PMOC COMPREHENSIVE MONTHLY REPORT

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

Report Period December 1 to December 31, 2016

PMOC Contract No. DTFT6014D00017

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

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

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THIRD PARTY DISCLAIMER

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

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REPORT FORMAT AND FOCUS

This report is submitted in compliance with the terms of the Federal Transit Administration (FTA) Contract No. DTFT6014D00017, Task Order No. 002. Its purpose is to provide information and data to assist the FTA as it continually monitors the Grantee's technical capability and capacity to execute a project efficiently and effectively, and hence, whether the Grantee continues to be ready to receive federal funds for further project development.

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

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

MONITORING REPORT

EXECUTIVE SUMMARY

1. PROJECT DESCRIPTION

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

2. CHANGES DURING 4th Quarter 2016

a. Engineering/Design Progress

As of the end of October 2016 (November 1, 2016 data date), MTACC reported that the overall Engineering effort is 99.3% complete, based on the GEC's monthly report. Note that this is reduced from the 99.6% reported in the August 2016 Monthly Progress Report. Its Cost Report shows 94.7% of the overall EIS & Engineering category as invoiced and 94.9% of the budgeted section titled "Design" as having been invoiced.

b. New Contract Procurements

MTACC received bids for Contract CH061A, Tunnel A Approach Structure, on August 2, 2016, and subsequently identified an apparent low bidder. MTACC deferred the Notice of Award and Notice to Proceed, however, based on the planned availability for construction site access and protection by limited railroad force account resources. MTACC awarded the contract on November 22, 2016. MTACC forecasts that the NTP date will be January 27, 2017, a three month delay from the previously forecast date of October 28, 2016. Total Notice to Proceed delay since January 1, 2016, is eight months.

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 due date has been extended one month from December 22, 2016 to January 19, 2017. This contract will be an Invitation for Bid (IFB) procurement. Total bid advertisement delay since January 1, 2016, is seven months.

c. Construction Progress

The Project Management Team (PMT) reported in its October 2016 Monthly Progress Report that total construction progress reached 66.1% complete, versus 70.3 % planned; the Cost Report also shows 66.1% of construction as having been invoiced.

d. Continuing and Unresolved Issues

[redacted] MTACC is currently seeking additional funding through the use of an amendment to the 2015-2019 Capital Plan. 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 through the end of 2016, the PMT has been reporting that Amtrak has not been able to provide even the reduced level of force account resources that had been planned in support of the ESA schedule. The Harold Schedule Plan was re-evaluated and further adjusted in early 2016 to account for the recent experience of the project, making work package changes to accommodate the railroad force account resource constraints.

Additionally, the projected force account costs are trending noticeably higher than planned [redacted]. By mid-3Q2016, ESA completed a comprehensive study to identify and evaluate the reasons for this continuing problem and to make recommendations with regard to a revised

basis for planning and scheduling the remaining work in the Harold Interlocking and a revised cost forecast. The schedule analysis and re-planning were completed earlier and the results were incorporated into the ESA Integrated Project Schedule (IPS) during 2Q2016. The Harold critical path has become the ESA program critical path and now leads the secondary Manhattan/Systems critical path by approximately three months. The railroad Force Account cost overruns have been evaluated and the additional costs are estimated to be approximately $246 million, not including 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 July 2016, Amtrak advised MTACC that it plans to start work on the total track replacement in ERT Lines 3 and 4 during 4Q2016. There is also concern that track outages required for the hardening work may conflict with ESA needs to support completion of the planned Harold work, required for LIRR service into GCT by 2020. However, no noticeable impacts to availability of Amtrak force account resources through December 2016 were observed due to work in ERT Lines 3 and 4. 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 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] The timing of the presentation of the amendment to the 2015-2019 Capital Plan is uncertain. The ESA amendment was not requested in December 2016 as expected. ESA is now expecting to submit the amendment in the Spring of 2017.

