PMOC COMPREHENSIVE MONTHLY REPORT

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

Report Period June 1 to June 30, 2017

PMOC Contract No. DTFT60D1400017

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

Urban Engineers of New York, D.P.C., 2 Penn Plaza, Suite 1103, New York, NY 10121
PMOC Lead: E. Williamson, 212-736-9100; ejwilliamson@urbanengineers.com
Length of time on project: Ten years on project for Urban Engineers

TABLE OF CONTENTS

TABLES

APPENDICES

THIRD PARTY DISCLAIMER

This report and all subsidiary reports are prepared solely for the Federal Transit Administration (FTA). This report should not be relied upon by any party, except 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 Sponsor cost and schedule data included in this report is based on the status date of May 1, 2017.

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 2nd Quarter 2017

a. Engineering/Design Progress

In its ESA April 2017 Monthly Progress Report, MTACC reported that the overall Engineering effort is 98.8% complete vs 100% planned. MTACC's April 2017 Total Cost Report shows 96.1% of the overall EIS and Engineering category as invoiced vs. budgeted, and 96.2% of the "Design Subtotal" as having been invoiced.

b. New Contract Procurements

Contract CQ033, Mid-Day Storage Yard Facility, was advertised on October 20, 2016, with bid sets available starting October 24, 2016. The Pre-Bid conference/site tour was held on November 10, 2016. The Bid Opening was extended from December 23, 2016, to February 23, 2017, when four bids were opened. The contract was awarded on April 11, 2017, and the Notice-to-Proceed was issued on the same date.

c. Construction Progress

In its ESA April 2017 Monthly Progress Report, MTACC reported that total construction progress reached 69.4% complete versus 74.7 % planned. The April 2017 Total Cost Report also shows 69.4% of construction as having been invoiced.

d. Continuing and Unresolved Issues

[redacted] MTACC had initially planned to request additional ESA funding through the use of an omnibus amendment to the 2015-2019 Capital Plan during December 2016. At that time, however, it was decided that there would be a stand-alone ESA amendment prepared for submission in 1Q2017, then 2Q2017, and then scheduled for no later than 1Q2108. During 2Q2017, it was decided that there will be no stand-alone ESA amendment to the 2015-2019 Capital Plan. The PMT is currently re-evaluating the ESA program budget and schedule to account for this new development. This issue is discussed further in Section 5.0, Project Cost, of this report.

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.

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. ESA reported that the Amtrak force account resource availability for the ESA Harold Interlocking work dropped

noticeably during May 2017 as a direct result of the aforementioned accelerated Amtrak project. This greatly constrained ESA third-party contract construction and Amtrak direct force account construction to support the critical path activities leading to the 2018 LIRR CIL cutovers.

Additionally, the projected force account costs are trending noticeably higher than planned [redacted] In mid-3Q2016, ESA completed a comprehensive study to identify and evaluate the reasons for this continuing problem and to make recommendations with regard to a revised basis for planning and scheduling the remaining work in Harold Interlocking and a revised cost forecast. The schedule analysis and re-planning were completed earlier and the results were incorporated into the ESA Integrated Project Schedule (IPS) during 2Q2016. The Harold critical path has become the ESA program critical path and now leads both the secondary Manhattan/Systems and Queens near-critical paths by approximately two and a half months. The railroad Force Account cost overruns have been evaluated and the total additional costs are estimated to be approximately $246 million, not including the costs of delay impacts to third party contracts. Details of the cost analysis and forecast were presented to the FTA and PMOC on October 26, 2016.

The PMOC has continuing concerns regarding the impact to the ESA Harold work due to the Amtrak program to harden ERT Lines 3 and 4 in preparation for extended outages for ERT Lines 1 and 2 to complete Hurricane Sandy damage-related reconstruction work, now planned for 2019. There is concern, shared by both the PMOC and MTACC, that significant Amtrak Force Account resources will be needed to support the hardening work, which could further reduce the Amtrak resources available to support the ESA Harold Re-Sequencing Plan. During March 2017, MTACC advised the PMOC that Amtrak hardening work on Line 3 had been completed. The PMOC notes 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 may conflict with ESA needs to support completion of the planned Harold work required for LIRR service into GCT by 2021. The PMOC does note, however, that MTACC does not believe that Amtrak's decision about taking ERT Line 2 out of service first, in 2019, for the 18-month reconstruction work will directly impact the completion of the Harold work needed to commence LIRR service into GCT. Amtrak's decision will, however, impact Contract CH058B, Harold Structures – Part 3B, Eastbound Re-route, a Regional Investment initiative having independent utility that is not required to provide the connection to GCT for LIRR service. The ESA-PMT has indicated that there is no work-around plan for this situation where ERT Line 1 can be taken out of service in order to begin construction of the Eastbound Re-route.

e. New Cost and Schedule Issues

[redacted] It should be noted that the forecast amount does not include the anticipated additional costs resulting from the recently completed Harold Force Account

Overrun analysis. The ESA Force Account Cost study completed in 3Q2016 resulted in an additional total cost projection of $246 million inclusive of the estimated $111 million for the FFGA work scope. This study did not, however, consider any additional 3rd party costs for extended overhead and indirect costs resulting from Force Account induced delays. The forecast also does not include the projected OCIP cost overrun, expected to be $191 million according to ESA, although ESA has expectations that the OCIP overrun may be paid by MTA. Finally, the forecast does not include expected additional costs in the GCT Passenger Concourse related to water leaks, OICs for Wi-Fi and cellular service, and digital advertising. [redacted] It is expected that additional upcoming demands on Amtrak forces will create further schedule delays and resultant cost increases. [redacted] ESA had previously indicated that they will request amendments to the MTA Capital Plans (both 2010 to 2014 and 2015 to 2019), seeking funding for the overruns noted above. The ESA amendment was not requested in December 2016 as expected and the forecast timing for the submission was repeatedly delayed. ESA most recently reported that the ESA amendment will be submitted no later than during 1Q2018. However, 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.

ESA's May 1, 2017 Integrated Project Schedule (IPS) update maintains a forecasted Target Revenue Service Date (RSD) of February 11, 2021, and a Late RSD of December 13, 2022. As of the IPS data date, Program-critical CIL cutover pre-testing had not yet begun at Harold, experiencing a late planned start of approximately three months. The impact of this delay is that the duration for this work to be accomplished has decreased accordingly, with the intention to hold the planned May 2018 CIL cutover dates. Another large change to the Program occurred over the previous quarter, with a Queens Sub-Program path of work being included in the IPS Report, and showing it has overtaken the Manhattan/Systems path of work in terms of criticality to the overall ESA Program. The PMOC maintains its concern about the insufficient progress of Program-critical work over the previous quarter. There has been an almost day-for-day delay, while predecessor work to the start of CIL cutover pre-testing was being performed which experienced delays.

3. PROJECT STATUS SUMMARY AND PMOC ASSESSMENT

a. Sponsor Management Capacity and Capability

The PMOC has 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 by the GEC to respond to RFIs and required field change requests on both of these contracts. The PMOC previously raised concerns about the inability of MTACC to provide definitive information on the status of Safety and Security certifications for the design and construction phases of the various contracts; and, any impact on this issue resulting from the departure of the MTACC person leading the Task Working group (TWG) effort on this work. During 2Q2017, MTACC reported significant improvement on the Security certification process; enough to reduce the PMOC concern on this specific certification process. MTACC will now focus on addressing the safety

certification process issue. A more detailed discussion of the Sponsor's Management Capacity and Capability can be found in Sections 1.1a and 1.1b, below.

b. Real Estate Acquisition

In its April 2017 Monthly Report, MTACC reported that it had sent a "Notice of Possession" to the owner of 335 Madison Avenue LLC that will allow MTACC to occupy the property for a one year period to construct and operate two elevators in the building. Negotiations with the Rudin Corporation concerning the 415 Madison Avenue building (for the planned 48th St. entrance), however, were put "On Hold" during 2Q2017 due to Midtown Manhattan zoning changes which Rudin needs more time to analyze in order to determine what effect they will have on the building. In Queens, MTACC also continued to update two agreements with Amtrak for construction of the Mid-Day Storage Yard and an easement through Amtrak's High Speed Rail facility.

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 bids were opened for Contract CQ033, Mid-Day Storage Yard, in February 2017, the final design completion of the package was significantly delayed due to incorporation of additional LIRR requested changes, late approval of track clearance waivers required from the NYSDOT that were submitted by LIRR in July 2016, as well as final approval by NYCT of overhead clearance to the No. 7 Line structure that crosses over the proposed LIRR tracks. The need to accommodate Positive Train Control capability in the LIRR signal design has also caused some delays to other packages. Additionally, GEC and LIRR delayed reviews of the CS179, Facilities Design, and CS084, Traction Power, systems designs and late GEC responses to RFIs and Field Change Requests are not supporting the contractor schedules. Details are provided in Section 2.1 of this report.

d. Procurement

Contract CQ033, Mid-Day Storage Yard Facility, was advertised on October 20, 2016, with bid sets available starting October 24, 2016. Four bids were opened on February 23, 2017. The contract was awarded on April 11, 2017, and the Notice-to-Proceed was issued on the same day. Total bid advertisement delay during 2016 was six months and total bid date delay into 2017 was two months.

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

- CM015, 48th Street Entrance – In June 2017, the ESA-PMT advised that all design work on this package has been suspended based on lack of acceptable progress toward completion of scope and cost negotiations with the building owner due to the re-zoning impacts. Total bid advertisement delay through 2016 and into 2017 is ten months.
- CS086, Systems Package 2-Tunnel Systems – Advertisement expected August 2017; Bids due (TBD). Total bid advertisement delay through 2016 and into 2017 is fourteen months.

e. Railroad Force Account (Support and Construction)

During June 2017, LIRR Signal personnel continued to install signal conduits, install, terminate, and meggar signal cables, and make signal revisions at the "H1", "H2", "H5", "H6" and Location 23 and 30 CILs, and continued TSR (Train and Signal Routing) testing at those locations in preparation for the CIL cutovers scheduled for 2018. LIRR 3rd Rail personnel continued limited installation of 3rd rail cables into the new GO2 Substation and began 3rd rail installation on the new re-aligned ML2 Track. LIRR High Tension personnel continued to make modifications to separate LIRR signal power from Amtrak signal power. Amtrak Electric Traction personnel continued to make catenary modifications in "F" Interlocking needed for the Montauk Cutoff bridge demolition and over the #825 crossover. Amtrak C&S personnel continued sporadic installation of new signal cables and cases on the New Haven tracks in support of the LIRR 2018 CIL cutovers.

f. Third-Party Construction

Manhattan:

Contract CM006 Manhattan North Structures: During 2Q2017, the CM006 contractor (Manhattan North Structures) continued the rehabilitation/remediation work at the 63rd St. Tunnels and Structures. The contractor completed arch construction at the GCT 3 Crossover Cavern and the, 55th St. Vent Facility, air plenum, and completed the B03 Substation room at the 55th St. Vent Facility. The contractor also continued construction of the North Back of House. Door and hardware installation continued at various locations including the 50th St. Air Plenum and the 53rd St. Sump. Contact and chemical grouting continued at various locations.

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 2Q2017, 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, and qualification testing of the Resilient Tie Block assemblies.

Contract CM014A GCT Concourse & Facilities Fit-Out: At the CM014A, through June 2017, all tests and repairs have been completed. The final work of "racking" the repaired breaker requires the presence of ConEd at the site. This will take place in September 2017 after the annual summer ConEd moratorium.

Contract CM014B GCT Concourse & Facilities Fit-Out: During 2Q2017, in the CM014B contract, structural steel delivery and erection began in the south sectors of the site. Installation of escalators and finishes in the Wellways (4) continued. Erection of block walls and vent facilities fit-out are ongoing.

Contract VM014 Vertical Circulation Elements: The contractor continued with the Phase II fabrication work. There are 47 total escalators and 21 total elevators. This includes both the CM007 and CM014B contracts. Through June 2017 there were 9 escalators and 10 elevators fabricated.

Queens:

Contract CQ032 Plaza Substation and Queens Structures: During 2Q2017, the CQ032 contractor continued to complete architectural and electrical work in the Yard Services Building (YSB), and also continued punchlist activity, close out documentation preparation, and

commissioning activity. Con Edison made the gas connection and turned on gas to the YSB during this Quarter. ESA continued negotiation for remaining work scope to be transferred to other contracts.

Contract CQ033 Mid-Day Storage Yard Facility: The Notice to Proceed was issued to the CQ033 contractor on April 11, 2017. The contractor has started to mobilize for this contract.

Harold Interlocking:

Contract CH057 Harold Structures Part 3: During June 2017, the CH057 contractor continued construction of MM4 Track (which will, after it is connected to existing track, become the new LIRR ML4 Track), continued wayside electrical installations at various project sites, and continued punchlist repairs to the Tunnel D structure and its headhouse. ESA declared Substantial Completion for the CH057 contract on June 30, 2017. The contractor will continue to make punchlist repairs at several different worksite locations until Final Completion can be achieved.

Contract CH057A (Westbound Bypass): During June 2017, the CH057A contractor completed construction of parapets on the West Approach Structure sidewalls of the Westbound Bypass (WBY), west of Queens Boulevard overhead bridge, completed demolition of obstructions that were preventing it from progressing construction of the East Approach Structure west of Honeywell Avenue overhead bridge, and resumed construction there. Mining of the Westbound Bypass Tunnel and its pump station construction remained on "Hold" as the ESA PMT and the contractor continued to negotiate the parameters of work resumption at those locations. The ESA Construction Manager informed the PMOC that, in mid-June 2017, ESA notified the contractor that the concrete slab under the Amtrak/LIRR main line tracks (which the contractor had alleged was not structurally sufficient to mine under), is "Fit for Purpose", and is therefore no longer a factor in the continuing delay to WBY Tunnel mining. As of June 30, 2017, delay to tunnel mining is now 11 months.

Contract CH061A – Track A Cut and Cover Structure: During June 2017, the CH061A contractor continued to excavate the west end of the Tunnel A Approach Structure (and "encountered" the Tunnel A portal constructed in 2011 by the CQ031 contractor), installed 15 of 18 soldier piles needed for support of excavation (SOE) at the east end of the approach structure, and began excavation to underpin the 39th St. overhead bridge, which is a NYCDOT requirement to construct the tunnel.

Systems:

Contract CS179 – Systems Facilities Package No. 1: During June 2017, 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 severely impacted the progression of work on this and another Systems' contract. While the LIRR has yet to provide formal "sign-off" approval for any 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 Contractor Proposal Requests (CPR) and 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-June 2017 Progress Meeting that reviewed contract progress for May 2017 and from the MTACC's April 2017 ESA Monthly Progress Report

(MPR)]. While the contra ctor's work on the L3 electrical service is complete, the LIRR has yet to fully use the service to energize all its signal huts because MTACC had to issue a contract modification for the contractor to perform additional work that was identified in November 2016. That contract modification was issued in the 2Q2017, enabling the contractor to make preparations to start the work. The contractor continues to perform site surveys and submit design documentation. Three major issues continue to significantly impact the timely progression of work on this contract, allowing the contractor to assert that the MTA is causing delays on this contract. In its April 2017 MPR, the MTACC cites an August 15, 2020, SC date. This is a five-week delay from that reported by MTACC in its March 2017 MPR, and a nine-month delay when compared to the original December 2, 2019, SC date established when the contract was awarded. MTACC's position is that the five-week additional delay in SC is due to a projected delay in the CM007 contract that impacts an Access Restraint for the CS084 contractor

VS086 – Systems Package 3 – Signal Equipment Procurement

[**Note:** The information presented below for the VS086 contract comes from discussions at a mid-June 2017 Progress Meeting that reviewed contract progress up to June 15, 2017, and from the MTACC's April 2017 ESA Monthly Progress Report (MPR)]. In its April 2017 ESA Monthly Progress Report, the forecasted SC date is now shown as November 12, 2017, one month later than the October 14, 2019, date established at contract award. The contractor's latest schedule update shows the five interim contract milestones delayed anywhere from 398 to 557 days. The MTACC advised that a contract modification changing the interim milestones is ready for signature by the contractor. However, the PMOC notes 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.

g. Vehicles

Details of the federal and non-federal vehicle procurements are provided in Section 2.5 of this report. The PMOC notes that the federal vehicle procurement has fallen behind schedule.

h. Commissioning and Start-Up

The PMOC was advised that the vacancy on Task Working Group (TWG) No. 7, the TWG responsible for Safety and Security certifications and other Safety/Security-related items, that was created when the original leader of that TWG left the ESA Project in mid-January, has been filled. However, it appears that no progress has been made since the PMOC's last report on the Safety and Security Certification process. As no quarterly briefing of the Operational Readiness (OR) group has been held yet in 2017, the progress of the remaining TWGs related to the commissioning and startup of the ESA Project remains to be statused. The next Quarterly Operational Readiness briefing will be held in July 2017 and the status of the progress of all the TWGs will be discussed. The PMOC's concerns about the lack of progress on the Safety and Security Certification process are detailed in Sections 1.5 and 2.4 of this report.

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 (April 30, 2017)

	FFGA				MTA's Current Baseline Budget (CBB)		Expenditures April 30, 2017	
	Original FFGA (Millions)	Amended FFGA (Millions)	(% of Grand Total Cost)	Obligated	(Millions)	(% of Grand Total Cost)	(Millions)	(% of CBB)
Grand Total Cost	$ 7,386.0	$ 12,038.0	100.00%	$ 4,724.0	$ 11,214.0	100.00%	$ 7,581.7	67.61%
Financing Cost	$ 1,036.0		14.03%	$ 617.0	$ 1,036.0	9.24%	$ 617.6	59.61%
Financing Cost		$ 1,116.0	9.27%					
Total Project Cost	$ 6,350.0		85.97%	$ 4,107.0	$ 10,178.0	90.76%	$ 6,964.1	68.42%
Total Project Cost		$ 10,922.0	90.73%					
Federal Share	$ 2,683.0		36.33%	$ 1,148.0	$ 2,699.0	24.07%	$ 2,324.0	86.11%
Federal Share		$ 2,683.0	22.29%					
5309 New Starts share	$ 2,632.0		35.63%	$ 1,098.0	$ 2,437.0	21.73%	$ 2,061.9	84.61%
5309 New Starts share		$ 2,632.0	21.86%					
Non New Starts share	$ 51.0		0.69%	$ 50.0	$ 67.0	0.60%	$ 66.7	99.55%
Non New Starts share		$ 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%	$ 4,640.1	62.04%
Local Share		$ 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. Details regarding risk management and risk mitigation are provided in Section 6.0 of this report.

l. FTA Quarterly Review Meeting

The FTA Quarterly Review Meeting for East Side Access and Second Avenue Subway (Phase 1) was held on May 9, 2017. Highlights of the ESA discussion include:

- Regarding MTACC's claim against the GEC on the ESA Project, MTACC counsel noted that due to the significant progress made by the parties to mediate a resolution,

- the binding arbitration has been stayed. MTACC counsel reported that the parties have achieved substantial progress mediating a settlement over the past four months. Counsel understands that the parties are close to a settlement and a resolution could occur by the end of May 2017.
- [redacted]
  ESA noted that, with the award of Contract CQ033 in April 2017, FTA Hold Point No. 1 (90% Bid/60% Constructed) had been achieved and the FTA minimum cost contingency is now $260 million. [redacted]
- ESA stated that there is sufficient capacity in the current approved budget to fund the ESA project through 2018. It was further noted that $110 million is being refunded to ESA as credit for Regional Investment work scope completed earlier by ESA. [redacted]
- ESA advised that program is on track to spend the full amount of the $294 million FRA High Speed Intercity Passenger Rail Grant that includes ESA work scope considered as Regional Investment.
- ESA advised that it has been decided that there will not be a 2015-19 Capital Plan amendment to provide additional required funding for the ESA project. Additional funding will need to be provided by the future 2020-24 Capital Plan.
  [PMOC notes that this new topic was introduced by ESA at the meeting and was not on the Agenda prepared by the FTA/PMOC]

  - The ESA PMT is currently re-evaluating the ESA program budget and schedule to determine the impacts of this decision. ESA noted what it considered to be the largest cost drivers: Amtrak/LIRR force account; OCIP; and soft costs for PM/CM, CCM and GEC. MTACC noted that these soft costs are not yet forecast to December 2022. [PMOC notes that this date refers to the Late, or "Public," RSD]
  - ESA indicated that the ongoing effort is a planning study and there are no definitive results as yet. MTACC would not expect final cost and schedule details to be available until after July 31, 2017, at the very earliest.

m. FTA Triennial Review

The FTA completed its Triennial Review of MTACC, including the East Side Access Project, during April 2017 and the final Report was issued in June 2017. No major findings were noted and no corrective actions were identified by the FTA that required action by MTACC.

MONTHLY UPDATE

The information contained in the body of this report is in accordance with Oversight Procedure #25, to "inform the FTA of the most critical project occurrences, issues, and next steps, as well as

professional opinions and recommendations". Where a section is included with no text, there are no new "critical project occurrences [or] issues" to report this month.

ELPEP COMPLIANCE SUMMARY

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

- **Technical Capacity and Capability (TCC):** The FTA requested MTACC to update its TCC Plan in response to the FTA/PMOC comments that were generated in November 2013 as a result of significant changes in key ESA upper level management positions. MTACC submitted its revised Technical Capacity and Capability Plan (ESA and SAS) on April 13, 2015. The PMOC returned comments to the FTA on May 7, 2015. MTACC submitted a revised TCC Plan in response to FTA/PMOC comments on June 12, 2015. In August 2015, the PMOC provided the FTA with its evaluation of the MTACC responses to the PMOC review comments and recommended a meeting with MTACC to resolve remaining issues. The FTA subsequently provided MTACC with the evaluation. MTACC responded with a reply on September 24, 2015. MTACC has requested an updated review of their responses to the TCC Plan review comments.
- **Continuing ELPEP Compliance:** The following ELPEP components continue to need improvement: Management Decision; Design Development; Change Control Committee (CCC) Process and Results; Stakeholder Management; Procurement; and Risk-Informed Decision Making. The PMOC has noted progress in two previously identified areas – Issues Management and Timely Decision Making, particularly when responding to new issues arising with the railroads' Force Account resource availability, track outages, and other issues regarding the remaining work in Harold Interlocking. The ESA Risk Manager continues to work on re-establishing risk management as one of the key inputs to the decision-making process. To assist MTACC with focusing efforts on improving ELPEP compliance in the remaining areas, the PMOC has started to re-evaluate the situation based on the current revisions of the CMP, SMP, and RMP, and now expects to complete this effort during the 3Q2017 time frame.
- **Project Management Plan:** MTACC submitted its last version of Revision 10 to the PMP in June 2016 that reflected ESA organizational changes along with some additional updates and revisions to certain sections. 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 early April 2017. The FTA subsequently notified MTACC in April 2017 that the FTA accepted the current version of Revision 10 to the ESA PMP.
- [redacted]

The PMOC notes that, since June 2013, the ESA project has not been in full compliance with ELPEP, and is, in the opinion of the PMOC, not meeting some of the more important

requirements of the Schedule Management Plan (SMP) and Cost Management Plan (CMP), both sub-plans of the PMP. The PMOC believes that this continues to be a deficiency that needs to be resolved. **[Ref: ESA-114-Sep13]** The PMOC does note, however, progress in certain areas. The PMOC's major areas of concern include:

- **Schedule Management Plan (SMP)**: The ESA project remains partially non-compliant with requirements for Integrated Project Schedule (IPS) Updating, Forecasting, [redacted] against a current baseline schedule. The revised SMP was submitted in 4Q2015 and the PMOC completed its review in June 2016. Review comments were forwarded to MTACC, a working meeting was completed, and MTACC resubmitted comment responses and a revised SMP in October 2016. The PMOC completed its evaluation, found no significant issues, and provided its findings, including the remaining comments requiring resolution, to the FTA in November 2016. The FTA subsequently forwarded the PMOC's comments to MTACC. In January 2017, MTACC submitted additional documents to the FTA and the PMOC in response to the remaining comments. The PMOC completed its final evaluation, concluded that the SMP is acceptable, and provided the FTA with comment close-out details in March 2017. The FTA subsequently notified MTACC that the FTA has accepted the current revision of the SMP.
- **Cost Management Plan (CMP)**: The ESA project remains partially non-compliant with requirements for Project Level EAC Forecasting, Project Level EAC Forecast Validation, [redacted] and Secondary Mitigation. The PMOC has noted some improvement in a number of areas, but additional work is needed in other areas. MTACC provided an initial revision to the CMP in December 2015. The PMOC worked with MTACC over a period of time to reach agreement on certain specific revisions and to evaluate the PMOC's recommendations in six areas. During October 2016, MTACC submitted the completed review comment matrix and a revised CMP. The PMOC completed its final evaluation, concluded that the CMP is acceptable, and provided the FTA with the comment close-out details in November 2016. The FTA subsequently notified MTACC that the FTA has accepted the current revision of the CMP.

Revisions to the ELPEP Document:

[redacted] The PMOC's recommendations were presented at several meetings with MTACC in 2015. During 1Q2016, MTACC [redacted] The PMOC continues work on a draft revision to the ELPEP document that reflects these agreements and will coordinate its efforts with MTACC.

1.0 SPONSOR'S CAPABILITIES AND APPROACH

1.1 Management Capacity and Capability

a) Organization

During 1Q2016, the project organization was revised. 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 late responses to RFIs and Field Change Requests on these contracts. These issues have continued into 2Q2017.

b) Staffing

As the PMOC had previously reported, the leader of the ESA OPR Task Working Group (TWG) No. 7, the TWG with the responsibility for Safety and Security certification documentation and development of a Safety and Security Management Plan (SSMP) and Emergency Preparedness and Response Plan, left the ESA project in mid-January 2017. The PMOC notes that this individual held a key position and was involved with safety and security certification process for many years. That position was filled in March 2017 with an individual new to the ESA project; and, during the 2Q2017, significant focus and improvement on the security certification process was reported by MTACC. MTACC will now focus on addressing the safety certification process issue. See Sections 1.5a, 1.5d, and 2.4 of this report for details.

1.2 Project Management Plan

a) History of Performance

MTACC re-baselined the ESA Project in May 2012. This re-baseline resulted in a risk adjusted budget of $8.24B (not including rolling stock reserve and finance cost) and a projected RSD in August 2019. During 2013 and 2014, ESA undertook an extensive re-planning effort to revise the Program budget and schedule as a result of the CM012R bid overrun 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 contractor; insufficient progress of work on Contracts CM014B, 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 delays in Harold Interlocking work caused by continued lack of adequate railroad force account support.

b) PMP

MTACC submitted PMP Rev. 10 to the FTA and PMOC on July 18, 2014. This revision incorporates changes stemming from FTA/PMOC comments on PMP Rev. 9.0 provided in December 2013 as well as changes that resulted from MTACC's Candidate Revision process. Based on working meetings, dialogue, and additional clarifying review comments from the PMOC, MTACC made additional changes to the PMP and submitted an updated Rev. 10 on September

18, 2014. The PMOC reviewed Rev. 10 and provided its comments to the FTA in 4Q2014. A subsequent update to the Rev. 10 document was submitted on March 13, 2015, reflecting only revisions to the ESA Change Control Committee. The PMOC worked with MTACC to arrange working meetings with ESA chapter authors and the corresponding PMOC reviewers to resolve the remaining outstanding FTA/PMOC evaluation comments. Several working meetings have been held since June 2015 and continued through December 2015. Through 2016, MTACC and the PMOC continued working together to complete this process and to coordinate reviews of the revised SMP and CMP Sub-Plans with the associated sections of the PMP. MTACC and the PMOC met in June 2016 to review the PMOC's comments on the Cost Management Plan. The PMOC completed its review of the revised Schedule Management Plan in late June 2016. Based on MTACC provided additional responses and documentation during 2016 and into 2017, the PMOC recommended acceptance of the current revised CMP and SMP in, respectively, November 2016 and March 2017. MTACC submitted the next revision to the PMP in June 2016 that reflects ESA organizational changes along with some additional updates and revisions to certain sections. The PMOC 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 early April 2017. The FTA subsequently notified MTACC in April 2017 that the FTA accepted the current version of Revision 10 to the ESA PMP.

1.3 Project Controls

a) Schedule

[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]

[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 Reserve and finance costs) and an RSD of December 2023. The new 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 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 issues affecting proposed equipment. Please refer to Appendix G for details.

Track Turnouts:

As the PMOC noted in previous Monthly Reports, it had been concerned about whether or not the remaining 41 turnouts to be installed in Harold Interlocking would meet "Buy America" requirements. The GEC revised the turnout specifications for both Amtrak and LIRR in order to make them compliant. Amtrak approved the revisions in January 2016, but procurement for its turnouts was placed "On Hold" by ESA due to a reduction in priority of the work for which they were intended.

The LIRR specification revisions, however, were not completed and approved until mid-4Q2016. A procurement package was issued to prospective vendors in January 2017. As of June 30, 2017, however, an award for the LIRR turnouts has not been issued to either of the two bidders. The PMOC is concerned about this order because, if it is not placed in a timely manner, LIRR will not have all the turnouts it needs to construct the "Northeast Quadrant (NEQ)" track work scheduled for July 2018, which was on the Harold Critical Path and has now become the Project Critical Path. The ESA PMT indicated during the Harold Risk Review in April 2017 that it would not proceed with the NEQ work if all 10 of the necessary turnouts were not in hand. If the turnouts are not received in time, the PMOC believes that the NEQ track work could be delayed by as much as a year. [**REF: ESA-123-Jun16]**

1.5 Safety and Security

a) Safety Certification Process

As noted earlier, the vacancy on Task Working Group (TWG) No. 7, the TWG responsible for Safety and Security certifications and other Safety/Security-related items, that was created when the original leader of that TWG left the ESA Project in mid-January, was filled. As of the April 2017 Quarterly OP briefing, it appeared that no progress had been made since the PMOC's December 2016 report on either certification process. Schedules showing the completion of Safety certificates for the design and construction phases of the various contracts need to be developed and incorporated into the overall ESA Project IPS. During the 2Q2017, MTACC focused on work associated with the Security certification process; and, very little progress was made on the Safety certification process. However, MTACC indicates that the safety certification process will become the focus item during the 3Q2017.

b) Project Construction Safety Performance

Through May 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 ratio of 0.39* versus 1.70 (2017 BLS average) lost time accidents (LTA) per 200,000 work hours. The ESA recordable rate for CY2017 through May 2017 was 1.38* versus 2.80 (2017 BLS average).

