PMOC noted in its previous reports. MTACC continues to develop a contract modification to add the use of the ATT-20 track circuit to the contract. The potential impact, if any, to the contract schedule can’t be quantified until the modification is finalized and issued.



- 5) **LSZH Wiring:** This newly identified issue could, if not resolved very quickly, have a significant impact on the fabrication, testing, and delivery of the Plaza (PLZ) Interlocking equipment. Use of the LSZH wire for the signal cases is a contract requirement. The wire manufacturer being used by the contractor now indicates that it will be unable to supply the required LSZH wire, potentially impacting the fabrication of the PLZ Interlocking signal cases. The contractor has identified two alternate LSZH wire manufacturers; but, neither one has wire that meets all the LIRR specification requirements. The LIRR needs to determine if the wire from either alternate manufacturer can be used on this contract; a decision that the contractor indicates must be made by mid-October 2017 to not impact the fabrication of the PLZ Interlocking signal cases.

**Please see Appendix J for current Cost performance.**

Observations/Analysis: The re-baselining of the contract's interim milestones will allow MTACC to more effectively manage this contract. However, the issues on this contract that remain unresolved could, if not resolved quickly, pose significant risks to the timely completion of this contract.

Concerns and Recommendations: The PMOC continues to be concerned that a number of items that have potential schedule impacts (e.g., open change orders, decisions on track circuits, the use of LEDs, etc.) remain unresolved. The PMOC is also concerned that there are still work activities with undetermined durations (e.g., the TRU-III testing) that are not included in the contract's interim milestones; raising questions as to the validity of any completion dates noted in the contractor's or MTACC's schedules. The PMOC encourages the MTACC management team on this contract to work with the LIRR and the GEC to provide timely answers and comments to design questions and submittals.

#### **Harold Stage I Amtrak FA (FHA01)**

Status: MTACC's Forecast at Completion for FHA01 remained at \$18,824,861 during July 2017. The MTACC forecast for Substantial Completion remained at July 7, 2018. Actual construction progress for July 2017 was 0.0% versus 0.0% planned. Cumulative progress was 98.8% versus 100.0% planned (based on cost incurred rather than actual construction progress).

Construction Progress: Amtrak did not perform any significant FHA01 construction during September 2017. The ESA July 2017 Progress Report indicates that the only remaining FHA01 work is demolition of the Electric Traction H24 sectionalizing switch at the east end of Harold Interlocking, which is now planned to take one day in conjunction with the LIRR 2018 Northeast Quadrant turnout installation project.

**Please see Appendix J for current Cost performance**

Observations/Analysis: The PMOC has no particular observations concerning Amtrak's FHA01 efforts to support the ESA Program at this time.

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

#### **Harold Early Stage 2 Amtrak FA (FHA02)**

Status: MTACC's Forecast at Completion for FHA02 remained at \$66,440,848 during July 2017. The MTACC forecast for Substantial Completion remained at July 7, 2018. Actual construction progress for July 2017 was 0.4% versus 0.0% planned. Cumulative progress through July 31, 2017, was 89.2% versus 86.7% planned (based on cost incurred rather than actual construction progress).

Construction Progress: During September 2017, Amtrak Electric Traction personnel made modifications at catenary poles B907 and B924 to support future CQ033 demolition of the Montauk Cutoff and construction of the Westbound Bypass, respectively.

**Please see Appendix J for current Cost performance**

Observations/Analysis: Although the overall ESA program is behind schedule, Amtrak's direct construction support of ESA activities continues on schedule with whatever activity is the priority at a particular time. As is evident from the actual percent complete versus planned, the PMOC believes that Amtrak's support for its direct work in support of the ESA program is entirely adequate.

Concerns/Recommendations: The PMOC has no concerns about or recommendations for Amtrak's support of its direct construction work for ESA at this time.

### **Loop Interlocking CIL Amtrak FQA65**

Status: MTACC's Forecast at Completion for FQA65 remained at \$33,287,863 during July 2017. The MTACC forecast for Substantial Completion was shortened by 2 weeks to July 29, 2023. Actual construction progress for July 2017 was 0.0% versus 0.4% planned. Cumulative progress through July 31, 2017, was 19.1% versus 86.4% planned (based on cost incurred rather than actual construction progress). The PMOC is not concerned about this discrepancy in cumulative progress due to the extended Substantial Completion date.

Construction Progress: During September 2017, Amtrak C&S personnel installed case legs and a cable pullbox in preparation for the future installation of the new "Loop" Interlocking CIH.

**Please see Appendix J for current Cost performance**

Observations/Analysis: Since FQA65 construction is not a necessary component of the "ESA First" schedule, its priority has been downgraded and its schedule extended. The PMOC notes that this contract provides Regional Investment work scope in Harold Interlocking and is considered to have independent utility that is not specifically required to provide the connection for LIRR service to GCT that is part of the FFGA scope of work. FQA65 work does, however, impact the FFGA efforts because it places additional demands on scarce Amtrak resources.

### **Harold Stage 1 LIRR FA (FHL01)**

Status: MTACC's Forecast at Completion for FHL01 remained at \$24,379,364 during July 2017. The MTACC forecast for Substantial Completion was extended by 2 weeks to April 9, 2018. Actual construction progress for July 2017 was 0.6% versus 0.0% planned. Cumulative progress through July 31, 2017, was 98.5% actual versus 100.0% planned (based on cost incurred rather than actual construction).

Construction Progress: During September 2017, LIRR 3<sup>rd</sup> Rail personnel continued installation of 3<sup>rd</sup> rail conduit and cables at the new G02 Substation and miscellaneous turnout locations in Harold Interlocking.

**Please see Appendix J for current Cost performance**

Observations/Analysis: The PMOC notes that the new G02 Substation must be in service before the existing G02 Substation, which is in the footprint of the future B/C Tunnel construction, can be de-commissioned. The B/C Tunnel is a critical component of LIRR RSD service into GCT, so any delay to its construction may have a corresponding negative impact on RSD. The PMOC notes, however, that LIRR has supported G02 construction with additional 3<sup>rd</sup> Rail personnel during August and September 2017, so it appears that LIRR has prioritized G02 construction.

Concerns and Recommendations: The PMOC remains concerned that G02 Substation construction remains behind schedule, but is encouraged that LIRR has increased its workforce to complete construction. The PMOC recommends that LIRR continue to supply this same level of 3<sup>rd</sup> Rail personnel until the new substation is placed in service.

### **Harold Early Stage 2 LIRR FA (FHL02)**

Status: MTACC's Forecast at Completion for FHL02 remained at \$84,564,345 during July 2017. The MTACC forecast for Substantial Completion remained at July 1, 2020. Actual construction progress for July 2017 was 1.3% versus 0.0% planned. Cumulative progress through July 31, 2017, was 100.0% actual versus 100.0% planned (based on cost incurred rather than actual construction).

Construction Progress: During July 2017, LIRR Signal personnel continued to install signal conduits, megger, terminate signal cables, and install snow melt equipment at "H1", "H2", and Location 30 CILs, and began "pre-testing" procedures at the "H1", "H2", "H5", "H6", and Location 30 CILs. Signal personnel also continued to make signal circuit revisions at the "H5", "H6", and Woodside CILs.

### **Please see Appendix J for current Cost performance**

Observations/Analysis: The PMOC notes that LIRR did not perform the "pre-testing" scheduled for two weekends during September 2017. The PMOC also observed that the ESA PMT does not seem overly concerned about this because it believes that, as long as all 6 weekends "pre-tests" are done by the end of 2017, the "pre-test" sequence will remain on schedule. The PMOC agrees with this approach, but must caution that delays tend to pile up on one another. If that happens with the "pre-test" sequence, an undesirable delay to the final cutovers scheduled for May 2018 could result.

Concerns and Recommendations: The PMOC is concerned that LIRR missed its two scheduled "pre-test" weekends during September 2017 and recommends that it develop a strategy that will allow the LIRR Signal Department to perform these "pre-test" weekends while other work takes place within its areas of operations.

## **2.4 Operational Readiness**

Status: The Quarterly Operational Readiness (OR) briefing for 2Q2017 was held on July 20, 2017. The information in this PMOC Comprehensive Monthly Report is based on information obtained during that OR briefing and subsequent meetings with LIRR personnel. The next Quarterly OR briefing is scheduled for October 19, 2017. The ESA Rail Activation Plan (RAP), the primary work product for the Operational Readiness effort, is a three-volume document that, once completed, will contain procedures and protocols for the implementation and future operation of the ESA rail service. The RAP is being developed through the use of 11 separate Task Working Groups (TWGs) that each focus on specific separate aspects of the RAP based on the expertise of the TWG participants. Participants in the TWGs represent internal MTA agencies and agencies external to the MTA (e.g., NYPD, FDNY, etc.), depending on what specific activities fall under the purview of each particular TWG. A representative from MTACC chairs 3 of the 11 TWGs and the remaining 8 TWGs are chaired by LIRR personnel.

TWG No.1: The Rail Activation Plan (RAP) being developed by TWG No. 1 is still a work in progress, with draft sections being circulated for comment among the ESA stakeholders. One particular section of the RAP is the Comprehensive System Test Plan (CSTP) that must be followed to progress to ESA revenue service. One element of this CSTP is the Integrated System Test Plan (ISTP) that was recently completed by the ESA CS179 Systems contractor. MTACC indicated that a draft CSTP should be ready for internal review in early fall 2017. The PMOC

continues to request that MTACC provide a schedule that shows the projected dates for completion of the various sections/volumes of the RAP.

TWG No.2: The PMOC raised a concern with MTACC regarding the status of the ESA Concept of Operations (ConOps); a document that, per MTACC, is the basis for all work being developed and progressed on the ESA Project. The development and updating of the ConOps falls under the purview of TWG No. 2, Train Service and Operations. The ConOps has, apparently, not been formally updated since March 2010, despite several significant changes made since then to the ESA Project (e.g., the elimination of a passenger rail station in the “Sunnyside” area of Long Island City). MTACC agreed that the document needs to be updated, as needed, to reflect current operating philosophies.

TWG No. 3: One significant responsibility of this TWG is the integration of Federally-mandated Positive Train Control (PTC) for the LIRR. Per the current Federal mandate, PTC needs to be operational by all railroads by December 2018, which poses a significant challenge to the MTA. A Memorandum of Understanding (MOU) between LIRR and MTACC, strictly for administrative issues related to PTC implementation for ESA service, has been executed. The “Technical Concurrence Document” has now been approved and signed-off by MTACC and LIRR. The MTA had indicated that it might request from the Federal Railway Administration (FRA) a waiver of the December 31, 2018 implementation date, considering that both the existing Harold Interlocking and the ESA Project will still be under construction when the 2018 PTC deadline occurs. However, the LIRR missed the August 2017 target for submitting any waiver request to the Federal Railway Administration (FRA) to delay PTC implementation in Harold Interlocking. The PMOC inquired, but did not receive a definitive answer from MTACC, about alternative plans regarding PTC implementation should a waiver request be submitted and subsequently denied by the FRA. Additional information on PTC status is contained in Section Nos. 1.7 and 2.1 of this report.

TWG No.4: One particular TWG showing substantial progress is TWG No. 4, which is responsible for developing and implementing procedures for Asset Management. This TWG continues to effectively progress its work; and, interim maintenance on assets from four completed contracts has commenced. Asset condition assessments on various contracts nearing or at substantial completion are underway, with three additional contracts slated for interim maintenance activation by the end of 2017.

TWG No.6: This TWG is responsible for developing Staffing and Training Plans to ensure that the proper resources, skilled personnel, and equipment are available to begin ESA revenue service. The PMOC previously asked to see a schedule for staffing and training that was linked to the overall ESA IPS. That schedule is still in development and the LIRR indicated that it would be available by the 3Q2017 Operational Readiness briefing in October 2017.

TWG No.7: The PMOC previously expressed serious concerns regarding the implementation of the certification processes for safety and security elements; especially during the design process of the various ESA contracts. The new chair of this TWG has been able to re-establish managerial control over the certification processes, with significant improvement noted for Security certifications related to the various ESA contract designs. The next step is to focus on Safety certifications.

TWG No. 11: This TWG focuses on the procurement of fleet-oriented equipment (railcars, locomotives, simulators, etc.) necessary for the final implementation and operation of the ESA Service. The PMOC’s update on this TWG is noted below in Section 2.5 – Vehicles.

Observations/Analysis: The PMOC continues to meet on an ad hoc basis with the Operational Readiness staff in between the formal Quarterly OR briefings to 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 level of PMOC concern related to the development and implementation of the Safety and Security Certifications while significantly reduced, still remains, as these certifications that safety and security issues were identified and addressed are essential items that need to be finalized before ESA revenue service commences. The PMOC recommends that MTACC continue the focus on ensuring safety and security requirements are identified, addressed, and certified as complete in a timely manner.

## **2.5 Vehicles**

Status: The LIRR Vehicle Procurement Schedule (dated April 21, 2017, the latest update available to the PMOC) for the M-9 (non-federal) and M-9A (federal) vehicles indicates that the RFP for the M-9A vehicles was supposed to be issued in November 2016 (the initial date was April 2016). As of September 30, 2017, however, the “Qualifications” portion of the RFP, which was supposed to be issued in June 2017, had not been issued and was still under development by LIRR. The “Qualifications” portion of the procurement was planned to be followed by the “Cost/Technical” portion in September 2017. Additionally, the PMOC notes that LIRR has developed two different schedules for the M-9A delivery – one for a scenario in which the present M-9 supplier wins the procurement and the other in case a different supplier wins. If the present M-9 supplier wins, the schedule indicates that delivery of the M-9A vehicles will begin in April 2021 and last through May 2022. If another supplier wins, the procurement schedule indicates that deliveries will take place between July 2022 and August 2023, a fifteen month lag between the two suppliers. The PMOC notes, however, that even if MTA experiences this potential delay, it will still meet the vehicle requirements for the amended FFGA Revenue Operations Date of December 2023.

Observations/Analysis: Based on the latest LIRR Vehicle Procurement Schedule provided to the PMOC, the ESA project would have all 160 of the required M-9A cars delivered by the December 2022 RSD date if the procurement is awarded to the present M-9 car builder, but only 72 if the procurement is awarded to a different car builder. Since the “Qualifications” portion of the procurement package was not issued as planned during June 2017, it is possible that the number of cars available for MTACC’s late RSD date of December 2022 may be even fewer than shown above.

Concerns and Recommendations: The PMOC remains concerned about the continued slippage in the procurement for the M-9A vehicles. If the procurement continues to slip, it is possible that even an award to the present supplier may not result in sufficient vehicles to begin revenue service. The PMOC recommends that LIRR complete its development of the procurement package and begin the procurement cycle as soon as possible.

## **2.6 Property Acquisition and Real Estate**

Status: As discussed in “Real Estate Acquisitions”, Section 3.b, above, in July 2017, MTACC reported that MTA Real Estate continued to negotiate with the owner of 415 Madison Avenue in Manhattan to complete the GCT 48<sup>th</sup> St. Entrance construction within the owner’s building and that construction within the building is expected to commence when the negotiations are completed and the agreements executed. In Queens, MTACC continued to negotiate a lease agreement with Amtrak to provide space for construction of the Mid-Day Storage Yard and an easement agreement

with Amtrak for an access road that would serve both the Mid-Day Storage Yard and the existing Amtrak High Speed Rail facility in Sunnyside Yard.

Observations/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 ESA July 2017 Progress Report indicates that Community Relations efforts for the month concentrated on coordination with the surrounding neighborhoods in several locations in Manhattan and Queens for maintenance and protection of traffic (MPT) of CM007 surface level concrete drop sites.

Observations and Analysis: The PMOC believes that the MTACC Community Relations Staff continues to perform its outreach campaign in an entirely effective manner.

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: The PMOC completed its evaluation, concluded that the current version of the PMP, Rev. 10, is acceptable, and provided the FTA with comment close-out details in 2Q2017. The FTA subsequently notified MTACC that the FTA accepted the current version of Revision 10 to the ESA PMP.

Observation: MTACC plans to update several sections of the PMP for the next revision. The sections include Risk Management, Procurement, Operational Readiness and Systems Testing and Startup.

#### **3.1 PMP Sub-Plans**

Status: The status of the key PMP sub-plans is also discussed in the ELPEP Compliance Section of this report. In September 2017, MTACC issued an update to its Technical Capacity and Capability Plan. The PMOC is currently reviewing this plan.

The PMOC has completed its evaluation of the current revision of the Cost Management Plan (CMP), concluded that the CMP is acceptable and provided the FTA with the comment close-out details during 4Q2016. The FTA subsequently notified MTACC that the revised CMP is acceptable.

PMOC has completed its evaluation of the current revision of the Schedule Management Plan (SMP), concluded that the SMP is acceptable and provided the FTA with the comment close-out details during 1Q2017. The FTA subsequently notified MTACC that the revised SMP is acceptable.

Observations: MTACC has revised its Project Management Plan, Cost Management Plan, and its Schedule Management Plan. MTACC plans to update the Risk Management Plan during 4Q2017.

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-UPDT96-08-01-2017-FINAL r01” which has a data date of August 1, 2017, and incorporates progress over the month of July 2017 (August 1, 2017 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. As of the August 1, 2017 IPS, ESA reports that the Target RSD of February 12, 2021, and the Late RSD of December 13, 2022, have remained unchanged. [REDACTED]

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- FHL02 – H1/H2/H5/H6/Loc 30 CIL Cutover Pre-testing and Cutovers;
- CH057D / FHL04 – Northeast Quadrant work;
- CH058A – B/C Approach Structure;
- FHL04 – Testing and Cutover work;
- Train Contract Staffing and LIRR Final 3 Months Period;
- Target RSD;
- [REDACTED]
- [REDACTED]
- Late RSD.

## MTACC-ESA

The PMOC notes the following observations and concerns resulting from its analysis of the ESA August 1, 2017 IPS update and report:

1. The PMOC continues to be concerned regarding the delays experienced to date for the procurement of future Contract CS086: Systems Package 2 – Systems Installation. As the procurement dates are delayed, the planned project period was decreased and this has been reported to have impacted the completion of CS179 Integrated Systems Testing (IST). The PMOC is concerned that delays will continue to occur and will begin to impact the Program schedule negatively.
2. The PMOC continues to be concerned with the slow progress on Contract CS084, Tunnel Systems Package 4 – Traction Power System, which is currently reported at 13% complete vs. 73% planned. The PMOC has been tracking important milestones for this contract and has noted that much of this work continues to experience a day-for-day delay over each IPS update period. These schedule delays are a concern and the PMOC recommends that ESA performs an analysis in which options to recover schedule time is discussed, and how much further time can be lost without CS084 impacting the overall ESA Program. As a starting point, the PMOC recommends focusing on the major electrical equipment submittals and layout drawings that are in development and the proposed study should identify any major issues and suggest corrective measures to try and bring the schedule back on track.
3. The PMOC is concerned that the revised planning effort (as indicated in the ESA August 1, 2017 IPS Report) for future Contract CH058A (B/C Tunnel Approach) may negatively impact the Program schedule. The PMOC recommends that ESA describe any major changes to the planning and any impacts that may occur with Program milestones or interfaces with other contracts.
4. Since 4Q2016, the PMOC has been monitoring and reporting on the status of the anticipated ESA amendment to the 2015-2019 Capital Plan for additional funding to meet the budget needs created by the forecast cost overruns for continued railroad force account support for both Amtrak and LIRR, continued OCIP coverage for the extended duration of the program, and other anticipated cost increases. During 2Q2017, it was decided that there will be no stand-alone ESA amendment to the 2015-2019 Capital Plan. This presents a new risk of funding constraint that may significantly impact the project. The PMOC is concerned about the potentially significant impacts to the program schedule as well as the target Revenue Service Date. The specific schedule impacts will not be known until ESA re-evaluates the current budget and schedule.
5. **Manhattan/Systems Performance Risk [Ref: ESA-128-Sep17]**

As discussed in other sections of this report, the PMOC details specific concerns with regard to the four major active contracts on the Manhattan/Systems schedule path:

- CM007, GCT Caverns
- CM014B, GCT Concourse and Facilities Fit-Out
- CS179, Systems Package 1 – Facilities Systems
- CS084, Tunnel Systems Package 4 – Traction Power Systems

6. [REDACTED]  
[REDACTED] The work remaining in these contracts is currently forecast to be completed in the timeframe from July 2019 to July 2020. [REDACTED]  
[REDACTED] This will place additional schedule pressure on the target RSD in February 2021.

#### 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 for all contracts. 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 – 4Q2017 and 1Q2018 Upcoming Contract Procurement Milestones**

Contract Description	Advertise Date	Bid Date	NTP	Project Period	Substantial Completion
CM015 48 <sup>th</sup> St. Entrance	TBD	TBD	TBD	TBD	TBD
CS086 Systems Package 2: Signal Installation	8/10/2017 A	10/20/2017	1/2/2018	33 Months	10/1/2020
CH057D Harold Track work	10/26/2017	1/29/2018	2/28/2018	15 Months	6/2/2019
CH058A B/C Tunnel	1/4/2018	4/17/2018	6/18/2018	26 Months	8/21/2020

- Over the update period, the forecasted CM015 (48<sup>th</sup> Street Entrance) procurement dates continue to be on hold, reported to be due to ongoing negotiations between MTACC and the building owner regarding recent NYC zoning changes that will impact the 415 Madison Avenue building. It was reported in the May 1, 2017 IPS that NTP was forecasted to occur on August 22, 2017, Substantial Completion was forecasted to occur on May 22, 2020, for a contract period of 33 months. The August 1, 2017 IPS Report shows all forecasted procurement dates for CM015 as “TBD.” The August 1, 2017 IPS.xer schedule file shows the following dates and duration for the procurement of CM015:
  - Procurement Period – September 6 to October 19, 2017
  - NTP – October 20, 2017
  - Project period – 33.3 Months
  - Substantial Completion – July 16, 2020

ESA reported that an advertisement date will be provided once the negotiations are complete.