ESA's November 1, 2016 Integrated Project Schedule (IPS) Update maintains a forecasted Target RSD of February 23, 2021, and a Late RSD of December 13, 2022. The biggest change over 4Q2016 related to the IPS is that the PMT, working under the Harold Task Force and with LIRR, resequenced critical Harold Cutover work. At the beginning of 4Q2016, as of the August 1, 2016 IPS Update, the CIL Pre-Cutover testing was scheduled to begin in December 2016 and end in March 2018. As of the November 1, 2016 IPS Update, this work is now forecasted to start later than previously scheduled, in February 2017, and complete in May 2018. The PMOC maintains its concern about the pace of Force Account work and has started tracking important milestones related to this work. Due to the limited resources of Amtrak and LIRR personnel, Force Account work may become a limiting factor that could impact the program's schedule. The PMOC notes that over the previous quarter, this Program-critical work has made almost no progress, and in some cases, has lost time due to additional activities being added into the IPS that are critical, such as the hatch fabrication for Signal Power Separation at Harold.

3. PROJECT STATUS SUMMARY AND PMOC ASSESSMENT

a. Grantee 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. Secondly, the PMOC remains concerned about the inadequate staffing levels for the project Quality staff. Lastly, the PMOC is concerned about the mid-January 2017 departure of the leader of the 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. 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 September 2016 Monthly Report, the MTACC reported that the easement agreement for 280 Park Avenue was executed with Vornado and S. L. Green on September 14, 2016. During 4Q2016, MTACC also reported that real estate negotiations continued on two agreements with Amtrak, one for a large-scale lease agreement in Sunnyside Yard and the other for a joint use access road in Sunnyside Yard. A more detailed discussion of these and other on-going issues is provided in Section 2.6 of this report.

c. Engineering/Design

Progress for remaining design work continues to lag design milestone targets. The GEC and PMT continue to miss target dates for completing remaining design activities on the project due to scope transfers between contract packages, and the inability to provide definitive requirements and answers to contractor questions in a timely manner, and other issues involving stakeholders. Although Contract CQ033, Mid-Day Storage Yard, is out to bid, the final design completion of the package continues to be 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

MTACC received bids for Contract CH061A, Tunnel A Approach Structure, on August 2, 2016, and subsequently identified an apparent low bidder. MTACC deferred the Notice of Award and Notice to Proceed, however, based on the planned availability for construction site access and protection by limited railroad force account resources. MTACC awarded the contract on November 22, 2016. MTACC forecasts that the NTP date will be January 27, 2017, a three month delay from the previously forecast date of October 28, 2016. Total Notice to Proceed delay since January 1, 2016, is eight months.

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:

- CQ033, Mid-Day Storage Yard Facility – 6 months delay; bid advertisement date was October 20, 2016.
- CM015, 48th Street Entrance – 4 months delay; forecast bid advertisement: January 5, 2017.
- CS086, Tunnel Systems – 9 months delay; forecast bid advertisement: January 10, 2017.

e. Railroad Force Account (Support and Construction)

During December 2016, LIRR Signal and 3rd Rail personnel completed construction of the new RPR (Relocated Primary Route) Track in Harold Interlocking for DC operation and placed the track in service (although not in service for catenary operation yet). LIRR 3rd Rail personnel also completed installation of conduits into the new G02 Substation, while LIRR Signal personnel continued to install and terminate signal cables at the new "H1" and "H2" CILs and their respective signal cases. LIRR Signal personnel also continued to make ESA 501(GEC designation) signal revisions at the Location 30 and Harold CILs and ESA 603 (GEC designation) signal revisions at the "H6" CIL and other miscellaneous construction necessary for the CIL cutovers planned for 2018. Amtrak Electric Traction personnel continued catenary system installation for AC operation over the new RPR Track, which is expected to be completed by mid-1Q2017.

f. Third-Party Construction

Manhattan:

During 4Q2016, ESA and the CM005 contractor (Manhattan South Structures) continued remaining work at the upper 37th St. Vent facility, remaining punchlist work, and commenced installation of pressure resistant doors. The project site was turned over to the CM007 contract in October 2016.

The CM006 contractor (Manhattan North Structures) continued the rehabilitation/remediation work at the 63rd St. Tunnels and Structures. Archway construction continued at the following locations: GCT 3 Crossover, 55th St. Vent Facility, and Tunnel WB3; and completed at GCT 3 West Wye Cavern, 50th St. Vent Facility, 300 Series Tunnels, and Tunnel EB4. Duct bench

construction continued at Tunnel WB3 and completed at EB4. The contractor also completed stair construction at the north end of the East and West Cavern BOH (back of house). Contact grouting continued at various locations. The contractor also completed removal of all service track rail, from the Bellmouth to the Caverns, in November 2016.