* These are PMOC calculated rates based on information contained in ESA's "12 Month Rolling Cumulative Profiles of Lost Time and Recordable Injury Rates" for May 2017, the latest information available to the PMOC. The Sponsor, however, uses a 12 month rolling average to calculate its OSHA statistics.

c) Security

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

d) Security Certification Process

As previously noted, the vacancy on Task Working Group (TWG) No. 7, the TWG responsible for Safety and Security certifications and other Safety/Security-related items, that was created when the original leader of that TWG left the ESA Project in mid-January, was filled. As of the April 2017 Quarterly OP briefing, it appeared that no progress had been made since the PMOC's December 2016 report on either certification process. Security certifications of contract designs and as-built construction reflect the methodology the MTA will use to address perceived security threats identified in the Threat Vulnerability Assessment made for ESA facilities and operation. It is important that the appropriate elements be "designed into" and incorporated into each contract on the ESA Project. Schedules showing the completion of security certificates for the design and construction phases of the various contracts needed to be developed and incorporated into the overall ESA Project IPS. During the 2Q2017, significant focus and improvement on the security certification process was reported by MTACC.

1.6 Project Quality

Quarterly Quality Oversights (QQOs): The 1Q2017 QQOs were performed in April and May 2017. All of the resulting Reports have been issued, and the contractors were advised of their respective audit results and findings prior to formal issuance of the reports. The Reports follow

the new Quality Audit format, which combines the QQO's element-based approach with a task and process-based approach. The PMOC reviewed this Report in 1Q2017 and believes that the new format adequately assesses contractor quality implementation. Table 3.1 provides a summary of the Quality Audit results.

Table 3.1 – 1Q2017 Quality Audit Results

Contract	Score
CH-057	92%
CH-057A	93.6%
CH-061A	(Not scored – Mobilization Audit)
CM-006	91.3%
CM-007	97.1%
CM-014B	91%
CQ-032	(Not scored – Close-Out Audit)
CS-179	88%

Nonconformance Reports (NCRs): Table 3.2 provides a summary of NCR status on the major active contracts for ESA, as per the latest available contractor NCR logs. It lists total NCRs for each contract, broken down into closed NCRs, NCRs open for less than 90 days, and NCRs open for over 90 days. The table includes data for most active construction contracts over the past four quarters.

Table 3.2 – NCR Aging Summary

Contract	Period	3Q2016	4Q2016	1Q2017	2Q2017
CM007	< 90 days Open	N/A	2	7	17
	> 90 days Open	N/A	N/A	1	2
	Total Open	N/A	2	8	19
	Total Closed	N/A	0	2	3
	Total NCRs	N/A	2	10	22
CM014B	< 90 days Open	0	0	0	3
	> 90 days Open	2	7	8	5
	Total Open	2	7	8	8
	Total Closed	15	19	18	22
	Total NCRs	17	26	26	30
CQ032	< 90 days Open	3	5	3	0
	> 90 days Open	1	1	5	15
	Total Open	4	6	8	15
	Total Closed	92	94	95	96
	Total NCRs	96	100	103	110
CH053	< 90 days Open	0	0	0	0
	> 90 days Open	1	0	0	0
	Total Open	1	0	0	0
	Total Closed	90	91	91	94
	Total NCRs	91	91	91	94
CH057	< 90 days Open	7	5	6	0
	> 90 days Open	4	0	1	6
	Total Open	11	5	7	6
	Total Closed	0	11	15	18
	Total NCRs	11	16	22	24
CH057A	< 90 days Open	7	1	1	1
	> 90 days Open	3	3	3	2
	Total Open	4	4	4	3
	Total Closed	10	13	13	16
	Total NCRs	14	17	17	19
CS179	< 90 days Open	9	4	0	3
	> 90 days Open	7	13	15	12
	Total Open	16	17	15	15
	Total Closed	15	18	20	24
	Total NCRs	31	35	35	39
CS084	< 90 days Open	0	0	0	0
	> 90 days Open	0	0	0	0
	Total Open	0	0	0	0
	Total Closed	0	0	0	0
	Total NCRs	0	0	0	0

1.7 Stakeholder Management

a) Railroads

Amtrak:

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 was also falling behind schedule due to the overall delays to much of the Harold work. Additionally, the sequence in which Amtrak decides to do its own work to reconstruct its East River (ERT) Line 1 and Line 2 tunnels that were damaged by Superstorm Sandy could have a significant impact on the "ESA First" schedule. Amtrak has notified MTACC that it plans to close ERT Line 2 first in 2019. The selection of Line 2 to close first will delay completion of Contract CH058B, Harold Structures – Part 3B, Eastbound Re-route, a Regional Investment initiative having independent utility that is not required to provide the connection to GCT for LIRR service, until after RSD. However, MTACC expects that this will not impact the remaining FFGA work in Harold Interlocking that is required to provide LIRR service into Grand Central Terminal. Both parties need to continue to work together to develop a more detailed ERT Line 1 and Line 2 outage schedule that will have the least negative impact on ESA. At present, Amtrak's work is not planned to begin until 2019, so the PMOC believes that there should be sufficient time to develop such a schedule.

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 prevent ESA from completing the Harold work planned for 2017-18 that is critical to achieving the target RSD date of February 2021. Through April 2017, however, ESA has been able to maintain minimally acceptable construction progress. ESA also reported that this problem was further exacerbated when Amtrak's Metropolitan Division, which is responsible for the force account resources assigned to the ESA Harold Interlocking work, indicated 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. Based on meetings with Amtrak earlier in 2017, MTACC management had hoped that Amtrak would be able to be more supportive of the remaining ESA work in Harold Interlocking, however a major development occurred during 2Q2017 that may become a major setback to ESA.

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's top priority is now a project that accelerates 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 will now start in July 2017 and is expected to last for 12 months. This will place a significant demand on the already limited amount of Metropolitan Division force account resources, which the PMOC believes will have a major negative impact on the amount of force account resources that will be available to ESA. This new risk was realized in May 2017 as ESA reported that Amtrak force account resource availability for ESA Harold Interlocking worked dropped noticeably and dwindled even further in June 2017.

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 2Q2017, several key ESA issues involving LIRR continued to challenge the project:

- Final approval of the three types of Resilient Tie Block assemblies (Contract CM007) has been delayed pending completion of the qualification testing and the evaluation by LIRR.
- Review and concurrence by LIRR of the final designs for the 10 control systems (Contract CS179) has progressed much slower than scheduled.
- 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, but the backlog of outstanding reviews started to increase again during 2017.
- 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.

Federal Railroad Administration:

MTA continues to work with both the FTA and the FRA to resolve funding drawdown issues with regard to the FRA High Speed Intercity Passenger Rail Grant for $295 million.

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)

The funding concern that the PMOC previously identified was resolved in May 2016 with CPRB approval of the 2015-19 Capital Plan. ESA is now seeking supplemental funding for the forecasted cost overruns related to Harold Force Account work (expected to be $246 million not including any 3rd Party extended overhead costs), the OCIP cost overrun ($191 million), as well as wireless cellular/WIFI, digital advertising, and leak remediation on the CM014B contract and other forecast funding needs. [redacted]

[redacted] MTA had planned to include the ESA components in its presentation for the plan amendment in December 2016, but was directed to submit the ESA components as a stand-alone amendment in 2017. MTACC subsequently changed its approach and set a deadline of 1Q2018 for submission of the ESA amendment to the current Capital Plan. However, 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 budget and schedule as well as the target Revenue Service Date.

b) Other Sources

The total FTA funding commitment, as of April 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 plans to update the RMP during 3Q2017.

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.

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 April 2017 Monthly Progress Report, MTACC reported that the overall Engineering effort is 98.8% complete vs. 100% planned. This figure is based on the GEC's March 2017 reporting and shows a decrease from the previous month due to the increased value of the GEC's contract. MTACC's April 2017 Total Cost Report shows 96.1% of the overall EIS and Engineering category as invoiced vs. budgeted, and 96.2% of the "Design Subtotal" as having been invoiced.

Status of Construction Packages Advertised:

Contract CQ033, Mid-Day Storage Yard Facility, was advertised on October 20, 2016, with bid sets available starting October 24, 2016. The Pre-Bid conference/site tour was held on November 10, 2016. The bid date had been extended from December 22, 2016, to January 19, 2017 and then to February 17, 2017. Four bids were opened on February 23, 2017. The most recent forecast date for Award and Notice-to-Proceed was April 7, 2017. The contract was awarded on April 11, 2017, and the Notice-to-Proceed was issued on the same day. Total bid advertisement delay during 2016 was six months and total bid date delay in 2017 was two months. The PMOC notes that unresolved

design and approval issues that continued over an extended period of time are primarily responsible for the late procurement.

Status of Construction Packages Not Advertised:

On Contract CM015 (48th St. Entrance), the MTA Board had previously approved the design agreement with the building owner, Rudin Management Corporation (RMC). RMC agreed to provide the designs for the relocation of the existing interior utilities and to complete some limited structural design. MTA had been meeting with the building owner, RMC, to advance and finalize the Work and Easement Agreements, but discussions have been temporarily suspended pending RMC's evaluation of the impacts that the new Midtown Manhattan zoning changes may have on RMC's 415 Madison Avenue Building. The parties were reportedly near final agreement, however, RMC has again requested that significant additional work be included in the design scope. In June 2017, the ESA-PMT advised that all design work on this package has been suspended. Final disposition will be based on future MTA/MTACC executive level decisions.

Contract CH058A, Harold Structures – Part 3A, B/C Approach will include construction of the Tunnel B/C Approach Structure. The 90% design submission was made on June 17, 2016, and the ESA Project Management Team and LIRR returned their comments to the GEC. The 90% package was sent to Amtrak on October 28, 2016. MTACC received Amtrak comments on the CH058A package during February 2017. The updated FHA03 design package that was submitted to Amtrak in mid-February 2017 to reflect changes made in support of CH058A regarding required catenary and track alterations has been approved. The GEC finalized the design package and issued the signed and sealed drawings in April 2017. At the May 16, 2017, meeting with ESA, NYCDOT approved the alternate support of excavation plan that involves maintenance and support of the piers for the 39th Street Bridge. The GEC is incorporating the alternate support of excavation plan into the contract plans and specifications. PCO 119 will transfer CH057 track work option scope to CH058A. Progress continues on definition of catenary work scope for Amtrak Force Account FHA04A to support the next PCO for the GEC.

Contract CH058B, Harold Structures – Part 3B, Eastbound Reroute, 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 has agreed to the track outages required to support the cut-and-cover construction but has requested additional rail traffic simulations from their consultant. The simulation proposal was submitted in November 2016 and the simulations are now in progress. The rail traffic simulation outcomes will not impact the design for Contract CH058B. MTACC has 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.

Contract CS086, Systems Package 2 - Tunnel Systems, is a stand-alone package. MTACC reports that PCO C184 to finalize the package was approved and the GEC has completed the work. The 100% design submission was forwarded to LIRR on October 21, 2016, for review, and comments were returned. The scope of this change order includes a refresh of the package and changes control of Plaza Interlocking from Penn Station Control Center to the GCT Train Operations Center. The scope of work of PCO C184 does not include Positive Train Control (PTC) design, which will be provided by LIRR. Based on when LIRR completes the PTC design, the PTC scope will be added to the CS086 contract either by addendum before bidding or by contract modification after award. Bid advertisement was most recently forecast for May 12, 2017, but this did not occur. ESA has not provided a new forecast bid advertisement date. Bid advertisement delays

through 2016 and into 2017 will now be at least eight months. The PMT noted previously that alternate procurement strategies are being considered to minimize coordination issues that would develop due to adding another third-party contractor requiring access to guideway and control area spaces. These alternatives include:

- Add CS086 scope of work to existing contract via contract modification.
- Use a negotiated procurement (RFP process) for CS086 to allow for pre-award establishment and agreement on contractor coordination processes.

ESA sought to negotiate an acceptable contract modification with the CS179 contractor for construction of the scope of work for package CS086. The CS179 contractor's final cost proposal was submitted on June 16, 2017, and ESA determined that the price was not reasonable. As a result, ESA-PMT has decided to pursue a negotiated procurement, RFP process, for the CS086 contract. This will require MTA Board approval and will be presented at the July 2017 MTA Board meeting. The RFP advertisement is expected to follow in late July 2017 or early August 2017.

Package FQA33A, Mid-Day Storage Yard Facility – Amtrak F/A, includes provision for yard access to Amtrak via Sub 4 to Line 2. ESA met with Amtrak during 1Q2017 and there is one outstanding issue to which the GEC must respond. This issue was expected to be resolved at a meeting with Amtrak in June 2017, but the meeting was deferred based on Amtrak's request for determination of the full scope of MDSY exiting routes as related to PSCC operations. ESA and the GEC are currently considering further design changes to the exiting routes from the MDSY. Upon completion of review of the additional yard exiting and briefing LIRR, ESA will schedule the follow-up meeting with Amtrak.

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 alternative alignment that does not include the diamond crossover was developed by the GEC. ESA will meet with LIRR to review the alternative design. Upon resolution of LIRR comments, the GEC will incorporate the changes in the design package. When LIRR is satisfied with the revised alternative design, ESA will meet with Amtrak to obtain Amtrak's approval. The alternative alignment does involve some minor adjustments to the current CQ033 track layout but no major impact is anticipated.

Contract CH057D, Harold Track Work - This is a new package that includes completion of all the remaining track work in the Harold Interlocking. The package scope of work has been finalized by the PMT and the CM. MTACC is seeking labor clearance from LIRR for track work only, however, some issues remain with the unions and meetings with LIRR continue.

Positive Train Control

The PMT has advised that the MOU between MTACC and LIRR for 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, but the "Technical Concurrence Document" is still in review. LIRR has issued the WAR (Willingness to Accept Risk) Certificate for the PTC design work only. This will permit ESA and the GEC to start modifying the scope of work on ESA contract packages CS179, VS086, and CS086 to provide for overlay of the LIRR designed PTC onto the ESA systems.

Summary of Systems Contractors' Designs:

[**Note:** The information presented below for the VS086 contract comes from discussions at a mid-June 2017 Progress Meeting that reviewed contract progress up to June 15, 2017, and from the MTACC's April 2017 ESA Monthly Progress Report (MPR)].

The VS086 contract is a contract for design and procurement of Signal equipment and systems for installation under the future CS086 Tunnel Systems Package 2 – Signal Installation contract. The Contractor's designs for the various equipment and systems have been underway since NTP was given in September 2014. Progress, however, on the interim design milestones on this contract continues to be significantly behind schedule. In a mid-June 2017 contract progress meeting, MTACC advised that a contract modification changing the interim milestones was ready for signature by the contractor. While this contract modification will allow MTACC to more effectively manage this contract, the PMOC is concerned that several other significant outstanding design issues that could potentially impact the contract completion date are not included in the revised milestone modification.

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 minimal progress on reducing the backlog has occurred. Discussions on ways to remedy this issue continue between MTACC-ESA senior management and LIRR management. In several of its ESA Monthly Progress Reports, MTACC indicated that the contractor's ten (10) Control System Designs would be completed by December 2016; nine months later than originally scheduled. MTACC's goal to complete the final designs of the ten Control Systems by the end of 2016 did not occur, however, as several of the system designs needed to be re-submitted for further review and approval and one other system's final design had yet to be discussed in a final design review meeting. As of the end of June 2017, the final design review meeting for the CCTV and SMS Control System has yet to occur; and, the contractor indicates that the final designs for several other Control Systems are incomplete, awaiting responses from the MTA on design questions**.** Although MTACC indicates in its April 2017 MPR that nine (9) of the Control System Final Designs are approved, the LIRR, who is the primary stakeholder of the ESA Project, has yet to issue formal "sign-off" approval for any of the Control System Final Designs.**[Ref: ESA-125-Sep16]**

[**Note:** The information presented below for the CS084 contract comes from discussions at a mid-June 2017 Progress Meeting that reviewed contract progress for May 2017 and from the MTACC's April 2017 ESA Monthly Progress Report (MPR)]

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 six of seven contract Milestones are delayed due to unresolved SCADA issues.

Observation:

The GEC and PMT continue to consistently miss many of the target dates for completion of remaining design activities on the project. These delays, in turn, push back procurement and construction completion dates. [redacted] Some of the delays are caused by the requirement to add Positive Train Control to the associated systems design and equipment, and other delays involve outside stakeholders. Additionally, the PMOC remains concerned about any potential impacts on the CS179, 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 notes 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, additional improvement is needed.

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

As of the end of April 2017, the Total Cost Report showed total procurement activity on the project as 87.9% complete, with $8.950 billion in contracts awarded out of the $10.178 billion current reported budget.

Status:

Contract CQ033, Mid-Day Storage Yard Facility, was advertised on October 20, 2016, with bid sets available starting October 24, 2016. The Pre-Bid conference/site tour was held on November 10, 2016. This contract was an Invitation for Bid (IFB) procurement. The bid date had been extended from December 22, 2016, to January 19, 2017, and then to February 17, 2017. Four bids were opened on February 23, 2017. The contract was awarded on April 11, 2017, and the Notice-to-Proceed was issued on the same day. Total bid advertisement delay during 2016 was six months and total bid date delay into 2017 was two months. The PMOC notes that unresolved design and approval issues that continued over an extended period of time are primarily responsible for the late procurement.

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

- CM015, 48th 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 ten months.

- CS086, Systems Package 2-Tunnel Systems – Advertisement expected August 2017; Bids due (TBD). Total bid advertisement delay through 2016 and into 2017 is fourteen months.

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

Concerns and Recommendations:

The lack of stability in the contracting strategy and Contract Packaging Plan (CPP) remains a concern. 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 April 2017 Monthly Progress Report that the total construction progress reached 69.4% complete vs. 74.7% planned.

Manhattan Contracts

CM006 – Manhattan North Structures

Status: As of May 1, 2017, MTACC slightly decreased its Forecast at Completion for CM006 to $358,127,433. MTACC reported the Substantial Completion (SC) slipped from June 8, 2017, to June 22, 2017. Actual construction progress for April 2017 was 1.6% versus 0.6% planned. Cumulative progress through May 1, 2017, was 97.1% actual versus 98.5% planned.

Construction Progress: During June 2017, the CM006 contractor continued to complete remaining base contract work elements, which included: concrete stairs, ramps, and walls at the North Back of House (both caverns), doors, and hardware. The contractor continued punch list work items and completion of NCR work.

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 are no delays 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 May 1, 2017, the MTACC Forecast at Completion remained $712,311,733. The MTACC Forecast for Substantial Completion slipped over one month from March 6, 2020, to April 6, 2020, due to continued delays with the track work resilient tie block (RTB) submittal approvals. Actual construction progress for April 2017 was 2.3% versus 4.1% planned. Cumulative progress through May 1, 2017, was 13.1% actual versus 22.5% planned.

Construction Progress:

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.

Precast Concrete Member Overview – Through June 30, 2017, 20.1% of the precast had been set and completed (522 pieces out of an approximate 2,774). This percent complete reflects precast pieces set, rebar installed, post tensioning/grout, and concrete closure pours. Precast fabrication was approximately 80% complete.

South Back of House, East: Installation of formwork for the Upper Deck Slab has been pushed back to June 26, 2017, from the previous May 18, 2017.

South Back of House, West: Installation of formwork for the Upper Deck Slab is ongoing.

North Back of House, East: Installation of HVAC piping and erection of CMU walls is ongoing.

North Back of House, West: US-2 (Unit Substation) equipment installation is complete.

West Cavern: Waterproofing continues throughout wherever final rebar and lining is not complete. Post tensioning of multi beams and removal of temporary shoring is ongoing. Erection of Upper and Mezzanine Level beams, grouting beam pads, and installation of precast floor panels continue, and forming/placing closure concrete follows.

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

Tunnels: The existing "rat" slab has been demolished at the 63rd St. Tunnel, and scarifying of a section of the invert was completed. The Direct Fixation Fasteners (DFF) track installation is scheduled to begin June 15, 2017. Material deliveries to the substations and caverns continue in the east tunnel.

Amityville Yard: Precast storage and track mockup(s) construction are the only activities at this location

Environmental: No issues this period.

Please see Appendix J for current Cost performance.

Observations/Analysis: As of May 1, 2017, ESA reported that the precast installation is trending behind the baseline progress, 13.5% actual versus 13.9% planned.

Concerns and Recommendations: The PMOC is concerned that if the precast erection continues to trend behind the baseline schedule, it will impact the schedule of all successor activities and separate contracts such as VM014 and CS179. However, ESA needs to actively monitor the precast installation sequence in order to ensure that the contractor stays on schedule.

Also, there were no track construction activities 2Q2017. LIRR completed review of the Resilient Tie Block (RTB) submittal and Qualification Testing of RTB units has started. Final approval for product acceptance and production is contingent on successful results from testing. The contractor's schedule continued to show increasing slippage of the Substantial Completion date and delay to achieving Milestone #4 (Track and Third Rail Work Complete) due to amount of time required for approval to use the Resilient Tie Block (RTB) proposed by the contractor. ESA, GEC, and LIRR need to remain diligent to resolve all issues related to this special trackwork.

CM014A – GCT Concourse & Facilities Fit-Out

Status: MTACC reports that, as of March 1, 2017, the forecast project cost at completion has decreased slightly to $58,175,904 from the previous $58,297,650. 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. However, MTACC also reports that, as of its April 2017 monthly report, there is still no signed agreement on this point between MTACC and the contractor. MTACC reports there was zero actual construction progress as of May 1, 2017. Cumulative progress through May 1, 2017, has, without explanation, been reduced to 94.4% from the previous 97.1% versus 100.0% planned.

Construction Progress:

Through June 30, 2017, the ESA CCM Office has advised the PMOC that all tests and repairs have been completed. The final work of "racking" the repaired breaker requires the presence of ConEd at the site. This will take place in September 2017 after the annual summer ConEd moratorium.

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 is continuing 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 May 1, 2017, the final forecast cost at completion has decreased to $481,818,608 from the previous $482,141,505. The Substantial Completion date remains 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, and issues with the availability of subcontractors to perform finish work in the 4 Wellways. Actual construction progress for April 2017 was 1.1% versus 1.9% planned. Cumulative progress through May 1, 2017, was 34.8% actual versus 86.3% planned.

Through March 31, 2017, Surveying in the Concourse continued and will be on-going throughout this contract.

Schedule

The contractor's monthly updates now consist of the Recovery Schedule. The MTACC forecast for substantial completion has been extended to June 17, 2019.
Milestone #4 (Comm. Closets CC-C3, CC-C7, & Room B3265) Was originally March 5, 2017; extended to May 25, 2017; now August 25, 2017 – 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 a change order is being negotiated.

Milestone #5 (44th St. Vent Building) June 4, 2017 – This milestone has been extended to December 13, 2017.

Milestone #5A (Completion of 48th St. Entrance) November 25, 2016 – This milestone delay has been extended to October 2, 2017, from the previous April 2017. There is still discussion underway to possibly transfer some of this scope to the future CM015 contract.

Construction Progress:

Concourse

Safety walkthroughs take place weekly and housekeeping, dust control, and safety items are addressed daily and are ongoing.
Stantec Repairs (repairs to existing structural columns in Madison Yard) continue throughout and near completion. Third Party Inspections continue for concrete, shotcrete, rebar, masonry, bolting, welding, and firestops. Some precast and cast-in-place manholes and handholes have leaked

because of deficient waterproofing, and have been replaced. Structural steel deliveries are ongoing and steel erection continues from south to north.
Electricians continued with installation of overhead conduit, moving from south to north in the Concourse, with the installation of Unit Substations #9 and #10, and with the medium voltage (MV) feeders to Unit Substations #7 - #10.
Piping in the West Mechanical Corridor and the Chiller Plant is ongoing. Installation of AHUs (Air Handling Unit) and FCUs (Fan Coil Unit) is ongoing throughout the Concourse. Painting of block walls and columns continues throughout Zones 1-4.
Placement of the final concrete slab invert continues at approximately 85% complete throughout the Concourse. Masonry material deliveries have been made throughout the concourse and erection of walls for rooms proceeds from south to north. Painting of block walls and columns continues throughout Zones 1-4.

Wellways

All 5 of the lower sections of escalators in Wellway #1 have been set. Installation of the upper "head" sections is next. The Wellway #2 area is prepared for installation of the structural steel rigging structure and sled tracks in the escalator incline have begun. Installation of the glass tile finishes continues in Wellway #3 and #4. The perforated wellway ceiling mockup will be ready for review at the California factory on June 19, 2017. A mockup at the site will be erected when approved.

3- Story Building

This is another area that is significantly affected by the structural steel fabrication and delivery delay. Erection of CMU began during June 2017.

Biltmore Connection

Installation of grounding grid and top mat reinforcement at the platforms at Tracks #39 - #42 was completed. MNR has not given permission for the placement of the platform. GCT has now directed VM014 to proceed with the escalator dimensions shown on the contract drawings and the contractor has resumed escalator fabrication. Conduit relocation continues on the MNR Express Track Level.

Dining Concourse Connection

Installation of conduit racks and overall fit-out is ongoing in the Escalator Machine Room.
Installation of the machinery controls is ongoing. Fit-out of the escalator(s) finishes continues.

Shaft #2

Installation of lighting nears completion.

Shaft #3

Installation of Stair #22 and lighting continued.

Shaft #4

Installation of conduit and lighting continued.

Elevator T-01

The casings for the hydraulic elevator have been set. Cleaning the shaft and installation of temporary power and lighting continues.

44th St. Vent Building

Completion of the MTA supplied steel stairs continues from the 3rd Floor to the Ground Floor. Pulling branch wire in the 2nd Basement continues. Utility work on the south side of E. 44th St. nears completion. Installation of Elevator #12 began. Installation of CMU nears completion in the shaft.

45th Street Cross Passageway (CPW)

Installation of Elevator #21 continues.

47th Street Cross Passageway

At Elevator #13, a Stop Work Order has been directed because the contractor has 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.

48th Street Entrance

Excavation of rock from the Express Level to the Concourse is ongoing along with cross-bracing. Re-paving of the street is scheduled for completion in October 2017.

50th Street Vent Building

Installation of Elevator #9 door frame and sill installation was completed at the Street and Concourse Levels. Installation of light fixtures and pulling of outlet wires throughout continues.

Please see Appendix J for current Cost performance.

Observations/Analysis: The recent issues concerning major repair work by Amtrak at Penn Station are now impacting this ESA contract. MTA (MNR) and Amtrak are finalizing an agreement to have some Amtrak trains run out of Grand Central Terminal from approximately July 10, 2017, through September 1, 2017, and again in 2018. Amtrak will use the Loop Tracks on the GCT Express Track Level. This impacts the project because CM014B has Express Track Level outage agreements in place with MNR to continue the work on the new entrances into the new Concourse. The presence of Amtrak operations puts that work on hold.

Concerns and Recommendations: The PMOC is concerned about the significant lack of progress and what appears to be slow advancement of the recovery schedule, which was a concern before the announcement that Amtrak will operate trains from GCT. The PMOC observes that if the Amtrak trains do not return to Penn Station in September 2017 and instead remain in GCT through September 2018, the work on Concourse Entrances will come to halt. The Cost and schedule impacts cannot be estimated at this time, but could be significant.

VM014 –Vertical Circulation Elements (Escalators & Elevators)

Status: MTACC reports that through May 1, 2017, the final forecast 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. MTACC reports that, through April 2017, the contractor completed 38.8% 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 contract

Construction Progress:

During June 2017, the contractor continued with the Phase II fabrication work. There are 47 total escalators and 21 total elevators. Through June 30, 2017, there were 9 escalators fabricated and either stored at the contractor's storage facility or on site. There were 38 in engineering, engineering complete, or in fabrication. 10 elevators have been fabricated and either stored at the contractor's storage facility or on site. 11 are in engineering, engineering complete, or in fabrication. Each escalator for the wellways consists of 11 sections covering an approximate 91' rise and 200' plus length.

New 45th St. Node Entrance: The new conceptual plan for the escalator and elevators has been sent to the contractor as information only. The ESA CCM advised that MTACC is now treating this entrance as a private entrance. The property developer will procure and install the respective escalators and elevators.

Biltmore Room Connection: The contractor's layout drawings have been approved and MTACC has directed that the dimensions on the contract drawings be used in fabrication.

Wellways: The contractor is experiencing a serious issue in Wellway #1. There is a water problem that appears to be coming from the Metro North track area above the Concourse. This will have serious impact on the ability of the contractor to install equipment in the escalator pit area.

Fabrication: The VM014 CCM visited the contractor's North Carolina escalator factory on June 1, 2017.

Tests: The contractor has submitted the Factory Acceptance Tests (FAT), but needs to provide the field test procedures.

Please see Appendix J for current Cost performance.

Observations/Analysis: The PMOC observes that, even though the VM014 contractor has the information needed to resume production of the Biltmore Room escalators, there is no estimate of what the schedule impact to fabrication will be, considering this month's long delay.

Concerns and Recommendations: The PMOC is concerned that the apparent slow progress of the controls subcontractor may impact other contracts, such as CS179.

Queens Third-Party Contracts

CQ032 Contract – Plaza Substation and Queens Structures

Status: As of May 1, 2017, the Forecast at Completion for CQ032 increased slightly to $263,257,107. MTACC reported the Forecast for Substantial Completion (SC) remained June 16, 2017. ESA later reported SC was not achieved, and now forecasts this to occur in July 2017. MTACC reports actual construction progress for April 2017 was 0.0% versus 0.0% planned. MTACC reports cumulative progress through May 1, 2017, was 99.9% actual versus 100.0% planned.

Construction Progress: During June 2017, the CQ032 contractor continued punch list work items, continued commissioning activity in the Yard Services Building (YSB), and close-out deliverables preparation. LIRR has requested further training to be delayed. ESA reported that SC remains dependent on these items: O&M Manuals, training, NCR resolution, etc. ESA also reported that another remediation effort is being planned to deal with the ongoing water infiltration at the old Early Access Chamber (EAC) and 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 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: On April 11, 2017, MTACC issued the Notice of Award and Notice-to-Proceed for Contract CQ033 to the contractor for the amount of $291,503,430. ESA reported that this sets the substantial completion date to August 9, 2020. Cost and schedule data on construction progress will be presented when ESA begins reporting for this new contract.