The procurement process for CS086 (Systems Package 2: Signal Installation) is continuing, and advertisement occurred on August 10, 2017. Over the quarter, the forecasted NTP date was delayed from August 14, 2017 to January 2, 2018, or by approximately five months. The forecasted date for Substantial Completion was delayed by approximately three months, from July 1 to October 1, 2020. Additionally, the planned project period was decreased by two months, from 35 to 33 months. The PMOC is concerned that continued delays to CS086 will likely have a follow-on impact to the completion of Integrated Systems Testing (IST).

ESA reports in the August 1, 2017 IPS Report that the forecasted procurement dates for CH057D (Harold Track work) are on schedule. These dates did not change significantly over the quarter, with Advertisement still planned for late October 2017 and NTP at the end of February 2018.

ESA also reported that the procurement of Contract CH058A (B/C Tunnel) is on schedule, with Advertisement forecasted to occur in early January 2018 and NTP in the middle of June 2018. The PMOC notes that the planned Advertise date was delayed approximately one month over the quarter; however, all planned successor procurement dates held. The August 1, 2017 IPS Report notes that a planning effort is underway to revise the project period duration based on revised construction sequencing. This new planned project period will be shown in next month's IPS update (September 1, 2017).

### 4.3 Critical and Sub-Critical Activities

The following table summarizes the contracts and key dates along the ESA Program's remaining Critical Path, as reported by the PMT in its August 1, 2017 IPS Report.

**TABLE 4.3 – August 1, 2017 IPS ESA Program –Remaining Critical Path**

Activity Name	Original Duration	Start	Finish
FHL02 CIL Cutover Work	292	01-Aug-17	20-May-18
CH057D Harold Track work and FHL04 Catenary Work	160	21-May-18	28-Oct-18
FHL02 Retire Harold CIL	28	29-Oct-18	26-Nov-18
CH058A B/C Approach work	634	26-Nov-18	21-Aug-20
FHL04 Testing and Cutover LK1, U1, LK2, R1/R2 (1143) 4C	49	24-Aug-20	12-Oct-20
Train Contract Staffs LIRR & LIRR Final 3 Months Period	119	15-Oct-20	11-Feb-21
<b>Target Revenue Service Date</b>			<b>12-Feb-21</b>
██	██	██████████	██████████
<b>Late Revenue Service Date</b>			<b>13-Dec-22</b>

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

The PMOC has tracked and analyzed progress along the ESA Program's Critical Path over the update period. The PMT continues to report that CIL cutover pre-testing at Harold Interlocking controls the Program's Critical Path from now until May of 2018, with the following sequence:

1. H1/H2/H5/H6/30 TSR Pre-cutover Testing (In Progress)
2. H5/H6/L30 South Pre-cutover Testing
3. H1/H2/L30 North Pre-cutover Testing
4. Days Lost/Weekend Work

██████████

██

██ As of May 1, 2017, the Harold longest path was controlled by FHL02-CSR1230: H5/H6/30 TSR Pre-cutover testing, which had begun on April 29, 2017, and was expected to be complete on May 19, 2017.

FOIA EXEMPTION 5 U.S.C. SECTION 552(b)(4)

The remaining sequence of work as planned in the May 1, 2017 IPS was as follows:

Activity ID	Activity Name	Current Duration	Start	Finish
FHL02-CSR1230	H5/H6/30 TSR Pre-cutover testing	14	29-Apr-17	19-May-17
CH054A-2620	CH054A Install 700KW Emergency Generator - H4 (#9)	1	01-May-17	01-May-17
FHL02-CSR1240	H5/H6/30 South Pre-Cutover Testing	50	22-May-17	31-Jul-17
FHL02-CSR1250	H1/H2/H5/H6 TSR Testing	10	01-Aug-17	14-Aug-17
FHL02-CSR1260	H1/H2/30 TSR Testing	40	15-Aug-17	10-Oct-17
FHL02-CSR1270	H1/H2/30 North Pre-Cutover Testing	80	11-Oct-17	02-Feb-18
FHL02-CSR1280	Days Lost/Weekend Work	50	05-Feb-18	13-Apr-18
FHL02-CSR1290	Pretesting/Cutover Float	15	16-Apr-18	04-May-18
FHL0266330	Cutover (2GHI): H5 / H6 / Loc 30 CIL + 6156, 6176, 6167 + ML4 Cut &	2	05-May-18	06-May-18

The August 1, 2017 IPS shows the following for work along this path:

Activity ID	Activity Name	Current Duration	Start	Finish
FHL02-CSR1230	H1/H2/H5/H6/30 TSR Pre-cutover testing	9	29-Apr-17	11-Aug-17
FHL02.MS.00095	Cutover #L-2 Service for H3, H4 CIL's	0		01-Aug-17
FHL02-CSR1240	H5/H6/30 South Pre-Cutover Testing	50	14-Aug-17	23-Oct-17
FHL02-CSR1270	H1/H2/30 North Pre-Cutover Testing	80	24-Oct-17	15-Feb-18
FHL02-CSR1280	Days Lost/Weekend Work	50	16-Feb-18	26-Apr-18
FHL02-CSR1290	Pretesting/Cutover Float	5	27-Apr-18	03-May-18
FHL0266330	Cutover (2GHI): H5 / H6 / Loc 30 CIL + 6156, 6176, 6167 + ML4 Cut &	2	05-May-18	06-May-18

As of the August 1, 2017 Harold longest path, FHL02-CSR1230 continued to control the path, but now represents the combined H1/H2/H5/H6/30 TSR Pre-cutover testing, with an expected completion date of August 11, 2017. Another revision in the sequence of activities is that FHL02-CSR1240: H5/H6/30 South Pre-Cutover Testing will now be performed after the TSR testing. Based on this progress of the overall work can be tracked by the planned start of FHL02-CSR1270: H1/H2/30 North Pre-Cutover Testing, which has changed from October 11 to October 24, 2017, over the quarter. This represents a 13-calendar day delay. [REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

#### 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 ESA’s August 1, 2017 IPS Report:

**TABLE 4.4 - CS179 Contractor Milestone Dates**

<b>Milestone</b>	<b>Description</b>	<b>Contract Date</b>	<b>Last Month</b>	<b>Current Month</b>	<b>Delta (CD)</b>
MS #1	Complete All Work in TPSS C05 at Vernon Blvd Ventilation Facility	2/15/2017	7/1/2017	8/1/2017	-167
MS #3	Complete All Work Plaza Rooms (CIR, Signal Reactor, Interlocking 1D, TPSS C06 & C07)	5/22/2017	7/1/2017	8/1/2017	-71
MS #4A	Complete All Work in Traction Power S/S C04 on Level P1 in 2 <sup>nd</sup> Ave. Vent Facility	2/1/2017	9/11/2017	9/26/2017	-237
MS #5	Complete All Work in GCT- 6 CIR to Room Ready Condition	4/30/2017	7/2/2017	8/1/2017	-93
MS #6	B10 Complete All Work in Bulk Power Substation for Energization of 13.2 kV Cables	4/22/2017	8/30/2017	9/13/2017	-144
MS #7	Complete All Work in GCT- 5 CIR to Room Ready Condition	4/30/2017	7/3/2017	8/1/2017	-93
MS #8	Complete All Work in GCT- 4 CIR to Room Ready Condition	4/30/2017	7/3/2017	8/1/2017	-93
MS #9	Complete All Work in Traction Power Substations C01 and C02 - Tail Tracks	6/8/2017	9/25/2017	8/15/2017	-68
MS #10	Complete All Work in GCT- 3 CIR to Room Ready Condition	9/6/2017	6/6/2018	6/6/2018	-273
MS #11	Complete All Work in Traction Power Substations C03 at 55th Street Vent Facility	3/25/2018	4/30/2018	3/21/2018	4
MS #12A	Complete All Work in the TMC, TOC, BCS, and FON to Commence IST	9/1/2018	12/1/2018	12/10/2018	-100
MS #12B-1	Complete Integrated Testing of all equipment installed under Contract CM007	3/23/2020	3/23/2020	7/20/2020	-119
MS #12B-2	Complete Integrated Testing of all equipment installed under Contract CM014A	3/23/2020	3/23/2020	7/20/2020	-119
MS #12B-3	Complete Integrated Testing of all equipment installed under Contract CM014B	3/23/2020	3/23/2020	7/20/2020	-119
MS #13	Substantial Completion	7/1/2020	10/1/2020	10/1/2020	-92

The PMOC notes significant delays to many of the forecasted milestone dates over the previous quarter, such as MS1, MS1, MS3, MS4A, MS6, MS7, MS8, MS9, MS10, MS12A, MS12B-1, MS12B-2, MS12B-3, and MS13. There were also savings experienced to the forecasted dates for MS3, MS5, MS11, and MS12A. Forecasted dates for MS5 and MS11 remained relatively close to schedule over the quarter, experiencing delays of 11 and 6 days, respectively. The PMOC believes that of greatest concern to the Program are delays associated with milestones MS12B-1, MS12B-2, MS12B-3, and MS13, representing the completion of Integrated Systems Testing (IST) and Substantial Completion. ESA reports that the delays to these end milestones is due to CM007 access restraints and IST logic. The PMOC anticipates additional delays to these forecasted

milestones as control and noncontrol system designs complete and the IST plan and schedule continue to be developed.

#### **Sub Program Longest Path – Manhattan/Systems:**

The longest path for Manhattan/Systems at the beginning of the update period showed that this work was controlled by CM007-P4-1400: Submittals & Approval (RTB Tracks), which actually began on July 5, 2016, had a remaining duration of 19 work days, and was expected to complete on July 28, 2017. The longest path reported for Manhattan/Systems at the end of the update period showed that CM007-P4-1400 still controlled this area's work, made no progress over the update period, and continued to show a remaining duration of 19 work days. The expected completion date of controlling activity CM007-P4-1400 changed to August 25, 2017.

This delay to controlling activity CM007-P4-1400 impacted the forecasted start and finish dates for successor activities CM007-P4-1420: Independent Lab Performs Offsite Qualification Testing for SWP and CM007-P4-1410: Fab/Deliver Switches for STW proportionally. However, the successor to CM007-P4-1410, CM007-P4-1120: Plaza East – Switch #14E, #14W, #24E, 24W, #13, #23E (SWP RTB), showed no impact, and maintained the same forecasted start and finish dates as the previous IPS update.

The PMOC determined that a logic revision was made in the August 1, 2017 IPS update to mitigate the delay. The relationship between CM007-P4-1410 and CM007-P4-1120 changed from a Start-to-Start (SS) relationship with a +103 day lag, to a SS relationship with a +83 day lag. This change in schedule logic allows the physical work to start as previously forecasted, thereby showing no delay to the first installation activity in this sequence of work.

#### **Sub Program Longest Path – Queens:**

The longest path for Queens at the beginning of the update period showed that the work was controlled by CQ033-1460: Substation Submittals Starting at NTP Use 4 Months 1<sup>st</sup> Substation Expectation@ [sic], which was forecasted to begin on July 3, 2017. As of the August 1, 2017 IPS update, CQ033-1460 was reported to have made no progress, and was expected to occur on the data date, August 1, 2017.

This delay to controlling activity CQ033-1460 impacted the forecasted start and finish dates of all successor activities through the sequence of IPS activities, with the exception of the last activity before Substantial Completion, CQ033-102310: MDSY Integrated Testing. While the forecasted start date for this activity was impacted, its original duration was decreased by 39 work days, causing the planned finish date to remain the same between the two IPS updates. Another schedule revision made along the Queens longest path over the update period was the increased original duration for activity CQ033-101640: Testing – Communications, from 20 to 26 work days.

## 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.

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

Standard Cost Category	FFGA	June 2014 Project Budget	Amended FFGA	Dec 2016 CBB	Mar 2017 CBB	June 2017 CBB	CBB / FFGA Variance	CBB / Amended FFGA Variance
10 - Guideway & Track Elements	1,989 m	3,405 m	3,353 m	3,486 m	3,486 m	3,504 m	76.21%	4.50%
20 - Stations, Stops, Terminals, Intermodal	1,169 m	2,238 m	2,327 m	2,328 m	2,328 m	2,327 m	99.08%	-0.01%
30 - Support Facilities (Yards, Shops, Admin)	356 m	474 m	451 m	472 m	472 m	506 m	42.06%	12.28%
40 - Site Work and Special Conditions	205 m	611 m	562 m	588 m	588 m	568 m	176.83%	0.95%
50 - Systems	619 m	606 m	628 m	580 m	580 m	578 m	-6.76%	-7.99%
60 - ROW, Land, Existing Improvements	165 m	219 m	192 m	215 m	215 m	215 m	30.31%	12.04%
70 - Vehicles	494 m	210 m	880 m	210 m	210 m	210 m	-57.50%	-76.13%
80 - Professional Services	1,184 m	1,975 m	1,809 m	2,003 m	2,003 m	2,013 m	69.98%	11.25%
100 - Financing Cost	1,036 m	1,036 m	1,116 m	1,036 m	1,036 m	1,036 m	0.00%	-7.20%

Observations: During 3Q2016, ESA indicated that the results of the Harold Schedule Status update and the Force Account Overrun Analysis will increase project costs by an estimated total of \$246 million for the full 14-4M alignment that includes Regional Investment work, inclusive of the estimated \$111 million for the FFGA work scope. ESA also reported that OCIP costs will overrun by \$191 million. There will also be added costs at the GCT Concourse for remediation of water leaks, Wi-Fi and cellular service, and digital advertising. The PMOC has also observed that the additional costs to continue the PM/CM, CCM, and GEC contracts through to the target RSD will be significant and may approach or exceed \$100 million.



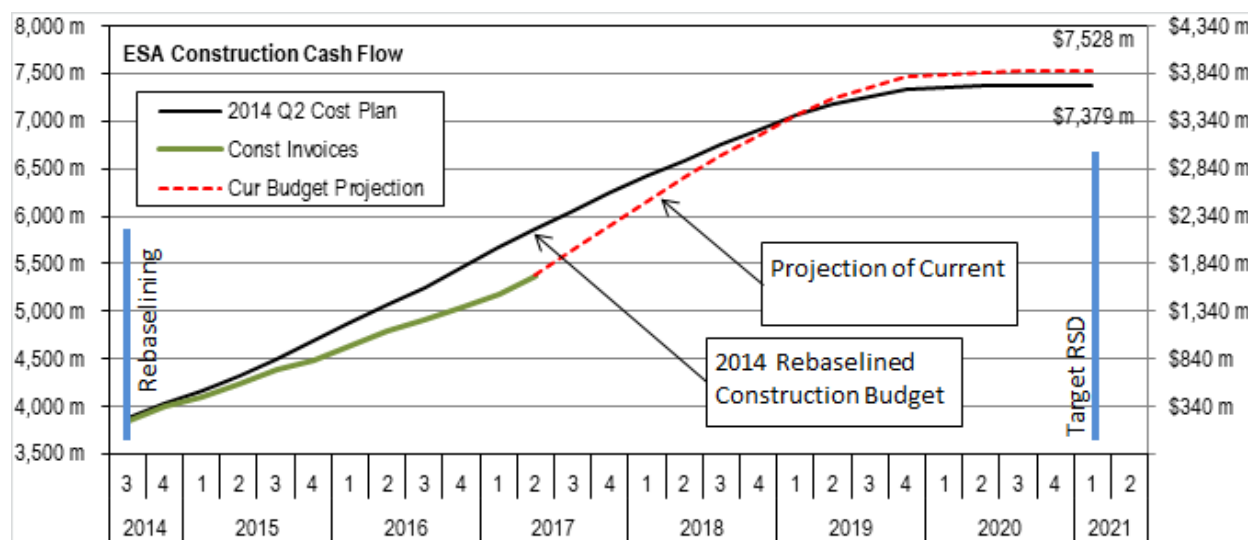
Concerns and Recommendations: The current forecast of Force Account costs does not include any amounts from this analysis. [REDACTED]

[REDACTED] The current budget forecast must, therefore, be considered as highly optimistic. The PMOC is concerned about the potentially significant impacts to the program budget as well as the target Revenue Service Date. The specific budgetary impacts will not be known until ESA re-evaluates the current budget and schedule. Details are anticipated to be revealed in October 2017.

## 5.2 Project Cost Management and Control

Status: MTACC reported in the ESA July 2017 Progress Report that the actual total project progress was 72.2% compared with planned progress of 76.1% against the Current Baseline Budget (CBB) of \$10.178 billion. The ESA July 2017 Monthly Progress Report Total also shows that actual construction progress has reached 72.0% of the 2014 re-baselined construction budget compared with planned progress of 77.3%, based on construction invoices. To date, based on trends which have remained consistent since the re-baselining, the actual and planned amounts continue to diverge, and the 1Q2021 RSD becomes more difficult to achieve.

**Table 5.2: Planned vs Actual Construction Cash Flow**



The ESA construction cash flow plan, shown from the time of the 2014 cost and schedule re-baselining, was prepared to support the Target Revenue Service Date in the first quarter of 2021. Actual invoiced construction costs through the second quarter of 2017 are plotted on the chart to monitor progress. The cash flow chart reveals a little improvement to the divergence between planned and actual construction spending. The PMOC simple cost projection for the current construction budget is also plotted for comparison. The cost projection picks up from the end of the invoice plot and proportionately models the current construction budget on the 2014 Rebaseline through to the Target RSD. In addition to the construction spending lagging behind the plan, the current construction budget, \$7.528 billion, is larger than the 2014 re-baselined budget of \$7.231 billion. [REDACTED]

The PMOC is concerned that 1) continued inability to achieve the construction spending as planned and 2) the budget increases may impact the timely achievement of the Target Revenue Service Date. The PMOC will review the MTACC's cost plans as soon as they are available.

As related to the previously reported cost increases, the 2016 ESA study indicated that \$111.4 million in additional Amtrak and LIRR Force Account costs will be required to complete the ESA FFGA scope (Revenue Service), while \$245 million in additional FA costs will be needed to complete the full Harold Rev. 14-4M Alignment, including the Regional Investment scope. It had been previously reported that there will also be an increase in OCIP costs of approximately \$191 million to fund the insurance program through February 2022.

In prior months, MTACC indicated that it would request further amendments to the MTA Capital Plans (both 2010–2014 and 2015–2019) to fund forecast cost overruns. As of July 2017, the MTACC set aside that plan and is investigating ways to utilize existing funds until the 2020–2024 Capital Plan is in place. [REDACTED]

The PMOC is concerned that a funding delay could potentially create a funding gap that could impact the program. The PMOC will review the MTACC's plans as soon as they are available.

Table 5.3, below shows the budget status of contracts awarded and paid amounts to date:

### Table 5.3: Project Budget and Invoices

Elements	Baseline Total Budget June 2014	Current Budget (July 2017)	Actual Awards (July 2017)	Paid to Date (July 2017)	Actual Pct. Budget Paid (July 2017)
Construction	\$7,379.3 m	\$7,527.6 m	\$6,956.5 m	\$5,279.6 m	70.14%
Soft Costs Subtotal	\$2,798.5 m	\$2,650.2 m	\$2,013.6 m	\$1,905.1 m	71.88%
Engineering	\$720.6 m	\$732.7 m	\$730.9 m	\$708.6 m	96.70%
OCIP	\$282.6 m	\$307.6 m	\$300.8 m	\$300.4 m	97.64%
Project Mgmt.	\$972.2 m	\$972.2 m	\$862.7 m	\$778.8 m	80.11%
Real Estate	\$182.1 m	\$178.0 m	\$119.2 m	\$117.3 m	65.90%
Rolling Stock	\$202.0 m	\$202.0 m	\$0.0 m	--	0.00%
Mgmt. Reserve	\$439.0 m	\$257.7 m	--	--	0.00%
Project Subtotal w/o financing	\$10,177.8 m	\$10,177.8 m	\$8,970.1 m	\$7,184.6 m	70.59%

**Concerns and Recommendations:** The PMOC recommends that ESA include known/anticipated cost overruns in the current forecast. The current cost forecast shown in ESA's Monthly Progress Report remains misleading until the significant overruns for railroad force account, OCIP, GCT Concourse fit-out additions, and the PM-CM/CCM/GEC contracts are shown.

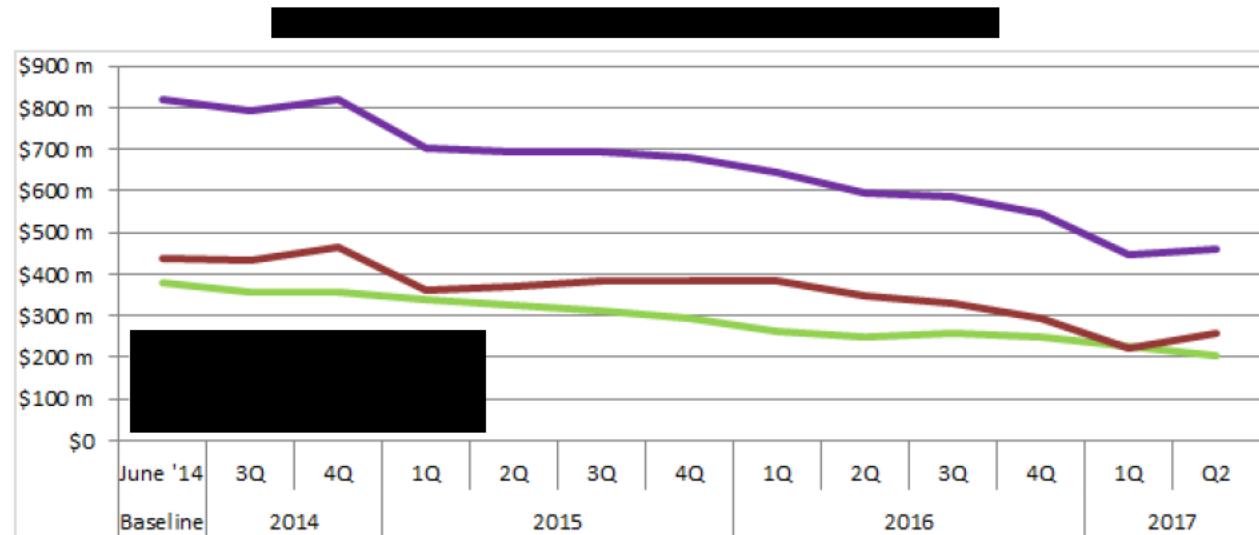


[REDACTED]

Concerns and Recommendations:

[REDACTED]

[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 had fallen behind schedule due to the overall delays to much of the Harold work. 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. The impacts caused by the insufficient Amtrak support have been reduced but not yet eliminated and this situation continues to be a challenge for MTACC. The basic cause of this issue is competition for force account resources by other regional Amtrak projects.