The CM007 contractor continued with the preparation of submittals and schedule development for this contract. During 4Q2016, the contractor prepared mock-ups of track construction, PAC application, and precast concrete element manufacture for MTA and GEC inspection prior to production. Other activities during this Quarter included: the beginning of rail distribution in the tunnels, the start of precast element production, and the setting of mezzanine level precast beams and deck panels using temporary supports. Monthly Construction Progress Meetings were held each month during 4Q2016.

Queens:

During the 4Q2016, the CQ032 contractor (Plaza Substation and Queens Structures) continued architectural finishes and electrical work at the Yard Services Building, and punchlist work activity continued. The contractor continued water infiltration repairs at the Plaza structures by internal grouting in the substation equipment rooms, in the former Early Access Chamber, and launch block areas. ESA continued work scope review to be transferred other contracts.

Harold Interlocking:

Contract CH057 Harold Structures Part 3: During December 2016, the CH057 contractor continued to pour the concrete roof slab and sidewalls in the transition area between the TBM reception pit and the secant pile area of Tunnel D, poured the concrete base slab and began to place re-bar for the sidewalls in the secant pile area, and continued to place base slab and sidewalls in the Option 10 section of the East Approach Structure. The contractor also continued to excavate and place sewer line at the 39-S6 retaining wall and miscellaneous catenary pole foundation construction in Harold Interlocking.

Contract CH057A (Westbound Bypass): During December 2016, the CH057A contractor began placement of sidewall concrete in the West Approach Structure, completed placement of the invert slab and began sidewall re-bar placement east of Honeywell St. overhead bridge in the East Approach Structure of the Westbound Bypass, and completed installation of secant piles for the pump station. The contractor was unable to resume mining of the Westbound Bypass Tunnel, however, as it continued to wait for design revisions and materials to make the necessary modifications to its "box shield" that would prevent the uplift that it experienced during its initial operation. As of the December 22, 2016, monthly Harold Oversight meeting, the ESA PMT does not believe that mining of the tunnel will resume until mid-1Q2017. The PMOC notes that the continuing delays to completion of the mined tunnel will likely create LIRR and Amtrak force account resource availability issues for follow-on contract construction that may impact timely completion of the Harold work required for LIRR service into GCT.

Systems:

Contract CS179 – Systems Facilities Package No. 1: During December 2016, the CS179 contractor continued various elements of work (installation of conduit, cable, fire stopping, fire

standpipe, etc.) at the B10; Roosevelt; Vernon; 12th St.; 39th St., Queens Plaza; and 63rd St. facilities. Seven (7) Stop Work Orders (SWOs) for work on this contract are still in effect. The GEC is still working on designs and solutions to these SWOs but no dates were given for the rescinding of the SWOs. At present, water infiltration issues have been identified at five locations: Vernon, Roosevelt, 12th St., 23rd St. and 29th St. Water infiltration remediation work is complete at the Vernon, 23rd St., and 29th St. facilities. Assembly of equipment racks in the subcontractor's off-site facility is underway.

Contract CS084 Traction Power System Package 4: (**Note:** The information presented for this CS084 contract comes from discussions at a mid-January 2017 Progress Meeting that reviewed contract progress for December 2016). While the contractor'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 there is some additional work (the installation of panel heaters and lightning arrestors), identified in November 2016, that must take place. The MTAC is in discussions with the contractor trying to determine how this extra work will be accomplished. The contractor continues to perform site surveys and submit design documentation. In December 2016, the MTA completed the SOW related to the SCADA system changes and requested that the contractor provide a cost proposal for the work. The MTACC indicates that there will be two contract modifications issued to address this modified SCADA work. The contractor continues to contend that the lack of clarity on SCADA has caused delays to its contract schedule. In its October 2016 MPR, the MTACC now cites a February 2020 SC date; acknowledging the schedule slippage from December 2019 to February 2020.