Construction Progress: The contractor has continued mobilization, permit applications, and the preparation of submittals and other documentation for this contract.

Observations/Analysis: None at this time.

Concerns and Recommendations: None at this time.

CH057 Contract – Harold Structures Part 3

Status: MTACC's Forecast at Completion for CH057 decreased to $87,188,758 during April 2017 due to continuing work scope deletions. MTACC's forecast for Substantial Completion (SC) remained at July 5, 2017, although the ESA Construction Manager announced that ESA would declare SC effective June 30, 2017 (which it did), during the CH057 June 2017 Progress Meeting. Actual construction progress for April 2017 was 4.3% versus 1.6% planned. Cumulative progress through April 30, 2017, was 84.1% actual versus 89.2% planned (based on cost incurred rather than actual construction).

Construction Progress: During June 2017, the CH057 contractor continued construction of LIRR MM4 Track (which will be connected to existing ML4 Track and become the new ML4 Track later this year), continued wayside electric installations at various project sites, and continued punchlist repairs in the Tunnel D Approach Structure and headhouse.

Please see Appendix J for current Cost Performance

Observations/Analysis: The ESA PMT and the contractor worked well throughout the life of the CH057 contract and will achieve Substantial Completion prior to its original baseline schedule of May 25, 2018. The PMOC notes, however, that the original baseline contained significantly more base and option work that has been deleted from the contract as it progressed.

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

Contract CH057A – Part 3 Westbound Bypass

Status: MTACC's Forecast at Completion for CH057A decreased to $161,319,625 during April 2017. The MTACC forecast for Substantial Completion remained at July 25, 2018. Actual construction progress for April 2017 was 1.2% versus 5.0% planned. Cumulative progress through April 30, 2017, was 53.5% actual versus 75.6% planned (based on cost incurred rather than actual construction).

Construction Progress: During June 2017, the CH057A contractor completed construction of parapet walls on both sidewalls of the West Approach Structure of the Westbound Bypass (WBY) west of the Queens Boulevard overhead bridge and demolition of obstructions that were preventing

the contractor from continuing construction of the East Approach Structure between the Honeywell Avenue overhead bridge and the WBY Tunnel. Mining of the WBY Tunnel and its pump station construction remained on "Hold" as the ESA PMT and the contractor continued to negotiate the parameters of work resumption in those locations, as described in greater detail in the "Observations and Analysis" section below.

Please see Appendix J for current Cost performance

Observations/Analysis: The negotiation process to resume WBY Tunnel mining has been long and drawn out as ESA addresses the various allegations the contractor has made and the parties attempt to find common ground on which both can agree, although, to date, neither party has advanced its disputes to the Dispute Resolution Board (DRB). The three issues that resulted in the original stoppage of work remain virtually unchanged, i.e. the contractor alleges differing soil site conditions and that the concrete slab which will form the roof of the tunnel is structurally not sufficient to mine under and has agreed that modifications to the "jacked shield" must be made in order to prevent the vertical uplift that the shield encountered when it began mining. Concerning the differing site soil conditions, ESA has maintained since the start of the work stoppage that the soil conditions were as indicated in the contractual geotechnical report. The ESA Construction Manager informed the PMOC that, in mid-June 2017, ESA notified the contractor that the concrete slab under the Amtrak/LIRR main line tracks (which the contractor had alleged was not structurally sufficient to mine under) is "Fit for Purpose", and is therefore no longer a factor in the continuing delay to WBY Tunnel mining. As of June 30, 2017, total delay to the resumption of tunnel mining is now 11 months.

Concerns and Recommendations: The PMOC remains concerned about when the contractor will resume mining the Westbound Bypass Tunnel, but realizes that the contractor and the ESA PMT are in a contractual dispute. The PMOC recommends that the ESA-PMT and the CM focus on resolving the open issues involving structural adequacy, safety, unanticipated/changed site conditions, design/technical review, construction means and methods. Subsequent to issue resolution, MTACC and the contractor will need to evaluate contractual cost and schedule impacts and then agree to a settlement. The PMOC also notes, however, that completion of the WBY is not critical to the "ESA First" program priority since it is not needed for LIRR to provide service to Grand Central Terminal.

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.

CS179 - Systems Package 1-Base Contract

Status: In its April 2017 Monthly Progress Report (MPR), the MTACC notes that the contract Forecast exceeds the current contract Budget, with the Forecast at $612,583,759, versus a $606,938,540 Budget. MTACC indicates this $6.4M variance is mainly driven by the potential contract modifications for water infiltration mitigation, as well as trough cover procurement and installation efforts. In its April 2017 MPR, MTACC shows a progress curve for the CS179 contract that presents actual contract progress as 45.8% versus a planned 69.7%; numbers that are based on actual versus projected costs, not physical construction efforts. These progress numbers continue to imply that the contract is significantly behind schedule. In its April MPR, MTACC indicates that the Integrated System Test Plan (ISTP) schedule is approved and included in the contractor's monthly schedule update. However, in the June 1, 2017, monthly progress meeting, the contractor advised that Schedule Update No. 26, with a data date of May 1, 2017, did not include the ISTP schedule information. The contractor indicated that the ISTP schedule would be included in the next schedule update. The next step is to incorporate the ISTP schedule into the overall ESA Integrated Project Schedule (IPS). The PMOC has requested copies of the contractor's schedule updates and any MTACC comments on those schedules. Despite the continuing, now 15-month, slippage in the completion of the Control System designs, the MTA's reported Substantial Completion (SC) date for this contract remains at July 1, 2020; an approximate seven-month delay from the original November 19, 2019, SC date. MTACC also notes in its April 2017 MPR that the completion of the 19 non-control system designs is behind schedule, causing delays in the fabrication of equipment racks. As of the end of June 2017, all but two Contract Options (Option Nos. 4 and 5) were exercised. The ESA CS179 CM indicates that these remaining two contract Options will be exercised in 2017 as per the schedule identified in Contract Modification No. 18. 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 additional potential Buy/Ship America issue (public address system speakers) remains under investigation. In May 2017, the FTA requested some cost information related to these HVAC units; and, the MTA provided that information in June 2017. The waiver request letter for the video monitor display panels continues to remain under review by MTA Legal staff with no forecasted completion date for when the MTA Legal staff will complete its review. 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. The contractor continues to note that its Notice of Change (NOC) Log shows 127 Contract Proposal Requests (CPRs) that it has responded to still remain in an open status; and the lack of closure on many of these CPRs is causing serious delays on contract work, particularly finalization of designs. Further, the contractor notes that in conflict with contractual requirements, it has not received timely responses from MTACC on many of the NOCs. MTACC acknowledges that the closure of open CPRs and timely responses to NOCs need increased attention.

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 June 2017, the completion of the final designs of the last of the 10 Control Systems is still an open item that is already 15 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. In its April 2017 ESA MPR, MTACC reports that nine of the ten Control System Final designs are approved. However, the contractor advises that some elements of the final design for two other Control Systems (the FLSS and BMS systems) are not "approved". MTACC recently advised that it sent forms for the approval of the SMM and AMS Control Systems to the LIRR that, once signed by the LIRR, would formally acknowledge the LIRR's approval of the final designs of these two systems. As of the end of June 2017, the execution and return of these approval forms remains as an open item. Further, the PMOC continues to note that, as of the end of June 2017, the LIRR has not provided any "formal" notification to MTACC that any of the Control System final designs are "accepted" or "approved". 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. The PMOC remains concerned about the LIRR's approval of the designs, and it will continue to follow this important aspect of the design process. In addition to the "Control" system designs, the contractor is also responsible for the design, fabrication, installation, and testing of 19 "Non-Control" Systems. MTACC advised in its five most recent MPRs that the contractor's progress on these non-control system designs is falling behind schedule and will cause delays to the fabrication of equipment racks. In response to a request from the PMOC to the ESA CS179 CM to provide progress data on each of these systems that might identify the extent and impact of any reported delays, the contractor developed a tracking system to identify design progress for these Non-Control Systems. 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 the numerous CPRs and NOCs noted above. The contractor continues to state that other design and coordination issues continue to cause schedule delays; and, that any further delay in the closure of the open CPRs, 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. MTACC will need to evaluate these assertions against an updated contract schedule that includes an accurate and comprehensive listing of all contract activities; including those associated with the closure of the CPRs and NOCs.

Construction Progress: During June 2017, 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 severely impacted the progression of work on this and another Systems' contract. Water infiltration remediation work was previously performed at the Vernon, 23rd St., and 29th St. facilities. In an early June 2017 progress meeting, MTACC advised that the water infiltration related to the floor of the TPSS room at the Vernon facility was successfully mitigated; and, although this TPSS room still has water infiltration issues from a leaky access hatch, the CS084 contractor should be able to begin some of its contract work in the room. The CS084 contractor performed a turnover inspection of this

TPSS room in June 2017 and found it unacceptable for turnover. The CS084 contractor noted that it found additional water infiltration and numerous other issues that, it contends, preclude it from performing CS084 work in the room (see "Construction Progress" under CS084 later in this report for additional information on this). Additionally, the remediation work for the 23rd and 29th Street facilities initially appeared to be effective. However, new water infiltration areas in the 23rd Street and 29th Street facilities are now apparent. As previously reported, the subcontractor responsible for system designs and equipment fabrication, assembly, and testing advised that, based on the Control System final designs presented at the various Final Design Review (FDR) meetings, it continues to move forward on the procurement of Control Systems equipment. As a result, assembly of equipment racks in the subcontractor's off-site facility continues. 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 a 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 and CPRs that remain as open items impacting the timely progression of the contract work. The PMOC believes that MTACC needs to focus on addressing those CPRs and 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-June 2017 Progress Meeting that reviewed contract progress for May 2017 and from the MTACC's April 2017 ESA Monthly Progress Report (MPR)

Status: In its April 2017 ESA Monthly Progress Report (MPR), MTACC reports that the Budget and Forecast for the CS084 contract remained at the $79,717,772 level previously reported. In its April 2017 MPR, the MTACC cites an August 15, 2020, SC date. This is a five-week delay from that reported by MTACC in its March 2017 MPR, and a nine-month delay when compared to the original December 2, 2019, SC date established when the contract was awarded. The MTACC contends that the five-week delay in SC is due to a projected delay in the CM007 contract that impacts an Access Restraint for the CS084 contractor. In its April 2017 ESA MPR, MTACC shows a progress curve for the CS084 contract that presents actual progress as 12.0% versus a planned 71.4%; numbers that are based on actual versus projected costs, not physical construction efforts. The actual versus planned progress numbers contained in MTACC's April 2017 MPR 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 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. As noted in previous PMOC reports, the contractor continues to assert that previous delays in receiving comments back from MTACC on the C05 facility switchgear, the SCADA requirements, PLC information, and the general C08 substation design impacted its ability to meet its own original design, procurement, fabrication, and installation schedules. The ESA CS084 CM worked with LIRR senior management and the General Engineering Consultant (GEC) to focus on the priority of these designs; and, a very significant improvement in reducing the backlog of submittal reviews was noted in December 2016. However, during 1Q2017 and 2Q2017, some additional submittal response issues re-surfaced, with over 55% of the outstanding submittals assigned to the LIRR exceeding the 30-day turnaround time stipulated in the contract. By the end of the 2Q2017, improvement in reducing the backlog of responses was noted. Although the contractor continues to cite the resolution of SCADA issues as one of the primary causes of day-to-day delays on the contract, there does appear to be some improvement in the resolution of this issue. Agreement was reached on a specific type of switching equipment for the SCADA system and technical meetings are being held to discuss software and Graphic User Interface (GUI) requirements. However, issues related to the Programmable Logic Controllers (PLCs) and substation designs continue, per the contractor, to contribute to work delays. In the early part of 2Q2017, the subcontractor designing and fabricating the only pre-fabricated substation on this contract (Substation C08 at 43rd Street in Queens) advised the contractor that, due to the lack of responses from the MTA on design questions and submittals, it was "bumping" the CS084 contractor out of the previously established design and fabrication cycle in its facility to perform other work. This action would impact the design completion, and potentially, the delivery of the C08 substation to the MTA. The design and fabrication of the C08 substation are two activities that are the primary critical path on the contract schedule. The contractor advised that, because of the re-assignment of the design resources to other work, the subcontractor will not be able to finalize and re-submit design calculations for the C08 substation until the end of July 2017. When the MTACC requested that the contractor urge the subcontractor to complete that activity sooner, the contractor balked at taking that action until it received a guarantee from MTACC that any review of calculations would receive an expedited review by the MTA. MTACC advised the contractor that review turnaround times established in the contract would be observed. At the end of the 2Q2017, the contractor advised that it was working with the C08 substation fabrication subcontractor to re-establish design and fabrication schedules. The contractor continues to indicate that it will submit a Time Impact Analysis (TIA) related to the SCADA issues, as it contends that the lack of clarity on SCADA has caused delays to its contract schedule. Previously, the GEC completed work on design changes and CPRs were issued to address the penetration to the track level and room beam height issues at the Vernon (C05) facility.

The contractor noted that it still had issues with some of the designs and that it was still waiting for responses to RFIs on the designs before it could submit proposals related to the work. The PMOC remains concerned about the length of time it is taking to provide responses and designs to resolve the various issues. MTACC needs to prioritize with the GEC and the LIRR the process to provide timely submittal responses and designs so as to preclude any further delays to the contract.

Construction Progress: As previously reported, the contractor finished all of the extra L3 electrical service work in November 2016 and turned the service over to the MTA. The LIRR has yet to fully use the service to energize all its signal huts because MTACC had to issue a contract modification for the contractor to perform additional work that was identified in November 2016. That contract modification was issued in the 2Q2017, enabling the contractor to make preparations to start the work. Other than the contractor performing site surveys and meeting with other contractors on coordination issues, there is no active on-site construction work taking place at this time on the CS084 contract. Water infiltration issues in equipment rooms continue to impact the start of construction efforts and the timely completion of the contract work. The most significant of these water infiltration issues has been the one in the Vernon (C05) Traction power Substation (TPSS) room. In June 2017, the contractor advised that, at the request of MTACC, it had performed a turnover inspection of the Traction Power Substation (TPSS) room at the Vernon C05 substation facility. The contractor indicated that, in addition to water infiltration still evident from the hatch area in the C05 TPSS room, there are numerous other significant issues with the TPSS room that precluded it from accepting a turnover of the room to the CS084 contractor. MTACC sent the contractor a letter directing the CS084 contractor to begin work in the TPSS room, even though another contractor will still be working in the room for quite some time. The CS084 contractor took issue with that directive, citing accountability issues and the problems/issues observed during its inspection of the TPSS room. The contractor will be submitting a "Nature of Deficiency" document, describing in detail the identified problems/issues that must be corrected before it accepts responsibility and begins contract work in the C05 TPSS room. One other significant deficiency with the C05 TPSS room was noted this month by the contractor. The floor of the C05 TPSS room is supposed to have a 3/8 inch depression in it to accommodate the installation of di-electric padding under the traction power equipment. The floor was installed by another ESA contractor, and accepted by MTACC, without this 3/8 inch depression. The CS084 contractor advised MTACC that if MTACC wanted the CS084 contractor to provide that depression, it would be "extra" work requiring a contract modification. Additionally, the contractor contends that the conduit holes provided by another contractor to link the C06 and C07 rooms do not line up properly with the configuration of the equipment it is providing and that some elongation of the conduit opening is required as "extra" work. The contractor contended that the resolution of this item was holding up fabrication of the rectifier equipment. MTACC sent a letter to the contractor contending that the contractor should have allowed for the size of the conduit opening in its design of the substation equipment and room layout. Although discussion of this item was contentious at the progress meeting, it appears that MTACC and the contractor have identified a solution to this problem that is acceptable to both parties. In its previous ESA MPRs, MTACC indicated that a transfer of construction work scope from this contract to either the CH058A or the CS179 contract was being considered to address the installation of traction power cabling for the C08 substation. The contract calls for this cabling, which is necessary to perform the testing of the C08 substation and the integrated and dynamic testing of all the CS084 substations, to be installed in MTA-provided ductwork between the C08 substation and the track. Because procurement efforts on other ESA contracts were delayed, the CS084 contract schedule

shows the testing to be performed before the ductwork is installed under any other contract; thus the consideration to transfer the cable installation and substation testing to another contract that will still be active once the ductwork is installed. The PMOC previously reported that MTACC was considering not only the transfer of this one substation's (C08) testing, but also the integrated substation testing for all the substations installed by the CS084 contractor. This would, in effect, allow MTACC to declare SC for the CS084 contract and release the CS084 contractor from the further participation in the ESA project. The PMOC continues to note that should the "live load" (dynamic) testing of the C08 substation and, consequently, the contractually required integrated live load testing of all the CS084 substations be transferred to another contract, work performance accountability issues could arise if test results are other than satisfactory. While this plan for testing is not specifically identified in the MTACC's April 2017 MPR, it is still a significant issue that must be addressed quickly, as the critical path of this contract goes through the completion of the C08 substation and any adjustment to the work scope for this substation will have a noticeable impact on the contract schedule. The PMOC's concern and a recommendation on addressing the concern are noted below.

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. MTACC should prioritize the delivery of requested design information related to the PLCs, the approval of substation designs, and the execution of SCADA-related contract modifications so as to preclude any further impact to substation design and fabrication. In regard to the "live load" (dynamic) testing of C08 substation and the integrated testing of all the CS084 substations, the PMOC is concerned that if any of the testing produces unsatisfactory results once the current CS084 contractor is no longer active on the ESA project, then the project is subject to a "finger-pointing" exercise to determine which contractor is at fault for the unsatisfactory results. The PMOC previously suggested to the ESA CS084 CM that the MTA might want to consider transferring the installation of the ductwork to another contractor, while leaving the requirement for the installation and testing of the cable and substations under the CS084 contract. This could be accomplished by temporarily "de-mobilizing" the CS084 contract for a short period of time and then "re-mobilizing" the CS084 contractor to perform all the testing. That way, any issues or problems that might surface during the testing period are still the responsibility of the CS084 contractor, eliminating any "finger-pointing" between multiple contractors.

VS086 – Systems Package 3 – Signal Equipment Procurement

[**Note:** The information presented below for the VS086 contract comes from discussions at a mid-June 2017 Progress Meeting that reviewed contract progress up to June 15, 2017, and from the MTACC's April 2017 ESA Monthly Progress Report (MPR)].

Status: In its April 2017 ESA Monthly Progress Report, MTACC incorrectly indicates that the Forecast of $22,024,987 is within the $21,835,022 Budget. The forecasted SC date is now shown as November 12, 2019, one month later than the October 14, 2019, date established at contract award. The contractor's latest schedule update shows the five interim contract milestones delayed anywhere from 398 to 557 days. The MTACC advised that a contract modification changing the interim milestones is ready for signature by the contractor. Once executed, this contract modification will establish re-baselined interim contract milestones. 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 be theoretically 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. During the 2Q2017, the contractor shifted some of its design personnel to other non-ESA projects. The contractor contends that this was done as a direct result of not receiving timely responses on design issues from the MTA. While this action purportedly kept the contractor's design personnel gainfully employed, it resulted in additional delays in the completion of designs on the VS086 contract. 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. 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. To begin addressing this request, MTACC developed a discussion paper identifying several issues related to this replacement and sent it to the LIRR for review in May 2017. The contractor has 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. 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). To accommodate these approval requirements, the contractor provided the LIRR with some of the TRU-III equipment. 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 for some undetermined amount of time before deciding on its acceptability for LIRR use. At the June 2017 progress meeting, the LIRR advised that field testing of this equipment was underway and would last for a minimum of six months. Once the results of the field testing are analyzed, the LIRR will make a decision regarding the use of this type of track circuit equipment on this contract. 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. Further, there are several other design issues that require a timely resolution or direction from the MTA, the most significant being the inclusion of a Positive Train Control (PTC) design in the overall Signal design. While a Memorandum of Understanding (MOU) between the LIRR and MTACC has been established to address administrative elements of the incorporation and implementation of this work, 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 April 2017 ESA 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. The contractor also notes that there are many of open change orders that could impact the contract schedule. While MTACC expressed the opinion that the upcoming contract milestone re-adjustment modification should address most of the issues identified in the open change orders, the contractor contends that there are still numerous decisions related to the change orders that must still be addressed.

Please see Appendix J for current Cost performance.

Observations/Analysis: The PMOC is encouraged to see that a contract modification is being issued to revise the interim milestone dates; but continues to be concerned that a number of other items that have potential schedule impacts (e.g., open change orders, decisions on track circuits, the use of LEDs, etc.) remain unresolved.

Concerns and Recommendations: The PMOC remains concerned that there is no accurate and comprehensive schedule in place that would allow MTACC to effectively manage this contract and encourages MTACC to quickly complete discussions regarding the development of such a schedule that addresses all the issues currently identified on this contract. The PMOC is concerned that design decisions that have the potential to negatively impact the contract schedule are not being made in a timely manner. 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 April 2017. The MTACC forecast for Substantial Completion remained at August 9, 2017. Actual construction progress for April 2017 was 0.0% versus 0.0% planned. Cumulative progress through April 30, 2017, was 98.9% actual versus 100.0% planned (based on cost incurred rather than actual construction progress).

Construction Progress: Amtrak did not perform any significant FHA01 construction during June 2017.

Please see Appendix J for current Cost performance.

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

Concerns and Recommendations: The PMOC has no concerns or recommendations regarding 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 April 2017. The MTACC forecast for Substantial Completion remained at May 20, 2018. Actual construction progress for April 2017 was 0.4% versus 0.0% planned. Cumulative progress through April 30, 2017, was 87.2% actual versus 81.0% planned (based on cost incurred rather than actual construction progress).

Construction Progress: During June 2017, Amtrak Electric Traction personnel continued to make catenary modifications in "F" Interlocking necessary for follow-on Montauk Cutoff bridge demolition for future Mid-Day Storage construction and over the #825 crossover. Amtrak C&S personnel continued to install signal trough, cables, and signal cases along the New Haven Tracks east of Harold Interlocking in support of the LIRR CIL cutovers scheduled for 2018.

Please see Appendix J for current Cost performance.

Observations/Analysis: Although the overall ESA program is behind schedule, Amtrak's construction support of ESA activities continues on schedule with whatever activity is currently the priority. As a result, the PMOC believes that Amtrak construction support of the ESA program is entirely adequate.

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

Loop Interlocking CIL Amtrak FQA65

Status: MTACC's Forecast at Completion for FQA65 remained at $33,287,863 during June 2017. The MTACC forecast for Substantial Completion remained at July 16, 2023. Actual construction progress for April 2017 was 0.2% versus 2.3% planned. Cumulative progress through April 30, 2017, was 17.1% actual versus 83.9% planned (based on cost incurred rather than actual construction progress). The PMOC is not concerned about this discrepancy due to the "hold" that MTACC put on FQA65 construction in early 2016 and the extended Substantial Completion date.

Construction Progress: Amtrak did not perform any significant FQA65 construction during June 2017.

Please see Appendix J for current Cost performance

Observations/Analysis: FQA65 construction is not a necessary component of the "ESA First" program. MTACC has therefore downgraded its priority and extended its schedule, which will have no impact on LIRR service into Grand Central Terminal.

Concerns and Recommendations: Due to the extended Substantial Completion date, the PMOC has no concerns about or recommendations for FQA65 at this time.

Harold Stage 1 LIRR FA (FHL01)

Status: MTACC's Forecast at Completion for FHL01 remained at $24,379,364 during June 2017. The MTACC forecast for Substantial Completion remained at September 9, 2017. Actual construction progress for April 2017 was 1.7% versus 0.0% planned. Cumulative progress through April 30, 2017, was 95.8% actual versus 100.0% planned (based on cost incurred rather than actual construction progress).

Construction Progress: During June 2017, LIRR 3rd Rail personnel continued to install 3rd rail cables into the new GO2 Substation and began 3rd rail installation on the re-aligned ML2 Track (although not placed in service as of June 30, 2017).

Please see Appendix J for current Cost performance.

Observations/Analysis: The 2Q2017 3rd rail construction necessary to place LIRR ML2 and ML4 Tracks in service has caused cable installation at G02 to take a lower priority. As a result, its schedule has lagged even further behind than it already was. At the beginning of 2017, cutover of G02 was scheduled for November 2017, but that schedule appears to be in danger. The PMOC estimates that the cutover will now take place mid-1Q2018. The new G02 Substation must be

operational so that the existing G02 Substation can be demolished to make way for the new Tunnel B/C Approach Structure, which will be constructed by the future CH058A contract. CH058A is scheduled to receive Notice-to-Proceed on June 12, 2018. Although the PMOC notes that the ESA PMT is planning to issue a contract modification to the existing CQ033 contract for demolition of the existing G02 Substation, nonetheless any further delay to the commissioning and start-up of the new G02 will have a ripple effect on the demolition of existing G02 and could result in delay to advertisement and award of the CH058A contract.

Concerns and Recommendations: The PMOC remains concerned that, because of MTACC's present emphasis on former Stage 2 and Stage 3 construction, former Stage 1 construction, such as the G02 Substation, will continue to lose priority. The PMOC believes that such work will accumulate and may delay RSD even further. The PMOC recommends that the PMT monitor incomplete or unstarted tasks, develop a master list of critical ones, and develop a plan to address all of them before the RSD date approaches.

Harold Early Stage 2 LIRR FA (FHL02)

Status: MTACC's Forecast at Completion for FHL02 remained at $84,417,099 during April 2017. The MTACC forecast for Substantial Completion remained at July 1, 2020. Actual construction progress for April 2017 was 0.8% versus 0.0% planned. Cumulative progress through April 30, 2017, was 94.8% actual versus 100.0% planned (based on cost incurred rather than actual construction).

Construction Progress: During June 2017, LIRR Signal personnel continued to install signal conduits, install, terminate, and meggar signal cables, and make signal revisions at the "H1", "H2", "H5", "H6", and Location 23 and 30 CILs and continued TSR (Train and Signal Routing) testing at those locations in preparation for the CIL cutovers scheduled for 2018. LIRR High Tension personnel continued to make modifications to separate LIRR signal power from Amtrak signal power.

Please see Appendix J for current Cost performance.

Observations/Analysis: Based on the May 1, 2017 MTACC IPS, the finish date for TSR testing was scheduled to be May 19, 2017, and the H5/H6/Loc 30 South pre-testing sequence was scheduled to begin immediately thereafter. As of June 30, 2017, however, TSR testing remained on-going, so the PMOC estimates that the start of the CIL cutover pre-testing will be delayed by at least 6 weeks.

Concerns and Recommendations: [redacted]

2.4 Operational Readiness

Status: The Quarterly Operational Readiness (OR) briefing for 1Q2017 was held on April 20, 2017. The information in this PMOC Comprehensive Monthly Report is based on information obtained during that OR briefing and a subsequent meeting with LIRR personnel. The next Quarterly OR briefing is scheduled for July 20, 2017. As noted in the PMOC's March 2017 report, the vacancy on Task Working Group (TWG) No. 7, the TWG responsible for Safety and Security

certifications and other Safety/Security-related items, that was created when the original leader of that TWG left the ESA Project in mid-January, was filled. That individual advised that meetings and workshops were being held with MTACC, LIRR, and MNR personnel to review and further define the draft LIRR ESA Emergency Action Plan. During the 2Q2017, the TWG continued to hold joint meetings to review Fire and Life Safety protocols and develop a Concept of Operations for the tunnels, GCT concourse and mezzanine, and Queens areas. As noted in previous PMOC reports, a substantial amount of work related to the completion of Safety and Security reviews of the various ESA contracts needs to still be accomplished to eventually provide the required Safety and Security Certifications of the Project's design and construction phases. During 2Q2017, MTACC reported significant improvement on the Security certification process; enough to reduce the PMOC concern on this specific certification process. MTACC will now focus on addressing the safety certification process issue. 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 significant component of the RAP, the ESA Comprehensive System Test Plan (CSTP) remains incomplete because of the delay receiving an approved Integrated System Test Plan (ISTP) and ISTP schedule from the CS179 contract. The PMOC requested that MTACC provide a schedule that shows the projected dates for completion of the various sections/volumes of the RAP. One particular TWG showing substantial progress is TWG No. 4, which is responsible for developing and implementing procedures for Asset Management. As of the April OR briefing, assets from four (4) substantially completed ESA contracts are already in a production database and interim maintenance on the assets has begun. The ESA Operational Readiness group also includes a TWG (TWG No. 11) whose responsibility is Fleet Readiness. 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) 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 target date was April 2016). As of June 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 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 be between July 2022 and August 2023 (a fifteen month time lag between the two suppliers).

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 the target 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, during April 2017, in Manhattan, MTA Real Estate issued a "Notice of Possession" to the owner of 335 Madison Avenue LLC that will allow MTACC to occupy the property for a one year period to construct and operate two elevators in the building. Negotiations with the Rudin Corporation concerning 415 Madison Avenue (for the planned 48th St. entrance), however, were put "On Hold" during 2Q2017 due to Midtown Manhattan zoning changes for which Rudin needs additional time to analyze before it commits to the easement agreement. In Queens, MTA Real Estate continued to update two agreements with Amtrak for construction of the Mid-Day Storage Yard and an easement through Amtrak's 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 April 2017 ESA Monthly Report indicates that April 2017 Community Relations efforts were centered around activities with two newly awarded contracts, QMP-1 and CQ033, both of which require extensive community outreach.

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:

MTACC submitted PMP Rev. 10 to the FTA and PMOC on July 18, 2014. This revision incorporates changes stemming from FTA/PMOC comments on PMP Rev. 9.0, provided in December 2013, as well as changes that resulted from the MTACC's Candidate Revision process. Based on working meetings, dialogue, and additional clarifying review comments from the PMOC, MTACC made additional changes to the PMP and submitted an updated Rev. 10 on September 18, 2014. The PMOC completed its review and evaluation of MTACC's revisions and responses and submitted its findings to FTA-RII in 4Q2014. MTACC subsequently submitted a revised Rev. 10 on March 13, 2015, that included updated information on the Change Control Committee. The PMOC coordinated with MTACC to arrange a series of working meetings through the remainder of 2015 with ESA chapter authors and the corresponding PMOC reviewers to resolve outstanding FTA/PMOC evaluation comments. Through 2016, MTACC and the PMOC continued working together to complete this process and to coordinate the reviews of the revised SMP and CMP Sub-Plans with associated sections of the PMP. MTACC submitted the next revision to the PMP in June 2016 that reflected ESA organizational changes along with some additional updates and revisions to certain sections. 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 early April 2017. The FTA subsequently notified MTACC in April 2017 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. MTACC issued updates to its TCC and Cost Management Plans in June 2015. The PMOC provided the FTA with its evaluation of the MTACC responses to the PMOC review comments on both the TCC and the CMP and recommended meeting with MTACC to resolve remaining issues. The FTA subsequently provided MTACC with the TCC and CMP evaluations for their review and action. MTACC responded with a reply for the TCC on September 24, 2015. MTACC has requested an updated review of their responses to the TCC Plan review comments.