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 into 2016, the PMT had 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. The impacts caused by the insufficient Amtrak support have been reduced but not yet eliminated and this situation continues to be a challenge for MTACC.

The PMOC has continuing concerns regarding the impact to the ESA Harold work due to the Amtrak program to harden East River Tunnel (ERT) Lines 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. Earlier this year, MTACC advised the PMOC that Amtrak hardening work on Line 3 was complete. The PMOC noted at the time that the Line 3 work had minimal impact on East Side Access construction during the period that it was underway. There is also concern that track outages required for the remaining hardening work in ERT Lines 1 and 4 may conflict with ESA needs to support completion of the planned Harold work through 2017 and 2018. However, no noticeable impacts to availability of Amtrak force account resources through August 2017 were observed attributable to any known work in the ERT Lines 1 and 4.

A new risk emerged earlier in 2017 involving Amtrak's ability to provide sufficient force account resources to support the planned ESA work in the Harold Interlocking based on Amtrak plans to advance and accelerate a project for extensive reconstruction of the NEC track turnout area between New York Penn Station and the existing Amtrak Hudson River tunnels. This new risk has been realized based on ESA reporting that the Amtrak force account resource availability for the ESA Harold Interlocking work dropped noticeably during May 2017 and continued through the third week in August 2017. The PMOC was not certain how Amtrak planned to balance this new need with the standing commitment to the Moynihan Station project. The most significant impact is the delay of the eight priority weekend track outages planned for July, August and September 2017. ESA was able to re-organize the planned work so that only six outages are required. ESA worked with Amtrak to reschedule the outages for September 15 and 29, 2017, and for all four weekends in October 2017. The risk remains that Amtrak may not be able to provide the needed track outages and this occurred because the September 2017 weekend track outages were late cancelled. The PMOC does note, however, that other impacts to date have been moderate and

Amtrak reportedly completed the scheduled work in NY Penn Station approximately two weeks earlier than the planned completion date of September 1, 2017. [Ref: ESA-126-Jun17]

During 2Q2017, a significant potential risk developed based on the decision that there will be no stand-alone ESA amendment to the 2015-2019 Capital Plan. This presents a new risk of funding constraint that may impact the project. The PMOC is concerned about the potentially significant impacts to the program budget and schedule as well as the MTACC's target Revenue Service Date. The specific cost, budget, and schedule impacts will not be known until ESA re-evaluates the current budget and schedule. No specific date was provided for release of the results and recommendations. [Ref: ESA-127-Jun17]

## **6.1 Risk Process**

### Status/Observations:

The PMOC observes that the 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. He has revised the ESA Risk Register procedures and reporting to streamline the process to improve its usefulness as a practical management tool. The ESA Risk Manager conducted a Contract CM014B Risk Refresh workshop in February 2017 and a comprehensive Risk Review for the remaining ESA work in the Harold Interlocking during April 2017 that was facilitated by an experienced outside consultant.

### 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 either the productivity challenges that result from the CM007 schedule that the PMOC considers very aggressive or the management challenges of coordinating the designs, functionality, and installation of the 10 Control Systems and 19 Non-Control Systems.

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:

The most recent Risk Register update was issued in April 2017.

### Concerns and Recommendations:

ESA should continue to issue 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 remaining risks for the East Side Access Program to be:

- a) Program Funding – 2015-19 Capital Plan issue resolved in May 2016; current forecast cost growth funding had been expected to rely on Capital Plan amendment and other sources; now potential risk of funding constraint due to 2Q2017 decision that there will be no stand-alone ESA amendment to the 2015-2019 Capital Plan;
- b) Recovery of lost time due to significant schedule delays on Contracts CM014B, CS179, and CS084 [PMOC notes improved productivity on CS179 during 2Q2017];
- c) Successful execution of multiple hand-off interfaces across several contracts;
- d) Contractor access and work area coordination in Manhattan;
- e) Duration of integrated systems testing;
- f) Continued availability of adequate Amtrak and LIRR force account resources for both railroad direct construction and third-party contractor support in Harold Interlocking (increasing risk trend noted in 4Q2015 through July 2017);
- g) Continued availability of required track outages in Harold Interlocking - Starting one year ago, fewer priority weekend track outages have been available; now the eight scheduled weekend outages in 2017 had to be rescheduled for later in 2017 due to Amtrak's accelerated project for extensive reconstruction of the NEC track turnout area between New York Penn Station and the existing Amtrak Hudson River tunnels;
- h) Maintaining adequate schedule performance of the remaining work in Harold Interlocking, now the ESA program critical path, that is dependent on a very high level of planning and coordination between third-party contractors and the LIRR and Amtrak force account management for both access and protection and direct labor work (increasing risk trend noted in 3Q2016 through August 2017); and

■ [REDACTED]

The comprehensive Harold risk review conducted during 2Q2017 identified a number of potentially significant risks that could delay completion of the critical work in Harold Interlocking planned for 2017-18 and cause a significant delay to the Revenue Service Date. These risks include the following:

A. Major Risks included in the Risk Assessment

- 1. Positive Train Control: Installation, testing, and activation of Positive Train Control by LIRR in Harold Interlocking to meet the December 31, 2018, FRA mandated deadline. Risk is not well defined because scope and schedule details have not been finalized. Possible mitigation: LIRR had planned, in August 2017, to formally request the FRA for a waiver to extend the requirement to have PTC operational in the Harold Interlocking beyond the deadline of by December 31, 2018, based on the interlocking's status as an active construction area. As of September 30, 2017, LIRR had not yet submitted the formal waiver request to the FRA.
- 2. LIRR Force Account Performance: Ability of LIRR force account resources to provide both a very high level of support for third-party contractor access and protection and adequate productivity for significantly increased direct labor work

involving track, 3<sup>rd</sup> rail, and signals, in accordance with the current ESA schedule plan.

3. Northeast Quadrant Rail Work: Ability of MTACC-ESA, Amtrak, and LIRR to fully prepare for and execute the remaining work in the Northeast Quadrant in Harold Interlocking, in accordance with the current ESA schedule plan, on a very tight schedule involving significant long-term Amtrak and LIRR track outages. Preparation work includes obtaining all required track turnouts and necessary track materials for the planned work.
4. LIRR CIL Cutovers: Ability of LIRR to complete the pre-testing and final cutovers of CILs H1/H2/H5/H6/Loc 30 in accordance with the current ESA schedule plan.
5. Contract CH058A Preparation Work: Ability of Amtrak and LIRR force account resources to complete, in accordance with the current ESA schedule plan, all track, catenary, and third-rail work required prior to NTP for CH058A.

**B. Potential Risks with Major Schedule Impacts – Not Included in Risk Assessment**

1. ESA Project funding constraints (Now realized in 2Q2017);
2. Ongoing and future “Regional Projects” requiring extensive support from Amtrak including: NYPS 2017-18 Track Rehabilitation (Now realized in 2Q2017); moderate impact except for delay to 2017 priority weekend track outages); Moynihan Station; Gateway; MNR to NYPS;
3. Amtrak program to reconstruct existing ERT Lines 1 and 2, starting with Line 2 in 2019. Risk is not well defined because Amtrak scope and schedule details have not been finalized and presented to MTA-LIRR.



### 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. During 2Q2017, MTACC revised the Harold schedule to reflect the current status and expected level of support from Amtrak and LIRR. The associated revisions to the Integrated Project Schedule show that the remaining work in Harold Interlocking is now on the program critical path.

#### Concerns and Recommendations:

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. Many external stakeholder issues including the Harold work and other systems issues with Amtrak and LIRR will remain beyond MTACC’s direct control, however, and are likely to complicate development and acceptance of the specific problem resolutions that are essential to completion of the ESA project. The PMOC recognizes that MTACC and ESA have been proactive in dealing with these issues as they arise and also recognizes ESA’s efforts to re-baseline the remaining work in Harold Interlocking to reflect more realistic expectations of Amtrak support. However, the situation still needs to be improved and the PMOC recommends that the PMT actively engage executive management in MTACC and MTA to assist with resolution of outstanding issues with Amtrak and LIRR.

Additionally, the ESA PMT has reported that it does not receive all the track outages it requires to do the work that it schedules. The ESA PMT has stated that both of these conditions have been major factors for why Harold construction has become the critical path of the ESA Project. The most recent impact is related to the delay to the eight priority weekend outages scheduled for 2017 as discussed below. 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 needs to be improved 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**].

Earlier in 2017, the ESA-PMT reported that Amtrak had been providing consistent levels of support during 4Q2016 and 1Q2017, which allowed ESA to more effectively plan work in Harold on a week-to-week basis. At the same time, however, the PMT also acknowledged that the level of support remained less than required to adequately support the Harold baseline schedule. This has been a continuing problem which may impact completion of the Harold work planned for 2017-18 that is critical to achieving the target RSD date of February 2021. Through April 2017, however, ESA had been able to maintain minimally acceptable construction progress, but Amtrak force account support began a decline in May 2017 which continued through June 2017, as explained below. ESA also reported that Amtrak stated that the ESA Harold Interlocking work, is not its top priority. At that time, Amtrak indicated that the Moynihan Station project in Manhattan was its top priority for assignment of force account resources.

During April 2017 and May 2017, Amtrak experienced two significant revenue train derailments in Penn Station New York which changed its construction priorities. As a result of these derailments, Amtrak accelerated reconstruction of several tracks and turnouts between Penn Station and the Hudson River Tunnels, Tracks #2 and #3. This project was already planned by Amtrak to be a 3 year project, but was started in July 2017 and is expected to last for 12 months with the majority of the work to be completed by September 1, 2017. This placed a significant demand on the already limited amount of Metropolitan Division force account resources. This new risk was realized in May 2017 as ESA reported that Amtrak force account resource availability for ESA Harold Interlocking work dropped noticeably and dwindled even further in June 2017. ESA was able to reduce the impact by re-sequencing and re-planning the critical work in Harold Interlocking. The most significant schedule impact was the delay to the planned eight priority weekend track outages for 2017 required to support the forecast CIL cutovers during May 2018.

## 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	<p><u>ELPEP Compliance:</u> With MTACC’s submission of its East Side Access FTA Quarterly Report (Apr, May, and June ’13) and continuing with all subsequent reports through July 2017, 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.</p> <p><u>Status Update:</u> 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. The PMOC notes that MTACC has successfully updated its Project Management Plan, Cost Management Plan and Schedule Management Plan. All have been accepted by the FTA. MTACC submitted an updated Technical Capacity and Capability Plan in September 2017 and this is currently under review by the PMOC.</p> <p><u>Recommendation:</u> 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.</p>	1

Number/ Date Initiated	Section	Issues/Recommendations	Criticality
		The PMOC notes that with completion of the most recent Schedule Management Plan and Cost Management Plan updates as well as the FFGA amendment, the ESA project is better able to generally remain compliant with ELPEP. <b>Therefore, this issue will be closed.</b>	
ESA-123- Jun16	1.4b – Federal Requirements	<p><u>Track Turnouts for LIRR – continued delays to finalizing specification.</u></p> <p><u>Status Update:</u> There are approximately 41 turnouts (from former Stages 3 and 4) remaining to be installed in Harold Interlocking. These turnouts need to be “Buy America” compliant. The GEC completed preparation of its final “Buy America”-compliant specifications in early 1Q2017, but the PMOC did not remove the issue from this register.</p> <p><u>Recommendation:</u> “Buy America”- compliant specifications have now been produced for both Amtrak and LIRR ESA turnouts. <b>This issue is now resolved and the PMOC will close it with this monthly report.</b></p>	
ESA-124- Jun16	6.3-Risk Mitigations	<p><u>Continued issues with insufficient Amtrak FA support of third-party contractors and lack of required track outages.</u></p> <p><u>Status Update:</u> During 2Q2017, ESA continued to experience insufficient Amtrak Force Account personnel, track foreman and Electric Traction (ET), to properly support its 3<sup>rd</sup> Party contractors currently working in Harold Interlocking, CH061A, 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 during 2Q2016. 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.</p> <p>A new risk emerged during April/May 2017 involving Amtrak’s ability to provide sufficient force account resources to support the planned ESA work in the Harold Interlocking based on Amtrak plans to advance and accelerate a project for extensive reconstruction of the NEC track turnout area between New York Penn Station and the existing Amtrak Hudson River tunnels. The impact to the level of force account support for ongoing work in Harold was moderate. The most significant impact was a delay to</p>	1

Number/ Date Initiated	Section	Issues/Recommendations	Criticality
		<p>the 8 planned priority weekend track outages required for pre-testing in support of the critical CIL cut-overs in May 2017.</p> <p><u>Recommendation:</u> The PMOC recognizes ESA's efforts to rebaseline the remaining work in the Harold Interlocking to reflect more realistic expectations of Amtrak support and to more effectively engage Amtrak at the management level. However, the situation still requires improvement and the PMOC recommends that the PMT engage senior management in MTACC and MTA to assist with resolution of this problem.</p>	
ESA-125- Sep16	2.1 Engineering/ Design and CPS	<p><u>On Contracts CS179, VS086, and CS084, there are continued issues with late completion of review and approval of contractors' final systems designs and closure of RFIs.</u></p> <p><u>Current Status:</u> 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 all three of these Systems 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 only been minimally effective on the CS084 contract; which, in December 2016 and again in late 2Q2017, saw an improvement in the reduction of the backlog of submittal reviews and comments. This issue still requires significant improvement on the CS179 and VS086 contracts. ESA senior management continues to elevate discussions involving ESA PMT and CM, the GEC and LIRR.</p> <p><u>Recommendation:</u> The PMOC recognizes MTACC's efforts 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.</p>	1
ESA-126- Jun17	6.0 Risk Management	<p><u>Issue:</u> A potential new risk emerged during April 2017 involving Amtrak's ability to provide sufficient force account resources to support the planned ESA work in the Harold Interlocking based on Amtrak plans to advance and accelerate a project for extensive reconstruction of the NEC track turnout area between New York Penn Station and the existing Amtrak Hudson River tunnels. This new risk has been realized based on ESA reporting that the Amtrak force account resource availability for the ESA Harold Interlocking work dropped noticeably during May 2017 and dwindled even further in</p>	1



Number/ Date Initiated	Section	Issues/Recommendations	Criticality
		<p>June 2017. PMOC is not certain how Amtrak plans to balance this new need with the standing commitment to the Moynihan Station project. The PMOC is quite concerned that this new development will further jeopardize MTACC-ESA efforts to complete the critical remaining work in the Harold Interlocking.</p> <p><u>Current Status:</u> Despite significant reduction in Amtrak support of ESA work in Harold Interlocking experienced in May through August 2017, ESA was able to re-sequence and re-plan work activities to partially mitigate impacts due to the decrease in force account support. The major impact is that the eight planned priority weekend outages in Harold will now be delayed until later in 2017.</p> <p><u>Recommendation:</u> MTACC should remain engaged with Amtrak at the senior and executive levels to maximize Amtrak's support for the current ESA critical path work in Harold Interlocking that leads to the planned May 2018 CIL cutovers and subsequent completion of track, turnout and catenary work in the Northeast Quadrant.</p>	
ESA-127- Jun17	6.0 Risk Management	<p><u>Issue:</u> Since 4Q2016, the PMOC has been monitoring and reporting on the status of the anticipated ESA amendment to the 2015-2019 Capital Plan for additional funding to meet the budget needs created by the forecast cost overruns for continued railroad force account support for both Amtrak and LIRR, continued OCIP coverage for the extended duration of the program and other anticipated cost increases. During 2Q2017, it was decided that there will be no stand-alone ESA amendment to the 2015-2019 Capital Plan. This presents a new risk of funding constraint that may significantly impact the project. The PMOC is concerned about the potentially significant impacts to the program cost, budget and schedule as well as the target Revenue Service Date. The specific cost and schedule impacts will not be known until ESA re-evaluates the current budget and schedule.</p> <p><u>Current Status:</u> ESA is currently re-evaluating the current program costs, budget and schedule. Details are not now expected until October 2017.</p> <p><u>Recommendation:</u> The PMT should expedite completion of the program re-evaluation and reach an agreement with MTACC and MTA senior management on an achievable plan forward for achieving Revenue Service.</p>	1

1 – Critical 2 – Near Critical

Number/ Date Initiated	Section	Issues/Recommendations	Criticality
ESA-128- Sep17	4.0 Project Schedule	<p><u>Issue:</u> As discussed in other sections of this report, the PMOC details specific concerns with regard the schedule performance of the four major active contracts on the Manhattan/Systems schedule path: CM007, GCT Caverns; CM014B, GCT Concourse and Facilities Fit-Out; CS179, Systems Package 1 – Facilities Systems; and CS084, Tunnel Systems Package 4 – Traction Power Systems. [REDACTED]</p> <p>[REDACTED]</p> <p>[REDACTED]</p> <p>[REDACTED]</p> <p>[REDACTED]</p> <p>[REDACTED] This will place additional schedule pressure on the target RSD in February 2021.</p> <p><u>Current Status:</u> Contracts CM014B and CS084 are significantly behind schedule. Contract CS179 has improved its construction rate, but will be constrained in numerous locations due to late completion of predecessor work under CM014B and CS084.</p> <p><u>Recommendation:</u> MTACC/ESA should focus on managing the coordination between these three contracts to minimize any further delays and to maximize available schedule recovery opportunities.</p>	1

## 8.0 SPONSOR'S ACTIONS FROM QUARTERLY AND MONTHLY MEETINGS

Priority in Criticality column 1 – Critical 2 – Near Critical

Number with Date Initiated	Section	Sponsor 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	12/31/17



## **APPENDIX A - LIST OF ACRONYMS**

ARRA	American Recovery and Reinvestment Act
BIM	Building Information Management
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
CIH	Central Instrument House (Amtrak designation)
CIL	Central Instrument Location (LIRR designation)
CPR	Contractor Proposal Request
CPRB	Capital Program Review Board
CPP	Contract Packaging Plan
DCB	Detailed Cost Breakdown
DFF	Direct Fixation Fasteners
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
GUI	Graphic User Interface
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
NOC	Notice of Change
NTP	Notice to Proceed
NYCT	New York City Transit
NYSPTS	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
RTB	Resilient Tie Block
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
STRTB	Special Trackwork Resilient Tie Block
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



### 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 63<sup>rd</sup> 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) as of July 31, 2017, including \$1,036.1 million in Finance Charges & Regional Investment Program
\$7,349.7 million	Amount of Expenditures as of July 31, 2017, based on the Total Project Budget of \$10,177.8 million
77.6%	Percent Complete, based on the Re-plan budget of \$10,177.8 million and invoices in the July 2017 report
	<div style="background-color: black; height: 15px; width: 100%;"></div> <div style="background-color: black; height: 15px; width: 95%;"></div> <div style="background-color: black; height: 15px; width: 90%;"></div> <div style="background-color: black; height: 15px; width: 40%;"></div>
72.0%	Construction Percent Complete vs. 77.3% planned
72.2%	Overall Project Percent Complete vs. 76.1% planned

### 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.
7	June-13	Contract Specs/Construction	Construction	Pneumatically Applied	Mismanagement of PAC/Shotcrete application has many different aspects

#	Date	Phase	Category	Subject	Lessons Learned
				Concrete (PAC)/ Shotcrete	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.