VS086 – Systems Package 3 – Signal Equipment Procurement

In its October 2016 ESA Monthly Progress Report, despite acknowledging that five interim contract milestones show delays of anywhere from 12 to 23 months, the MTACC forecasts a SC date that remains the same as that established at contract award (October 14, 2019). The MTACC indicates in its report that it is currently in discussions with the contractor to re-establish interim milestone dates. Due to the departure of the originally assigned MTACC construction manager (CM), the MTACC recently assigned a new management team for this contract. The contractor continues to raise concerns over the timeliness of responses from the MTA on design submittals and inquiries. The contractor indicates that coordination efforts with the ESA CS179 contractor need to be established to facilitate the Factory Integrated Acceptance Testing of some of the signal equipment. Additionally, the LIRR has recently requested that the contractor replace the incandescent lights in the signal units with Light Emitting Diodes (LEDs); a change to the contract requirements and to designs already underway. The VS086 CM indicated that this request is under review by MTACC senior management.

g. Vehicles

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

h. Commissioning and Start-Up

The PMOC has met with the Operational Readiness (OR) Director, to gather information on the progress of the 11 OR Task Working Groups (TWGs). The Asset Management TWG continues

to progress, and the other TWGs continue to meet to develop documentation and plans to operate ESA when it is ready for revenue service. In December 2016, the OR Director advised the PMOC that the leader of TWG NO. 7, the TWG responsible for Safety and Security certifications and other Safety/Security-related items, will be leaving the ESA project in mid-January 2017. The PMOC's concern about this development is 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 Grantee forecasts:

Table 1: Summary of Critical Dates

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

* Source – Grantee forecast late Revenue Operations Date per information presented to the MTA CPOC in June 2014.
**Source –Based on PMOC 2014 schedule trending analysis representing a medium degree of mitigation.
***Source – Amended FFGA (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 (October 31, 2016)

	FFGA				MTA's Current Baseline Budget CBB		Expenditures October 31 2016	
	Original FFGA (Millions)	Amended FFGA (Millions)	(% of Grand Total Cost)	Obligated	(Millions)	(% of Grand Total Cost)	(Millions)	(% of CBB)
Grand Total Cost	$7,386	$12,038	100.00%	$4,724	$ 11,214	100.00%	$ 7,229.1	64.46%
Financing Cost	$1,036		14.00%	$617	$ 1,036	9.24%	$ 617.6	59.61%
Financing Cost		$1,116	9.27%					
Total Project Cost	$6,350		86.00%	$4,107	$ 10,178	90.76%	$ 6,611.5	64.96%
Total Project Cost		$10,922	90.73%					
Federal Share	$2,683		36.30%	$1,148	$ 2,699	24.07%	$ 1,965.6	72.83%
Federal Share		$2,683	22.29%					
5309 New Starts share	$2,632		35.60%	$1,098	$ 2,437	21.73%	$ 1,703.5	69.91%
5309 New Starts share		$2,632	21.86%					
Non New Starts grants	$51		0.70%	$50	$ 67	0.60%	$ 66.7	99.55%
Non New Starts grants		$51	0.42%					
ARRA	0	0	0.00%	0	$ 195	1.74%	$ 195.4	100.00%
Local Share	$3,667		49.60%	$2,959	$ 7,479	66.69%	$ 4,645.9	62.12%
Local Share		$8,239	68.44%					

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 2016. 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 next FTA Quarterly Review Meeting for East Side Access is tentatively scheduled for January 19, 2017.