MTACC submitted its revised Cost Management Plan (ESA and SAS) on April 13, 2015. The PMOC returned comments to the FTA on May 8, 2015. The MTACC submitted a revised CMP in response to FTA/PMOC comments on June 30, 2015. In August 2015, the PMOC provided the FTA with its evaluation of the MTACC responses to the PMOC review comments and met with MTACC on November 16, 2015. MTACC is working on additional agreed-upon revisions and is evaluating the PMOC's recommendations in six areas. MTACC issued an interim revision update in December 2015 and the PMOC completed its review during 2Q2016. MTACC and the PMOC met on June 22, 2016, to review the PMOC comments. During October 2016, MTACC submitted the completed review comment matrix and a revised CMP. The PMOC has completed its evaluation, concluded that the CMP is acceptable and provided the FTA with the comment close-out details in November 2016. The FTA subsequently notified MTACC that the revised CMP is acceptable.

MTACC issued its revised Schedule Management Plan (SMP), which now includes both the ESA and SAS projects, on October 26, 2015. The PMOC completed its review during 2Q2016. Review comments were forwarded to MTACC on July 15, 2016, and a working meeting was held on August 25, 2016, to review, discuss, and resolve the comments. MTACC has followed up with the agreed upon revisions to the SMP and has completed their responses in the review comment matrix. During October 2016, MTACC submitted the completed review comment matrix and a revised SMP. The PMOC has completed its evaluation, found no significant issues, and provided its findings to the FTA in November 2015, which the FTA subsequently forwarded to MTACC. MTACC is preparing responses to the remaining open items. At the November 2016 Cost and Schedule meeting, the MTACC agreed to provide the PMOC with the documents that the PMOC requested in its evaluation of the SMP. In January 2017, MTACC submitted additional documents to the FTA and the PMOC in response to the remaining comments. The PMOC has now completed its evaluation, concluded that the SMP is acceptable and provided the FTA with the comment close-out details in March 2017. The FTA subsequently notified MTACC that the FTA has accepted the current revision of the SMP.

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 1Q2017.

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.

[redacted]

[redacted]

[redacted]

[redacted]

- 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]
- Late RSD.

Observations, Analysis, and Concerns:

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

1. The PMOC has observed a potential discrepancy in the PMT's May 1, 2017 IPS Report related to CS179. The text of the report notes that data from the Contractor's schedule update No. 26 is reflected in the report, and that this update shows a delay to the forecasted date for Milestone #12A. However, the table in the IPS report shows no change to this milestone.

2. The PMOC continues to observe slower-than-expected progress along the Program's Critical Path through CIL cutover pre-testing at Harold. [redacted] The PMT has noted that the LIRR signal department has begun working additional shifts on weekends to mitigate potential future impacts, but the PMOC is concerned that delays may build up and continue to impact this critical work.

3. The PMOC is concerned about the delays experienced to the CM007 contract over the update period, which have shown an impact to CS084 and the overall Manhattan/Systems longest path. The issue is related to gaining approval for resilient tie block for track work, and has surpassed pre-cast concrete fabrication and installation as the longest path for this contract/area. The PMOC recommends a concerted effort from stakeholders on gaining approval for these submittals and to plan any time-saving efforts possible regarding the follow-on testing and approval of the equipment to reduce future potential delays. The PMT has stated in meetings that an option for potential schedule mitigation is to install track work in a different sequence. The PMOC notes that installing track work in a different sequence may cause more problems than it will solve, with access issues and crowding in tight areas being a primary concern that will need to be investigated.

4. The PMOC is concerned regarding the delays experienced to date for the procurement of future contracts CS086 and CM015. The procurement timelines for these contracts continued to experience delays month-to-month through most of 2Q2017 as issues were being resolved. The PMOC recommends that special attention be made to expedite the CS086 procurement now that the decision has been made to pursue a negotiated procurement using the RFP process. Procurement of Contract CM015 is no longer an issue based on the decision to suspend all design work on this package. The new issue is determining how and when the 48th St. Entrance will be built.

   Contract CS084, Tunnel Systems Package 4 – Traction Power System, is currently reported at 12.0% complete vs. 71.4% 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.

The PMOC is concerned about scope transfers from Contract CH057 to future contract CH057D. The PMT has noted that the transfers have been approved, however, there has been no adjustment to the planned project period, and no statement made regarding any schedule impact. The PMOC suggests the PMT comment on whether it anticipates any schedule impact to future Contract CH057D due to the scope transfers.

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. Details are not expected until August 2017 at the earliest.

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 – 3Q2017 and 4Q2017 Upcoming Contract Procurement Milestones

Contract Description	Advertise Date	Bid Date	NTP	Project Period	Substantial Completion
CM015 48th St. Entrance	TBD	TBD	8/22/2017	33 Months	5/22/2020
CS086 Systems Package 2: Signal Installation	TBD	TBD	8/14/2017	35 Months	7/1/2020
CH057D Harold Track work	10/25/2017	1/25/2018	2/26/2018	15 Months	6/2/2019
CH058A B/C Tunnel	12/6/2017	4/17/2018	6/12/2018	26 Months	8/21/2020

Over the update period, the forecasted CM015 (48th Street Entrance) procurement dates continue to be on hold, reported to be due to ongoing negotiations surrounding zoning changes at 415

Madison Avenue building. It was reported in the May 1, 2017 IPS that an advertisement date will be provided once the negotiations are complete. No timetable was given regarding when the negotiations are expected to be complete. The PMOC notes that the NTP and Substantial Completion dates forecasted for CM015 have been delayed approximately one month since they were last reported two months ago in the March 1, 2017 IPS. It is likely these dates will continue to be delayed on a month-by-month basis.

The forecasted procurement dates for CS086 (Systems Package 2: Signal Installation) are similarly on hold, pending legal review of Division 1 Specifications and a decision on alternative procurement methods. The PMOC notes that the current forecasted NTP date of August 14, 2017, is the same date provided in the previous IPS update and may not be reliable. The forecasted date for Substantial Completion has remained the same, at July 1, 2020. The PMOC is concerned that if no mitigation of delays associated with the procurement of this contract can occur, the planned Substantial Completion date will be impacted, and could have a follow-on impact to the completion of Integrated Systems Testing (IST).

Forecasted procurement dates for CH057D (Harold Track work) and CH058A (B/C Tunnel) have not changed over the update period. The PMT notes that scope transfers from CH057 to CH057D were approved and include catenary foundation removal, Option 10D tunnel approach, and pre-track demolition. No mention was made in the May 1, 2017 IPS report regarding whether the increased scope of future contract CH057D would impact the planned project period. The May 1, 2017 IPS report shows the same planned project period and Substantial Completion date for CH057D as the previous IPS update and report. The PMOC notes that this may be likely to change based on additional work being anticipated compared to before these scope transfers.

4.3 Critical Path 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 May 1, 2017 IPS Report.

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

Activity Name	Original Duration	Start	Finish
FHL02 CIL Cutover Work	384	01-May-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
Target Revenue Service Date			**12-Feb-21**
[redacted]	[redacted]	[redacted]	[redacted]
Late Revenue Service Date			**13-Dec-22**

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. Input / Output Predecessor Tests (Completed)
2. H5/H6/L30 TSR Pre-cutover Testing (In Progress)

3. H5/H6/L30 South Pre-cutover Testing
4. H1/H2/H5/H6 TSR Testing
5. H1/H2/L30 TSR Testing
6. H1/H2/L30 North Pre-cutover Testing
7. Days Lost/Weekend Work
8. Pre-testing Cutover Float (Reduced)

In the previous IPS update, as of April 1, 2017, the Program's critical path was controlled by the in-progress activity of FHL02-CSR1220: Input/Output Processor Tests, expected to be complete on April 14, 2017. Over the update period, this work was reported to have actually been completed on April 28, 2017, two weeks later than planned. [redacted]

The PMOC wishes to highlight two items noted in the May 1, 2017 IPS report that appear to be good for the Program-critical work at Harold. First, is that the PMT noted that signal power separation work at Harold is running concurrent, but independent of the critical CIL cutover pre-testing. Second, that the LIRR "signal department began working on additional shifts during the weekend to mitigate potential additional delays."

4.4 CS179 Systems Package 1 – Facilities Systems

ESA provided several Milestone Date Tables in the IPS. Table 4.4, below, is a sample of the table provided for CS179 Systems Package 1 – Facilities Systems in the PMT's May 1, 2017 IPS report:

TABLE 4.4 - CS179 Contractor Milestone Dates

Milestone	Description	Contract Date	Last Month	Current Month	*Delta (CD)
MS #1	Complete All Work in TPSS C05 at Vernon Blvd Ventilation Facility	2/15/2017	4/1/2017	5/1/2017	-75
MS #3	Complete All Work Plaza Rooms (CIR, Signal Reactor, Interlocking 1D, TPSS C06 & C07)	5/22/2017	7/19/2017	6/6/2017	-15
MS #4A	Complete All Work in Traction Power S/S C04 on Level P1 in 2nd Ave. Vent Facility	2/1/2017	8/3/2017	8/2/2017	-182
MS #5	Complete All Work in GCT-6 CIR to Room Ready Condition	4/30/2017	9/1/2017	7/21/2017	-82
MS #6	B10Complete All Work in Bulk Power Substation for Energization of 13.2 kV Cables	4/22/2017	8/18/2017	8/1/2017	-101
MS #7	Complete All Work in GCT-5 CIR to Room Ready Condition	4/30/2017	9/21/2017	10/17/2017	-170
MS #8	Complete All Work in GCT-4 CIR to Room Ready Condition	4/30/2017	10/6/2017	11/3/2017	-187
MS #9	Complete All Work in Traction Power Substations C01 and C02 - Tail Tracks	6/8/2017	10/27/2017	11/23/2017	-168
MS #10	Complete All Work in GCT-3 CIR to Room Ready Condition	9/6/2017	3/8/2018	4/4/2018	-210
MS #11	Complete All Work in Traction Power Substations C03 at 55th Street Vent Facility	3/25/2018	4/30/2018	3/15/2018	10
MS #12A	Complete All Work in the TMC, TOC, BCS, and FON to Commence IST	9/1/2018	12/21/2018	12/11/2018	-101

MS #12B-1	Complete Integrated Testing of all equipment installed under Contract CM007	3/23/2020	3/23/2020	3/23/2020	0
MS #12B-2	Complete Integrated Testing of all equipment installed under Contract CM014A	3/23/2020	3/23/2020	3/23/2020	0
MS #12B-3	Complete Integrated Testing of all equipment installed under Contract CM014B	3/23/2020	3/23/2020	3/23/2020	0
MS #13	Substantial Completion	7/1/2020	7/1/2020	7/1/2020	0

The PMOC notes significant delays to many of the intermediate forecasted milestone dates, such as MS1, MS7, MS8, MS9, and MS10. There were also savings experienced to the forecasted dates for MS3, MS5, MS11, and MS12A. The PMOC notes that MS12A is on the longest path of CS179, but despite a forecasted savings to this milestone, no corresponding savings was forecasted for the substantial completion date. The PMOC is concerned with the continued delays experienced by the milestones of this contract, and notes that impacts from these delays may begin to build up and negatively affect the IPS.

The PMT's May 1, 2017 IPS report notes that the Contractor's schedule update no. 26 is reflected in the report. However, the IPS report appears to contain conflicting information: the text in the IPS report notes that the Contractor's schedule update no. 26 shows a delay to milestone 12A, however, the table provided shows no change to this milestone date over the update period.

5.0 PROJECT COST

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

5.1 Budget/Cost

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

Observations: 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, 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] The submission of the ESA amendment has already been delayed and was most recently scheduled for 1Q2018. [redacted] The current budget forecast must therefore be considered as highly optimistic. 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 budget as well as the target Revenue Service Date. The specific cost and budget impacts will not be known until ESA re-evaluates the current budget and schedule. Details are not expected until August 2017 at the earliest.

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

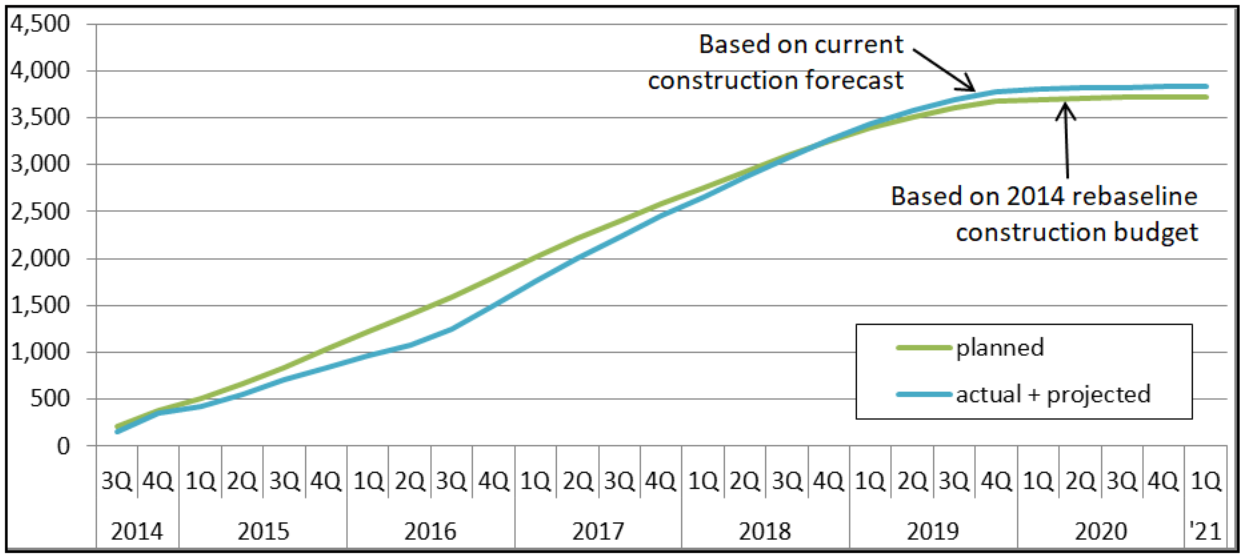
Standard Cost Category	FFGA	June 2014 Project Budget	Amended FFGA	Jun-16 Current Budget	Sep-16 Current Budget	Dec-16 Current Budget	Mar-17 Current Budget	CBB Variance from FFGA	CBB Variance from Amended FFGA
10 - Guideway & Track Elements	$ 1,989	$ 3,405	$ 3,353	$ 3,467	$ 3,475	$ 3,486	$ 3,486	75.29%	3.96%
20 - Stations, Stops, Terminals, Intermodal	$ 1,169	$ 2,238	$ 2,327	$ 2,326	$ 2,325	$ 2,328	$ 2,328	99.22%	0.06%
30 - Support Facilities (Yards, Shops, Admin)	$ 356	$ 474	$ 451	$ 473	$ 472	$ 472	$ 472	32.60%	4.81%
40 - Site Work and Special Conditions	$ 205	$ 611	$ 562	$ 594	$ 592	$ 588	$ 588	186.74%	4.56%
50 - Systems	$ 619	$ 606	$ 628	$ 568	$ 582	$ 580	$ 580	-6.37%	-7.61%
60 - ROW, Land, Existing Improvements	$ 165	$ 219	$ 192	$ 215	$ 215	$ 215	$ 215	30.31%	12.04%
70 - Vehicles	$ 494	$ 210	$ 880	$ 210	$ 210	$ 210	$ 210	-57.50%	-76.13%
80 - Professional Services	$ 1,184	$ 1,975	$ 1,809	$ 1,978	$ 1,978	$ 2,003	$ 2,003	69.20%	10.74%
[redacted]									
100 - Financing Cost	$ 1,036	$ 1,036	$ 1,116	$ 1,036	$ 1,036	$ 1,036	$ 1,036	0.00%	-7.20%
[redacted]									

5.2 Project Cost Management and Control

Status:

The PMT reported in April 2017 that the actual total project progress was 70.1% vs. 73.9% planned progress resulting from the June 2014 re-baseline (based on the total amount invoiced compared to the total current budget). In addition, construction progress was reported as 69.4% actual vs. 74.5% planned. Table 5.2 shows the planned construction spending through completion at the target RSD vs. actual spending through 1Q2017, and projected required spending. 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, Actual & Projected Construction Cash Flows to Target RSD



Construction Cash Flow Starting at 2014 Rebaseline

Table 5.2 - The "planned" curve shows construction cash flow that was planned by ESA at the 2014 re-baselining in order to reach revenue service by the 1st quarter of 2021. At that time, the total construction budget was $7.38 billion. The vertical axis is $million, starting at $0 at the time of the re-baselining. The "actual" curve, up to the 2nd quarter of 2016, shows actual construction spending as reported by ESA. The "projected" portion of that curve, from the 2nd quarter of 2016 through the 1st quarter of 2021, shows the PMOC's projected construction spending rate to reach the current $7.49 billion final construction budget by the 1st quarter of 2021.

[redacted]

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

Table 5.3: Project Budget and Invoices As of April 30, 2017

Elements	Baseline Total Budget (June 2014)	Current Baseline Budget (April 2017)	Actual Awards (April 2017)	Paid to Date (April 2017)	Actual % Budget Paid (April 2017)
Construction	$ 7,379,296,706	$ 7,562,576,878	$ 6,932,666,565	$ 5,247,799,968	69.39%
Soft Costs Subtotal	$ 2,798,474,304	$ 2,615,194,132	$ 2,017,428,006	$ 1,889,077,665	72.23%
Engineering	$ 720,615,810	$ 732,721,828	$ 730,245,025	$ 704,164,416	96.10%
OCIP	$ 282,613,620	$ 307,613,620	$ 298,593,953	$ 294,618,113	95.78%
Project Mgmt.	$ 972,168,644	$ 972,168,644	$ 869,427,760	$ 773,042,583	79.52%
Real Estate	$ 182,076,230	$ 178,049,776	$ 119,161,268	$ 117,252,553	65.85%
Rolling Stock	$ 202,000,000	$ 202,000,000	$ -	$ -	0.00%

[redacted]

Concerns and Recommendations:

[redacted]

5.3 Change Orders

Table 5.4 below shows the executed contract modifications greater than $100,000 during April 2017:

Table 5.4: ESA's Change Order Log in April 2017 (>$100,000)

Contract	Mod #	Description	Executed Date	Amount
GCT Caverns – CM007	5	Remediation of Rebar Dowels at Cavern Walls.	4/27/2017	$151,532
GCT Concourse/Facilities Fit-Out Early Work – CM014A	55	Maintain and Operated B30 Substation 52-F6 Breaker.	4/14/2017	$1,563,352
Concourse/Facilities Fit-Out – CM014B	54	Replenishment of Payment Item No. 11A.	4/21/2017	$3,000,000
Concourse/Facilities Fit-Out – CM014B	60	MNR Repair/Replacement of MNR 48th Street Beams.	4/5/2017	$1,078,222
Systems Facility Package No.1 – CS179	28	Temporary Trough Covers for 63rd Street Tunnel EB.	4/27/2017	$211,000
Systems Facility Package No.1 – CS179	32	2nd Avenue Level P1 TPSS Hatch Replacement.	4/11/2017	$239,000
General Engineering Contractor	130	Revision to Future 45th Street Entrance.	4/10/2017	$315,898
General Engineering Contractor	136	Increase in Not to Exceed CPS Amount.	4/10/2017	$27,000,000

Status/Observation:

The PMOC finds that the above change orders reflect its understanding of recent changes to project scope

5.4 Project Funding

a) Federal Funding

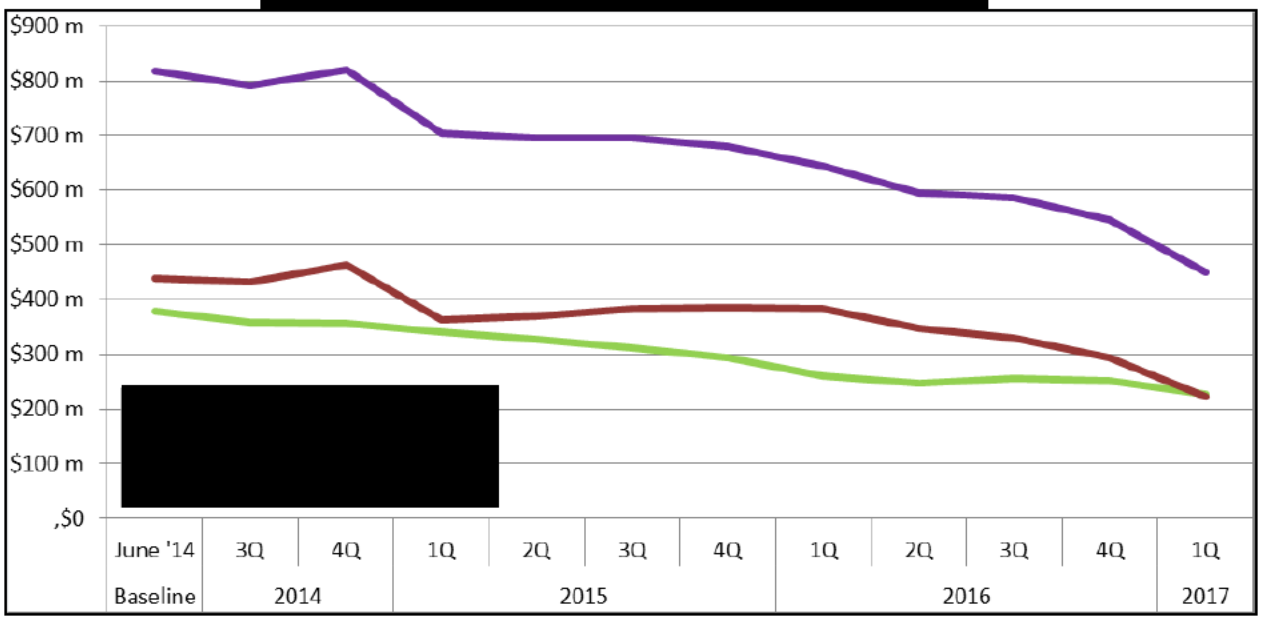
As of April 30, 2017, the PMT MTACC has awarded a total of $8.950 billion in contract work. The Federal share of awarded contracts is $1.97 billion. The total Federal funding commitment, as of April 30, 2017, remained at $2.699 billion.

b) Local Funding

The obligated local share was $5,065M. There has been a $617,607,000 incurred finance cost (for local share) to April 30, 2017.

[redacted]

[redacted]


$900 m
$800 m
$700 m
$600 m
$500 m
$400 m
$300 m
$200 m
$100 m
,$0
[redacted]
June '14
3Q
4Q
1Q
2Q
3Q
4Q
1Q
2Q
3Q
4Q
1Q
Baseline
2014
2015
2016
2017

6.0 RISK MANAGEMENT

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

With regard to the implementation of the "ESA First" Harold Re-sequencing of late 2014, the PMOC notes that, through 2015 and into 2016, Amtrak has not been able to provide even the reduced level of force account resources that was planned in support of the schedule. Additionally, the projected force account costs are trending noticeably higher than planned [redacted] In 3Q2016, ESA completed a comprehensive study to identify and evaluate the reasons for inadequate level of force account resources required to support the Harold schedule and to make recommendations to revise the schedule reflecting the reduced force account support and to plan for the increasing force account costs. Based on the outcome of the study, the revised project schedule indicates that the Harold critical path has now become the ESA program critical path and leads the secondary Manhattan/Systems critical path by approximately three months. Cost impacts have been evaluated and ESA estimates the additional Amtrak and LIRR force account cost to be $200-300 million for support of all remaining Harold Interlocking work to complete the Revision 14-4M Alignment. Of the $200-300 million estimate, approximately $110 million would be the estimated value for support of only the FFGA scope of work to provide LIRR service to GCT. Details of the cost analysis and forecast were presented to the FTA and PMOC on October 26, 2016.

The PMOC has continuing concerns regarding the impact to the ESA Harold work due to the Amtrak program to harden ERT Lines 3 and 4 in preparation for extended outages for ERT Lines 1 and 2 to complete Hurricane Sandy damage-related reconstruction work, earlier scheduled to commence in 2018, but now planned for 2019. There is concern, shared by both the PMOC and MTACC, that significant Amtrak Force Account resources will be needed to support the hardening work, which could further reduce the Amtrak resources available to support the ESA Harold Re-Sequencing Plan. During July 2016, Amtrak advised MTACC that it plans to start work on the total track replacement in ERT Lines 3 and 4 during 4Q2016. During March 2017, MTACC advised the PMOC that Amtrak hardening work on Line 3 had been completed. The PMOC notes 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 hardening work may conflict with ESA needs to support completion of the planned Harold work required for LIRR service into GCT by 2021. The PMOC does note, however, that Amtrak's decision about taking ERT Line 2 out of service first, in 2019, for the 18-month reconstruction work is not expected to directly impact the completion of the Harold FFGA scope of work needed to commence LIRR service into GCT. Amtrak's decision will, however, impact Contract CH058B, Harold Structures – Part 3B, Eastbound Re-Route, a Regional Investment initiative having independent utility that is not required to provide the rail connection to GCT for LIRR service. The ESA-PMT has indicated that there is no work-around plan for this situation, during which ERT Line 1 would have to be taken out of service in order to construct the Eastbound Re-Route.

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 June 2017. The 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. **[Ref: ESA-126-Jun17]**

During 2Q2017, a major new 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 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. The specific cost, budget, and schedule impacts will not be known until ESA re-evaluates the current budget and schedule. Details are not expected until August 2017 at the earliest. **[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. He conducted a comprehensive Risk Review for the remaining ESA work in the Harold Interlocking during April 2017 that was be 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 19 individual 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:

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

c) Successful execution of dozens of hand-off interfaces across multiple 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 construction and third-party contractor support in Harold Interlocking [increasing risk trend noted in 4Q2015 through 2Q2017];

g) Continued availability of required track outages in Harold Interlocking - Starting in September 2016, fewer priority weekend track outages have been available; now the eight scheduled weekend outages in 2017 are at risk 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 2Q2017]

The comprehensive Harold risk review conducted in April 2017 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.
2. LIRR Force Account Performance: Ability of LIRR force account resources to provide both a very high level of support for third-party contractor access and protection and adequate productivity for significantly increased direct labor work involving track, 3rd rail, and signals in accordance with the current ESA schedule 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 major 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. Future "Regional Projects" requiring extensive support from Amtrak including: NYPS 2017-18 Track Rehabilitation **[Now realized in 2Q2017]**; 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.
4. Continued slippage of the LIRR vehicle procurement.

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. MTACC re-evaluated the cost of force account support going forward and has forecast the total cost growth to be in the range of $200-300 million, inclusive of the estimated $111 million for the FFGA work scope.

Concerns and Recommendations:

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

The PMOC notes that, although MTACC has actively engaged Amtrak to develop some specific mitigations for certain risks and continues to work on strategies for mitigating many of the other identified risks, continued shortcomings in provision of adequate force account resources have adversely impacted the current Harold schedule and have caused the remaining Harold work to become the ESA program schedule critical path. Many external stakeholder issues with Amtrak and LIRR will remain beyond MTACC's direct control, however, and are likely to complicate development and acceptance of the specific problem resolutions that are essential to completion of the ESA project. 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 has not improved and the PMOC recommends that the PMT actively engage executive management in MTACC and MTA to assist with resolution of this problem.

The PMOC notes that ESA has been unable to develop a sustainable schedule for the remaining Harold Interlocking work that can be achieved despite the most recent full re-plans in 2013-2014 and again in 2015 as the "ESA First" Harold Re-Sequencing. Based on insufficient support from Amtrak during 2015, 2016 and into 2017, ESA has undertaken another Harold re-plan effort that reflects the continued inadequacy of Amtrak support with regard to force account resources and track outages for ESA work. The results of the study, along with the recent Amtrak decision about the ERT tunnel program, do not provide any basis for optimism going forward, especially considering that the situation has deteriorated so quickly since the current baseline was established only 3 years ago:

- [redacted]
- The Harold critical path has now become the ESA Program Critical Path and leads the secondary Manhattan/Systems critical path by three months; and,
- Amtrak's decision to take ERT Line 2 out of service first for an extended outage of one year or more will not support the current ESA planning to complete all of the remaining Harold work, including the High Speed Rail work, by 2021. The PMOC does note, however, that MTACC believes that Amtrak's decision about ERT Line 2 will not impact the remaining work in Harold Interlocking required to provide LIRR service to Grand Central Terminal.

Through 2016, ESA continued to experience a worsening trend of insufficient Amtrak Force Account personnel, now including track foreman as well as Electric Traction (ET), to properly support its 3rd Party contractors currently working in Harold Interlocking, CH057, CH057A, and earlier in 2016, CH053.

Additionally, the ESA PMT has reported that it does not receive all the track outages it requires to do the work that it schedules. The ESA PMT has stated that both of these conditions have been major factors for why Harold construction recently became the critical path of the ESA Project. The PMOC recognizes ESA's efforts to rebaseline the remaining work in Harold Interlocking to reflect more realistic expectations of Amtrak support. However, the situation is not improving 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 prevent ESA from completing 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 steep decline in May 2017 which continued through June 2017, as explained below. ESA also reported that this problem was further exacerbated when Amtrak's Metropolitan Division, which is responsible for the force account resources assigned to the ESA Harold Interlocking work, indicated 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. Based on meetings with Amtrak earlier in 2017, MTACC management had hoped that Amtrak would be able to be more supportive of the remaining ESA work in Harold Interlocking, but a major development occurred during 2Q2017 that appears may become a major setback to ESA.

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's top priority is now a project that accelerates 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 will now start in July 2017 and is expected to last for 12 months. This will place a significant demand on the already limited amount of Metropolitan Division force account resources, which the PMOC believes will have a major negative impact on the amount of force account resources that will be available to ESA. This new risk was realized in May 2017 as ESA reported that Amtrak force account resource availability for ESA Harold Interlocking worked dropped noticeably and dwindled even further in June 2017.