## FOIA EXEMPTION 5 U.S.C. SECTIONS 552(b)(3) AND 552(b)(4)

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FOIA EXEMPTION 5 U.S.C. SECTIONS 552(b)(3) AND 552(b)(4)

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FOIA EXEMPTION 5 U.S.C. SECTIONS 552(b)(3) AND 552(b)(4)

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FOIA EXEMPTION 5 U.S.C. SECTIONS 552(b)(3) AND 552(b)(4)

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

## APPENDIX F - SCHEDULE ANALYSIS TABLES

**Table F: 90 Day Look-Ahead Schedule – August 1, 2017 ESA IPS Schedule**

ACTIVITY ID	ACTIVITY DESCRIPTION	START	FINISH
<b>CH057: Harold Structure - Part 2/3 Loop Box Approach, &amp; EBRR West Approach &amp; Tunnel</b>			
CH057-M007	Substantial Completion		30-Jun-17 A
CH057-3110	Complete Catenary / Signal Tower Relocation for L & T CIH Cutover		1-Aug-17
CH057-3370	Construct "D" Pit (Incl TBM Recovery) - For Cutover New Main Line 4	14-Dec-15 A	22-Aug-17
CH057-CPR4-55081	Catenary Complete for Demolition of Montauk Platform		14-Sep-17
CH057-M008	Final Completion		4-Oct-17
<b>CH057A - Westbound Bypass Structure (exclude Slab)</b>			
CH057A-1940	CH057A – No Advancement – Modifications to Shield	15-Aug-16 A	19-Oct-17
<b>CH061A: Tunnel A</b>			
CH061A-8280	Fabricate Catenary Structures	7-Aug-17	30-Oct-17
CH061-55341	Intermediate Milestone #2 – Pole Completion for CQ033 Area 2		9-Nov-17
<b>CH058A: Harold Structures - B/C Structure/ Catenary Structure</b>			
CH058A-0020	Develop/Finalize 100% Design Documents - CH058A	22-Jun-16 A	2-Oct-17
<b>CH058B: Harold Structures - Eastbound Reroute Structure</b>			
N/A	No Milestones in IPS over the next 90 days	N/A	N/A
<b>FHL01: Harold Stage 1 - LIRR F/A</b>			
FHL01-1150	Complete Trough H2 to H3 (Track A)		1-Aug-17
FHL01-1340	Energize GO2 Substation (CH053-Milestone #3)		7-Sep-17
<b>FHL02: Harold Stage 2 - LIRR F/A</b>			
FHL02-SI5010	Install Remaining Conduit and Pull boxes in H5-CIL Location	31-Jan-17 A	16-Aug-17
FHL02.MS.00095	Cutover #L-2 Service for H3, H4 CIL's		1-Aug-17
<b>FHL03: Harold Stage 3 - LIRR F/A</b>			
FHL03502370	Signal Works for R2 Switch	18-Aug-17	24-Aug-17
<b>FHA01: Harold Stage 1 - Amtrak F/A</b>			
FHA01-1000	ET Catenary: Complete Catenary Work for Stage 1		7-Jul-18

ACTIVITY ID	ACTIVITY DESCRIPTION	START	FINISH
<b>FHA02: Harold Stage 2 - Amtrak F/A: Balance Work</b>			
SUMFHA02-1540	Cutover - ZJ1/ZJ2 (747)		6-Aug-17
FHA02-1060	CH054A - Completed SMUS 1 & 2 / Install New RTU		8-Aug-17
FHA02-4000S	ESA Complete Material Procurement		3-Nov-17
<b>FHA03: Harold Stage 3 - Amtrak F/A</b>			
FHA03-CA3698	ET Catenary – CH061A Complete Port Wash 2 Overrun Catenary Structures		7-Nov-17
<b>VH051A (Part 1): Harold &amp; Point CILs</b>			
VH51C0340	FIAT COMPLETED (w/HTSCS Contract)		29-Sep-17
<b>VH051B (Part 2): Harold Tower SCS</b>			
VH51H0300	As-Built Drawings	01-May-15 A	13-Oct-17
<b>VH051C: 250 Hertz Misroute/ Tunnel Collision Avoidance</b>			
VH051C	VH051C - 250 Hz Track Circuits	11-May-09 A	15-Jul-23
<b>VH052: Cab Simulator</b>			
VH052	VH052 - Cab Simulator	31-Jan-15 A	15-Jul-23
<b>VHA03: Procure Materials for Harold Stage 3 - Amtrak F/A</b>			
VHA03	VHA03 -Procure Amtrak Materials - Harold Stage 3	05-May-14 A	3-Nov-22
<b>VHA04: Procure Materials for Harold Stage 4 - Amtrak F/A</b>			
N/A	No Milestones in IPS over the next 90 days	N/A	N/A
<b>VHL02: Procure Materials for Harold Stage 2 - LIRR F/A</b>			
VHL02-1010	Procure ZE Crossover	30-Jul-14 A	01-Aug-17
<b>VHL03: Procure Materials for Harold Stage 3 - LIRR F/A</b>			
N/A	No Milestones in IPS over the next 90 days	N/A	N/A
<b>VHL04: Procure Materials for Harold Stage 4 - LIRR F/A</b>			
N/A	No Milestones in IPS over the next 90 days	N/A	N/A
<b>CM005: Manhattan South Structures</b>			
CM005-1050	Milestone 5 Final Completion - MS70 (May 6, 2016)		28-Aug-17
<b>CM013A: 55th Street Vent Facility</b>			



ACTIVITY ID	ACTIVITY DESCRIPTION	START	FINISH
CM013A-280	CM13A - MS#3 Final Completion		31-Aug-17
<b>CM004: 245 Park Ave. Entrance &amp; 44th Street Vent Structure</b>			
CM04-C0940	CM004 Contractual Final Completion (ML#2 Date 820 CDs from NTP)		1-Aug-17
<b>CM006: Manhattan North Structures</b>			
CM006-MS5	CM006 Milestone #5 (GCT 4 Facility Room - 460 CD from NTP (7/4/2015))		1-May-17 A
CM006-MS2A	CM006 Milestone #2A (55th Street Vent Facility Complete - 702 days from NTP (3/2/16))		11-Aug-17
<b>CQ032: Plaza Substation &amp; Queens Structures</b>			
CQ032-MS06	MILESTONE #6 – SUBSTANTIAL COMPLETION		29-Sep-17
<b>FQA65: Loop Interlocking - Amtrak F/A</b>			
FQA65-3010	CH057: Complete Catenary Structure for Loop and T CIHs (65-0) Part 2		1-Aug-17
<b>VQ065: Loop Interlocking CIL (Amtrak)</b>			
VQ065RI	VQ065 RI - Loop Interlocking	12-Sep-12 A	5-Feb-21
<b>CQ033: Mid-Day Storage Yard Facility (Procurement Status TBD)</b>			
CQ033-2410	Permanent Power Available		1-Aug-17
CQ033-100780	Mobilization Including Early Submittals	11-Apr-17 A	8-Sep-17
<b>CS084: Tunnel Systems Package 4 – Traction Power Systems</b>			
CS084-AR01	Access Restraint #1- C05 (Vernon) Traction Power Substation		1-Jun-17 A
CS084-AR03	Access Restraint # 3- C06 (QP- Main) Traction Power Substation		9-Jun-17 A
CS084-AR04	Access Restraint # 4- C07 (QP- Yard) Traction Power Substation		9-Jun-17 A
CS084-AR02	Access Restraint # 2- C04 (2 <sup>nd</sup> Ave) Traction Power Substation		27-Sep-17
<b>CS179: System Package 1 - Facilities Systems</b>			
CIA#008	(CM006 – CS179) – 55 <sup>th</sup> Street Ventilation Facility – Traction Power Substation C03		1-Aug-17
CIA#015	(CM006 – CS179) – 50 <sup>th</sup> Street Adit	1-Aug-17	
CIA#004	(CM006 – CS179) – GCT-5 Rooms	5-Aug-17	
CIA#014	(CM006 – CS179) – Tracks 301 & 302 & 303 & 304 – GCT-3 to Cavern	1-Aug-17	
CIA#012	(CM006 – CS179) – GCT-3 Crossover, Wyes and Rooms & Cross Passages #2, #4, and #5	3-Aug-17	

ACTIVITY ID	ACTIVITY DESCRIPTION	START	FINISH
CIA#005	(CM006 – CS179) – Cross Flue	8-Aug-17	
MILE-63ST	63rd St Tunnel and Offsite facilities - Complete		17-Oct-18
CS179-MS03	CS 179 MS 03 – Completion of Multiple Rooms (CIR/Sig. Reactor/ Interlocking 1D/ TPSS C06 and C07)*		1-Aug-17
CIA#009	(CM006 – CS179) – 55 <sup>th</sup> Street Ventilation Facility		1-Aug-17
<b>CSU99: Systems Utility Relocations</b>			
CSU99	CSU99 - Systems Utilities Relocations	30-Sep-14 A	13-Sep-23
<b>VS086: System Package 3 - Signal Equipment Procurement</b>			
VS086-1005	Prepare/Furnish Signal Equipment Catalog Cuts	12-Dec-14 A	2-Nov-17
<b>SA79: Communication, Controls, Security and Fire Detection - Amtrak F/A</b>			
FSA79	FSA79-Power, Signals, Comm & Security Sys	31-Mar-14 A	1-Aug-17
<b>FS099: Force Account Support</b>			
FS099	FS099 - Force Account Support	30-Sep-14 A	13-Sep-23
LIRR 3.3.7	Take Over Preparation for GCT Building Management System (BMS)	2-Sep-19	11-Feb-20

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

**TABLE G – CONTRACT CS179 (As of September 30, 2017)**

<b>Equipment</b>	<b>Current Status</b>
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 was sent to the FTA as of the end of October 2016. In May 2017, the FTA requested some cost information related to these HVAC units. The MTA provided that information in June 2017 and is waiting for a decision regarding the approval of the waiver request.
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 continues to be assembled.
Public Address System Speakers	The contractor reports that some of the Public Address (PA) speakers specified in the CS179 contract are no longer manufactured in the USA. As of the end of September 2017, the contractor and the GEC have been unable to identify an American made speaker that meets the specification requirements in the contract. MTACC needs to either find an acceptable American made unit or prepare and submit a Buy America Waiver request.

## APPENDIX H – AMTRAK REMAINING ESA ELECTRIC TRACTION (ET) CONSTRUCTION\*

**Table H – Remaining Catenary Construction Start and Finish Dates  
from IPS Data Date August 1, 2017**

Last Activity in IPS ID# String	Scope	IPS Start	IPS Finish	Status
FHA03-CA5182	Install 7,100 LF CA WBV Track	9/4/18	5/4/19	To date, the CH057A contractor has installed 6 of 25 catenary poles in its contract. No new poles have been installed since June 22, 2017.
FHA03-CA5182	Install CAs at two CH057D Turnout locations <sup>1</sup>	12/10/18	4/30/19	CH057D contractor to install two Turnouts as part of NEQ track construction in August 2018. Amtrak to install CAs after WBV track construction is complete.
CH057-C1630	Relocate cross catenary east of 39th St. as result of const. of Tunnels A, B/C, and D	2/18/16	8/8/17	Tunnel B/C predecessor construction has not started yet. Amtrak will install CAs during and after track construction is complete.
FHA04-1030	Install 1,000 LF (est.) CA MDSY Sub 4 to Line 2 Connection	11/13/18	12/20/19	To date, the CQ033 contractor has not installed any of the 4 catenary poles in its contract. Amtrak will transfer wires after Catenary pole installation is complete.
FHA04-1050	Install 3,600 LF CA EBRR Track	2/12/19	7/29/21	CH058B not advertised yet. CH058B to install 10 catenary poles prior to Amtrak installation of CAs.
FHA04-1430 and FHL02.TK.00350	Install CAs 2 Turnout locations <sup>2</sup> FHL02	2/4/18	8/5/20	LIRR to install #3234W and #3145 Turnouts. Neither started yet. Amtrak will install CAs after track construction is complete.
FHA03-1490 and FHL03MS370	Install CAs 5 Turnout locations <sup>3</sup> FHL03	6/26/16	8/28/19	LIRR scheduled to complete installation of turnouts in August 2018. Amtrak will install CAs after turnout installation is complete.
FHA04-1020 and FHL04-1120	Install CAs 5 Turnout locations <sup>4</sup> FHA04	9/23/18	8/5/20	LIRR to install turnouts prior to Amtrak installation of CAs. Turnout installation scheduled to be complete in August 2018.
FHA02-CA299	Complete Loop 1A Electrification	2/17/14	1/21/18	Amtrak Loop 1A Track construction partially complete. Amtrak ET will install Catenary wires after track construction is complete.
CH057-CPR4-55101	Wire Transfer for demolition of Montauk Cutoff Platform	8/8/17	9/14/17	The CQ033 contractor will install 6 catenary poles prior to Amtrak wire transfer. No construction started during 3Q2017.
FQA65-1092	Install CAs 14 Turnout locations <sup>5</sup> in Loop and T Interlockings - FQA65	8/29/20	5/25/23	Turnout procurement for Loop and T “on hold” by MTACC since early 2016. Amtrak ET will install Catenary wires after all turnouts are procured and installed.
CH058B-1270	PW2 Overrun	5/13/21	5/17/21 5/21/21	CH058B contractor to install 4 catenary poles, scheduled for May 2021. Amtrak will install CAs after poles are installed.

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.

1. #1121W (CH057D-0240) and #1112E (CH057D-0250)
2. #3234W (FHL0207110) and #3145 (FHL02.TR.00085)
3. #1112E, #1121E, #1121E, #4167E, and #3111W
4. ##5165W, #5165E, #4145, #2254, #2154, #2155, and #4154
5. All 14 Loop and T turnouts

## **APPENDIX I – REMAINING HAROLD INTERLOCKING CONSTRUCTION PROGRESS SCHEMATICS**

The purpose of Appendix J is to depict, in schematic fashion, the major ESA Force Account and 3<sup>rd</sup> 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 (3<sup>rd</sup> Rail) to be Installed**

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

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

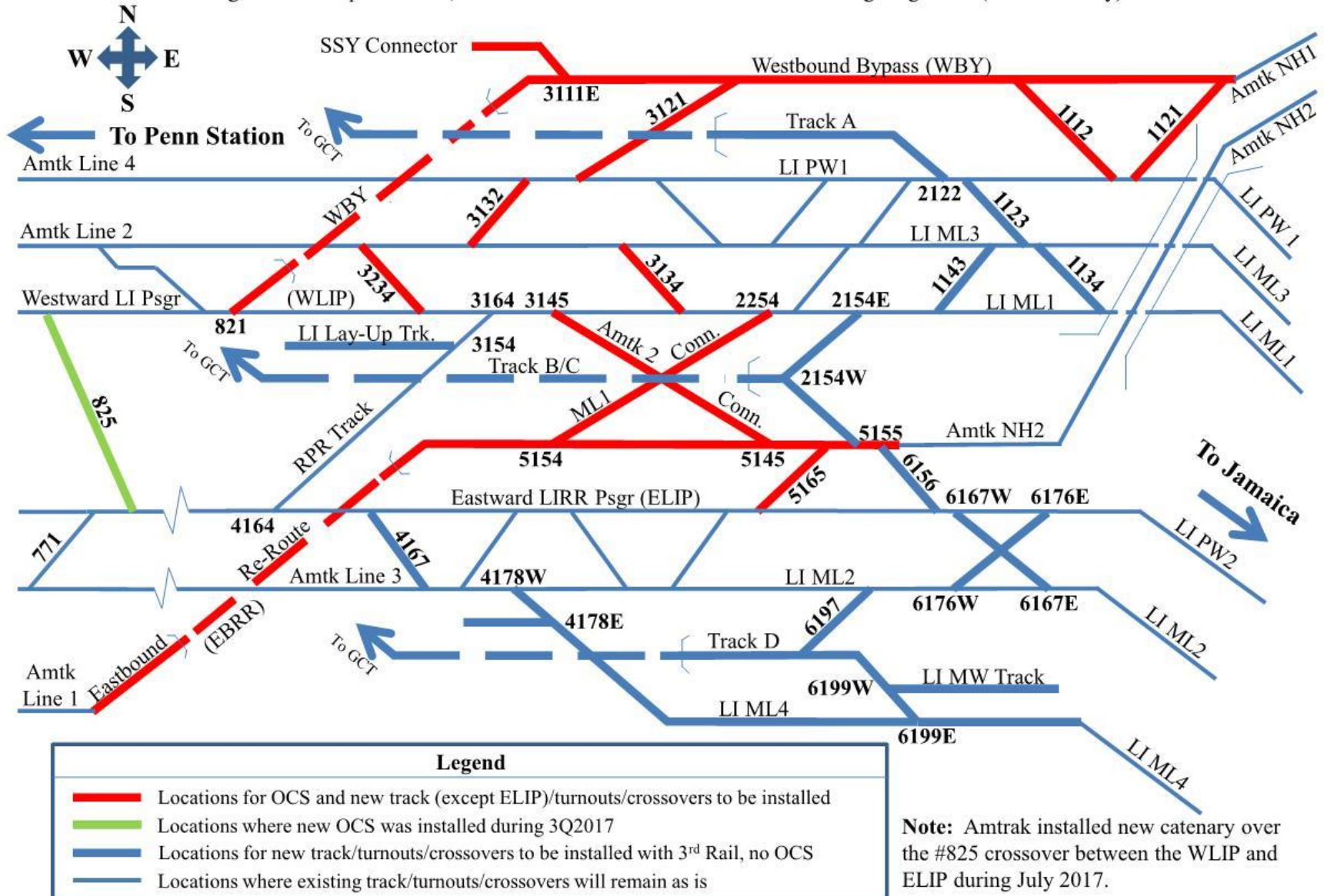
This diagram depicts, along with existing tracks, crossovers, and turnouts that will not be renewed, the present construction status ESA constructed tracks, crossovers, and turnouts that have been or will be installed to make LIRR service into GCT possible. Existing trackage that will not be renewed 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.

# Appendix I: Harold Progress Monitoring Schematic

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

Progress as of September 30, 2017 - based on ESA 14-4 Harold Interlocking Alignment (main line only)

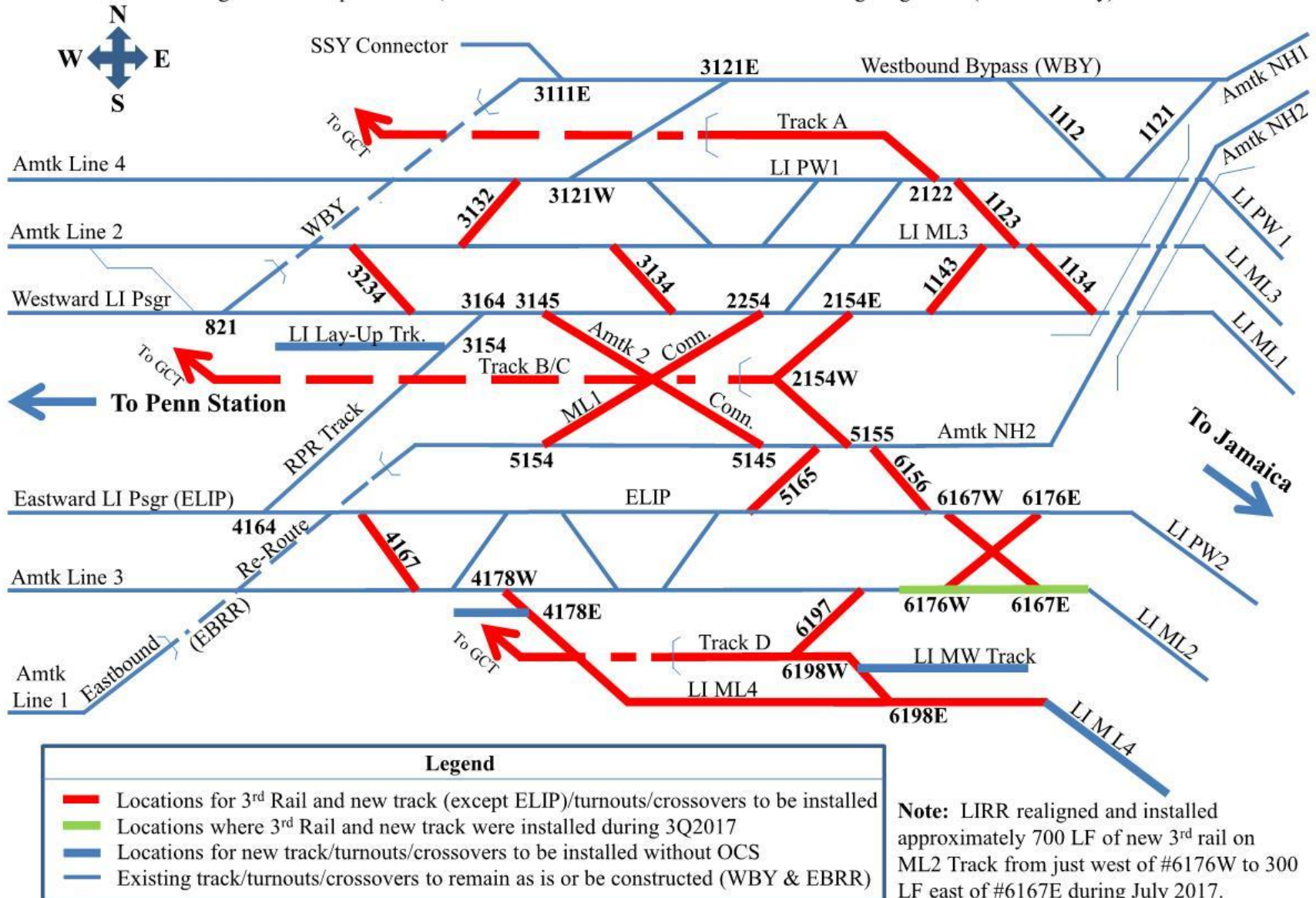




# Appendix I: Harold Progress Monitoring Schematic

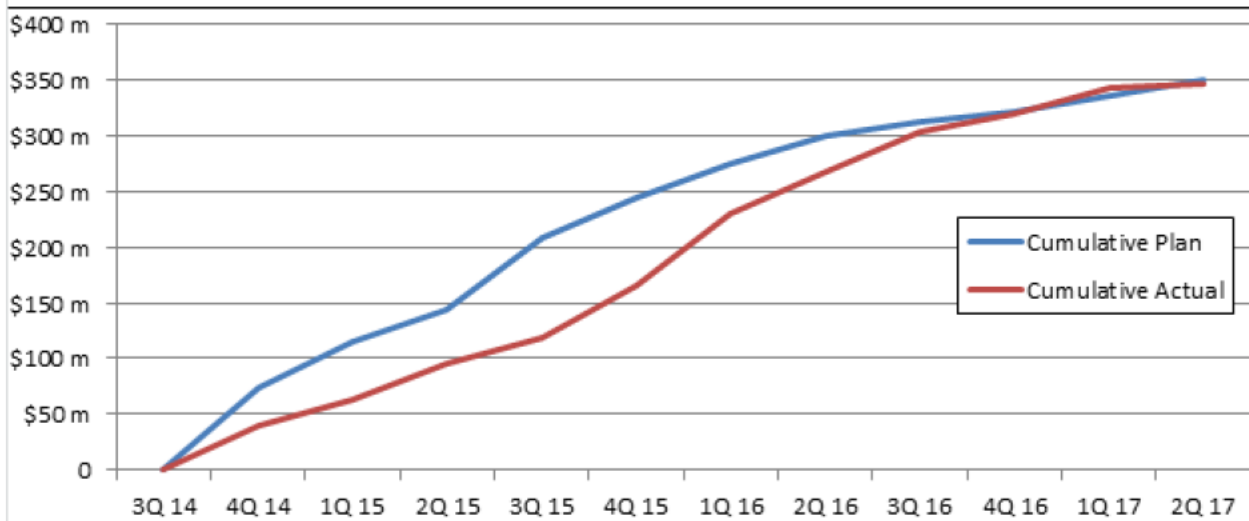
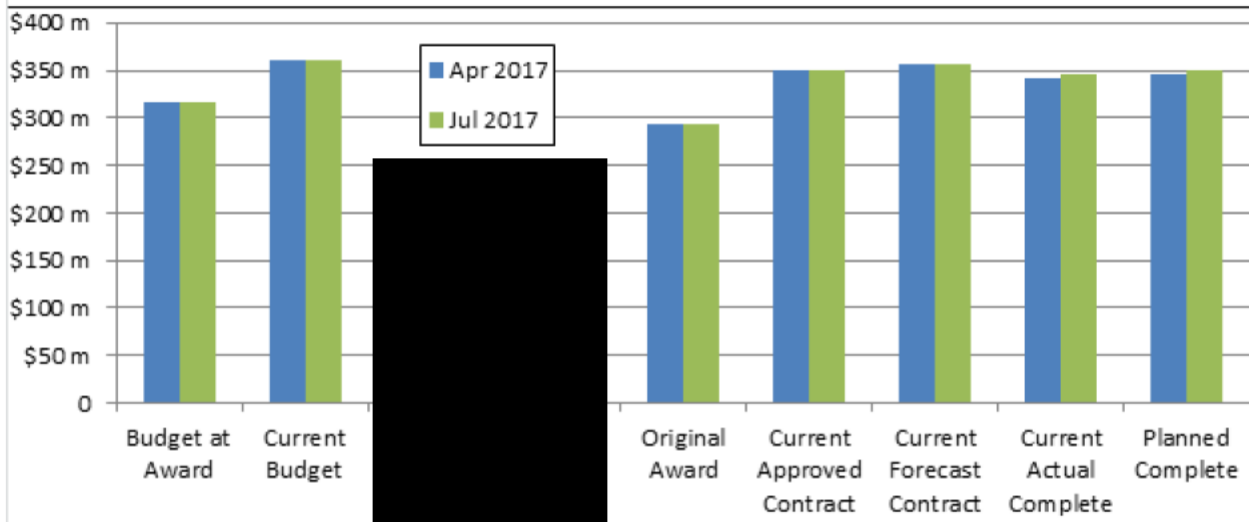
## Schematic #2: Remaining Harold Third Rail System (3<sup>rd</sup> Rail) to be Installed