MONTHLY UPDATE

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

ELPEP COMPLIANCE SUMMARY

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

- **Technical Capacity and Capability (TCC):** The FTA requested MTACC to update its TCC Plan in response to the FTA/PMOC comments that were generated in November 2013 as a result of significant changes in key ESA upper level management positions. MTACC submitted its revised Technical Capacity and Capability Plan (ESA and SAS) on April 13, 2015. The PMOC returned comments to the FTA on May 7, 2015. MTACC submitted a revised TCC Plan in response to FTA/PMOC comments on June 12, 2015. In August 2015, the PMOC provided the FTA with its evaluation of the MTACC responses to the PMOC review comments and recommended a meeting with MTACC to resolve remaining issues. The FTA subsequently provided MTACC with the evaluation. MTACC responded with a reply on September 24, 2015.
- **Continuing ELPEP Compliance:** The following ELPEP components continue to need improvement: Management Decision; Design Development; Change Control Committee (CCC) Process and Results; Stakeholder Management; Procurement; and Risk-Informed Decision Making. The PMOC has noted progress in two previously identified areas – Issues Management and Timely Decision Making, particularly when responding to new issues arising with the railroads' Force Account resource availability, track outages, and other issues regarding the remaining work in the Harold Interlocking. The 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 expects to complete this effort during 1Q2017.
- **Project Management Plan:** The PMOC completed its review and evaluation of the MTACC's revisions and responses and submitted its findings to FTA-RII in 4Q2014. The MTACC subsequently submitted a revised Rev. 10 on March 13, 2015, that included updated information on the Change Control Committee. The revised Rev. 10 of the PMP was reviewed by the PMOC against the PMOC's evaluation in 4Q2014. The PMOC coordinated with MTACC to arrange working meetings with ESA chapter authors and the corresponding PMOC reviewers to resolve the remaining outstanding FTA/PMOC evaluation comments. Several working meetings were held between June 2015 and December 2015. MTACC and the PMOC are working to schedule the few remaining meetings with ESA chapter authors required to complete this process.

  MTACC submitted the next revision to the PMP in June 2016 that reflects ESA organizational changes along with some additional updates and revisions to certain sections. The PMOC is currently reviewing these changes and is nearing completion of its evaluation.

- [redacted]

The PMOC notes that, since June 2013, the ESA project has not been in full compliance with ELPEP, [redacted] The PMOC believes that this continues to be a deficiency that needs to be resolved. **[Ref: ESA-114-Sep13]** The PMOC does note, however, progress in certain areas. The PMOC's major areas of concern include:

- **Schedule Management Plan (SMP)**: The ESA project remains partially non-compliant with requirements for Integrated Project Schedule (IPS) Updating, Forecasting, [redacted] against a current baseline schedule. The revised SMP was submitted in 4Q2015 and the PMOC completed its review in June 2016. Review comments were forwarded to MTACC on July 15, 2016, and a working meeting was held on August 25, 2016, to review, discuss, and resolve the comments. MTACC 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 2016, which the FTA subsequently forwarded to MTACC. MTACC is preparing responses to the remaining open items.
- **Cost Management Plan (CMP)**: The ESA project remains partially non-compliant with requirements for Project Level EAC Forecasting, Project Level EAC Forecast Validation, [redacted] and Secondary Mitigation. The PMOC has noted some improvement in a number of areas, but more work is needed in other areas. After progressing with resolution of many PMOC comments, the PMOC met with MTACC in November 2015 to focus on the remaining issues. MTACC continued working on additional agreed upon revisions and evaluated the PMOC's recommendations in six areas. MTACC provided an initial draft of the revised CMP on December 15, 2015, and the PMOC completed its review in early June 2016. MTACC and the PMOC met on June 22, 2016, to review the PMOC comments. 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 comment close-out details in November 2016.

Revisions to the ELPEP Document:

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

1.0 GRANTEE'S CAPABILITIES AND APPROACH

1.1 Management Capacity and Capability

a) Organization

During 1Q2016, the project organization was revised. The PMOC has been monitoring this organizational restructuring and has not noted any significant change in the Sponsor's ability to 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 under Contracts CS179 and CS084 as well as the GEC's late responses to RFIs and Field Change Requests on these contracts.

b) Staffing

The ESA Quality group remains understaffed and the PMT is currently recruiting for the one remaining open staff position. The PMOC notes that the new Quality Manager started on the project in mid-October 2016. See Section 1.6 of this report for details.