7.0 PMOC CONCERNS AND RECOMMENDATIONS

Priority in Criticality column

1 – Critical 2 – Near Critical

Number/ Date Initiated	Section	Issues/Recommendations	Criticality
ESA-114-Sep13	3.0 ELPEP Compliance	ELPEP Compliance: With MTACC's submission of its East Side Access FTA Quarterly Report (Apr, May, and June '13) and then continuing with all subsequent reports through June 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. Status Update: Specific areas of non-compliance were provided to MTACC at the September 12, 2013, ELPEP Quarterly Review Meeting and additional details provided on October 30, 2013. MTACC provided preliminary draft responses (partial) to the PMOC list of ELPEP non-compliances at the December 12, 2013, ELPEP Quarterly Compliance Meeting. MTACC and the PMOC met on February 27, 2014, to discuss the FTA and PMOC's concerns. At that meeting, MTACC acknowledged the need for more transparency/clarity in documenting the cost/schedule management processes to support traceability in the decision making process. Since that time, the PMOC has endeavored to engage the ESA Project Controls in productive discussions regarding improvements to cost and schedule reporting during the monthly cost and schedule review meetings. MTACC noted that both Cost and Schedule Management Plans will be revised, after completion of the PMP update, to improve the management processes and reporting. MTACC submitted the revised CMP on June 30, 2015, and two review cycles culminated in a working meeting on November 16, 2015, to review outstanding PMOC issues/concerns. MTACC issued an interim revision update of the CMP in December 2015 and the PMOC completed its review and met with MTACC in June 2016. The revised SMP was submitted by MTACC on October 26, 2015 and the PMOC completed its review in June 2016. During October 2016, MTACC submitted the completed review comment matrix and a revised CMP. The PMOC has completed its evaluation and concluded that the CMP is acceptable and provided the FTA with the	1

Number/ Date Initiated	Section	Issues/Recommendations	Criticality
		comment close-out details in November 2016. MTACC has followed up with the agreed upon revisions to the SMP and has completed its responses in the review comment matrix. During October 2016, MTACC submitted the completed review comment matrix and a revised SMP. The PMOC has completed its evaluation, found no significant issues, and provided its findings to the FTA in November 2016 that the FTA subsequently forwarded to MTACC. In January 2017, MTACC submitted additional documents to the FTA and PMOC in response to the remaining comments. The PMOC has now completed its evaluation, concluded that the CMP is acceptable and provided the FTA with the comment close-out details in March 2017. The PMOC notes that the updated TCC Plan was expected earlier in 2014 but was submitted on June 11, 2015, based on finalization of the role, responsibilities, and level of authority of the ESA Change Control Committee. In August 2015, the PMOC provided the FTA with its evaluation of the MTACC responses to the PMOC review comments and recommended a meeting with MTACC to resolve remaining issues. The FTA subsequently provided MTACC with the evaluation. MTACC responded on September 24, 2015. MTACC has requested an updated review of their responses to the TCC Plan review comments. Recommendation: The PMOC will continue to work with MTACC at the monthly cost and schedule review meetings, as well as dedicated meetings as needed, to advance progress in this area. Although some improvements to the transparency/clarity and traceability of the decision-making process with regard to cost and schedule have been noted, the PMOC's opinion is that MTACC's continued efforts to improve are still needed.	
ESA-123-Jun16	1.4b Federal Regulations	Track Turnouts for LIRR – continued delays to finalizing specification. Status Update: 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.	2

Number/ Date Initiated	Section	Issues/Recommendations	Criticality
		Recommendation: "Buy America"-compliant specifications have now been produced for both Amtrak and LIRR ESA turnouts. This issue is now complete and the PMOC will close it with this monthly report.	
ESA-124-Jun16	6.3-Risk Mitigations	Continued issues with insufficient Amtrak FA support of third-party contractors and lack of required track outages. Status Update: During 2Q2017, ESA continued to experience insufficient Amtrak Force Account personnel, track foreman and Electric Traction (ET), to properly support its 3rd 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. 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. This will impact both the level of force account support for ongoing work in Harold as well as the 8 planned priority weekend track outages required for pre-testing in support of the critical CIL cut-overs in May 2017. Recommendation: 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 has not improved and the PMOC recommends that the PMT engage senior management in MTACC and MTA to assist with resolution of this problem.	1

Number/ Date Initiated	Section	Issues/Recommendations	Criticality
ESA-125-Sep16	2.1 Engineering/ Design and CPS	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. Current Status: The PMOC has been reporting delays in the process of GEC and LIRR review and approval of the contractors' final systems designs and closure of RFIs. Schedule impacts have been significant on 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. Recommendation: 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.	1
ESA-126-Jun17	6.0 Risk Management	Issue: 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 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	1

Number/ Date Initiated	Section	Issues/Recommendations	Criticality
		concerned that this new development will further jeopardize MTACC-ESA efforts to complete the critical remaining work in the Harold Interlocking. Current Status: Significant reduction in Amtrak support of ESA work in Harold Interlocking experienced in May and June 2017. PMOC anticipates that this will continue through at least August 2017 based on Amtrak's current work plan. 8 planned priority weekend outages in Harold will now be delayed until later in 2017. Recommendation: 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.	
ESA-127-Jun17	6.0 Risk Management	Issue: 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. Current Status: ESA is currently re-evaluating the current program costs, budget and schedule. Details are not expected until August 2017 at the earliest. Recommendation: 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.	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	9/30/17

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
CIL	Central Instrument Location
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
NYSPTSB	New York State Public Transportation Safety Board
OR	Operational Readiness
PE	Preliminary Engineering
PEP	Project Execution Plan
PMOC	Project Management Oversight Contractor (Urban Engineers)
PMP	Project Management Plan
PMT	Project Management Team
PQM	Project Quality Manual
PWE	Project Working Estimate
QA	Quality Assurance
RAMP	Real Estate Acquisition Management Plan
RAP	Rail Activation Plan
RFP	Request for Proposal
RMP	Risk Management Plan
ROD	Revenue Operations Date
ROW	Right of Way
RSD	Revenue Service Date
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
TBD	To Be Determined
TBM	Tunnel Boring Machine
TCC	Technical Capacity and Capability
WBS	Work Breakdown Structure
WBY	Westbound Bypass Tunnel

APPENDIX B - PROJECT OVERVIEW AND MAP

Project Overview and Map – East Side Access

East Side Access Project Map

MTA/LIRR East Side Access Project

Scope

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

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

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

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

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

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

Original Schedule

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

Cost ($)

4,300 million	Total Project Cost ($YOE) at Approval Entry to PE
4,350 million	Total Project Cost ($YOE) at Approval Entry to FD
7,386 million	Total Project Cost ($YOE) at FFGA signed
11,936.0 million	Total Project Cost ($YOE) at Revenue Operations
11,972.1 million	Total Project Cost ($YOE) as of April 30, 2017, including $ 1,036.1 million in Finance Charges & Regional Investment Program
7,136.9 million	Amount of Expenditures as of April 30, 2017, based on the Total Project Budget of $10,177.8 million
70.1%	Percent Complete, based on the Re-plan budget of $10,177.8 million and invoices in the April 2017 report
[redacted]	[redacted]
69.4%	Construction Percent Complete vs.74.7% planned
70.1%	Overall Project Percent Complete vs. 73.9% planned

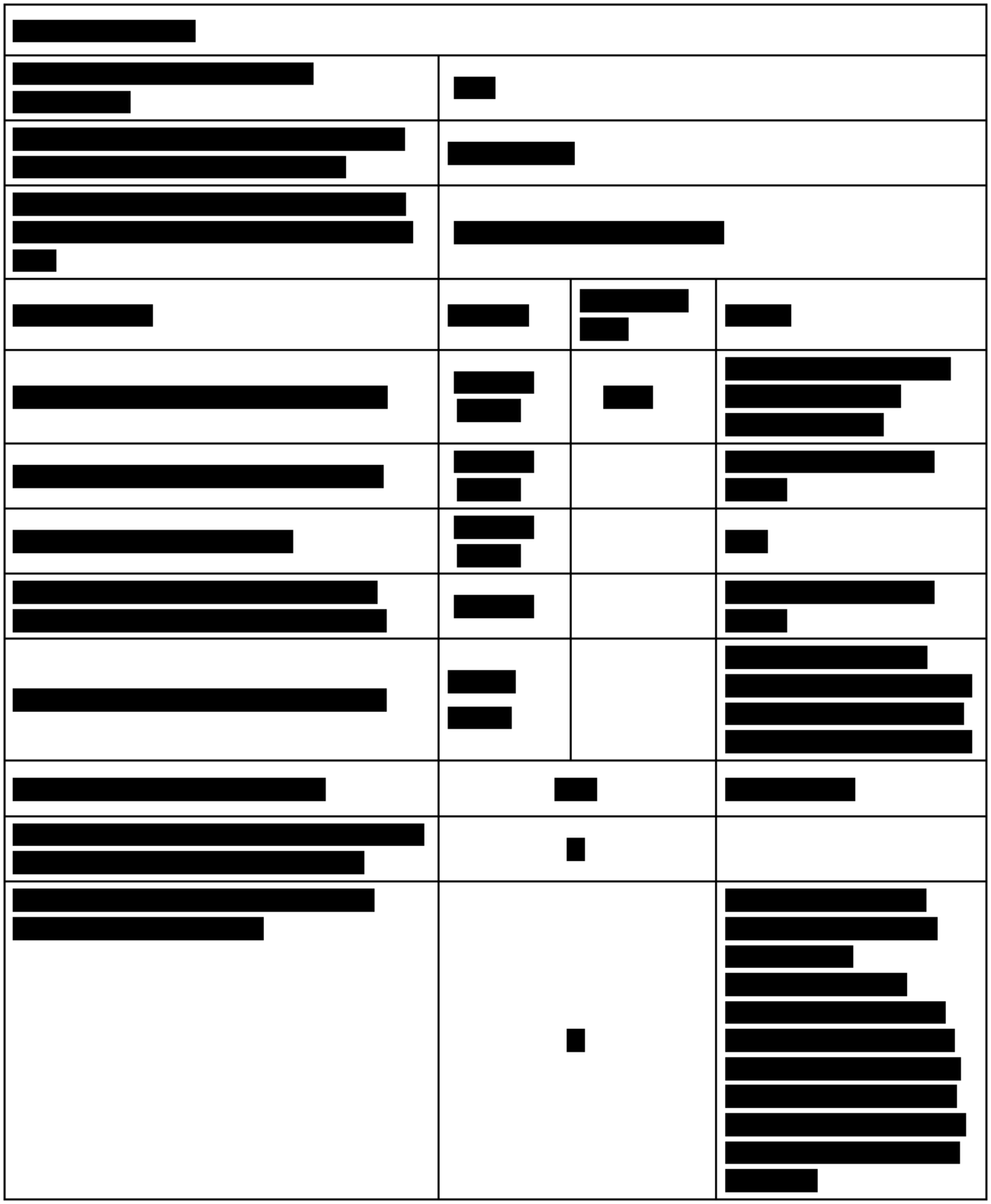
APPENDIX C – LESSONS LEARNED

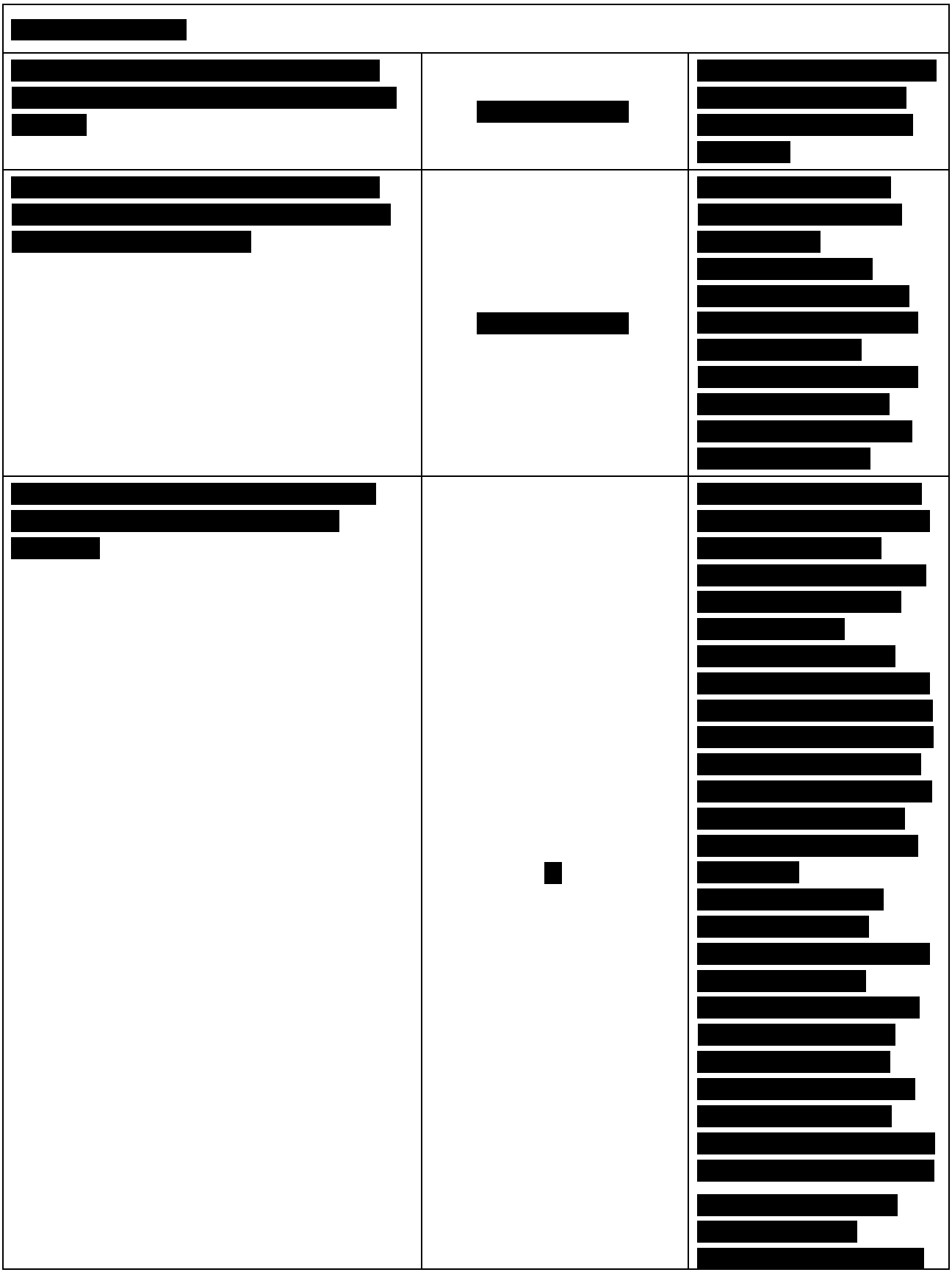
#	Date	Phase	Category	Subject	Lessons Learned
1	Dec-12	Construction	Construction	Muck Handling	During cavern excavation, the CM019 contractor became muck-bound, which caused a project delay of several months. The PMOC recommended that the contractor make extraordinary effort to evacuate the muck. After 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.

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

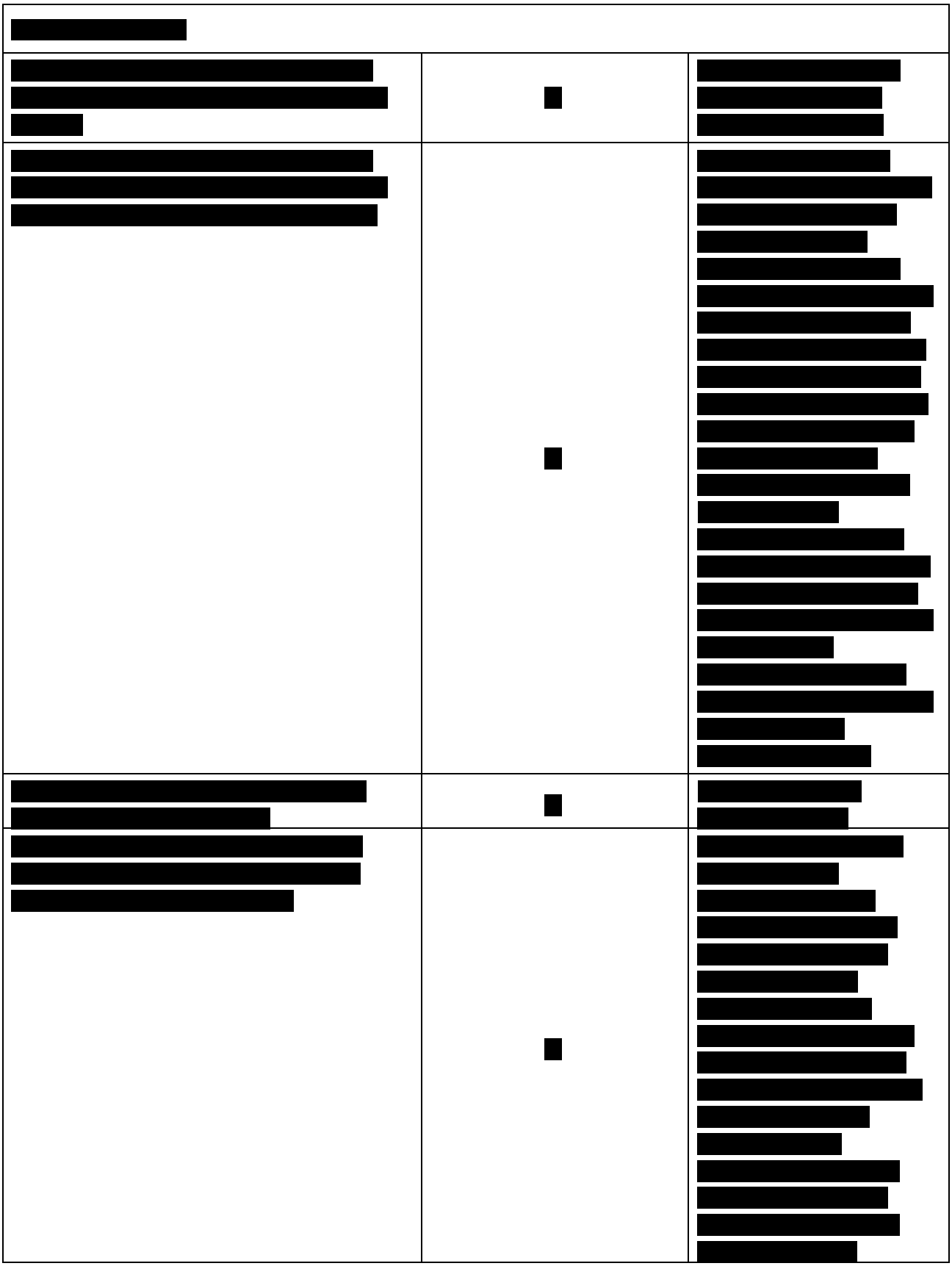
[redacted]

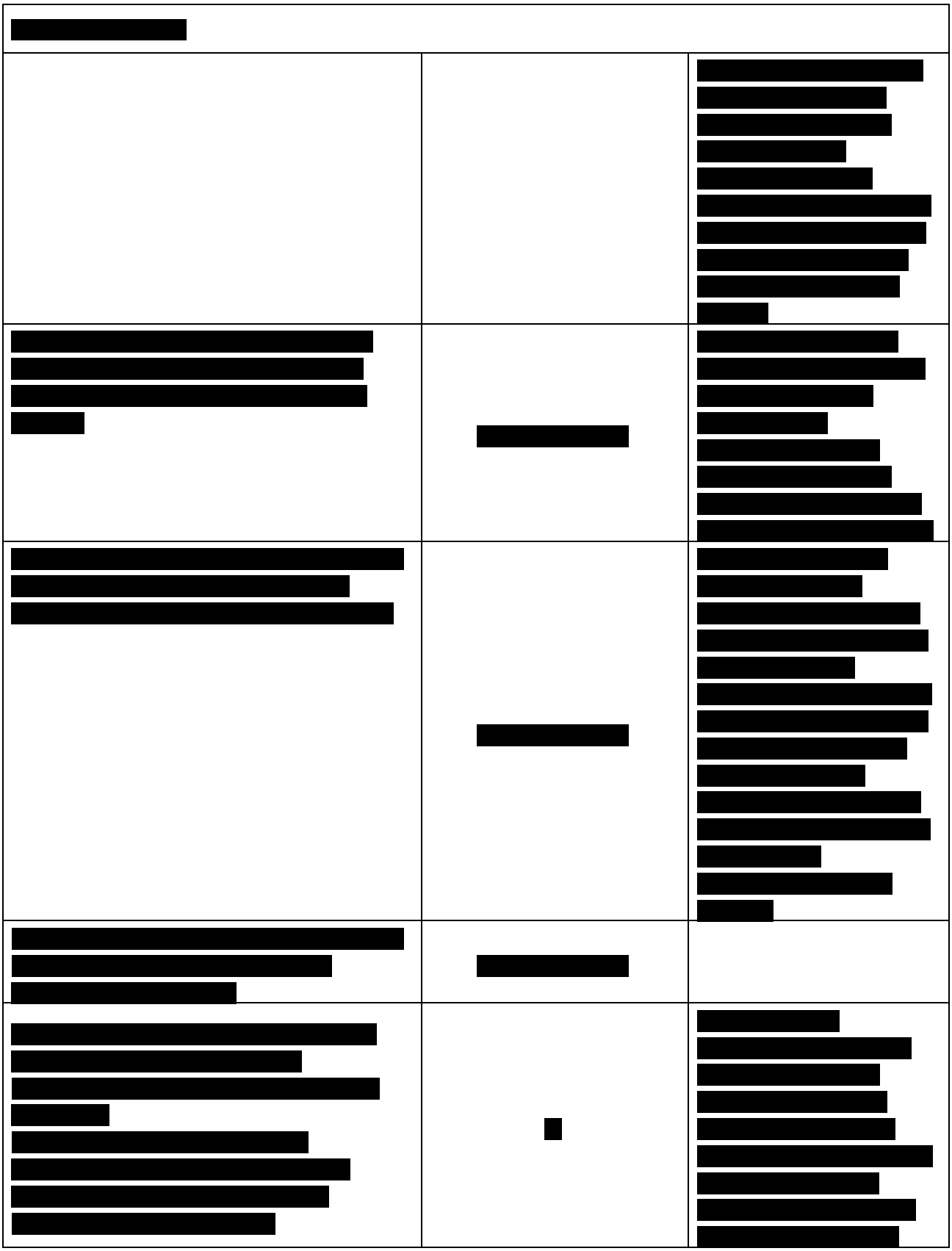




[redacted]

[redacted]





Project Overview		
[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted] is not at this

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

APPENDIX F - COST AND SCHEDULE ANALYSIS TABLES

Table F-1: ESA Planned vs Actual Construction Cash Flow as end of 1Q2017

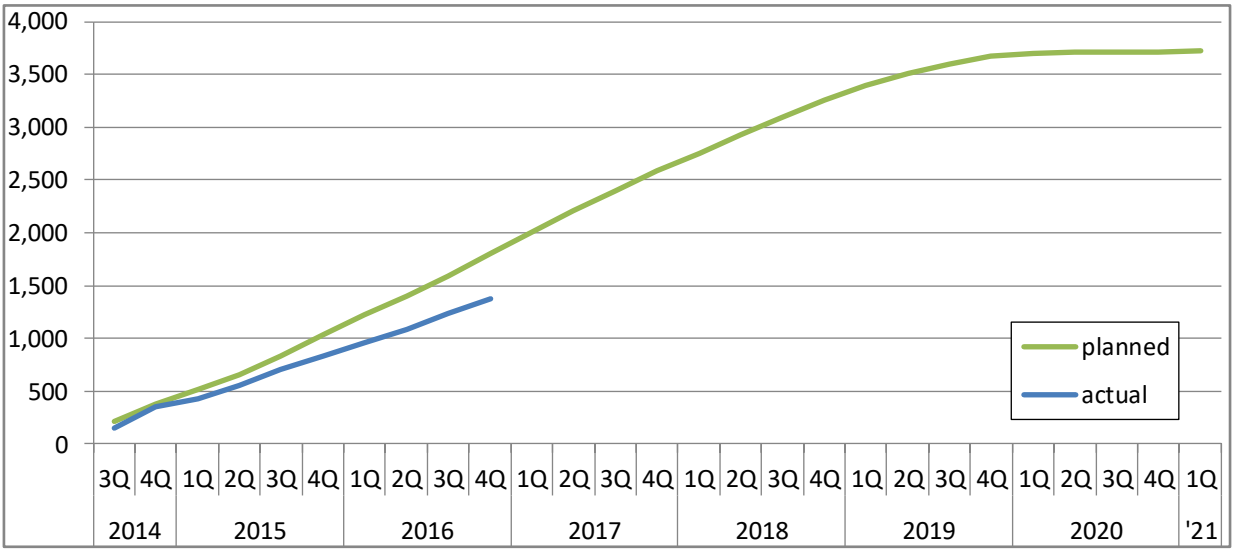


Table F-1 - The "planned" curve shows construction cash flow that was planned by ESA at the 2014 re-baselining in order to reach revenue service by the 1st quarter of 2021. The vertical axis is $ million, starting at $0 at the time of the re-baselining. The "actual" curve, up to the 1st quarter of 2017, shows actual construction spending as reported by ESA.

Table F-2: 90 Day Look-Ahead Schedule – May 1, 2017 ESA IPS Schedule

ACTIVITY ID	ACTIVITY DESCRIPTION	START	FINISH
CH057: Harold Structure - Part 2/3 Loop Box Approach, & EBRR West Approach & Tunnel			
CH057-3110	Complete Catenary / Signal Tower Relocation for L & T CIH Cutover		01-May-17
CH057-3370	Construct "D" Pit (Incl TBM Recovery) - For Cutover New Main Line 4	14-Dec-15 A	23-May-17
CH057-CPR4-55081	Catenary Complete for Demolition of Montauk Platform		28-Jun-17
CH057-M008	Substantial Completion		5-Jul-17
CH057A - Westbound Bypass Structure (exclude Slab)			
CH057A-1940	CH057A – No Advancement – Modifications to Shield	15-Aug-16 A	19-Jul-17
CH061A: Tunnel A			
CH061A-8280	Fabricate Catenary Structures	8-Jun-17	31-Aug-17
CH061-55341	Intermediate Milestone #2 – Pole Completion for CQ033 Area 2		11-Sep-17
CH058A: Harold Structures - B/C Structure/ Catenary Structure			
CH058A-0020	Develop/Finalize 100% Design Documents - CH058A	22-Jun-16 A	31-Aug-17
CH058B: Harold Structures - Eastbound Reroute Structure			
N/A	No Milestones in IPS over the next 90 days	N/A	N/A
FHL01: Harold Stage 1 - LIRR F/A			
FHL01-1150	Complete Trough H2 to H3 (Track A)		12-May-17
FHL01-1340	Energize GO2 Substation (CH053-Milestone #3)		5-Jun-17
FHL02: Harold Stage 2 - LIRR F/A			
FHL02-5160	Cutover Harold Emergency Generator		25-Mar-17 A

ACTIVITY ID	ACTIVITY DESCRIPTION	START	FINISH
FHL02-SI5010	Install Remaining Conduit and Pull boxes in H5-CIL Location	22-May-17	25-May-17
FHL02.MS.00095	Cutover #L-2 Service for H3, H4 CIL's		1-May-17
FHL03: Harold Stage 3 - LIRR F/A			
FHL03502370	Signal Works for R2 Switch	19-May-17	25-May-17
FHA01: Harold Stage 1 - Amtrak F/A			
FHA01-1000	ET Catenary: Complete Catenary Work for Stage 1		16-Aug-17
FHA02: Harold Stage 2 - Amtrak F/A: Balance Work			
SUMFHA02-1540	Cutover - ZJ1/ZJ2 (747)		7-May-17
FHA02-1060	CH054A - Completed SMUS 1 & 2 / Install New RTU		8-May-17
FHA02-4000S	ESA Complete Material Procurement		11-Aug-17
FHA03: Harold Stage 3 - Amtrak F/A			
FHA03-1200	FHA03: MS01 Cutover 771/EWD/RPR Track w/AC		30-Apr-17 A
FHA03-CA3698	ET Catenary – CH061A Complete Port Wash 2 Overrun Catenary Structures		11-Sep-17
VH051A (Part 1): Harold & Point CILs			
VH51C0340	FIAT COMPLETED (w/HTSCS Contract)		29-Jun-17
VH051B (Part 2): Harold Tower SCS			
VH51H0300	As-Built Drawings	01-May-15 A	13-Jul-17
VH051C: 250 Hertz Misroute/ Tunnel Collision Avoidance			
VH051C	VH051C - 250 Hz Track Circuits		08-Jul-23
VH052: Cab Simulator			
VH052	VH052 - Cab Simulator	31-Jan-15 A	08-Jul-23
VHA03: Procure Materials for Harold Stage 3 - Amtrak F/A			
VHA03	VHA03 -Procure Amtrak Materials - Harold Stage 3	05-May-14 A	27-Oct-22

ACTIVITY ID	ACTIVITY DESCRIPTION	START	FINISH
VHA04: Procure Materials for Harold Stage 4 - Amtrak F/A			
N/A	No Milestones in IPS over the next 90 days	N/A	N/A
VHL02: Procure Materials for Harold Stage 2 - LIRR F/A			
VHL02-1010	Procure ZE Crossover	30-Jul-14 A	01-May-17
VHL03: Procure Materials for Harold Stage 3 - LIRR F/A			
N/A	No Milestones in IPS over the next 90 days	N/A	N/A
VHL04: Procure Materials for Harold Stage 4 - LIRR F/A			
N/A	No Milestones in IPS over the next 90 days	N/A	N/A
CM005: Manhattan South Structures			
CM005-1050	Milestone 5 Final Completion - MS70 (May 6, 2016)		26-May-17
CM013A: 55th Street Vent Facility			
CM013A-280	CM13A - MS#3 Final Completion		31-May-17
CM004: 245 Park Ave. Entrance & 44th Street Vent Structure			
CM04-C0940	CM004 Contractual Final Completion (ML#2 Date 820 CDs from NTP)		1-May-17
CM006: Manhattan North Structures			
CM006-MS5	CM006 Milestone #5 (GCT 4 Facility Room - 460 CD from NTP (7/4/2015)		1-May-17
CM006-MS2A	CM006 Milestone #2A (55th Street Vent Facility Complete - 702 days from NTP (3/2/16)		15-Jun-17
CQ032: Plaza Substation & Queens Structures			
CQ032-MS06	MILESTONE #6 – SUBSTANTIAL COMPLETION		16-Jun-17

ACTIVITY ID	ACTIVITY DESCRIPTION	START	FINISH
FQA65: Loop Interlocking - Amtrak F/A			
FQA65-3010	CH057: Complete Catenary Structure for Loop and T CIHs (65-0) Part 2		01-May-17
VQ065: Loop Interlocking CIL (Amtrak)			
VQ065RI	VQ065 RI - Loop Interlocking		15-Dec-19
CQ033: Mid-Day Storage Yard Facility (Procurement Status TBD)			
CQ033-2410	Permanent Power Available		01-May-17
CQ033-100780	Mobilization Including Early Submittals		11-Jul-17
CS084: Tunnel Systems Package 4 – Traction Power Systems			
CS084-AR01	Access Restraint #1- C05 (Vernon) Traction Power Substation		2-May-17
CS084-AR03	Access Restraint # 3- C06 (QP-Main) Traction Power Substation		7-Jun-17
CS084-AR04	Access Restraint # 4- C07 (QP-Yard) Traction Power Substation		7-Jun-17
CS084-AR02	Access Restraint # 2- C04 (2nd Ave) Traction Power Substation		2-Aug-17
CS179: System Package 1 - Facilities Systems			
CS079-B0575	CR-108 @ GCT5 Ready for Equipment Installation		8-May-17
CIA#008	(CM006 – CS179) – 55th Street Ventilation Facility – Traction Power Substation C03		9-May-17
CIA#015	(CM006 – CS179) – 50th Street Adit		
CIA#004	(CM006 – CS179) – GCT-5 Rooms		
CIA#014	(CM006 – CS179) – Tracks 301 & 302 & 303 & 304 – GCT-3 to Cavern		
CIA#012	(CM006 – CS179) – GCT-3 Crossover, Wyes and Rooms & Cross Passages #2, #4, and #5		
CIA#005	(CM006 – CS179) – Cross Flue		
MILE-63rd	63rd St Tunnel - Complete Start-up and Local Testing		30-May-17

ACTIVITY ID	ACTIVITY DESCRIPTION	START	FINISH
CS179-MS03	CS 179 MS 03 – Completion of Multiple Rooms (CIR/Sig. Reactor/ Interlocking 1D/ TPSS C06 and C07)*		6-Jun-17
CIA#009	(CM006 – CS179) – 55th Street Ventilation Facility		16-Jun-17
CS179-WB1-C10	Completion of WB1 Cable Pulling		16-Jun-17
CS179-WB13	Completion of WB3 UL Workscope		19-Jul-17
CSU99: Systems Utility Relocations			
CSU99	CSU99 - Systems Utilities Relocations	30-Sep-14 A	6-Sep-23
VS086: System Package 3 - Signal Equipment Procurement			
VS086-1005	Prepare/Furnish Signal Equipment Catalog Cuts	12-Dec-14 A	22-Sep-17
SA79: Communication, Controls, Security and Fire Detection - Amtrak F/A			
FSA79	FSA79-Power, Signals, Comm & Security Systs	31-Mar-14 A	01-May-17
FS099: Force Account Support			
FS099	FS099 - Force Account Support	30-Sep-14 A	6-Sep-23
LIRR 3.3.7	Take Over Preparation for GCT Building Management System (BMS)	3-Sep-18	11-Feb-20

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

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

Equipment	Current Status
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 June 2017, the contractor and the GEC have been unable to identify an American made speaker that meets the specification requirements in the contract.