Progress as of September 30, 2017 - based on ESA 14-4 Harold Interlocking Alignment (main line only)



**APPENDIX J – COST PERFORMANCE****CM006 - Manhattan North Structures****Jul 2017**

1	2	3	4	5	6	7	8
Budget at Award	Current Budget	Change from Original to Current	Contract at Award	Current Approved Contract	Change from Original to Current	Current Forecast	Change from Current Forecast to Budget at Award
\$316.3	\$361.6	(2-1) \$45.3	\$294.2	\$350.2	(5-4) \$56.0	\$355.7	(7-1) \$39.4
Percent Complete		Actual Prog Last 12 Mths		Actual Prog Last 6 Mths		Average Required Progress to reach forecast SC	
Planned	Actual	Total	Avg/Mth	Total	Avg/Mth		
99.7%	98.7%	18.4%	1.5%	0.9%	0.7%		
							0.65% per month

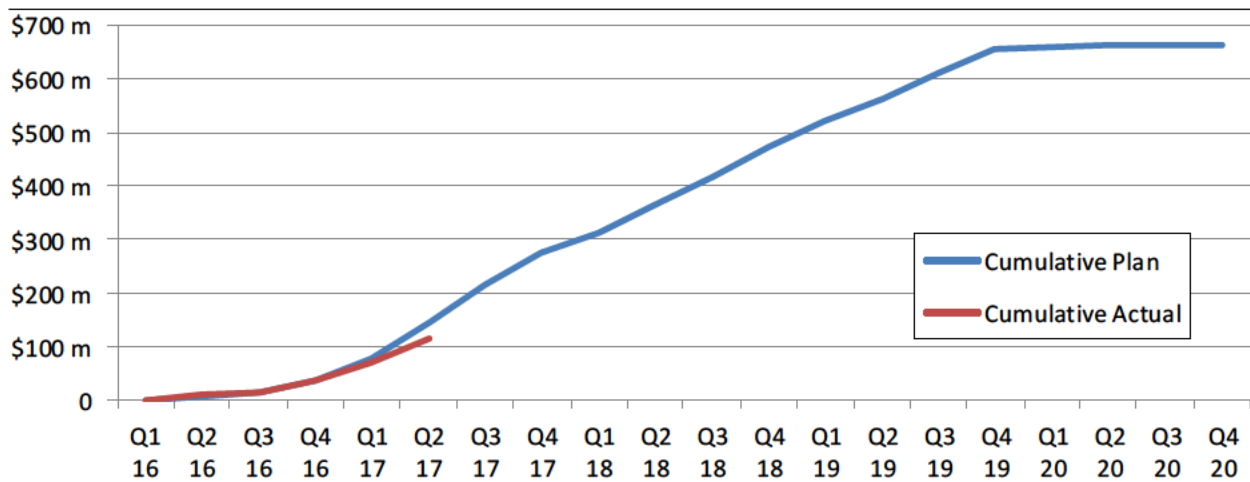
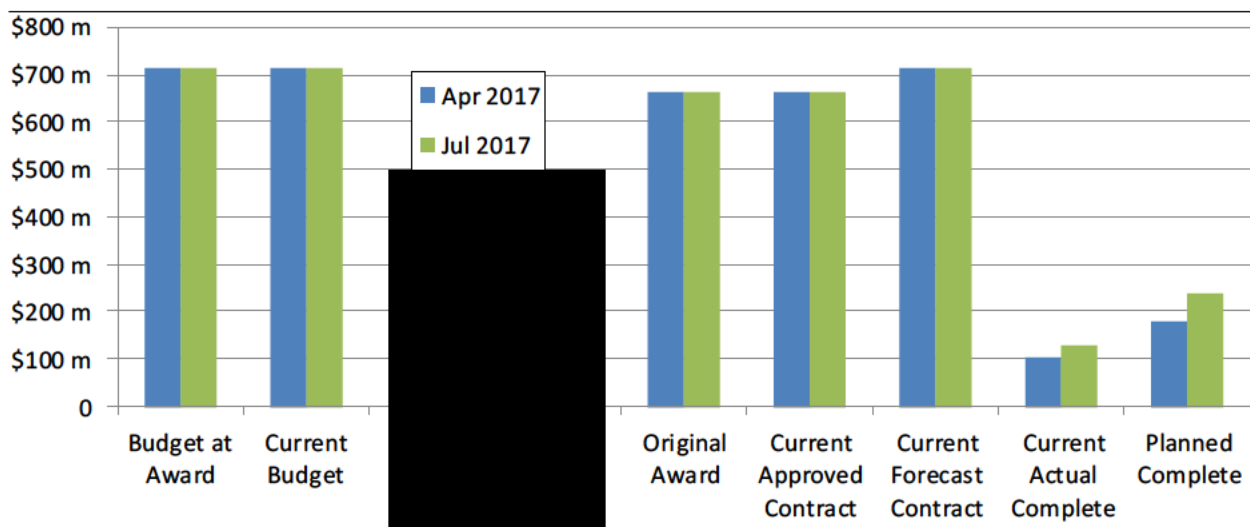




## CM007 - GCT Caverns

Jul 2017

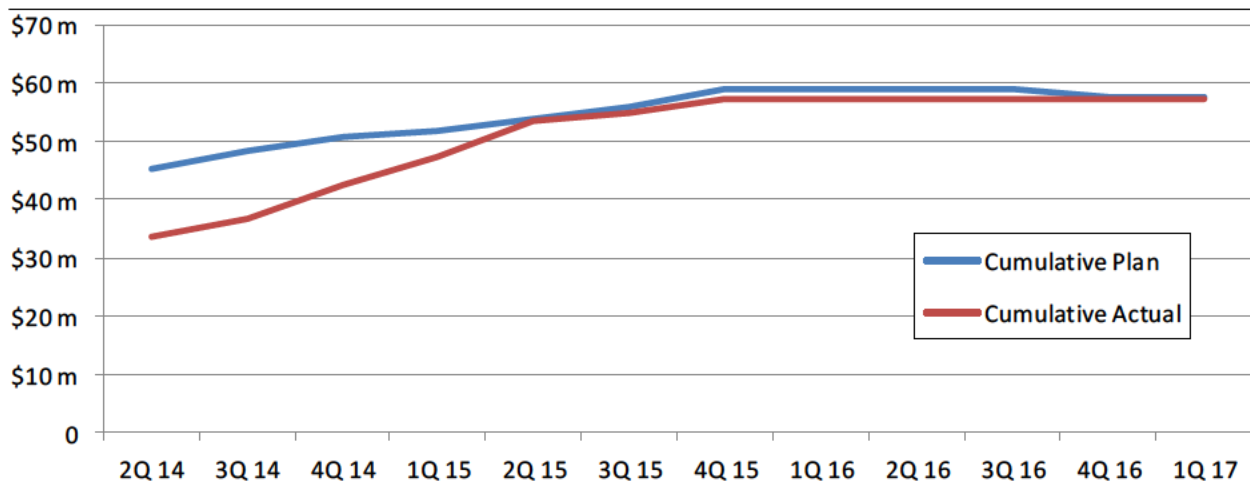
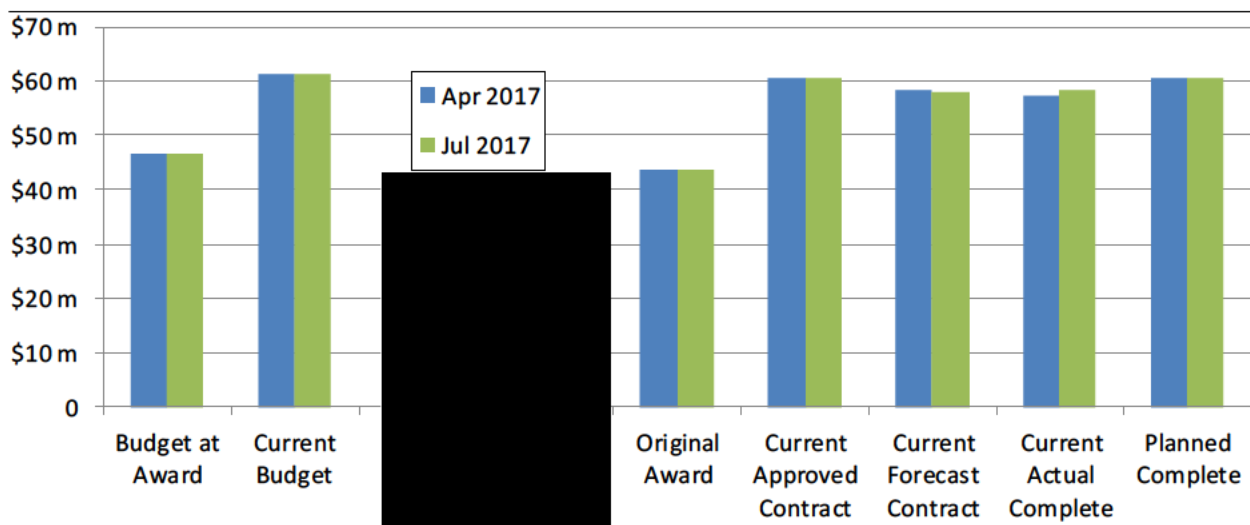
1	2	3	4	5	6	7	8
Budget at Award	Current Budget	Change from Original to Current	Contract at Award	Current Approved Contract	Change from Original to Current	Current Forecast	Change from Current Forecast to Budget at Award
\$712.3	\$712.3	(2-1) \$0.0	\$663.1	\$664.1	(5-4) \$1.0	\$712.3	(7-1) \$0.0
Percent Complete		Actual Prog Last 12 Mths		Actual Prog Last 6 Mths		Average Required Progress to reach forecast SC	
Planned	Actual	Total	Avg/Mth	Total	Avg/Mth		
36.0%	19.6%	N/A	N/A	4.3%	2.2%		
							2.17% per month



## CM014A - GCT Concourse / Facilities Fit Out Early Work

Jul 2017

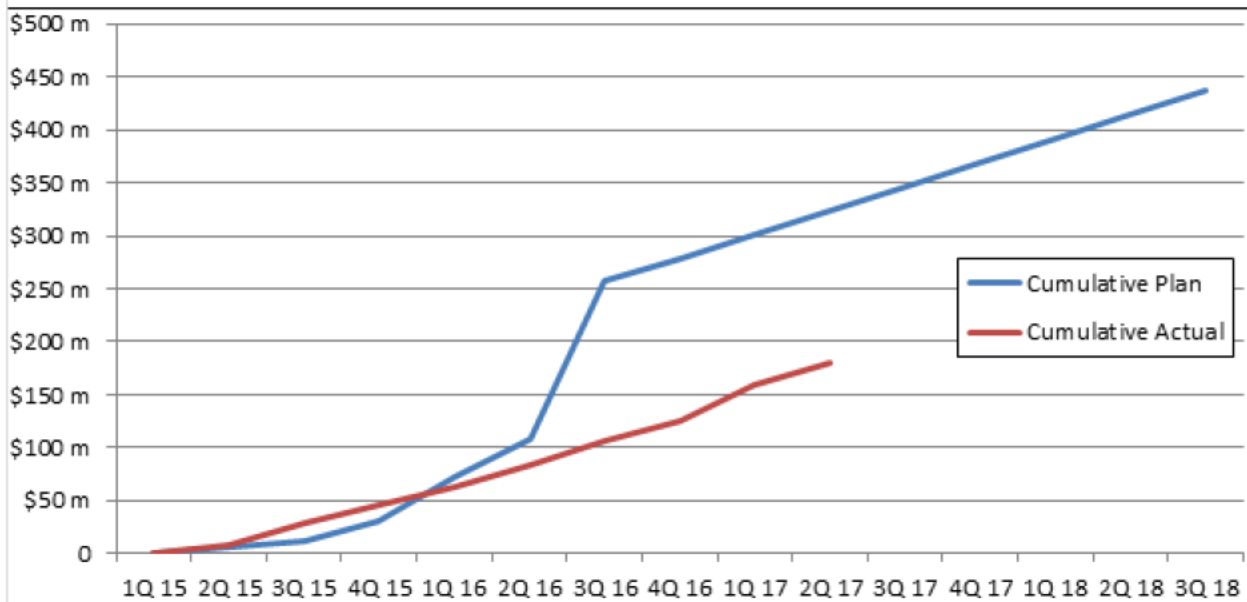
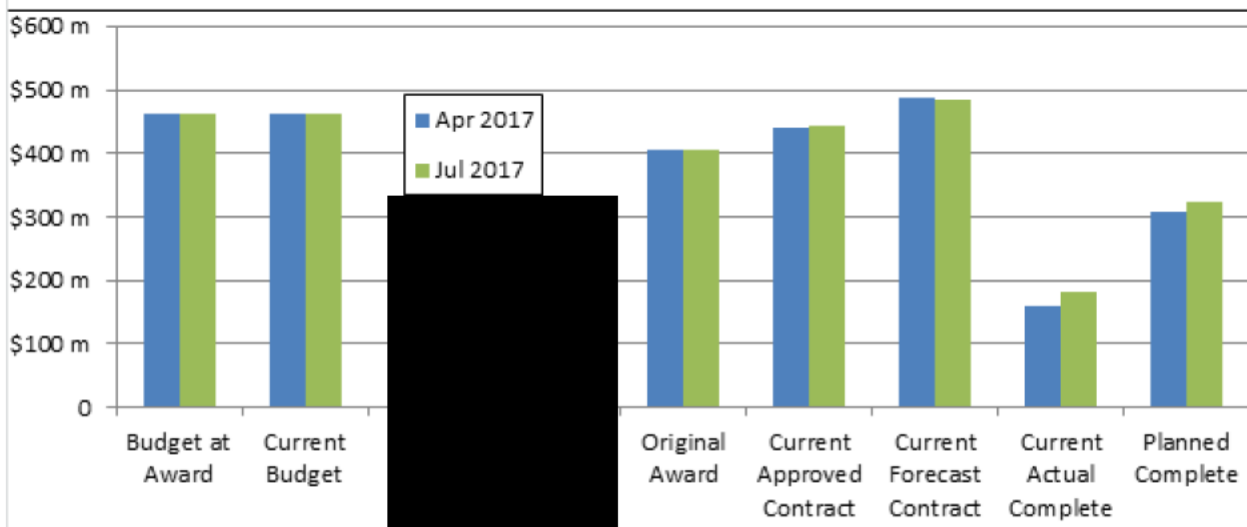
1	2	3	4	5	6	7	8
Budget at Award	Current Budget	Change from Original to Current	Contract at Award	Current Approved Contract	Change from Original to Current	Current Forecast	Change from Current Forecast to Budget at Award
\$46.5	\$61.1	(2-1) \$14.6	\$43.5	\$60.5	(5-4) \$17.0	\$58.1	(7-1) \$11.6
Percent Complete		Actual Prog Last 12 Mths		Actual Prog Last 6 Mths		Average Required Progress to reach forecast SC	
Planned	Actual	Total	Avg/Mth	Total	Avg/Mth		
100.0%	96.3%	3.8%	0.3%	0.1%	-0.2%		
						N/A per month	



## CM014B - GCT Concourse / Facilities Fit Out

Jul 2017

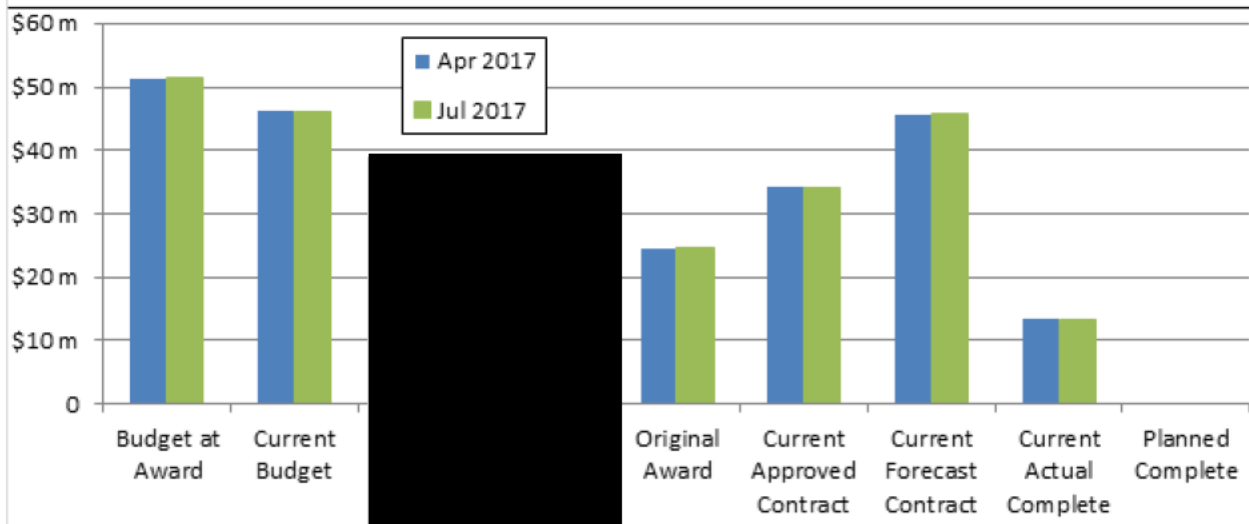
1	2	3	4	5	6	7	8
Budget at Award	Current Budget	Change from Original to Current	Contract at Award	Current Approved Contract	Change from Original to Current	Current Forecast	Change from Current Forecast to Budget at Award
\$461.1	\$463.6	(2-1) \$2.5	\$404.6	\$442.0	(5-4) \$37.4	\$485.5	(7-1) \$24.4
Percent Complete		Actual Prog Last 12 Mths		Actual Prog Last 6 Mths		Average Required Progress to reach forecast SC	
Planned	Actual	Total	Avg/Mth	Total	Avg/Mth		
73.4%	40.9%	20.1%	1.7%	4.7%	2.0%		
							1.97% per month