Regarding the ESA Operational Readiness group, the PMOC notes that the leader of the 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, will be leaving the ESA project in mid-January 2017. The PMOC is concerned that the departure of this individual will adversely impact the program's safety and security certification effort. See Section 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 CS179 and CS084; late award and NTP of Contract CM007 and ongoing delays in the Harold Interlocking work caused by continued lack of adequate railroad force account support.

b) PMP

MTACC submitted PMP Rev. 10 to the FTA and PMOC on July 18, 2014. This revision incorporates changes stemming from FTA/PMOC comments on PMP Rev. 9.0 provided in December 2013 as well as changes that resulted from MTACC's Candidate Revision process. Based on working meetings, dialogue, and additional clarifying review comments from the PMOC, MTACC made additional changes to the PMP and submitted an updated Rev. 10 on September 18, 2014. The PMOC reviewed Rev. 10 and provided its comments to the FTA in 4Q2014. A subsequent update to the Rev. 10 document was submitted on March 13, 2105, reflecting only revisions to the ESA Change Control Committee. The PMOC continues to coordinate with

MTACC arranging working meetings with ESA chapter authors and the corresponding PMOC reviewers to resolve the remaining outstanding FTA/PMOC evaluation comments. Several working meetings have been held since June 2015 and continued through December 2015. MTACC and the PMOC continue working toward resolution of the remaining minor comments. MTACC and the PMOC met in June 2016 to review the PMOC's comments on the Cost Management Plan. The PMOC completed its review of the revised Schedule Management Plan in late June 2016. MTACC submitted the next revision to the PMP in June 2016 that reflects ESA organizational changes along with some additional updates and revisions to certain sections. The PMOC is nearing completion of its reviews and expects to provide its evaluation in January 2017.

1.3 Project Controls

a) Schedule

MTACC presented its new baseline schedule to the MTA CPOC in June 2014 with an RSD of December 2022. [redacted] During the June 22, 2016, Cost and Scheduling meeting, the MTACC stated that it is in the process of finalizing an 'Interface Schedule' which will detail key interface activities and milestones between various contracts. As of the date of this report, this Interface Schedule has yet to be provided to the PMOC. During the December 19, 2016 Cost and Scheduling meeting, the MTACC stated that it was being delayed due to the approval process regarding the CM007 baseline schedule.

b) Cost

[redacted]

1.4 Federal Requirements

a) FFGA

As a result of MTACC's re-baselining of the ESA Project budget and schedule on three separate occasions (2009, 2012, and 2014) since the FFGA was signed in 2006, an FFGA amendment has been developed and has been approved by the FTA. The PMOC notes that the FFGA Amendment was fully executed with MTA's sign-off of August 2, 2016. The amended FFGA incorporates the

changes in the Baseline Cost Estimate and Revenue Service Date that have occurred since 2006 when the original FFGA was signed. In June 2014, MTACC presented to the MTA CPOC, 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. 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.

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 two issues affecting proposed equipment. Please refer to Appendix G for details.

Track Turnouts:

As the PMOC has noted in previous Monthly Reports, there remain approximately 41 turnouts that ESA must purchase for future years' installation in Harold Interlocking which must meet "Buy America" requirements. The GEC revisions for the remaining Amtrak turnouts were approved in January 2016, but the orders for those turnouts have been on "hold" due to the reduction in priority for Loop and "T" Interlockings as a result of the adoption of the "ESA First" construction schedule for the Harold Interlocking.

GEC revisions for the remaining LIRR turnouts were finalized in late November 2016 and the GEC began development of the corresponding procurement package in December 2016. The PMOC has been advised, however, that it could possibly take an additional 5 to 8 months for MTACC to begin solicitation and issue a purchase order for these turnouts. Based on this, the PMOC continues to believe that it will be mid-to-late 2Q2017 before MTACC is in a position to place the order for the LIRR "Buy America" compliant turnouts. Since turnouts are long lead items which could take 12-18 months from order to delivery, the PMOC is concerned that MTACC may not have all the turnouts on hand that it plans to install during the major track outage scheduled for summer of 2018. [**Ref: ESA-123-Jun16]**

1.5 Safety and Security

a) Safety Certification Process

In meetings with the Director of ESA Operational Readiness, the PMOC was advised that a schedule showing the completion of construction safety certificates continues to be incorporated into the overall ESA Project IPS. This will link the completion of construction safety certificates to the completion of the various contract construction schedules; especially important if the construction schedules change for any reason. However, the MTACC must still develop and implement a schedule that identifies the process and timing to complete safety certifications for contracts that are, or will be, in the design phase. The PMOC is concerned that the imminent departure from the ESA Project of the individual (Operational Readiness TWG No.7 Lead) who was the primary person leading the Safety certification process will have an adverse impact on the MTACC's ability to effectively further develop and implement the Safety Certification process.