APPENDIX H – AMTRAK REMAINING ESA ELECTRIC TRACTION CONSTRUCTION*

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

Last Activity in IPS ID# String	Scope	IPS Start	IPS Finish	Status
CH057A-6280	Install 7,100 LF CA WBY Track (or FHA02-1830)	9/14/17	9/14/17	The CH057A contractor began limited catenary pole installation on the WBY Track during 1Q2017. No new catenary poles were installed during 2Q2017.
CH057D-2050	Install CAs at two CH057D Turnout locations[1]	11/27/18	12/3/18	CH057D contractor to install two Turnouts as part of NEQ track construction in August 2018. Amtrak to install CAs after track construction is complete.
CH057-C1740	Relocate cross catenary east of 39th St. as result of const. of Tunnels A, B/C, and D	4/12/17	4/13/17	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	11/26/19	12/27/19	The CQ033 contract was awarded on April 11, 2017. The contractor will install 4 catenary poles prior to Amtrak wire transfer.
FHA04-1050	Install 3,600 LF CA EBRR Track	6/3/21	8/18/21	CH058B not advertised yet. CH058B to install catenary poles prior to Amtrak installation of CAs.
FHA02-1010 and FHL02.TK.00350	Install CAs 2 Turnout locations[2] FHL02	10/28/17	6/13/20	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[3] FHL03	8/13/18	9/19/21	LIRR scheduled to install in August 2018. Amtrak will install CAs after track construction is complete.
FHA04-1020 and FHL04-1120	Install CAs 7 Turnout locations[4] FHA04	9/22/18	11/13/22	LIRR to install turnouts prior to Amtrak installation of CAs. Turnout installation scheduled to begin in August 2018.
FHA02-1280	Cutover Loop 1A	2/3/18	2/4/18	Amtrak Loop 1A Track construction partially complete. No Amtrak ET catenary construction occurred during 2Q2017.
CH057-CPR4-55101	Wire Transfer for demolition of Montauk Cutoff Platform	8/16/17	9/22/17	The CQ033 contract was awarded and NTP was issued on April 11, 2017. The contractor will install 6 catenary poles prior to Amtrak wire transfer. No construction started during 2Q2017.
FQA65-1092	Install CAs 13 Turnout locations[5] in Loop and T Interlockings - FQA65	6/7/23	6/8/23	Procurement of track material for Loop and T Interlocking construction on "hold" by MTACC since early 2016. Turnout installation scheduled to begin in August 2020.
CH058B-1270	PW2 Overrun	12/1/20	5/21/21	CH058B contractor to install 4 catenary poles, scheduled for late 2020. 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 and #1112W
2. #3234W and #3145
3. #1112E, #1121E, #1121E, #4167E, and #3111W
4. ##5165W, #5165E, #4145, #2254, #2154, #2155, and #4154
5. All 13 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 3rd Party construction elements that remain in Harold Interlocking. At present, three such items will be included in the PMOC's Quarterly Comprehensive Reports. As additional elements are identified, they will be added to the reports. The original three are:

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

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

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

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

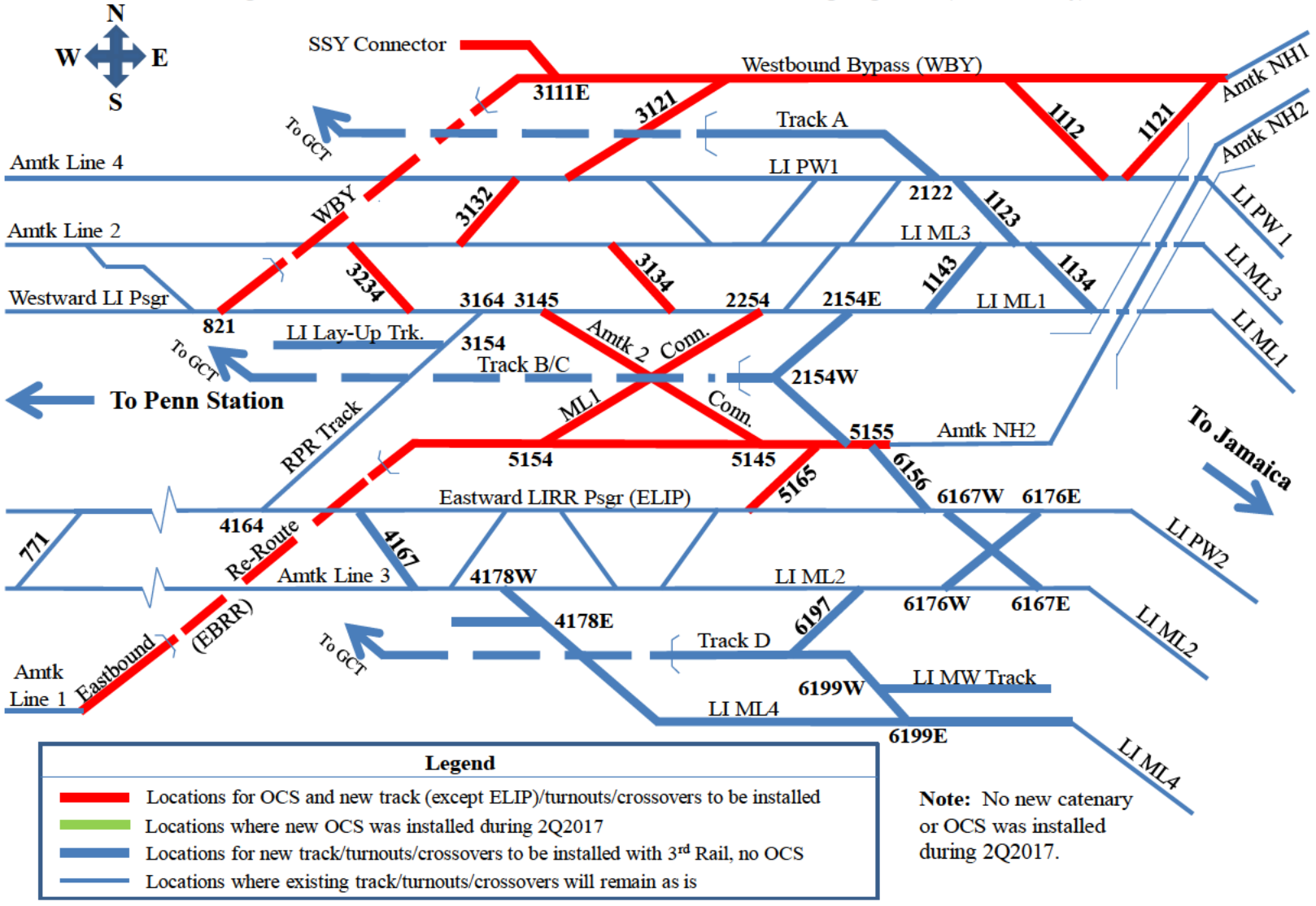
Schematic #3: Status of Harold Interlocking Turnouts and Crossovers to be Installed

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

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

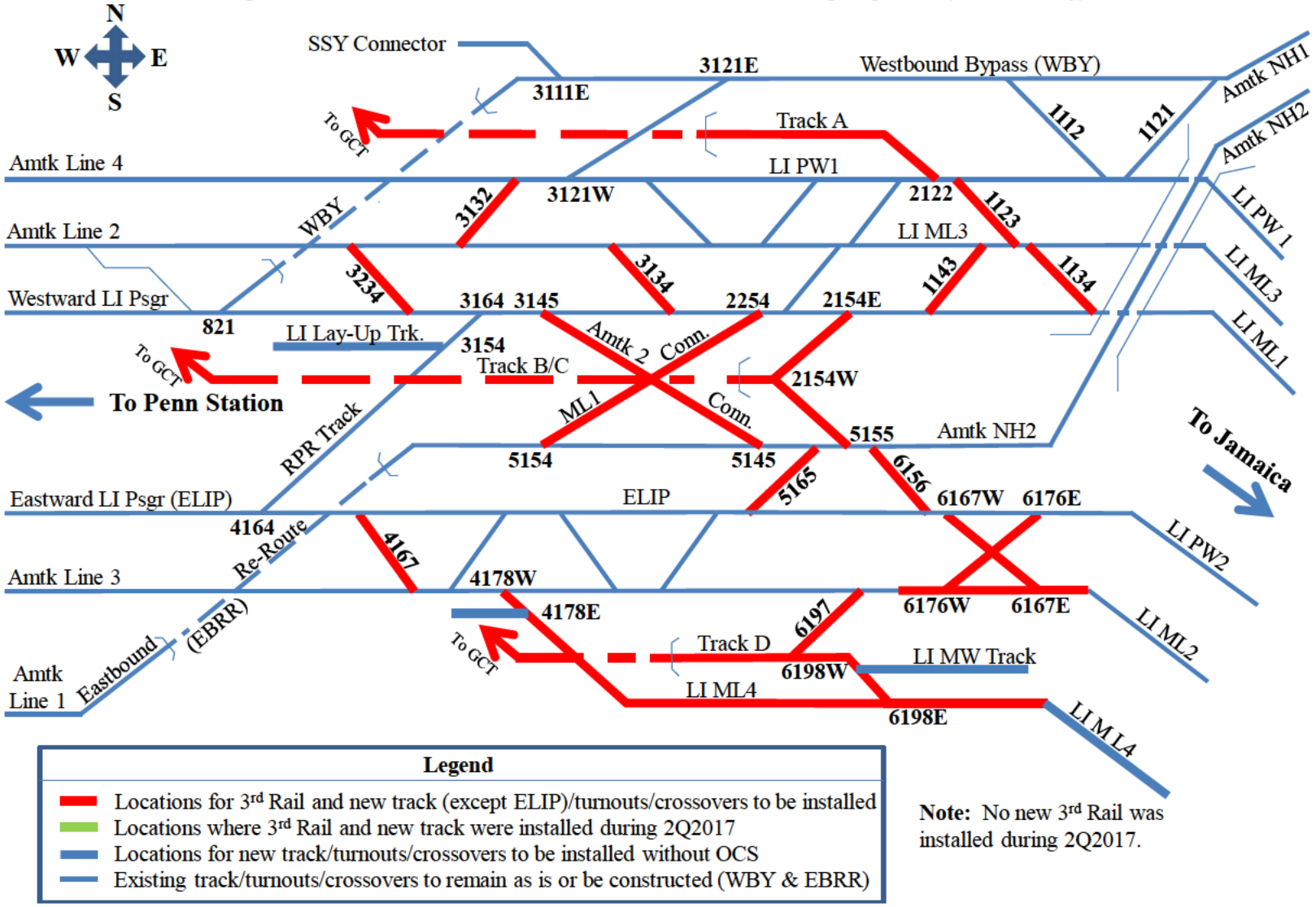
Schematic #1: Remaining Amtrak Harold Overhead Contact System (OCS) to be Installed

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



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

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



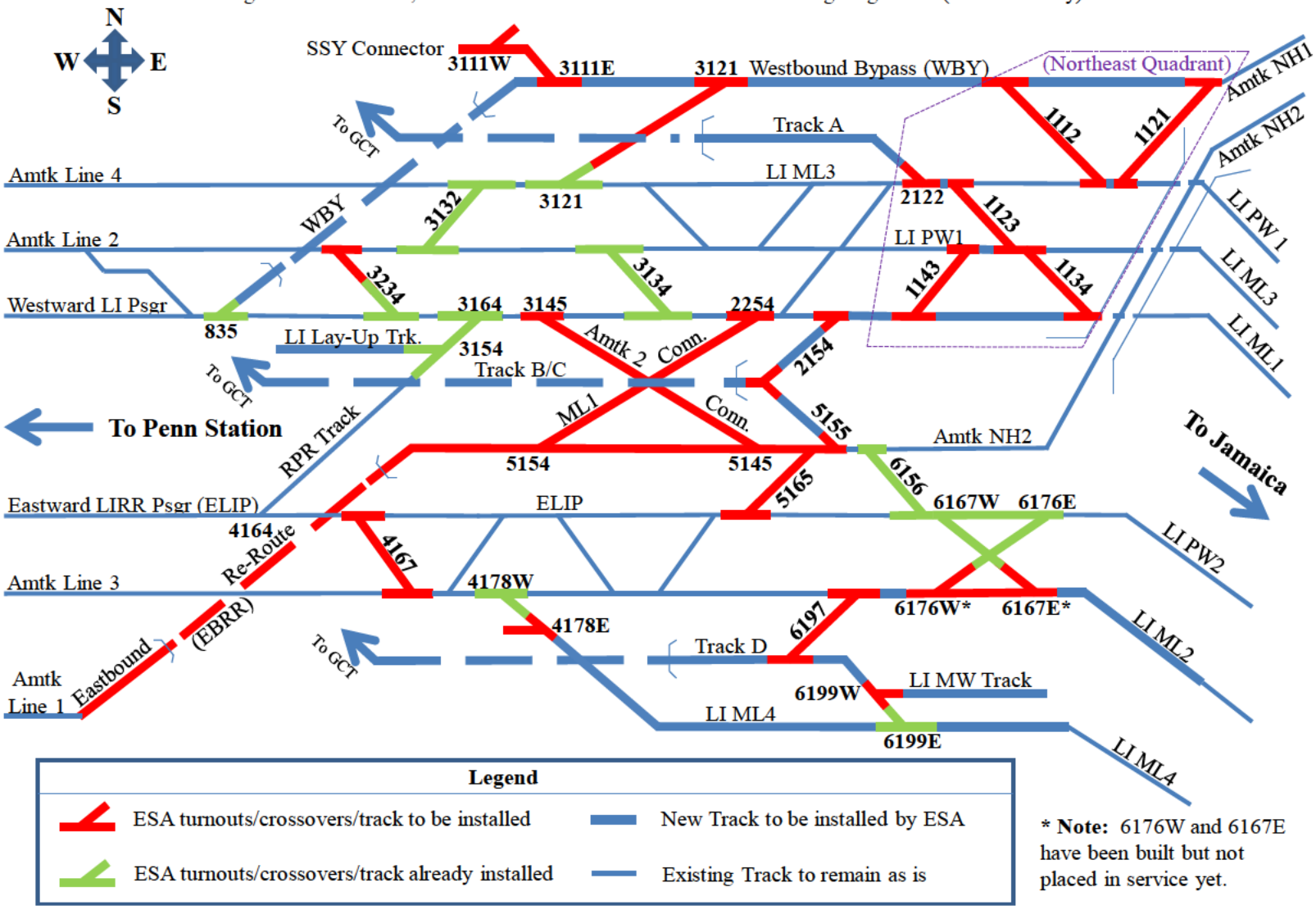
Legend

- Locations for 3rd Rail and new track (except ELIP)/turnouts/crossovers to be installed
- Locations where 3rd Rail and new track were installed during 2Q2017
- Locations for new track/turnouts/crossovers to be installed without OCS
- Existing track/turnouts/crossovers to remain as is or be constructed (WBY & EBRR)

Note: No new 3rd Rail was installed during 2Q2017.

Schm. #3: Status of Harold Interlocking Turnouts, Crossovers, and Tracks to be Installed

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

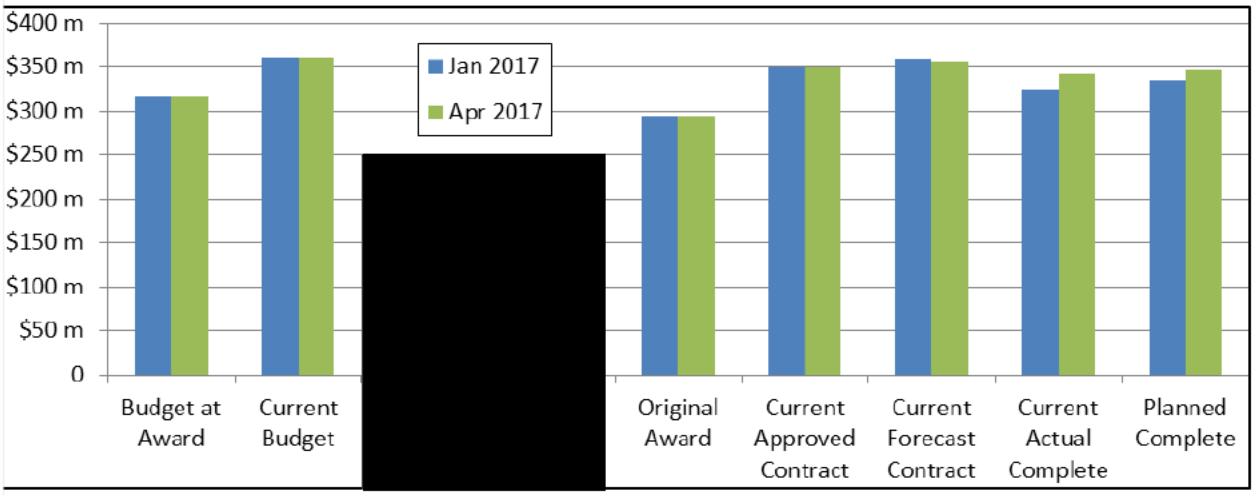


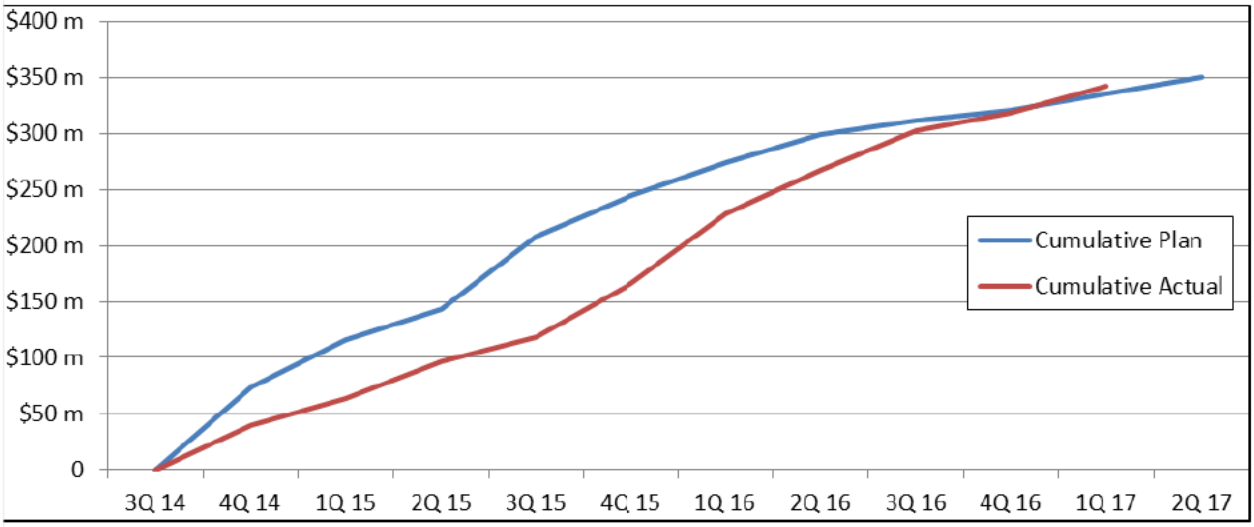
APPENDIX J – COST PERFORMANCE

CM006 - Manhattan North Structures May 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
		(2-1)			(5-4)		(7-1)
$316.3	$361.6	$45.3	$294.2	$350.2	$56.0	$356.0	$39.7

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	
99.0%	97.8%	23.6%	2.0%	9.1%	1.1%	1.10% per month

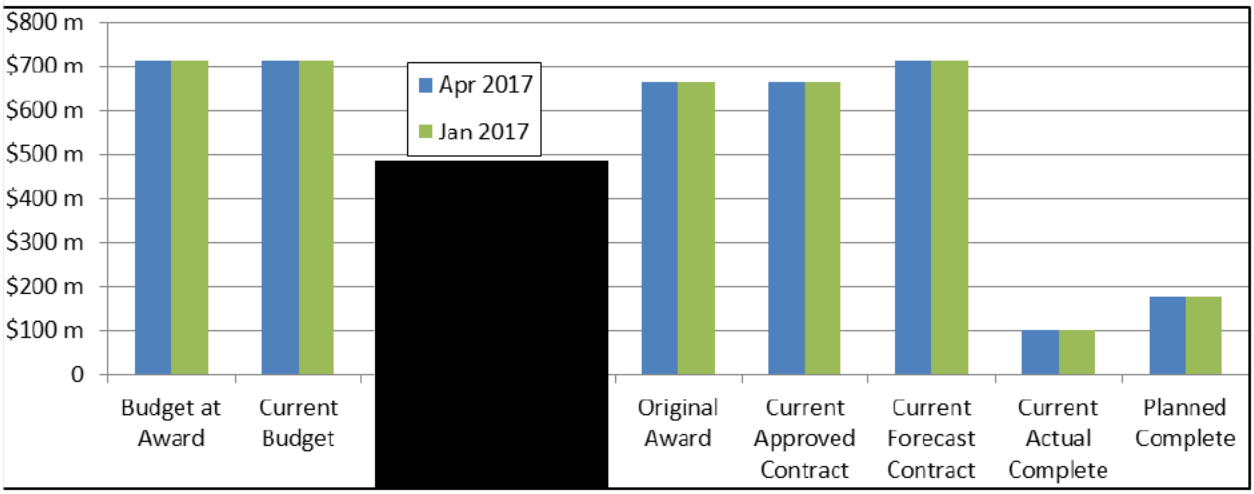




CM007 - GCT Caverns May 2017

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	$663.6	(5-4) $0.5	$712.3	(7-1) $0.0

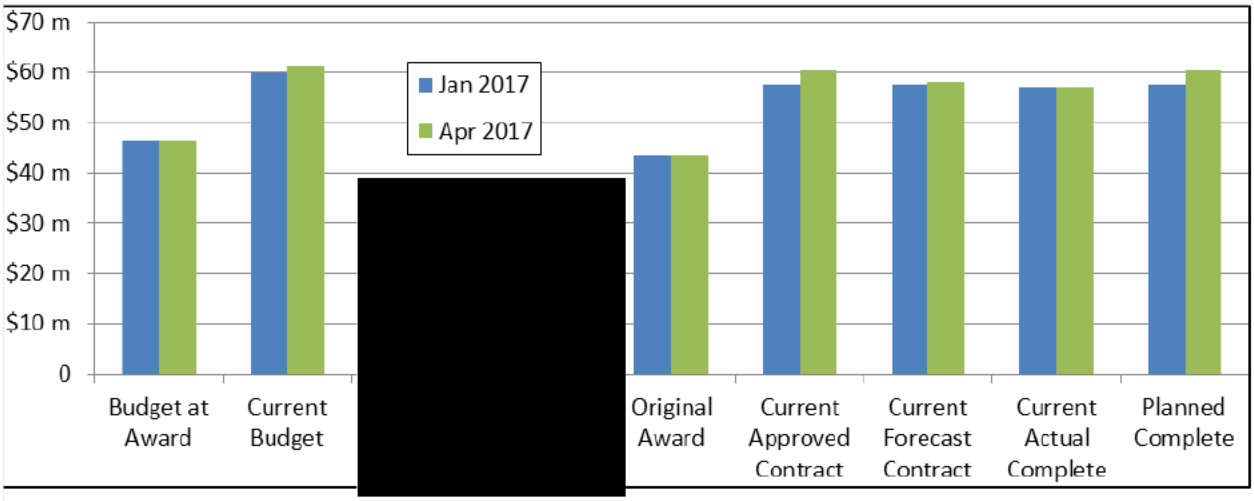
Percent Complete		Actual Prog Last 12 Mths		Actual Prog Last 6 Mths		Average Required Progress to reach forecast SC
Planned	Actual	Total	Avg/Mth	Total	Avg/Mth	
26.7%	15.3%	N/A	N/A	12.0%	2.4%	2.42% per month

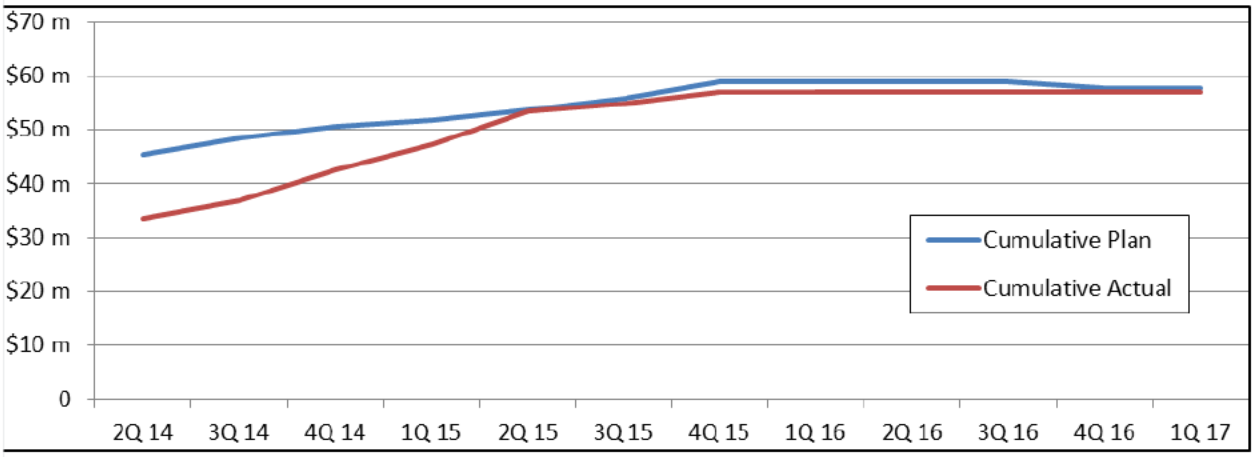


CM014A - GCT Concourse / Facilities Fit Out Early Work May 2017

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	$58.2	(7-1) $11.7

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%	94.4%	3.8%	0.3%	0.1%	-0.3%	N/A per month