**VM014 - Vertical Cir-culation (Escalators & Elevators)**

Jul 2017

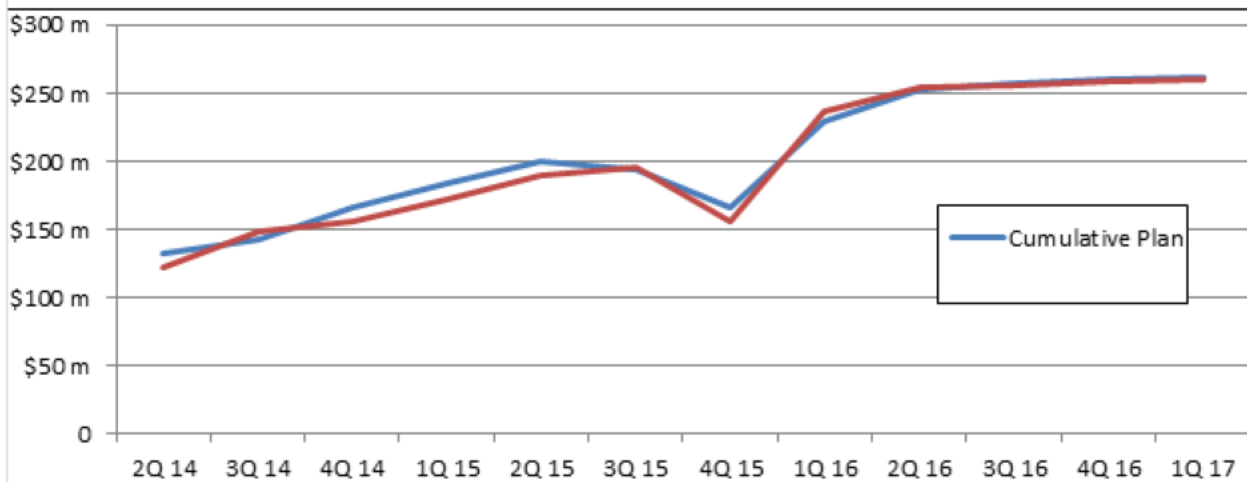
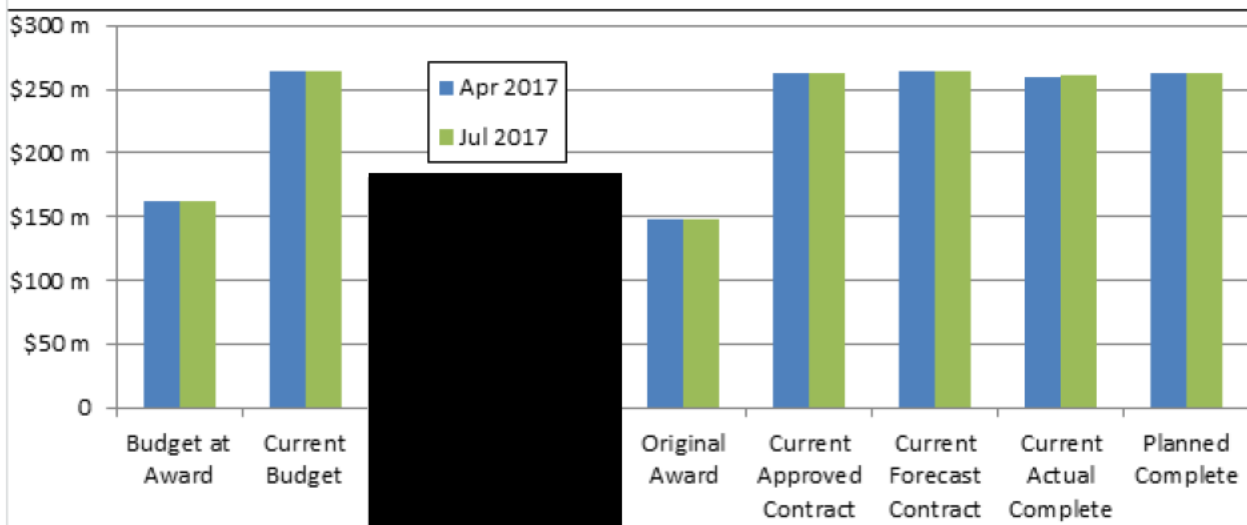
1	2	3	4	5	6	7	8
Budget at Award	Current Budget	Change from Original to Current	Contract at Award	Current Approved Contract	Change from Original to Current	Current Forecast	Change from Current Forecast to Budget at Award
\$51.4	\$46.1	(2-1) (\$5.3)	\$24.6	\$34.2	(5-4) \$9.6	\$45.6	(7-1) (\$5.8)
Percent Complete		Actual Prog Last 12 Mths		Actual Prog Last 6 Mths		Average Required Progress to reach forecast SC	
Planned	Actual	Total	Avg/Mth	Total	Avg/Mth		
NA	40.6%	N/A	N/A	N/A	N/A	1.61% per month	



## CQ032 - Plaza Substation &amp; Queens Structures

Jul 2017

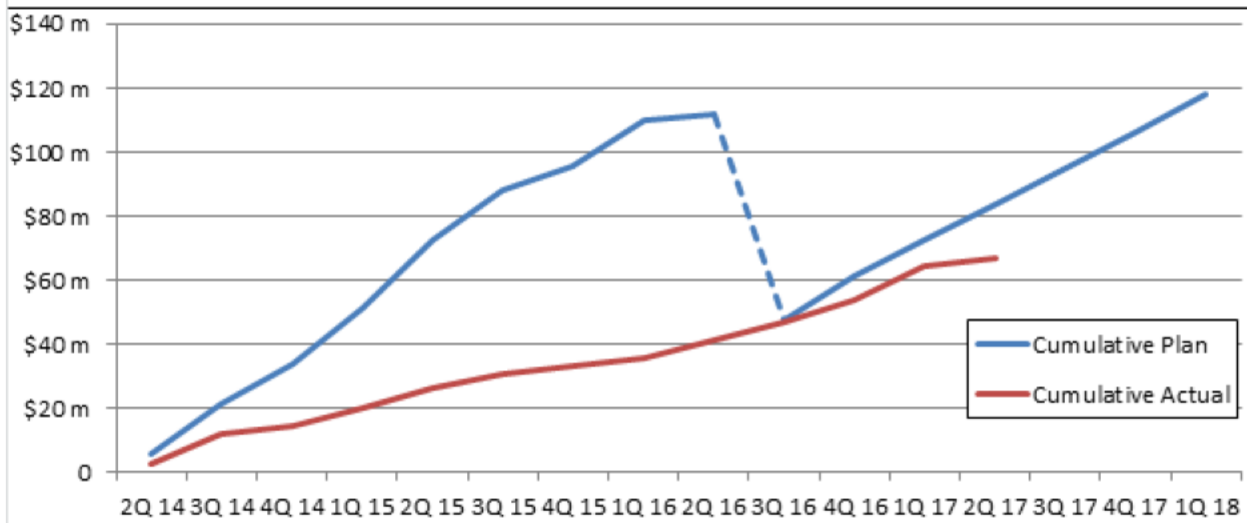
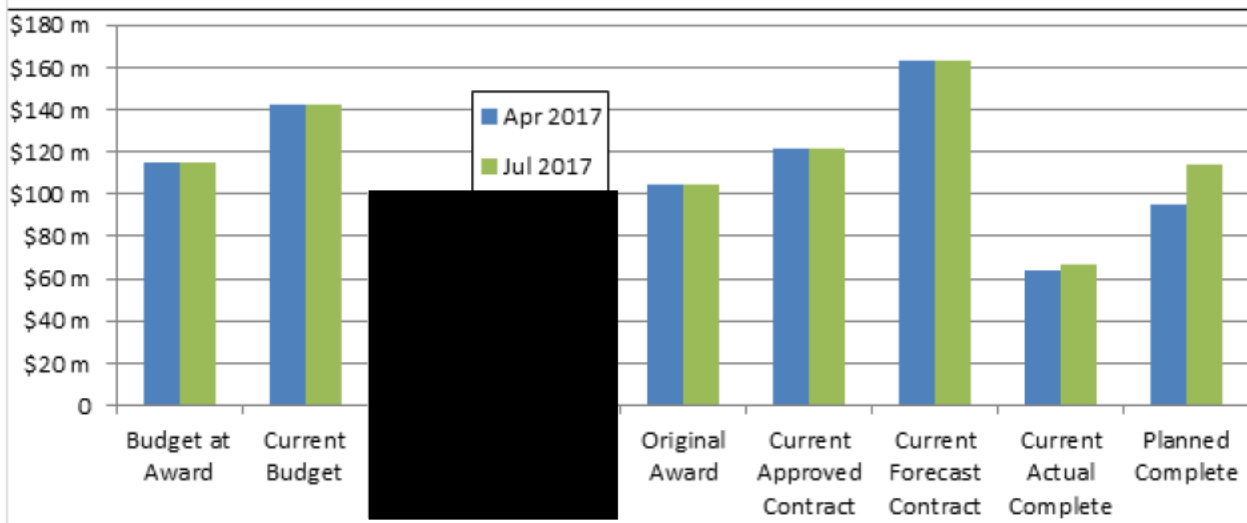
1	2	3	4	5	6	7	8
Budget at Award	Current Budget	Change from Original to Current	Contract at Award	Current Approved Contract	Change from Original to Current	Current Forecast	Change from Current Forecast to Budget at Award
\$162.1	\$263.9	(2-1) \$101.8	\$147.4	\$262.4	(5-4) \$115.0	\$264.7	(7-1) \$102.6
Percent Complete		Actual Prog Last 12 Mths		Actual Prog Last 6 Mths		Average Required Progress to reach forecast SC	
Planned	Actual	Total	Avg/Mth	Total	Avg/Mth		
100.0%	99.3%	1.2%	0.1%	0.3%	0.2%		
							0.23% per month



## CH057A - Westbound Bypass

Jul 2017

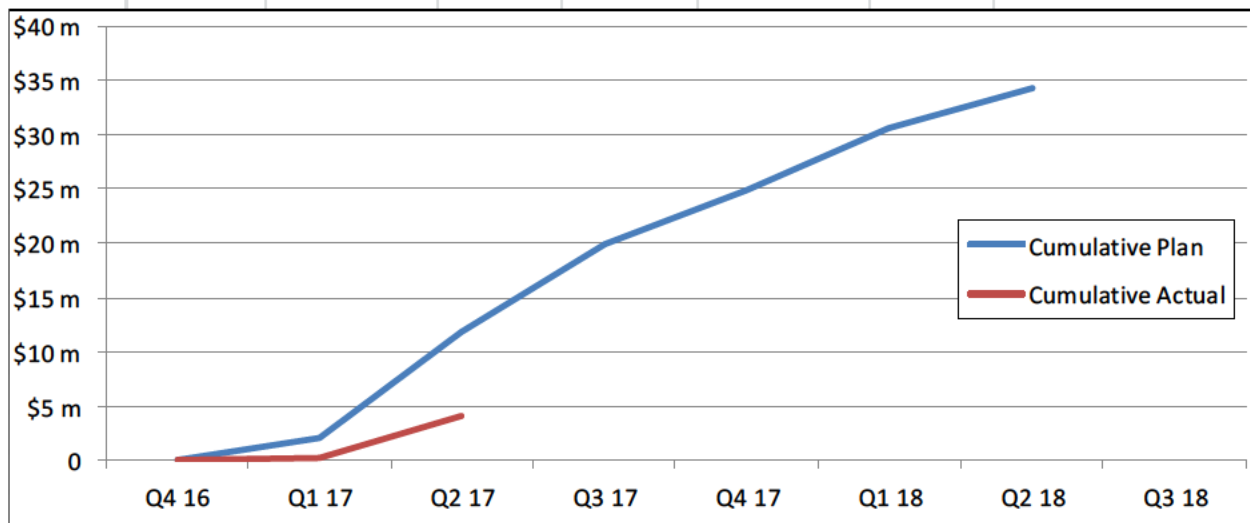
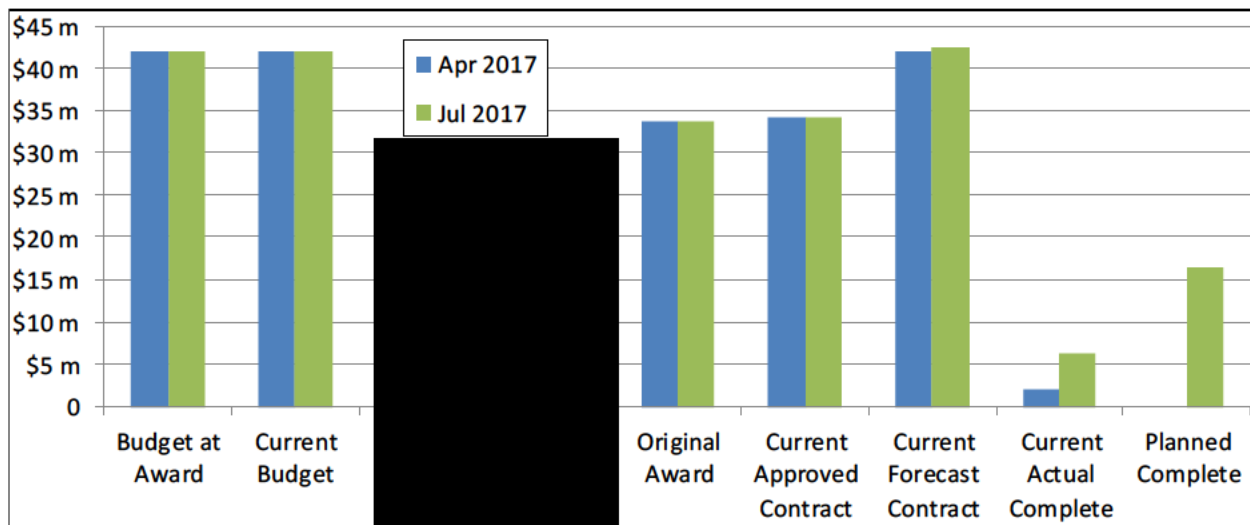
1	2	3	4	5	6	7	8
Budget at Award	Current Budget	Change from Original to Current	Contract at Award	Current Approved Contract	Change from Original to Current	Current Forecast	Change from Current Forecast to Budget at Award
\$114.7	\$142.8	(2-1) \$28.1	\$104.3	\$121.3	(5-4) \$17.0	\$162.8	(7-1) \$39.8
\$113.6	\$132.9	\$19.3	\$103.3	\$110.1	\$6.8	\$153.4	\$39.8
Percent Complete		Actual Prog Last 12 Mths		Actual Prog Last 6 Mths		Average Required Progress to reach forecast SC	
Planned	Actual	Total	Avg/Mth	Total	Avg/Mth		
94.0%	54.9%	18.3%	1.5%	2.1%	2.7%		
						2.65% per month	



## CH061A - Track A Cut and Cover Structure Michels Corporation

Jul 2017

1	2	3	4	5	6	7	8
Budget at Award	Current Budget	Change from Original to Current	Contract at Award	Current Approved Contract	Change from Original to Current	Current Forecast	Change from Current Forecast to Budget at Award
\$42.0	\$42.0	(2-1) \$0.0	\$33.7	\$34.2	(5-4) \$0.5	\$42.5	(7-1) \$0.5
Percent Complete		Actual Prog Last 12 Mths		Actual Prog Last 6 Mths		Average Required Progress to reach forecast SC	
Planned	Actual	Total	Avg/Mth	Total	Avg/Mth		
48.1%	18.3%	N/A	N/A	N/A	N/A		
							7.43% per month

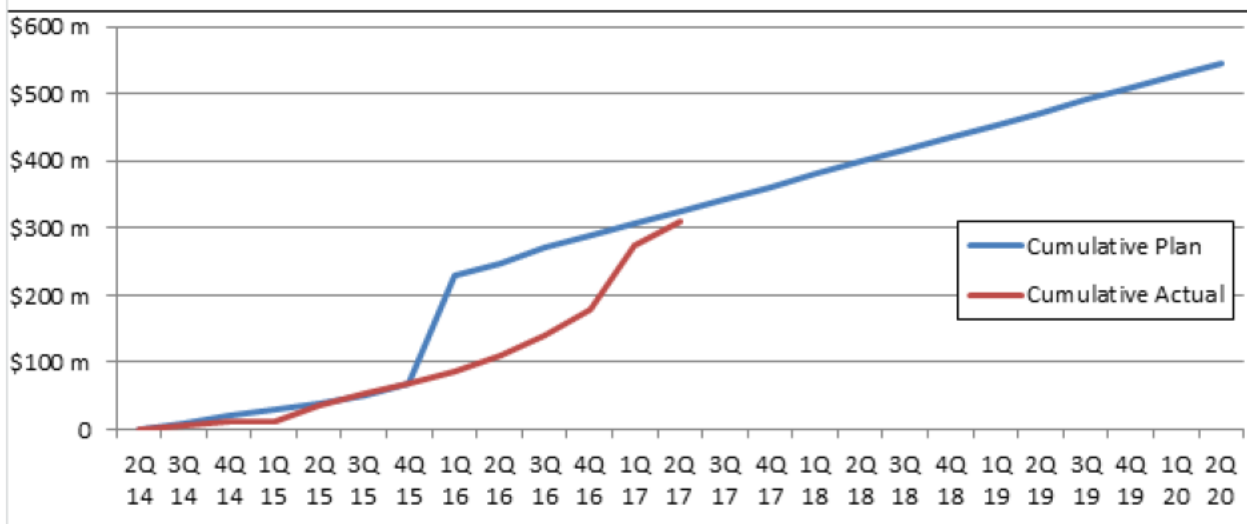
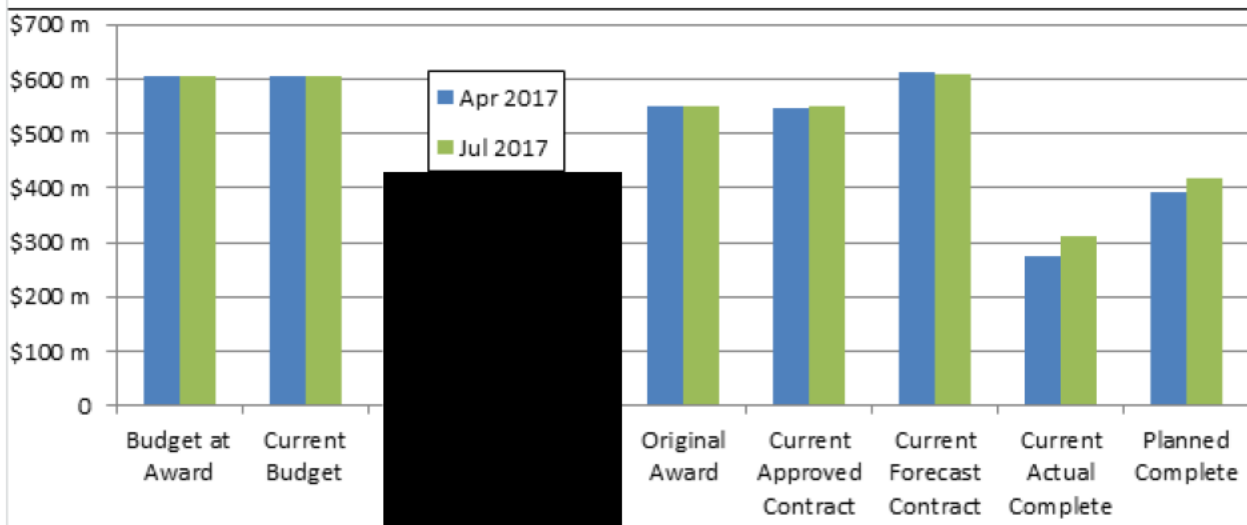


## CS179 - Systems Package 1

Jul 2017

1	2	3	4	5	6	7	8
Budget at Award	Current Budget	Change from Original to Current	Contract at Award	Current Approved Contract	Change from Original to Current	Current Forecast	Change from Current Forecast to Budget at Award
\$605.4	\$606.9	(2-1) \$1.5	\$550.4 **	\$550.3 (options+mods)	(5-4) (\$0.1)	\$607.5	(7-1) \$2.1
Percent Complete		Actual Prog Last 12 Mths		Actual Prog Last 6 Mths		Average Required Progress to reach forecast SC	
Planned	Actual	Total	Avg/Mth	Total	Avg/Mth		
75.8%	56.4%	30.8%	2.6%	6.3%	1.1%		
							1.12% per month

\*\* Contract at Award (\$333.6M + Planned Options (\$216.8 M) = \$550.4 M

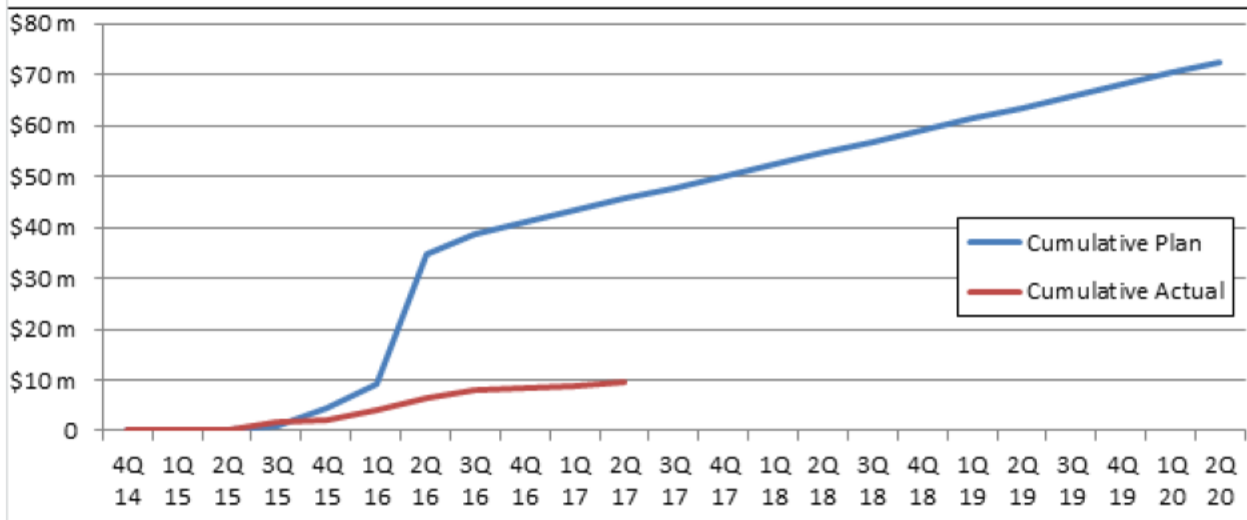
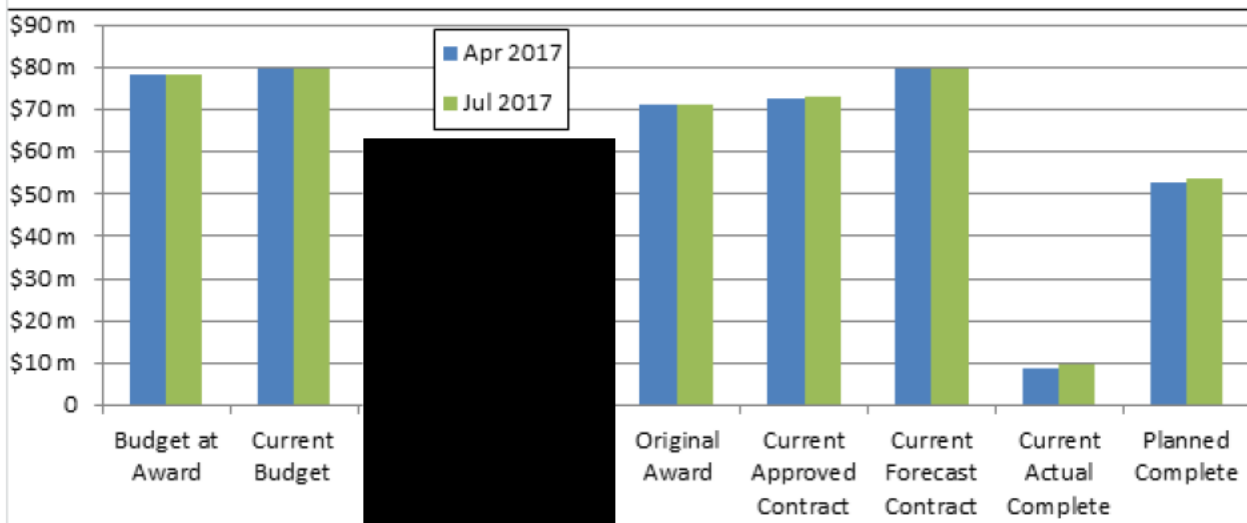