b) Project Construction Safety Performance

Through November 2016, ESA project safety statistics for lost time accident and OSHA recordable injuries on active construction contracts are trending below the Bureau of Labor Statistics (BLS) national average with a CY2016 project wide ratio of 0.60* versus 1.70 (2016 BLS average) lost time accidents (LTA) per 200,000 work hours (national average). The ESA recordable rate for CY2016 through November 2016 was 1.97 versus 3.0 (2016 BLS average).

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

c) Security

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

d) Security Certification Process

The PMOC previously reported that Operational Readiness Task Working Group No. 7 continued to work on the development and implementation of ESA Security Certifications for the various ESA contracts. Security certifications of contract designs and as-built construction reflect the methodology the MTA will use to address perceived security threats identified in the Threat Vulnerability Assessment made for ESA facilities and operation. It is important that the appropriate elements be "designed into" and incorporated into each contract on the ESA Project.

The PMOC is now concerned that the imminent departure from the ESA Project of the individual (Operational Readiness TWG No.7 Lead) who was the primary person leading the Security certification process will have an adverse impact on the MTACC's ability to effectively further develop and implement the Security Certification process.

1.6 Project Quality

ESA Quality Staff: A new ESA Quality Manager was hired and began work in October 2016. At the same time, an ESA Quality Engineer was promoted to Deputy Quality Manager. She has been out on a six-week leave of absence and is expected to return to work on January 9, 2017. A new Quality Engineer, possessing electrical, system, and transit experience has been hired and will start work in early February 2017. These actions resolve an ongoing concern and the PMOC believes that when the new employee begins work that the ESA function will be adequately and capably staffed to perform their required functions. [**Ref: ESA-122-Jun16]**

GEC Quality: The ESA Quality Manager conducted an audit of the GEC's Quality System on June 21, 2016 before he resigned. The Acting ESA Quality Manager met with the GEC Quality Manager in September 2016 to discuss the quality issues that were identified during the audit. They agreed on a course of action to close all findings and the PMOC notes that all findings were closed by the end of December 2016.

Quarterly Quality Oversights (QQOs): No QQOs were scheduled during 4Q2016 since the new ESA Quality Manager prepared a proposed revision to the QQO system and is presently reviewing it with his management.

CM005: Punchlist work including installing door frames, doors, and hardware continues at a slow rate.

CM007: Quality concerns in December 2016 have involved waterproofing and concrete. Otherwise, there are no major quality issues.

CM014B: There are no major quality concerns. Work included rough electrical installation, ductwork, masonry, and fire suppression throughout the project site.

CQ032: There are no quality issues. Work included remedial grouting at the plaza, installation of miscellaneous metal and railings, and rough and finish electrical.

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 advances work elements required for the new LIRR service to GCT and delays some of the FRA funded High Speed Rail (HSR) work beyond 2017. Railroad construction work prior to development of the "ESA First" schedule was also falling behind schedule due to the overall delays to much of the Harold work. Additionally, the sequence in which Amtrak decides to do its own work to reconstruct its East River (ERT) Line 1 and Line 2 tunnels that were damaged by Superstorm Sandy 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 does not support the current ESA Harold Schedule for work on the Eastbound Reroute track and structure. However, MTACC expects that this will not impact the remaining work in Harold Interlocking that is required to provide service into Grand Central Terminal. Both parties need to continue to work together to develop an ERT Line 1 and Line 2 outage schedule that will have the least negative impact on ESA. At present, Amtrak's work is not planned to begin until 2019, so there should be sufficient time to develop such a schedule.