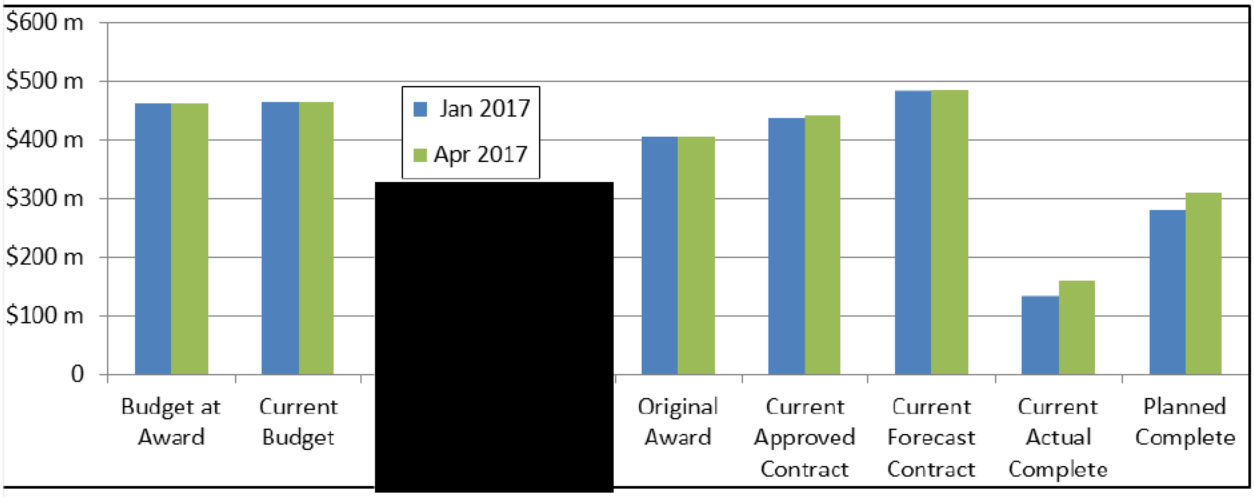


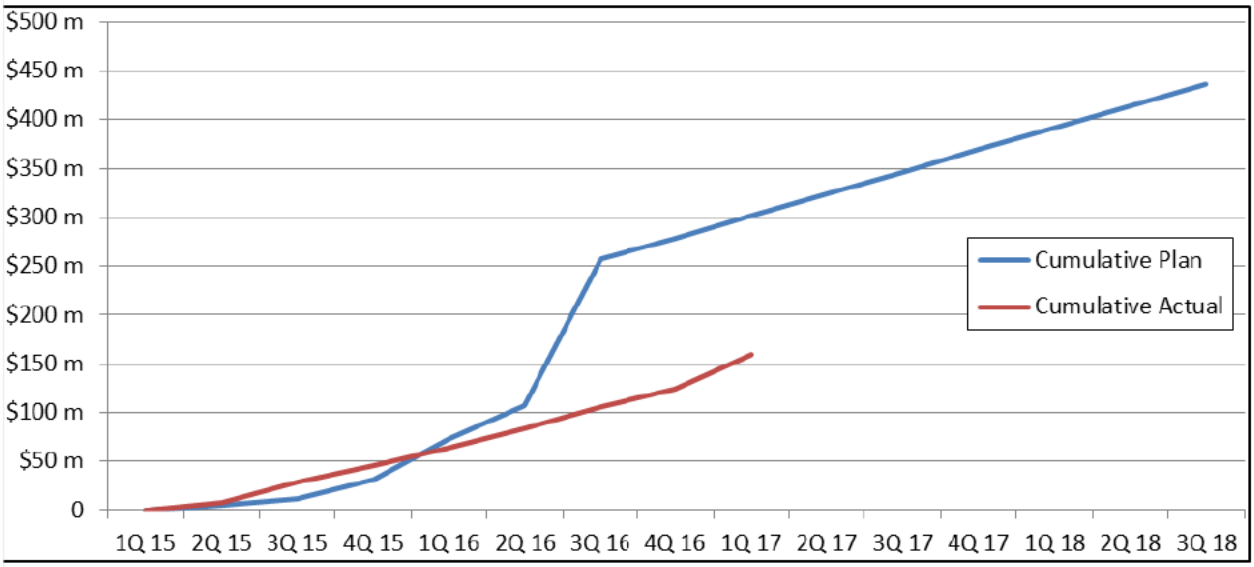


CM014B - GCT Concourse / Facilities Fit Out May 2017

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	$441.6	(5-4) $37.0	$486.2	(7-1) $25.1

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	
70.0%	36.2%	19.7%	1.6%	10.7%	2.5%	2.45% per month

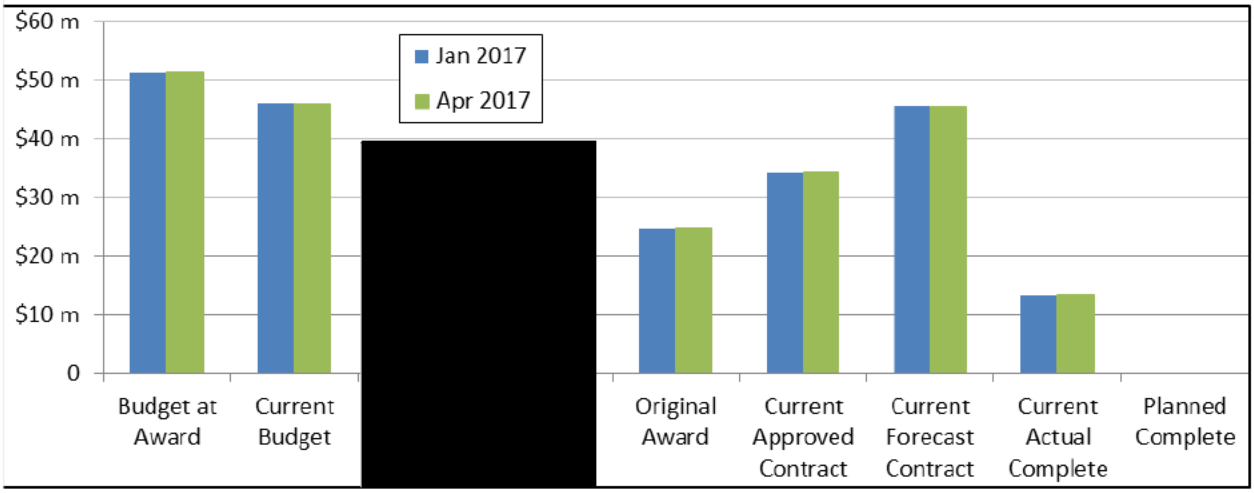




VM014 - Vertical Cir-culation (Escalators & Elevators) May 2017

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)

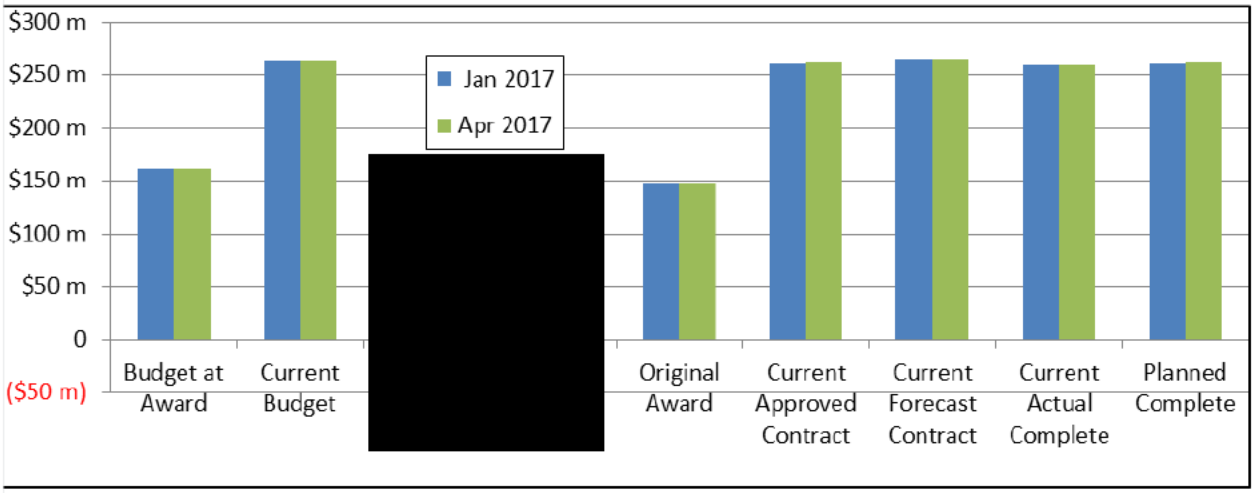
Percent Complete		Actual Prog Last 12 Mths		Actual Prog Last 6 Mths		Average Required Progress to reach forecast SC
Planned	Actual	Total	Avg/Mth	Total	Avg/Mth	
N/A	38.8%	N/A	N/A	N/A	N/A	2.91% per month

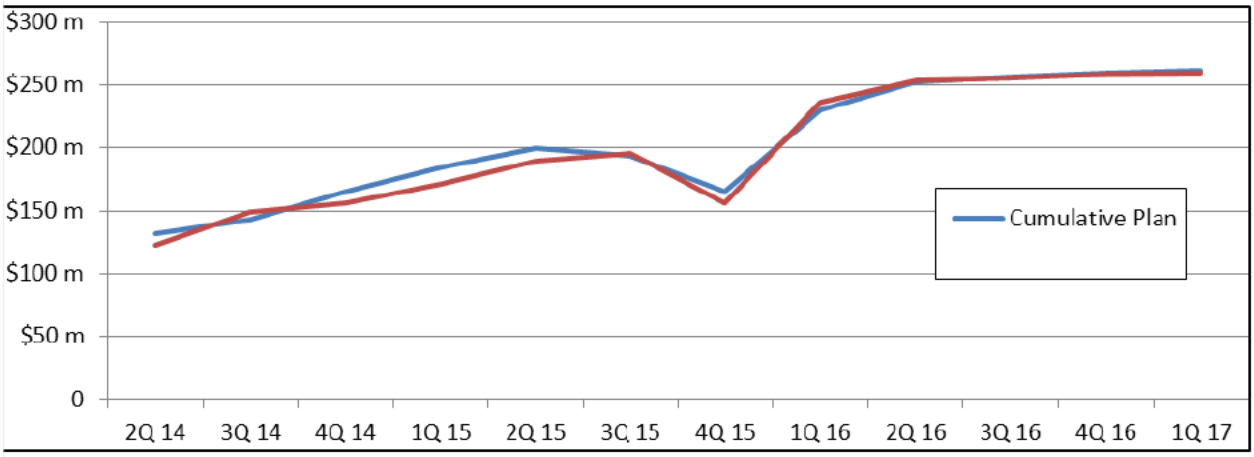


CQ032 - Plaza Substation & Queens Structures May 2017

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%	99.0%	2.5%	0.2%	1.0%	0.5%	0.50% per month



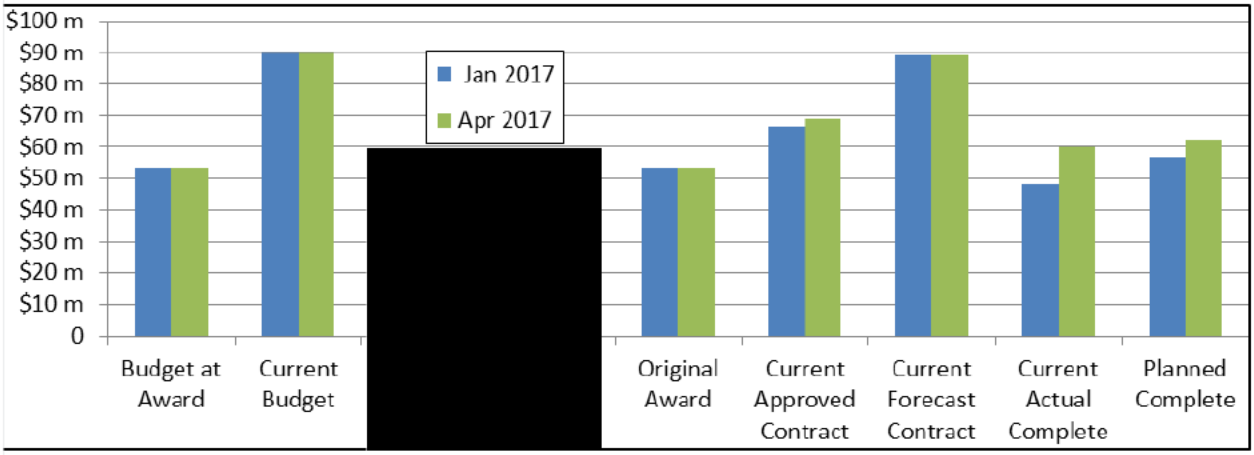


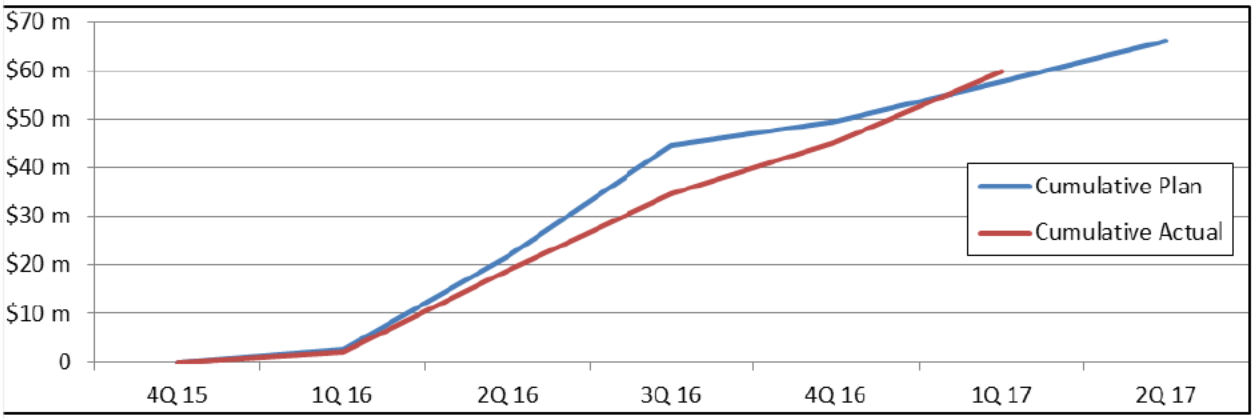
CH057 - Harold Structures Part 3 May 2017

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
$53.4	$89.9	(2-1) $36.5	$53.4	$68.9	(5-4) $15.5	$89.3 *	(7-1) $35.9

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	
90.6%	86.9%	69.2%	5.8%	27.4%	6.6%	6.55% per month

*This forecast includes $1,895,000 for the Montauk Cutoff Catenaries for CQ033 from CH058A.

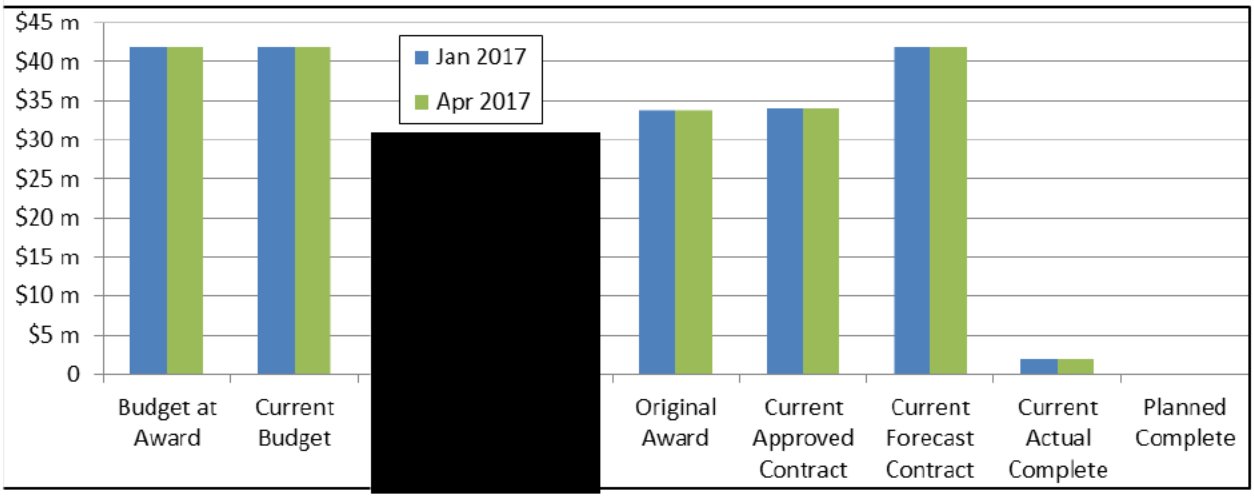




CH061A - Track A Cut and Cover Structure Michels Corporation May 2017

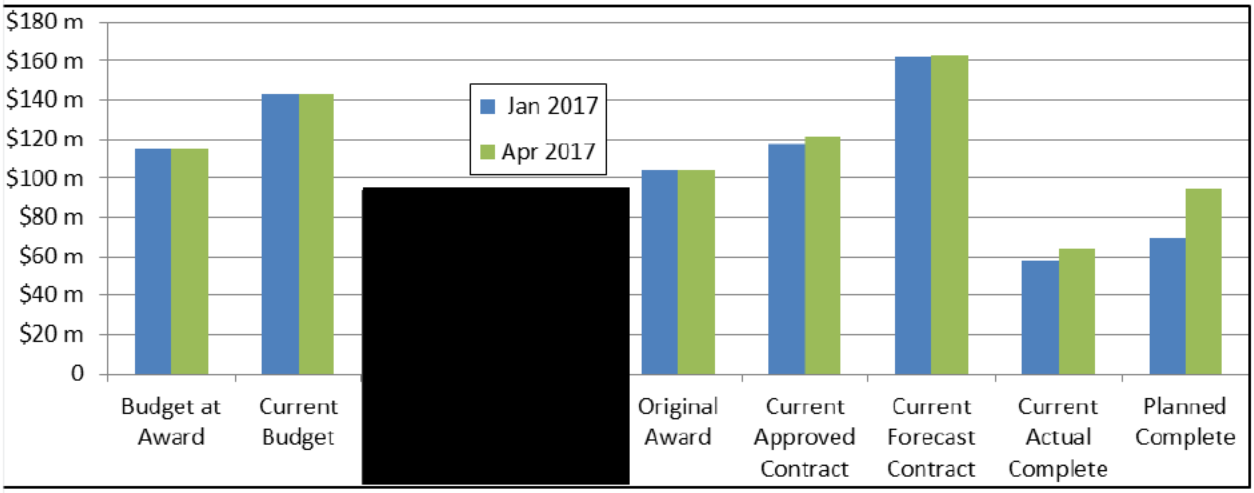
1	2	3	4	5	6	7	8
Budget at Award	Current Budget	Change from Original to Current	Contract at Award	Current Approved Contract	Change from Original to Current	Current Forecast	Change from Current Forecast to Budget at Award
$42.0	$42.0	(2-1) $0.0	$33.7	$34.1	(5-4) $0.4	$42.0	(7-1) $0.0

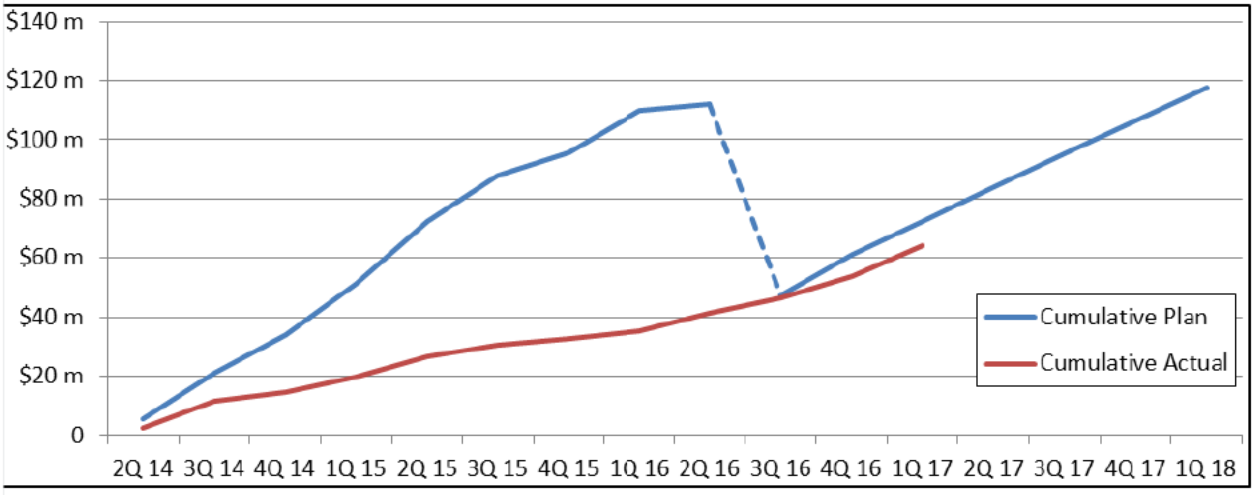
Percent Complete		Actual Prog Last 12 Mths		Actual Prog Last 6 Mths		Average Required Progress to reach forecast SC
Planned	Actual	Total	Avg/Mth	Total	Avg/Mth	
NA	5.9%	N/A	N/A	N/A	N/A	7.24% per month



CH057A - Westbound Bypass May 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
		(2-1)			(5-4)		(7-1)
$114.7	$142.8	$28.1	$104.3	$121.3	$17.0	$162.9	$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		
78.2%	52.8%	17.9%	1.5%	10.3%	2.8%	2.78% per month	



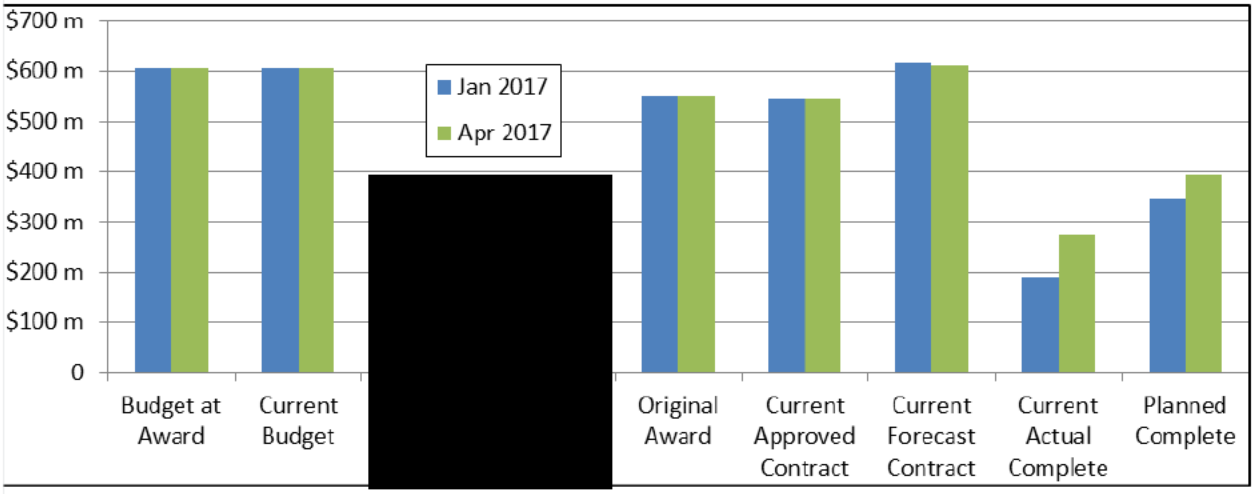


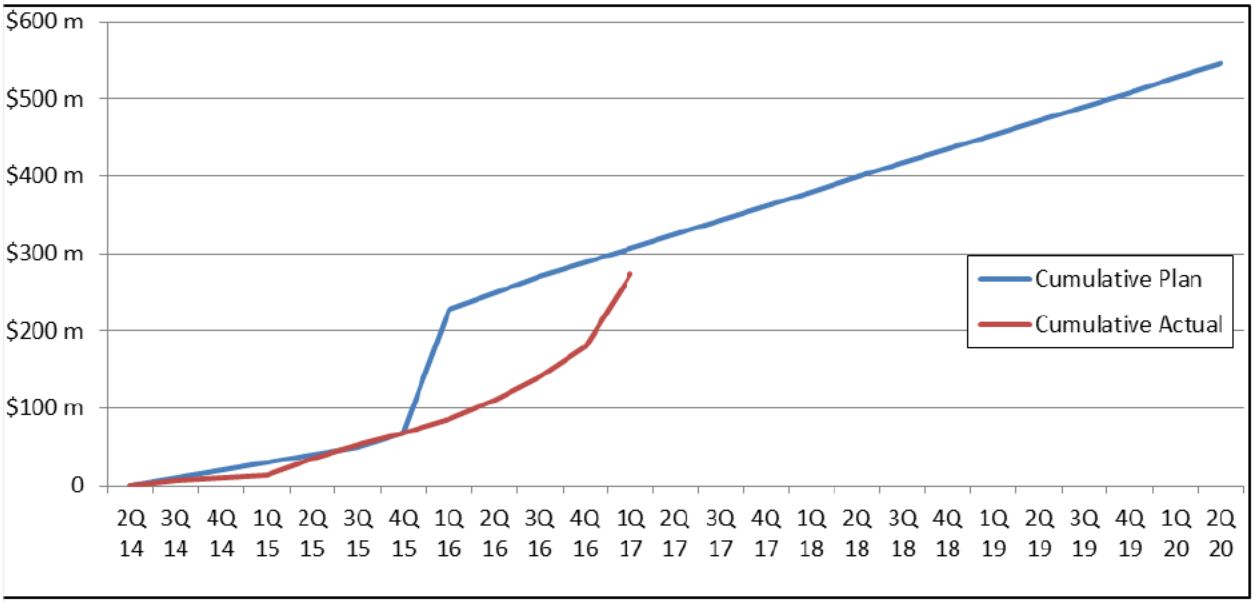
CS179 - Systems Package 1 May 2017

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 **	$547.0	(5-4) ($3.4) (options+mods)	$611.4	(7-1) $6.0

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	
72.0%	50.1%	29.7%	2.5%	21.8%	1.3%	1.31% per month

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

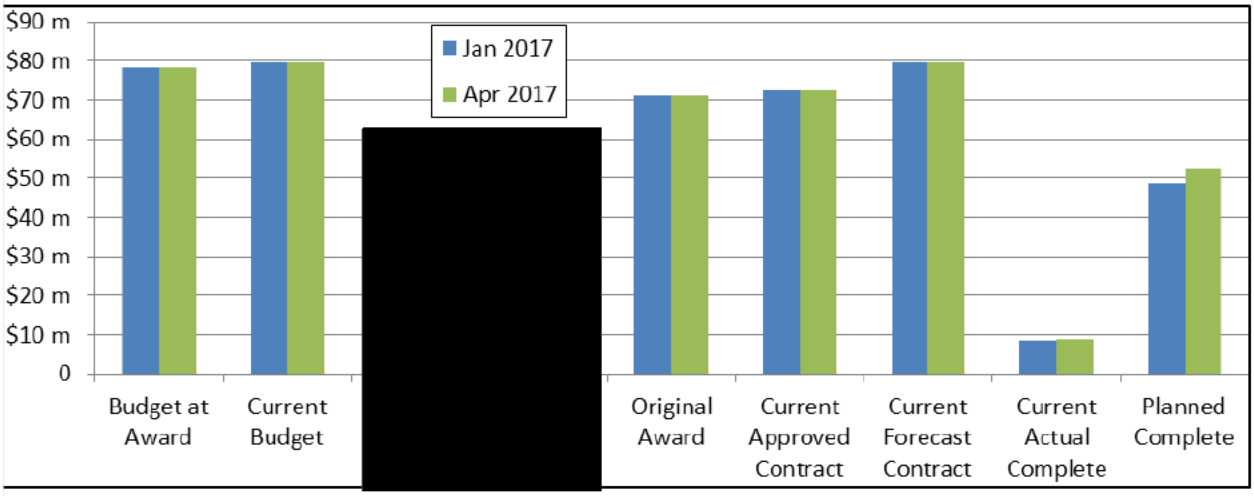


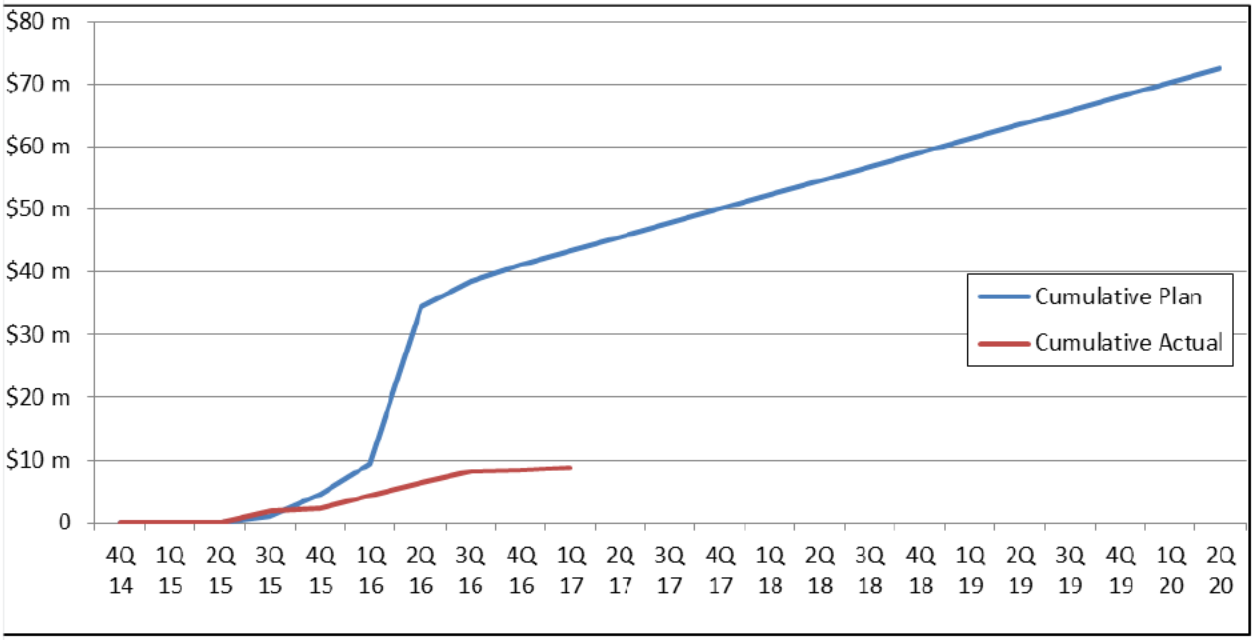


CS084 - Tunnel Systems Package 4 May 2017

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	$72.6	(5-4) $1.4	$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	
72.5%	12.0%	4.2%	0.4%	0.6%	2.3%	2.32% per month