## CS084 - Tunnel Systems Package 4

Jul 2017

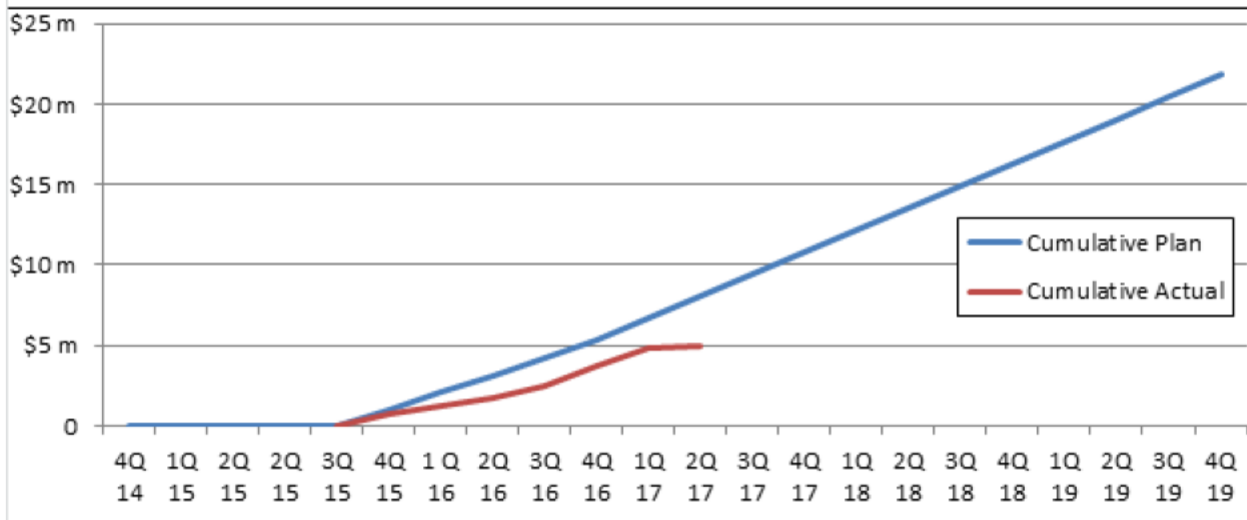
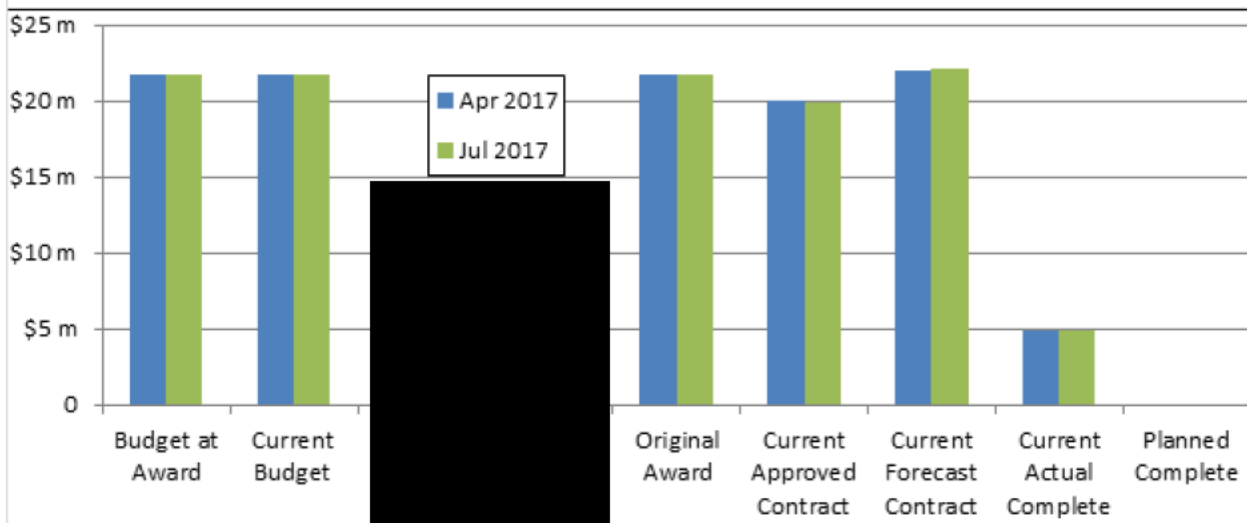
1	2	3	4	5	6	7	8
Budget at Award	Current Budget	Change from Original to Current	Contract at Award	Current Approved Contract	Change from Original to Current	Current Forecast	Change from Current Forecast to Budget at Award
\$78.4	\$79.7	(2-1) \$1.3	\$71.2	\$72.9	(5-4) \$1.7	\$79.7	(7-1) \$1.3
Percent Complete		Actual Prog Last 12 Mths		Actual Prog Last 6 Mths		Average Required Progress to reach forecast SC	
Planned	Actual	Total	Avg/Mth	Total	Avg/Mth		
73.4%	13.0%	2.4%	0.2%	1.0%	2.3%		
							2.29% per month



## VS086 - Systems Package 3: Signal Equipment Procurement

Jul 2017

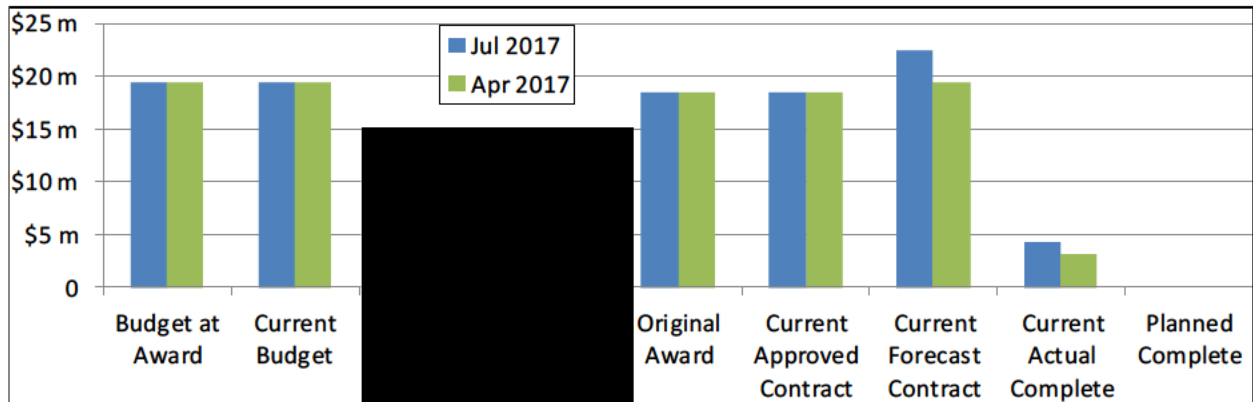
1	2	3	4	5	6	7	8
Budget at Award	Current Budget	Change from Original to Current	Contract at Award	Current Approved Contract	Change from Original to Current	Current Forecast	Change from Current Forecast to Budget at Award
\$21.8	\$21.8	(2-1) \$0.0	\$21.8	\$19.9	(5-4) (\$1.9)	\$22.1	(7-1) \$0.3
Percent Complete		Actual Prog Last 12 Mths		Actual Prog Last 6 Mths		Average Required Progress to reach forecast SC	
Planned	Actual	Total	Avg/Mth	Total	Avg/Mth		
NA	25.3%	16.8%	1.4%	0.8%	2.7%		
							2.67% per month



## VQ033 - Midday Storage Yard CILs

Jul 2017

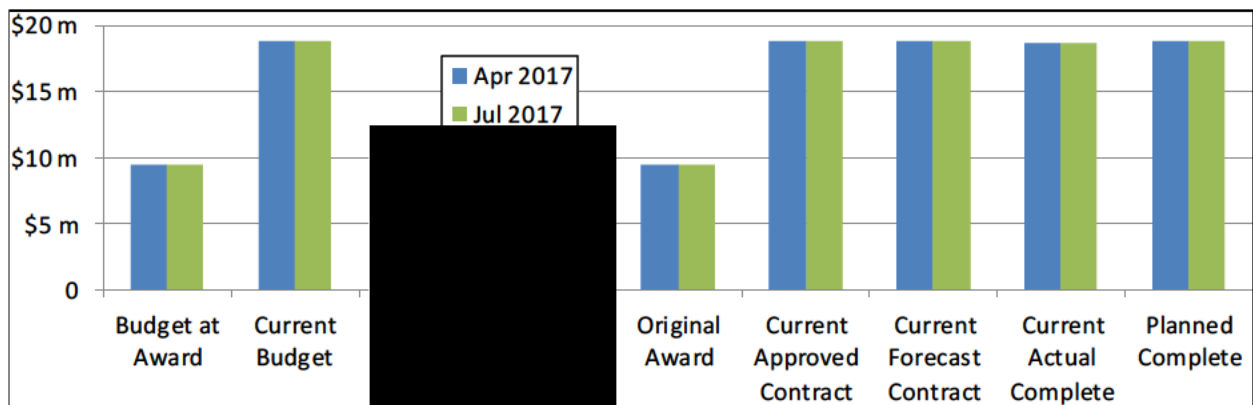
Budget at Award	Current Budget	Change from Original to Current	Contract at Award	Current Approved Contract	Change from Original to Current	Current Forecast	Change from Current Forecast to Budget at Award
\$19.4	\$19.4	(2-1) \$0.0	\$18.5	\$18.5	(5-4) \$0.0	\$22.3	(7-1) \$2.9
Percent Complete		Actual Prog Last 12 Mths		Actual Prog Last 6 Mths		Average Required Progress to reach forecast SC	
Planned	Actual	Total	Avg/Mth	Total	Avg/Mth		
NA	22.8%	22.8%	1.9%	5.3%	2.4%	2.41% per month	



## FHA01 - Harold Stage 1 - AMTRAK Harold Stage 1 FA

Jul 2017

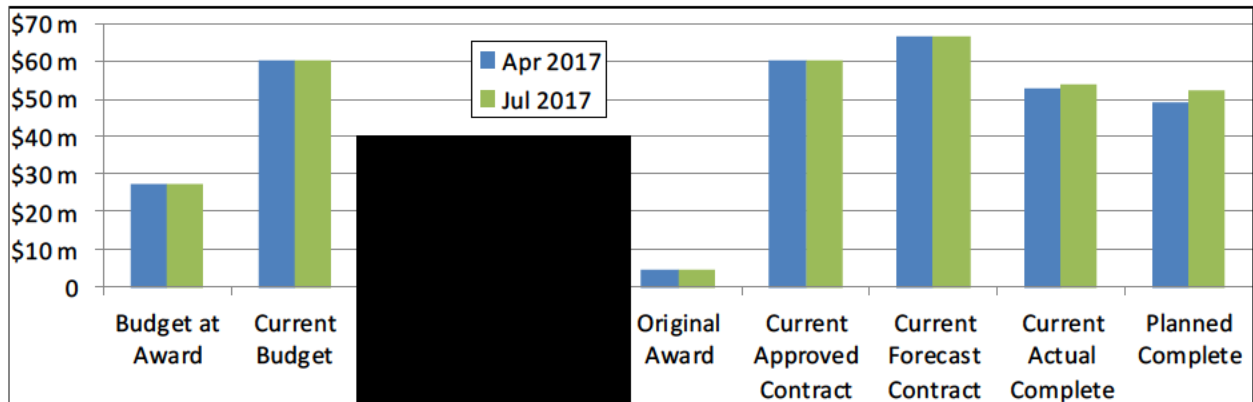
Budget at Award	Current Budget	Change from Original to Current	Contract at Award	Current Approved Contract	Change from Original to Current	Current Forecast	Change from Current Forecast to Budget at Award
\$9.5	\$18.8	(2-1) \$9.3	\$9.5	\$18.8	(5-4) \$9.3	\$18.8	(7-1) \$9.3
Percent Complete		Actual Prog Last 12 Mths		Actual Prog Last 6 Mths		Average Required Progress to reach forecast SC	
Planned	Actual	Total	Avg/Mth	Total	Avg/Mth		
100.0%	98.9%	0.1%	0.0%	0.1%	0.1%	0.09% per month	



## FHA02 - Harold Stage 2 - AMTRAK Harold Stage 2 FA

Jul 2017

Budget at Award	Current Budget	Change from Original to Current	Contract at Award	Current Approved Contract	Change from Original to Current	Current Forecast	Change from Current Forecast to Budget at Award
\$27.3	\$60.2	(2-1) \$32.9	\$4.8	\$60.2	(5-4) \$55.4	\$66.4	(7-1) \$39.1
Percent Complete		Actual Prog Last 12 Mths		Actual Prog Last 6 Mths		Average Required Progress to reach forecast SC	
Planned	Actual	Total	Avg/Mth	Total	Avg/Mth		
86.7%	89.2%	N/A	N/A	1.3%	0.9%		
							0.90% per month

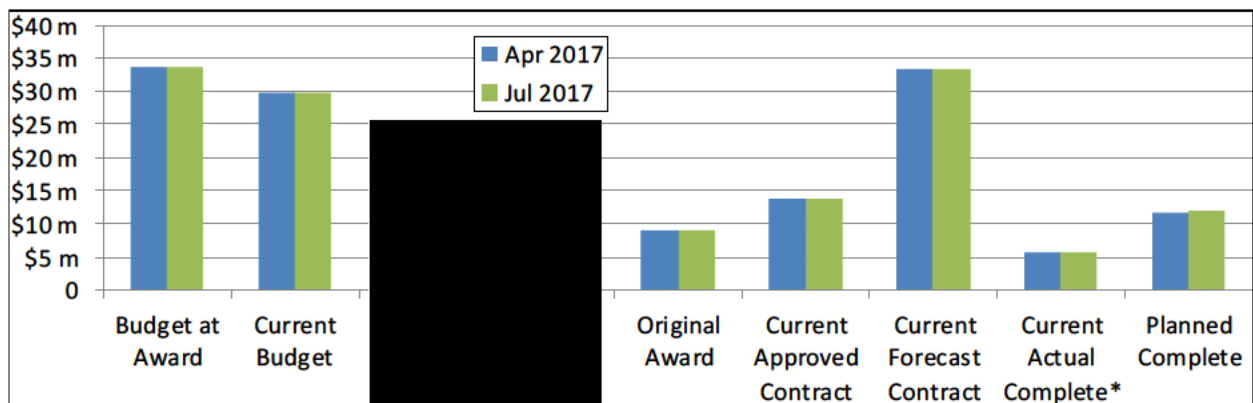


## FQA65 - AMTRAK Loop Interlocking CIL - Regional Investment

Jul 2017

Budget at Award	Current Budget	Change from Original to Current	Contract at Award	Current Approved Contract*	Change from Original to Current	Current Forecast	Change from Current Forecast to Budget at Award
\$33.8	\$29.7	(2-1) (\$4.1)	\$9.0	\$13.7	(5-4) \$4.7	\$33.3	(7-1) (\$0.5)
Percent Complete		Actual Prog Last 12 Mths		Actual Prog Last 6 Mths		Average Required Progress to reach forecast SC	
Planned	Actual	Total	Avg/Mth	Total	Avg/Mth		
86.4%	19.1%	N/A	N/A	N/A	N/A		
							1.11% per month

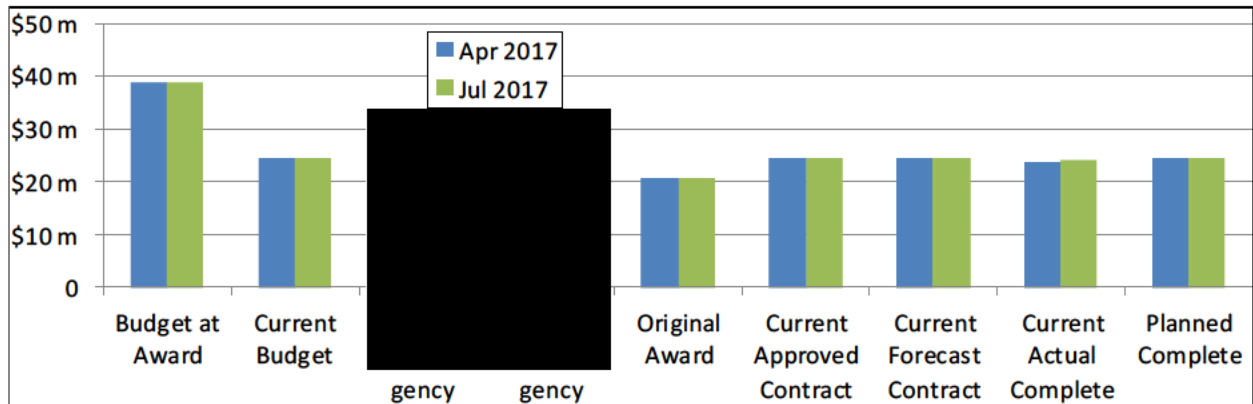
\* Current Approved Contract does not include full scope.



## FHL01 - Harold Stage 1 - LIRR FA

Jul 2017

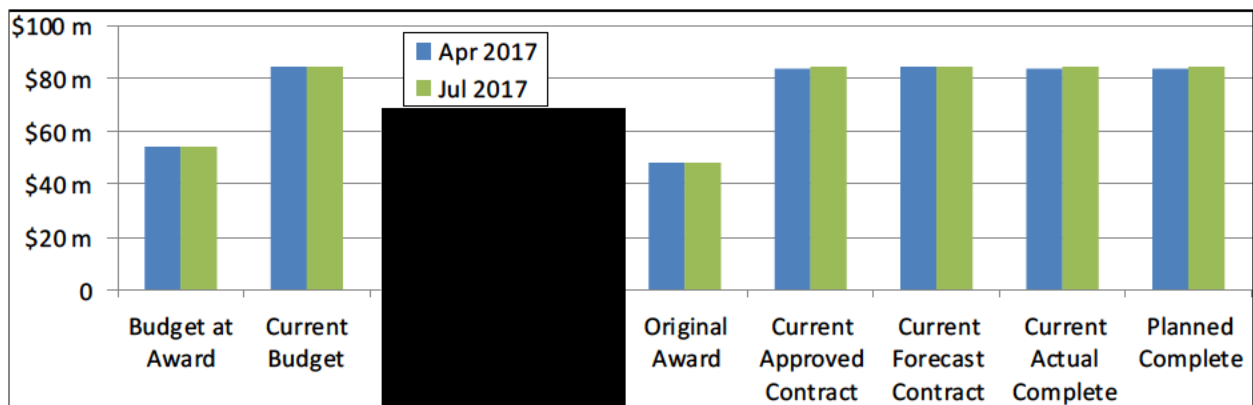
Budget at Award	Current Budget	Change from Original to Current	Contract at Award	Current Approved Contract	Change from Original to Current	Current Forecast	Change from Current Forecast to Budget at Award
\$28.8	\$24.4	(2-1) (\$4.4)	\$20.8	\$24.4	(5-4) \$3.6	\$24.4	(7-1) (\$4.4)
Percent Complete		Actual Prog Last 12 Mths		Actual Prog Last 6 Mths		Average Required Progress to reach forecast SC	
Planned	Actual	Total	Avg/Mth	Total	Avg/Mth		
100.0%	98.5%	11.1%	0.9%	-0.2%	0.2%		
							0.17% per month



## FHL02 - Harold Stage 2 - LIRR FA

Jul 2017

Budget at Award	Current Budget	Change from Original to Current	Contract at Award	Current Approved Contract	Change from Original to Current	Current Forecast	Change from Current Forecast to Budget at Award
\$54.1	\$84.6	(2-1) \$30.5	\$48.2	\$84.6	(5-4) \$36.4	\$84.6	(7-1) \$30.5
Percent Complete		Actual Prog Last 12 Mths		Actual Prog Last 6 Mths		Average Required Progress to reach forecast SC	
Planned	Actual	Total	Avg/Mth	Total	Avg/Mth		
100.0%	100.0%	8.0%	0.7%	1.3%	0.0%		
							0.00% per month



## APPENDIX K – 3<sup>rd</sup> PARTY CONTRACT MILESTONE METRICS

As of August 1, 2017 IPS Update

Mile- stone	Activity Description	IPS Baseline Date¹ June 2014	Appr Cont Baseline Date²	Current Contract Date³	Current ESA Forecasted Date⁴	Delta⁵ IPS BL to Forecast	Notes
CM006: Manhattan Structures North							
NTP	Notice to Proceed	3/31/14A	N/A	N/A	3/31/14A	-	Contractor is expected to complete remaining contract work by Aug 2017, but not expected to close open NCRs nor submit all required documentation until the end of September 2017.
SC	Substantial Completion	11/30/16	N/A	6/1/17	8/31/17	274	
FC	Final Completion	2/28/17	N/A	8/30/17	11/29/17	274	
CM007: GCT Caverns							
NTP	Notice to Proceed	4/19/16	4/11/16A	N/A	4/11/16A	-8	Approved baseline in Feb. 1, 2017 IPS.
4	Trackwork & 3rd Rail Work Complete (excludes STW @ GCT4, GCT6 & Plaza West)	N/A	10/3/19	8/7/19	4/8/20	188	Delta is measured against the Approved Contract Baseline Date for all milestones.
5	Substations US1 and US2 Complete	N/A	6/27/18	6/27/18	6/27/18	0	
5A	Caverns Ready for Integrated Systems Testing	4/11/19	8/7/19	8/7/19	8/7/19	0	
6	All Caverns and Tunnel Work Complete	N/A	12/16/19	12/16/19	2/10/20	56	
6A	Substantial Completion	7/19/19	1/28/20	1/28/20	7/17/20	171	
6B	Punchlist Completion	N/A	4/27/20	4/27/20	10/16/20	172	
7	Integrated System Testing Completion	N/A	6/1/20	6/1/20	6/1/20	0	
CM014B: GCT Concourse and Facilities Fit Out							
NTP	Notice to Proceed	11/2/14	2/2/15A	N/A	2/2/15A	92	Approved baseline in Nov. 1, 2016 IPS.
1	TMC/ CC-C5/ CR-C2 Comm Room & F/O Backbone Route from TMC-CRC2	12/3/15	6/1/16A	N/A	6/1/16A	181	
2	50th St. Comm Room CR102, Tunnel Fan Control Room, Electrical RM #126 & ICC (Room Ready)	3/3/16	4/17/17	N/A	4/17/17A	410	
3	Comm Room CR-C1/ Comm Closet CC-C1/ C2 & C6 & F/O Backbone from CR-C2 to CR-C1	5/3/16	11/30/16	N/A	12/3/16A	214	
4	Comm Closets CC-C3, CC-C7 & Room B3265	12/2/16	3/5/17	3/5/17	2/26/18	451	
5	44th St Vent Facility Complete	3/3/17	7/2/17	6/4/17	12/17/17	289	
5A	Complete all work at 48th St Entrance	2/15/18	3/20/17	10/2/17	3/26/18	39	
6	Comm Closets CC-C4 and CC-C8	5/12/17	5/20/18	5/20/18	5/20/18	373	
7	Completion of 50th Street 2nd Phase	10/26/17	1/27/18	1/27/18	1/27/18	93	
8	Substantial Completion	7/24/19	1/21/19	8/18/18	12/24/19	153	
8A	Punchlist Complete	5/17/18	5/21/19	12/16/18	4/22/20	706	
9	Integrated Systems Testing Completed	7/24/19	3/23/20	10/25/19	7/20/20	362	



Mile-stone	Activity Description	IPS Baseline Date <sup>1</sup> June 2014	Appr Cont Baseline Date <sup>2</sup>	Current Contract Date <sup>3</sup>	Current ESA Forecasted Date <sup>4</sup>	Delta <sup>5</sup> IPS BL to Forecast	Notes
9A	Ready for Integrated Systems Testing	5/17/18	10/2/18	5/20/18	5/6/19	354	
10	Shaft 4	N/A	7/1/18	7/1/18	7/1/18	0	Delta is measured against the Approved Baseline Date for this milestone only.
11	Final Completion	10/22/19	3/23/20	8/8/20	1/23/20	93	
<b>CQ032: Plaza Substation and Queens Structures</b>							
NTP	Notice to Proceed	8/10/11A	8/10/11A	N/A	8/10/11A	-	
6	Substantial Completion	10/8/15	N/A	9/6/16	9/29/17	722	
7	Final Completion	1/7/16	N/A	12/5/16	12/29/17	722	
<b>CQ033: Mid-Day Storage Yard</b>							
NTP	Notice to Proceed	7/4/15	N/A	N/A	4/11/17A	-	This is a newer contract and more data will become available for comparison once the baseline schedule is approved and incorporated into the IPS.
1	Precondition Site Survey	N/A	N/A	6/10/17	9/29/17	111	
2	Temporary Construction Fence Along Arch St. Access Route	N/A	N/A	6/10/17	9/29/17	111	
3	RWIC Trailer	N/A	N/A	7/10/17	6/19/17A	-	
4	Submission of Integrated Test Plan	N/A	N/A	4/11/18	4/11/18	0	
4A	Ready for Integrated Testing MDSY	N/A	N/A	3/11/20	3/11/20	0	
5	YS Track Completion	N/A	N/A	4/11/18	4/11/18	0	
6	Substantial Completion	10/25/18	N/A	8/10/20	8/10/20	655	Delta measured against Current Cont Date for all milestones except 6 and FC.
8	Completion of Plaza Work	N/A	N/A	7/12/18	7/12/18	0	
9	Complete Option 1 - Demo Amtrak Buildings	N/A	N/A	5/27/20	5/27/20	0	
FC	Final Completion	1/23/19	N/A	N/A	11/20/20	667	Current Forecast Date is end of "Demobilization" activity in IPS. No FC activity was found in the IPS.
<b>CH057A: Harold Structures Part 3 - Westbound Bypass</b>							
NTP	Notice to Proceed	12/2/13A	12/2/13A	N/A	12/2/13A	-	Approved baseline in Aug. 1, 2015 IPS.
1	Signal Bridge 24 & 30	8/17/14	N/A	8/9/14A	8/9/14A	-8	
2	Signal Bridge 16	4/12/15	N/A	2/28/16A	2/28/16A	322	
3	Substantial Completion	4/22/16	N/A	10/30/17	11/30/18	952	
4	Final Completion	7/21/16	N/A	1/28/18	2/28/19	952	
<b>CH061A: Harold Structures Part 3 - Track A Cut and Cover Structure</b>							
NTP	NTP CH061A - A Approach	7/5/16	1/27/17A	N/A	1/27/17A	206	
1	PW2 Catenary Structures	N/A	9/7/17	9/7/17	11/7/17	61	The Aug. 1, 2017 IPS Report notes that the baseline was approved in July 2017. It is assumed
2	Montauk Cutoff Catenary Structures	N/A	9/11/17	9/11/17	11/9/17	59	

Mile- stone	Activity Description	IPS Baseline Date <sup>1</sup> June 2014	Appr Cont Baseline Date <sup>2</sup>	Current Contract Date <sup>3</sup>	Current ESA Forecasted Date <sup>4</sup>	Delta <sup>5</sup> IPS BL to Forecast	Notes
3	Substantial Completion	9/20/17	5/28/18	5/28/18	5/28/18	0	that the Aug. 1, 2017 IPS has this data and was used for the Approved Baseline Dates
4	Final Completion	N/A	8/27/18	8/27/18	8/27/18	0	
CS179: Systems Package 1 - Facilities Systems							
NTP	Facilities Systems Package 1 NTP	3/31/14A	3/31/14A	N/A	3/31/14A	-	Approved baseline in Oct. 1, 2016 IPS.
1	C05 TPSS Room Ready for CS084 Work at Vernon Blvd. Vent Facility	10/16/15	12/30/16	2/15/17	8/1/17	655	
3	Completion of Multiple Rooms (CIR, Sig. Reactor, Interlocking 1D, TPSS C06 and C07)*	10/13/16	12/31/16	5/22/17	8/1/17	292	
4A	C04 TPSS Room (Level P1) Ready for CS084 Work at 2nd Ave. Vent Facility	5/5/16	2/1/17	2/1/17	9/26/17	509	
5	GCT 6 CIR Ready for CS086 (orig CS086) Installation	10/17/16	4/14/17	4/30/17	8/1/17	288	
6	B10 Permanent Power Energized (Precedes Energization of B05, B06,B08, B09, B11 & B13)	6/24/16	4/28/17	4/22/17	9/13/17	446	
7	GCT 5 CIR Ready for CS086 (orig CS086) Installation	2/17/17	5/27/17	4/30/17	8/1/17	165	
8	GCT 4 CIR Ready for CS086 (orig CS086) Installation	5/2/17	6/27/17	4/30/17	8/1/17	91	
9	C01 & C02 TPSS Room Ready for CS084 at Tail Tracks	8/7/17	6/8/17	6/8/17	8/15/17	8	
10	GCT 3 CIR Ready for CS086 (orig CS086) Installation	11/6/17	9/6/17	9/6/17	6/6/18	212	
11	C03 TPSS Room Ready for CS084 at 55th St. Vent Facility	2/20/18	2/27/18	3/25/18	3/21/18	29	
12A	Integrated System Testing Start (TOC & All Permanent Power Complete)	5/2/18	12/8/18	9/1/18	12/10/18	222	
12B-1	Complete IST of All Systems Equip Installed by CM007	10/22/19	7/1/20	3/23/20	7/20/20	272	
12B-2	Complete IST of All Systems Equip Installed by CM014A	7/24/19	7/1/20	3/23/20	7/20/20	362	
12B-3	Complete IST of All Systems Equip Installed by CM014B	7/24/19	7/1/20	3/23/20	7/20/20	362	
13	Substantial Completion Including Completion of IST	12/9/19	7/1/20	7/1/20	10/1/20	297	
CS084: Tunnel Systems Package 4 - Traction Power Systems							
NTP	CS084 NTP	9/5/14	10/29/14A	N/A	10/29/14A	54	Contract approved baseline in the Jan 1, 2016 IPS.
1	Energize Traction Power Substation C08	5/26/17	5/6/18	5/6/18	7/11/19	776	
2	Energize Traction Power Substation C04 and C05	6/20/18	12/14/18	10/3/18	11/1/19	499	
3	Energize Traction Power Substation C06 and C07	10/2/18	3/2/19	3/2/19	1/8/20	463	
4	Energize Traction Power Substation C01 and C02	10/30/18	1/30/19	2/5/19	11/1/19	367	
5	Energize Traction Power Substation C03	12/28/18	5/16/19	5/16/19	11/27/19	334	
6	Complete Local testing of all substation	1/11/19	7/30/19	7/30/19	6/9/20	515	



Mile-stone	Activity Description	IPS Baseline Date <sup>1</sup> June 2014	Appr Cont Baseline Date <sup>2</sup>	Current Contract Date <sup>3</sup>	Current ESA Forecasted Date <sup>4</sup>	Delta <sup>5</sup> IPS BL to Forecast	Notes
7	Substantial completion & Final Completion	10/21/19	11/25/19	12/2/19	9/2/20	317	
<b>VQ033: Mid-Day Storage Yard CIL Procurement</b>							
NTP	Notice To Proceed (NTP) Actual 1/15/16 by JPS	N/A	1/15/16A	N/A	1/15/16A	-	Contract not in the June 2014 Re-baseline IPS.
1	Mid-3 CIL (NTP+549d)*	N/A	7/21/17	7/20/17	10/9/19	810	Approved baseline in May 1, 2016 IPS. Delta measured against Approved Contract Baseline Date for all milestones.
2	Mid-6 CIL (NTP+855d)*	N/A	5/23/18	5/23/18	6/21/19	394	
3	Mid-8 CIL (NTP+1158d)*	N/A	11/22/18	11/22/18	7/19/19	239	
SC	Substantial Completion (NTP+1216d)	N/A	5/19/19	5/19/19	3/10/20	296	
<b>VS086: Systems Package 3 - Tunnel Signal Equipment</b>							
NTP	VS086 NTP	7/7/14	9/30/14A	N/A	9/30/14A	85	Approved baseline in Dec. 1, 2016 IPS.
1	Furnish Catalog Cuts for Tunnel Sig. Equip and CIR Layouts (NTP+300CD)	5/6/15	6/5/17	5/8/17	11/2/17	911	
2	Complete and Provide Final Design for Entire Tunnel Signal System (NTP+420CD)	9/5/15	9/19/17	7/7/17	2/22/18	901	
3	Furnish Tunnel Signal Equip. & Hardware for Plaza CIR (NTP+582CD)	2/18/16	6/29/17	4/28/17	12/2/17	653	
4	Furnish Tunnel Signal Equip. & Hardware for GCT5 & GCT6 CIRs (NTP+650CD)	4/26/16	1/9/18	11/13/17	4/19/18	723	
5	Furnish Tunnel Signal Equip. & Hardware for GCT3 & GCT4 CIRs (NTP+730CD)	7/17/16	6/5/18	3/16/18	8/30/18	774	
SC	Substantial Completion (NTP+1840CD)	12/9/19	10/14/19	10/14/19	10/14/19	-56	

Notes:

General - Contract Milestones shown are current, and may not have been in the June 2014 Rebaseline IPS.

General - An "A" after a date indicates an actualized date.

1 IPS Baseline Date - June 2014 IPS Update, data date July 1, 2014, referred to as the "2014 Re-Baseline"

2 Approved Contract Baseline Schedule - Refers to the IPS Update in which the Contractor's Approved CPM Baseline schedule was incorporated into the IPS

3 Current Contract Date - Contract dates adjusted for modifications, etc. Taken from tables in the ESA IPS Reports.

4 Current ESA Forecasted Date - Date shown in current IPS Monthly Update (data date August 1, 2017).

5 Delta - Difference between Current ESA Forecasted Date and a baseline Date. The baseline will typically be the IPS Baseline Date (June 2014), unless otherwise noted. A positive number represents a delay and a negative number represents a savings.

## APPENDIX L – CS084 : TRACTION POWER SUBSTATIONS SCHEDULE METRICS

**Major Electrical Equipment (Note 3)**

	Submittals - Approve			Layout Drawings - Approve			Fabricate			Factory Witness Test (FAT) Start			Delivery to ESA Site			
	Baseline (Note 4)	Current Update (Note 1)	Delta in Months (Note 2)	Baseline (Note 4)	Current Update (Note 1)	Delta in Months (Note 2)	Baseline (Note 4)	Current Update (Note 1)	Delta in Months (Note 2)	Baseline (Note 4)	Current Update (Note 1)	Delta in Months (Note 2)	Baseline (Note 4)	Current Update (Note 1)	Delta in Months (Note 2)	
1 CO1 - Tail Tracks (38th St)	2/16/16	4/30/18	-90	1/18/17	9/5/17	210	9/13/16	9/20/18	22	2/23/17	10/12/18	59	2/9/18	11/2/18	61	Submittal date = SCADA Controls & Screens. Fabricate date = SCADA Controls & Screens.
2 CO2 - Tail Tracks (38th St)	2/16/16	3/2/18	5	5/24/16	9/5/17	246	9/13/16	9/19/18	28	2/20/17	10/8/18	57	2/9/18	10/26/18	59	
3 CO3 - 55th Street	2/23/16	7/31/18	-92	6/1/16	9/5/17	337	9/13/16	12/20/18	-35	3/13/17	1/15/19	-20	8/2/18	2/4/19	-19	
4 CO4 - 2nd Avenue	2/18/16	12/6/17	-120	11/21/16	8/7/17	8	9/13/16	3/2/18	10	10/5/16	3/26/18	29	3/13/17	4/13/18	31	
5 CO5 - Vernon	2/18/16	9/14/17	-57	5/26/16	6/7/17	49	9/13/16	10/12/17	-13	10/5/16	11/2/17	-13	11/8/16	11/24/17	-14	
6 CO6 - QP - Main	2/18/16	12/8/17	7	5/26/16	8/7/17	137	9/30/16	4/3/18	34	11/21/16	4/27/18	40	6/13/17	5/18/18	39	
7 CO7 - QP - Yard	2/18/16	1/5/18	20	5/26/16	9/5/17	210	9/13/16	7/24/18	-49	1/12/17	3/26/18	101	8/17/17	4/13/18	103	
8 CO8 - 43rd St (Pre-fab Bldg.)	1/21/16	11/21/17	-71	5/12/16	9/5/17	41	9/12/16	3/29/18	-24	10/25/16	7/17/18	-12	12/6/16	8/6/18	-5	Del date does not include SCADA Cont & Screens. Fab date = Pre-fab Enclosure.

	Install Electrical Equipment & All Other Items (Note 5)			ConEd Inspection / Test Reports			Local Testing (Note 7)			Energize / Place in Service (CS084 Contract Milestones)			Integrated Testing (Note 6)			
	Installation Complete	Work Complete	Testing Complete	Work Complete	Testing Complete	Work Complete	Testing Complete	Work Complete	Testing Complete	Work Complete	Testing Complete	Work Complete	Testing Complete	Work Complete	Testing Complete	
1 CO1 - Tail Tracks (38th St)	11/6/18	8/7/19	57	12/27/18	9/27/19	56	1/21/19	10/18/19	59	2/4/19	11/1/19	60	12/2/19	4/28/20	0	158 Ea.
2 CO2 - Tail Tracks (38th St)	11/14/18	8/9/19	59	12/24/18	9/24/19	56	1/22/19	10/15/19	57	2/5/19	10/29/19	58	12/2/19	4/28/20	0	158 Ea.
3 CO3 - 55th Street	3/1/19	9/12/19	-20	N/A	10/23/19	-19	5/6/19	11/15/19	-17	5/16/19	11/27/19	-19	12/2/19	4/28/20	0	50 Ea.
4 CO4 - 2nd Avenue	4/27/18	6/14/19	32	7/6/18	8/23/19	32	8/7/18	9/24/19	29	8/21/18	10/8/19	29	12/2/19	4/28/20	0	65 Ea.
5 CO5 - Vernon	6/8/18	7/10/19	16	N/A	9/12/19	-14	9/19/18	10/18/19	-11	10/3/18	11/1/19	-11	12/2/19	4/28/20	0	60 Ea.
6 CO6 - QP - Main	9/10/18	8/29/19	39	N/A	N/A	N/A	1/3/19	12/23/19	38	1/17/19	1/8/20	36	12/2/19	4/28/20	0	76 Ea.
7 CO7 - QP - Yard	10/22/18	7/2/19	101	N/A	N/A	N/A	2/15/19	10/25/19	104	3/1/19	11/8/19	104	12/2/19	4/28/20	0	92 Ea.
8 CO8 - 43rd St (Pre-fab Bldg)	9/12/17	7/24/18	-92	12/8/17	5/14/19	17	2/1/18	7/26/19	-2	2/15/18	7/11/19	27	12/2/19	4/28/20	0	107 Ea. Last inst. before local test & energize.

**Notes:**

- 1 Current Update = Contractor's Monthly CPM Schedule Update #20 with Data Date 8/1/17.
- 2 Delta = Change from the Contractor's Previous Quarter's CPM Schedule Update #17, with Data Date 5/1/17, shown in calendar days. A positive value represents an improvement in the planned date. A negative value represents a slippage in the planned date.
- 3 Major Electrical Equipment = There are many components included in this category. The dates shown in this table for Submittals, Fabricate, FAT, and Delivery are the latest date for all Major Electrical Equipment at each substation and includes the SCADA Controls & Screens. The comments column notes which Equipment is controlling that date.
- 4 The Baseline date refers to the Contractor's approved CS084 Baseline CPM Schedule, with data date 10/29/14.
- 5 This work includes installation of all major Electrical Equipment and all other components in the TPSS, including conduit, cable tray, cabinets, panels, bus duct, and the pulling and termination of cables. Includes cable from TPSS to track.
- 6 This work includes five System-Wide tests in the CS084 Contractor's CPM Schedule: Train Acceleration Test; Short Circuit Verification Test; Load Capacity Verification Test; Third Rail and High Tension EO Switch Test; and Emergency Trip Verification Test. The date shown represents the last test - the Emergency Trip Verification Test - and aligns with Contract Milestone No. 7 (Substantial Completion).
- 7 This represents the completion of Field Acceptance Tests, typically the last testing shown at each substation. It should be noted that CO8 has a later activity, entitled "Finalize Local Testing," which occurs as the last activity, after energization - and is not tracked in this table.

## APPENDIX M - ESA CORE ACCOUNTABILITY ITEMS

Table M – ESA Core Accountability Items

Project Status:		Original at FFGA	Amended FFGA	Current *	ELPEP **
Cost	Cost Estimate	\$7.368 b	\$10,922 b	\$10.178 b	\$8.119 b
Schedule	RSD	Dec 31, 2013	Dec 31, 2023	December 2022	April 30, 2018
Total Project % Complete		Based on Invoiced Amount		72.2% actual vs. 76.1% (ESA Figure)	
Project Performance Rate since 2014 "Re-Plan"		Based on Earned Value A		77.6% (PMOC calculation of construction spending at 2Q2017 planned vs. actual since re-baselining).	
Contracts		Total contracts awarded to date		\$8.97 b	88.2% of total awards
		Total construction contracts awarded to date		\$6.96 b	92.4% of construction awards
Major Issue	Status		Comments		
	During 2Q2017, MTACC announced that there will be no ESA amendment of the 2015-19 Capital Plan for additional required funding for forecast cost overruns. Through Sep 2017, the ESA PMT continued development of a cost plan to avoid or manage potential impacts				
Project Cost	MTACC has identified significant forecast cost overruns: <ul style="list-style-type: none"> <li>OCIP - \$190 million</li> <li>Railroad Force Account - \$110 million (FFGA scope)</li> <li>AWO, OICs for Contract CM014B - \$65 million</li> <li>PM/CM, CCM, GEC Services – (TBD)</li> </ul> Schedule delays due to funding constraints (see above) will result in additional escalation costs. Review of forecast cost overruns based on new funding constraint continued during September 2017.		ESA-PMT is currently evaluating cost of continued PM/CM, CCM and GEC Services to target RSD. Recent funding issues (see above) may delay completion of current contracts, award of remaining contracts and completion of railroad force account work. The resulting added cost escalation could be significant.		
Harold Schedule	The schedule for the remaining ESA work in the Harold Interlocking has been revised several times since the June 2014 Program Schedule rebaseline: December 2014 ("ESA First"); 2015 ("Harold Re-Sequencing"); 1Q2016 schedule adjustment resulting in the Program critical path passing through the Harold work. Primary cause for all the revisions is continuing inadequate railroad force account support due to other higher priority Amtrak projects in the region. This issue has continued to challenge ESA through 3Q2017.  During 2Q2017 a new risk emerged due to Amtrak's accelerated project to complete extensive reconstruction of the NEC track turnout area between New York Penn Station and the existing Amtrak Hudson River tunnels.		Primary impacts due to Amtrak's NY Penn Station Project include: <ul style="list-style-type: none"> <li>Eight scheduled priority weekend track outages in 2017 for support of pre-testing of schedule critical Harold CIL cutovers in May 2018 are at risk; ESA trying to reschedule a minimum of six priority track outages to end of October 2017; two scheduled for Sep 2017 were missed.</li> <li>Current Amtrak support to ongoing Harold work: impact through 3Q2017 is moderate; Amtrak has completed its current plan ahead of the September 1, 2017, planned completion.</li> </ul>		

\* 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.