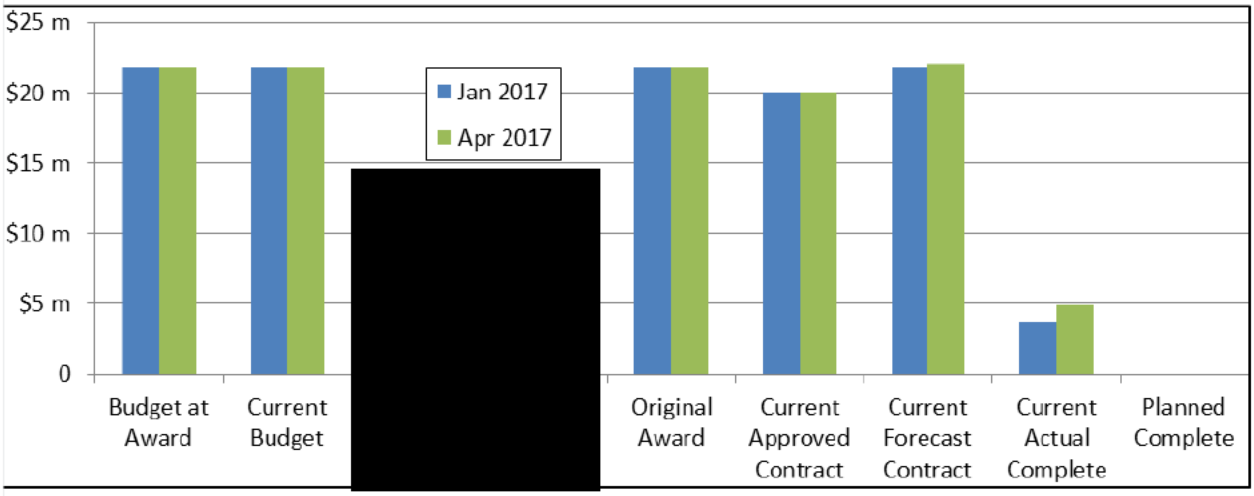


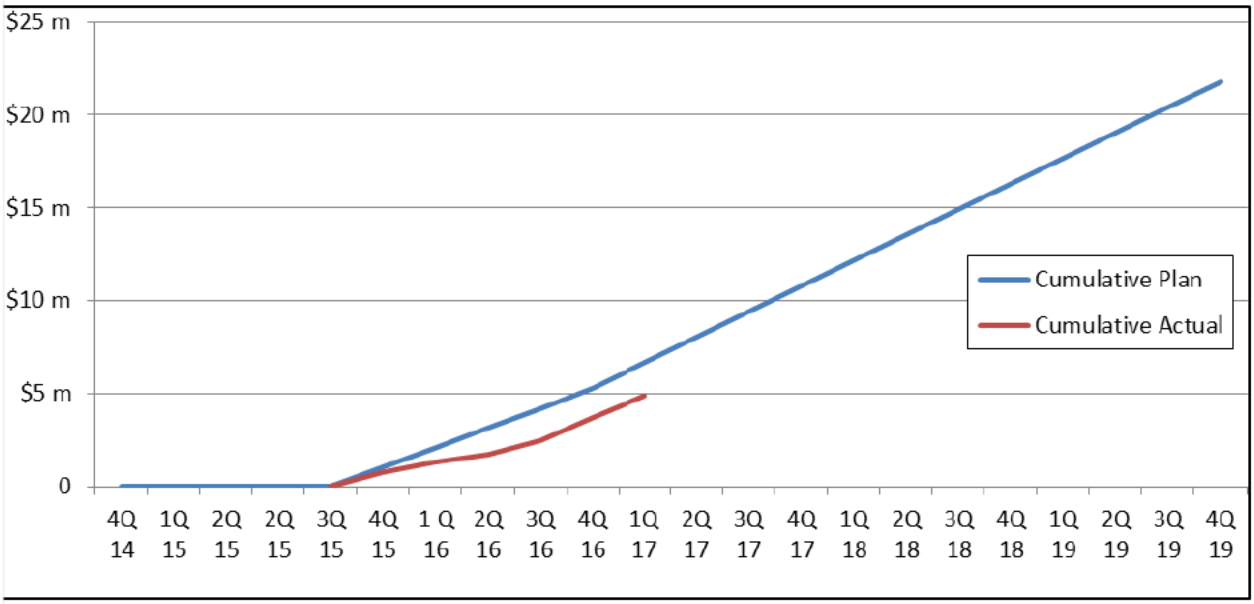


VS086 - Systems Package 3: Signal Equipment Procurement May 2017

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	$20.0	(5-4) ($1.8)	$22.0	(7-1) $0.2

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	
N/A	24.5%	17.8%	1.5%	10.9%	2.6%	2.60% per month

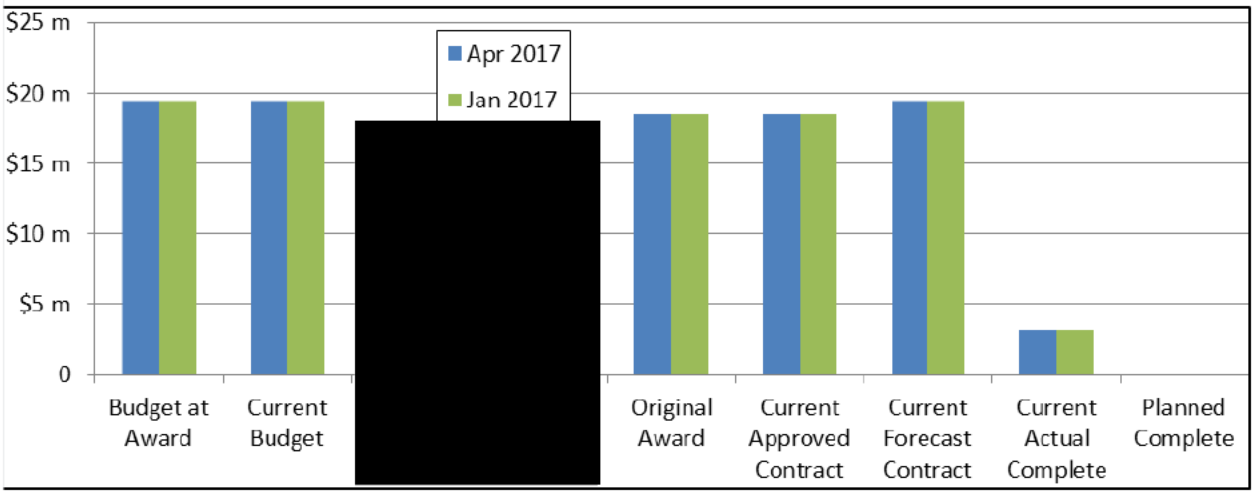




VQ033 - Midday Storage Yard CILs - at Jan 2017 May 2017

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
$19.4	$19.4	(2-1) $0.0	$18.5	$18.5	(5-4) $0.0	$19.4	(7-1) $0.0

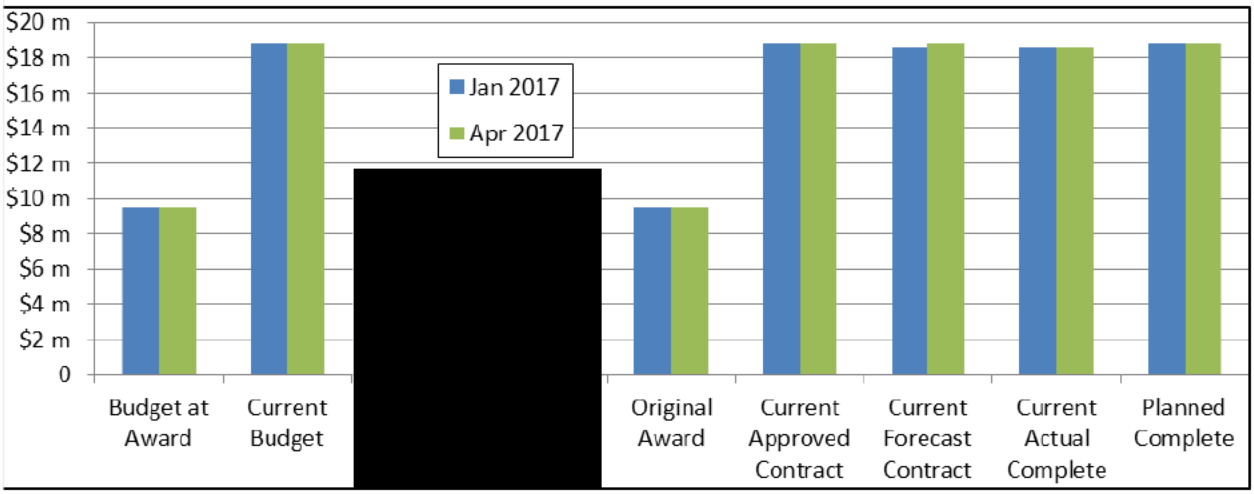
Percent Complete		Actual Prog Last 12 Mths		Actual Prog Last 6 Mths		Average Required Progress to reach forecast SC
Planned	Actual	Total	Avg/Mth	Total	Avg/Mth	
N/A	17.5%	17.5%	1.5%	7.3%	2.4%	2.43% per month



FHA01 - Harold Stage 1 - AMTRAK Harold Stage 1 FA May 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
$9.5	$18.8	(2-1) $9.3	$9.5	$18.8	(5-4) $9.3	$18.8	(7-1) $9.3

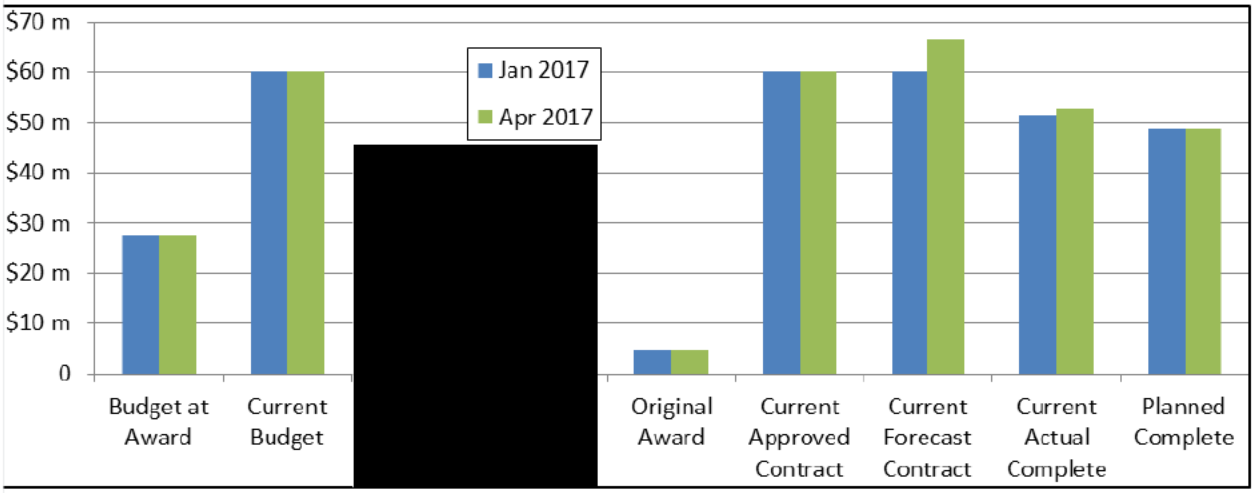
Percent Complete		Actual Prog Last 12 Mths		Actual Prog Last 6 Mths		Average Required Progress to reach forecast SC
Planned	Actual	Total	Avg/Mth	Total	Avg/Mth	
100.0%	98.8%	0.0%	0.0%	0.0%	0.1%	0.09% per month



FHA02 - Harold Stage 2 - AMTRAK Harold Stage 2 FA May 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
$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	
81.0%	87.9%	N/A	N/A	2.8%	0.8%	0.81% per month

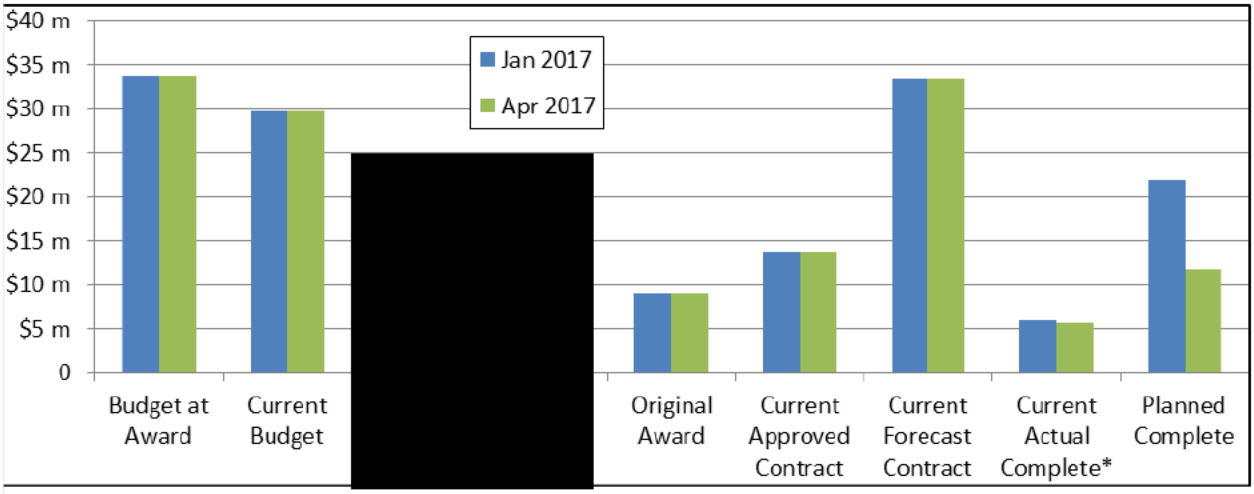


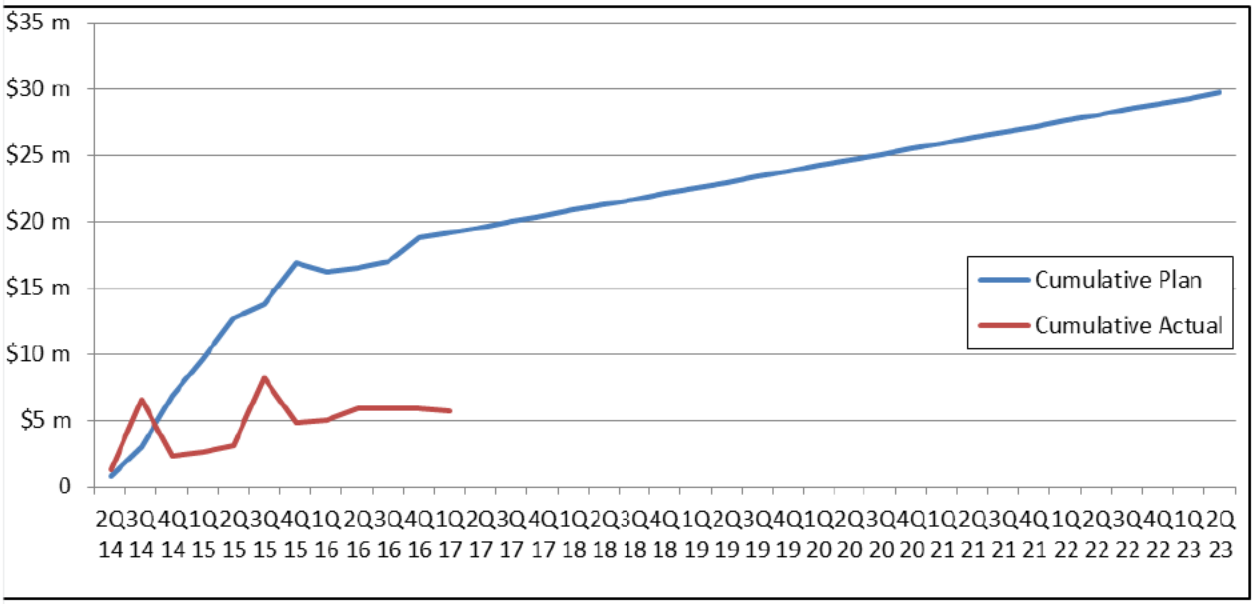
FQA65 - AMTRAK Loop Interlocking CIL - Regional Investment May 2017

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
$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	
85.6%	19.1%	N/A	N/A	N/A	N/A	1.09% per month

* Current Approved Contract does not include full scope.

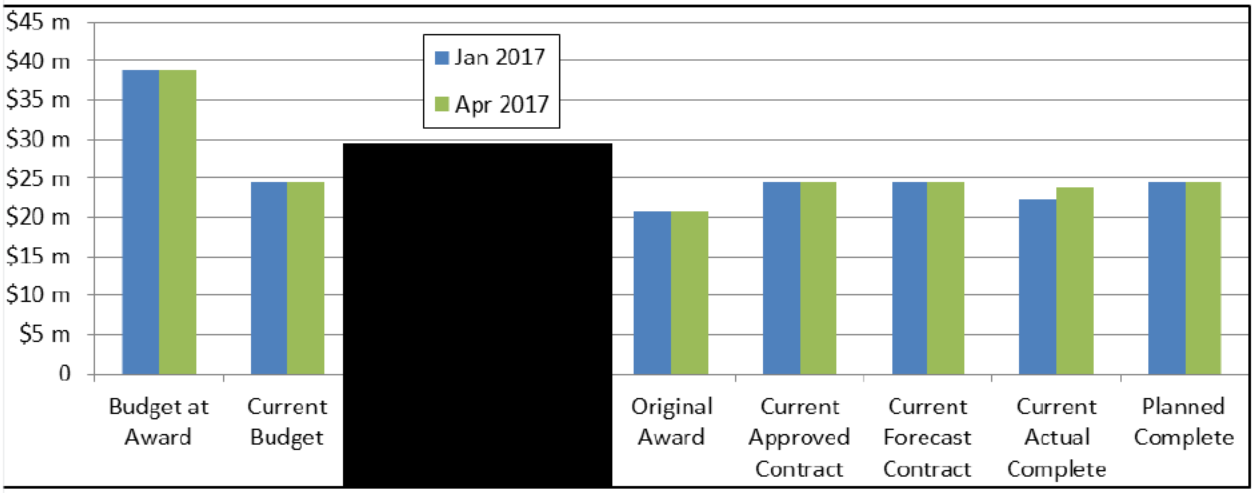




FHL01 - Harold Stage 1 - LIRR FA May 2017

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
$28.8	$24.4	(2-1) ($4.4)	$20.8	$24.4	(5-4) $3.6	$24.4	(7-1) ($4.4)

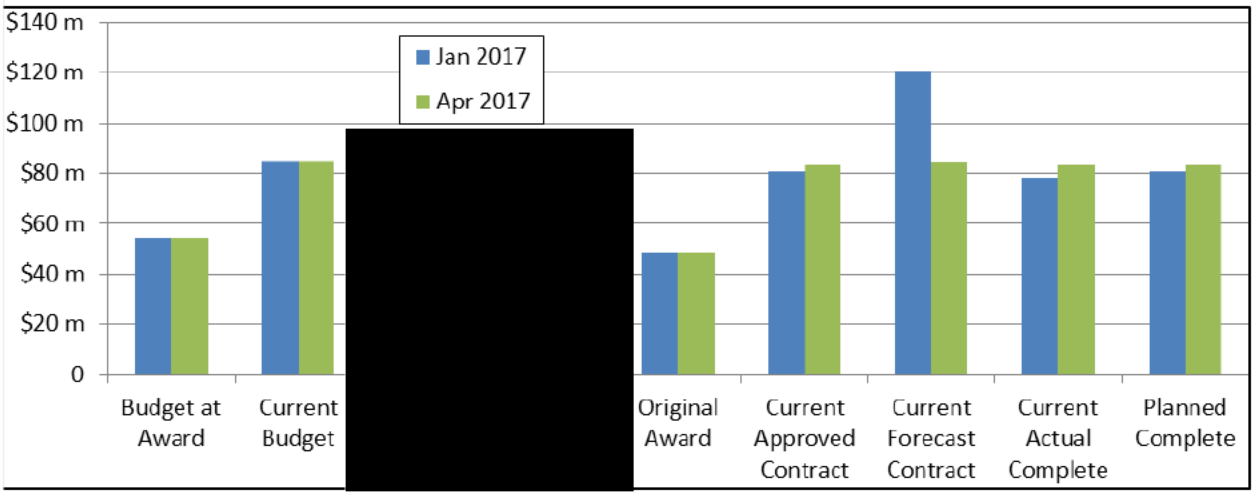
Percent Complete		Actual Prog Last 12 Mths		Actual Prog Last 6 Mths		Average Required Progress to reach forecast SC
Planned	Actual	Total	Avg/Mth	Total	Avg/Mth	
100.0%	98.7%	11.9%	1.0%	10.1%	0.1%	0.12% per month



FHL02 - Harold Stage 2 - LIRR FA May 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
$54.1	$84.6	(2-1) $30.5	$48.2	$83.5	(5-4) $35.3	$84.4	(7-1) $30.3

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%	98.7%	13.1%	1.1%	2.6%	0.0%	0.03% per month



APPENDIX K – CS084 : TRACTION POWER SUBSTATIONS SCHEDULE METRICS

Traction Power Substations (TPSS)		Major Electrical Equipment (Note 3)															
		Submittals - Approve			Layout Drawings - Approve			Fabricate			Factory Witness Test (FAT) Start			Delivery to ESA Site			
No.	Name	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)	Comments
1	**CO1 - Tail Tracks (38th Street)**	2/16/2016	1/30/2018	-28	1/18/2017	4/3/2018	-28	9/13/2016	10/12/2018	-28	2/23/2017	12/10/2018	-31	2/9/2018	1/2/2019	-28	**Submittal date** = AC Switchgear PLCS; EO DC Switches Control Cabinet; Main PLC; Rectifier PLC; and SCADA Controls & Screens. **Fabricate date** = AC Switchgear PLCS; EO DC Switches Control Cabinet; Main PLC; and Rectifier PLC.
2	**CO2 - Tail Tracks (38th Street)**	2/16/2016	3/7/2018	-28	5/24/2016	5/9/2018	20	9/13/2016	10/17/2018	-28	2/20/2017	12/4/2018	-25	2/9/2018	12/24/2018	-24	**Submittal date** = Bus Duct 12KA Positive Tie; and Bus Duct 12KA Negative. **Fabricate date** = AC Switchgear PLCS; DC Switchgear PLC; EO DC Switches Control Cabinet; Main PLC; and Rectifier PLC.
3	**CO3 - 55th Street**	2/23/2016	4/30/2018	-28	6/1/2016	8/8/2018	-28	9/13/2016	11/15/2018	-28	3/13/2017	12/26/2018	-29	8/2/2018	1/16/2019	-30	**Submittal date** = SCADA Controls & Screens. **Fabricate date** = SCADA Controls & Screens.
4	**CO4 - 2nd Avenue**	2/18/2016	8/8/2017	-28	11/21/2016	8/15/2017	34	9/13/2016	3/12/2018	-14	10/5/2016	4/24/2018	-7	3/13/2017	5/14/2018	-7	**Submittal date** = Bus Duct (12KA, Negative); Bus Duct (38KV Tie); Bus Duct (6PH, 1000V T1-R1); Bus Duct (6PH, 1000V T2-R2); and SCADA Controls & Screens. **Fabricate date** = AC Switchgear PLCS; EO DC Switches Control Cabinets; Main PLC; and Rectifier PLCS.
5	**CO5 - Vernon**	2/18/2016	7/19/2017	-8	5/26/2016	7/26/2017	13	9/13/2016	9/29/2017	39	10/5/2016	10/20/2017	41	11/8/2016	11/10/2017	40	**Submittal date** = SCADA Controls & Screens. **Fabricate date** = SCADA Controls & Screens.
6	**CO6 - QP - Main**	2/18/2016	12/15/2017	-29	5/26/2016	12/22/2017	34	9/30/2016	5/7/2018	-28	11/21/2016	6/6/2018	-19	6/13/2017	6/26/2018	-18	**Submittal date** = Bus Duct (12KA Positive); Bus Duct (12KA Negative #1); and Bus Duct (12KA Negative #2). **Fabricate date** = SCADA Controls & Screens.
7	**CO7 - QP - Yard**	2/18/2016	1/25/2018	-29	5/26/2016	4/3/2018	-28	9/13/2016	6/5/2018	-29	1/12/2017	7/5/2018	-29	8/17/2017	7/25/2018	-29	**Submittal date** = Bus Duct (7 separate submittal packages). **Fabricate date** = AC Switchgear PLCS; Main PLC; Rectifier PLCS; and SCADA Controls & Screens.
8	**CO8 - 43rd Street (Pre-fab Building)**	1/21/2016	9/11/2017	-31	5/12/2016	10/16/2017	-28	9/12/2016	3/5/2018	-28	10/25/2016	7/5/2018	-29	12/6/2016	8/1/2018	-29	**Submittal date** = SCADA Controls & Screens. **Fabricate date** = Pre-fab Enclosure.

Notes:
1 - Current Update = IPS Monthly Update with Data Date 5/1/17.
2 - Delta = Change from Previous Month's IPS Update, with Data Date 4/1/17, 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 approved CS084 baseline 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 Tenson 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 K – CS084 : TRACTION POWER SUBSTATIONS SCHEDULE METRICS

Traction Power Substations (TPSS)		Installation of 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			
No.	Name	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)	Comments
1	**CO1 - Tail Tracks (38th Street)**	11/6/2018	10/3/2019	-28	12/27/2018	11/22/2019	-28	1/21/2019	12/16/2019	-31	2/4/2019	12/31/2019	-29	12/2/2019	5/25/2020	-28	**Installation Complete date** = Terminate Ground Cable - 158 Ea.
2	**CO2 - Tail Tracks (38th Street)**	11/14/2018	10/7/2019	-24	12/24/2018	11/19/2019	-22	1/22/2019	12/11/2019	-23	2/5/2019	12/26/2019	-23	12/2/2019	5/25/2020	-28	**Installation Complete date** = Terminate Ground Cable - 158 Ea.
3	**CO3 - 55th Street**	3/1/2019	8/23/2019	-28	N/A	N/A	N/A	5/6/2019	10/29/2019	-28	5/16/2019	11/8/2019	-28	12/2/2019	5/25/2020	-28	**Installation Complete date** = Terminate Ground Cable - 50 Ea.
4	**CO4 - 2nd Avenue**	4/27/2018	7/16/2019	-7	7/6/2018	9/24/2019	-7	8/7/2018	10/23/2019	-7	8/21/2018	11/6/2019	-7	12/2/2019	5/25/2020	-28	**Installation Complete date** = Terminate Ground Cable - 65 Ea.
5	**CO5 - Vernon**	6/8/2018	7/26/2019	10	N/A	N/A	N/A	9/19/2018	10/7/2019	37	10/3/2018	10/21/2019	37	12/2/2019	5/25/2020	-28	**Installation Complete date** = Terminate Ground Cable - 60.
6	**CO6 - QP - Main**	9/10/2018	10/7/2019	-18	N/A	N/A	N/A	1/3/2019	1/30/2020	-16	1/17/2019	2/13/2020	-16	12/2/2019	5/25/2020	-28	**Installation Complete date** = Terminate Ground Cable - 76 Ea.
7	**CO7 - QP - Yard**	10/22/2018	10/11/2019	-28	N/A	N/A	N/A	2/15/2019	2/6/2020	-28	3/1/2019	2/20/2020	-28	12/2/2019	5/25/2020	-28	**Installation Complete date** = Terminate Ground Cable - 92 Ea.
8	**CO8 - 43rd Street (Pre-fab Building)**	9/12/2017	4/23/2018	-28	12/8/2017	5/31/2019	-29	2/1/2018	7/24/2019	-29	2/15/2018	8/7/2019	-13	12/2/2019	5/25/2020	-28	**Installation Complete date** = Terminate Ground Cables - 107 Ea.This is the last installation preceding local testing and energizat on.

Notes:
1 - Current Update = IPS Monthly Update with Data Date 5/1/17.
2 - Delta = Change from Previous Month's IPS Update, with Data Date 4/1/17, 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 approved CS084 baseline 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 Tenson 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 L - ESA CORE ACCOUNTABILITY ITEMS

Table L – ESA Core Accountability Items

Project Status:		Original at FFGA	Amended FFGA	Current*	ELPEP **
Cost	Cost Estimate	$7.368B	$10,922B	$10.178B	$8.119B
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
Schedule	RSD	December 31, 2013	December 31, 2023	December 2022	April 30, 2018
Total Project % Complete	Based on Invoiced Amount			70.1% actual vs. 73.9% (ESA Figure)	
Project Performance Rate since 2014 "Re-Plan"	Based on Earned Value***			74.8% (PMOC calculation of construction spending at 1Q2017 planned vs. actual since re-baselining). Actual cumulative construction amount invoiced since project start is 100.0% of original plan.	

Major Issue	Status	Comments
Project Funding and Budget	During 2Q2017, MTACC announced that there will be no ESA amendment to 2015-19 Capital Plan for additional required funding for forecast cost overruns. [redacted].	ESA-PMT is currently evaluating cost, budget and schedule impacts. Results not expected until August 2017, at the earliest. [redacted]ntly [redacted]
Project Cost	MTACC has identified significant forecast cost overruns: • OCIP - $190 million • Railroad Force Account - $110 million • OICs for Contract CM014B - $25 million • PM/CM, CCM, GEC Services – (TBD) Schedule delays due to funding constraint (see above) will cause additional escalation costs.	ESA-PMT is currently evaluating cost of continued PM/CM, CCM and GEC Services to target RSD. Recent funding issue (see above) will likely delay completion of current contracts, award of remaining contracts and completion of railroad force account work. The resulting added cost escalation could be significant.
Project Schedule	MTACC presented a revised baseline schedule to the MTA CPOC in June 2014, with a target RSD in February 2021 and a late (public) RSD in December 2022. [redacted] Funding constraint (see above) will cause schedule delays.	The approximate 2 month schedule float for each of the two near critical paths will likely be insufficient for the $2.217 billion of construction work scheduled to be completed in the remaining 45 months to the target RSD. Additional delays are expected due to the funding constraint discussed above.
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 2Q2017. 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: • 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 prior to end of 2017. • Current Amtrak support to ongoing Harold work: impact through 2Q2017 is moderate; future impacts could be significant.

* 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.

***74.8% is PMOC calculation of construction spending at 1Q2017 planned vs actual since June 2014 re-baselining.