ESA-PMT reports that Amtrak has been providing consistent levels of support over the last few months and this allows ESA to more effectively plan work in Harold on a week-to-week basis. The PMT does acknowledge, however, that the level of support remains less that required to adequately support the Harold baseline schedule. This continuing problem may prevent ESA from completing the Harold work planned for 2017-18 that is critical to achieving the target RSD of February 2021. The PMT further noted that Amtrak's New York Division, which is responsible for the force account resources assigned to the ESA Harold Interlocking work, has apparently indicated that ESA is not their top priority. Currently, the Moynihan Station project is Amtrak's top priority for assignment of force account resources. The PMOC believes that this this situation will need to change soon in order for Amtrak to be able to provide the required force account resources and track outages required to support ESA's schedule for completion of the remaining work in the Harold Interlocking.

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 involvement with the 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.

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.

b) Others Stakeholders

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

1.8 Local Funding

a) MTA/New York State (Capital Plan)

The funding concern that PMOC previously identified was resolved in May 2016 with CPRB approval of the 2015-19 Capital Planning. ESA is now seeking supplemental funding for the forecasted cost overruns related to Harold Force Account work (expected to be $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 lead remediation on the CM014B contract. MTACC has already approached MTA about this issue and this is the first of four components of the MTA's proposed (2015-2019) Capital Plan Amendment for the ESA project. [redacted] 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. The PMOC is concerned that this may introduce additional delays.

b) Other Sources

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

1.9 Project Risk Monitoring and Mitigation

a) Risk Management Plan (RMP)

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

The ESA Risk Manager plans to update the RMP during 1Q2017.

b) Monitoring

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

c) Mitigation

Current risk mitigations are discussed in Section 6.3 below.

2.0 PROJECT SCOPE

On Contract CM015 (48th St. Entrance), the MTA Board had previously approved the design agreement with the building owner. The building owner, Rudin Management Corporation (RMC), agreed to provide the designs for the relocation of the existing interior utilities and to complete some limited structural design. MTA is continuing discussions with RMC and is nearing completion of the required easements and construction agreements. Turner Construction was awarded the utility construction contract and it started work in August 2016. The utility relocations are currently 40% complete. The GEC is reviewing shop drawings for coordination with the CM015 work scope and are not signing-off on shop drawings. The GEC completed the 100% design and submitted it on July 12, 2016. RMC and the VM015 contractor review comments were received on August 15, 2016. RMC has made additional comments on the entrance design. Change Order (PCO)-127 work for the GEC has been completed and involves revisions to the entrance façade, sitework, sidewalk, utility connections and provision of fire-rated construction for future basement retail space. Submittal will be made to the NYC Department of Buildings upon incorporation of all comments and issuance of the signed and sealed plans. Bid advertisement had been scheduled for September 27, 2016, was revised to November 29, 2016, and is now forecast for January 5, 2017. Delays through 2016 and into 2017 will be 5 months.

Contract CQ033, Mid-Day Storage Yard is out to bid, however, the final design completion of the package continues to be delayed due to the following: 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. Any design changes will be included in bid addenda, as required.

2.1 Engineering/Design and Construction Phase Services

As of the end of October 2016, MTACC reported that the overall Engineering effort was 99.3% complete, based on the GEC's monthly report, compared with a planned status of 100%. Its Cost Report shows 94.7% of the overall EIS and Engineering category as invoiced and 94.9% of the budgeted section titled "Design" (including Design Settlement) as having been invoiced.

Status of Construction Packages Advertised:

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

- Contract was advertised on October 24, 2016.
- Procurement status details are as follows:
  - Addendum No. 1 already issued.
  - Responses to bidders' questions, approximately 100 to date, have been included in Addendum #2 along with a revised construction staging plan.
  - 3 bidders have requested a time extension from December 22, 2016, to January 19, 2017, and MTACC has changed the bid date to January 19, 2017.
  - No change to forecast award date and NTP date of Feb. 22, 2016.
- Work on PCO C176 is continues. MTA reached agreement with Amtrak regarding coordination of catenary relocations and has reached agreement with both Amtrak

and FDNY regarding the access road width. The access road is joint use between LIRR and Amtrak for the High Speed Shop, Yard C and the Penn Lead.

- Package design variance approvals are required from NYSDOT regarding LIRR track standards and clearances in order to provide sufficient yard capacity to store twenty-four 12-car train-sets. All internal track standard and clearance issues were resolved in late May 2016. In early July 2016, LIRR submitted a waiver letter to NYSDOT for track center clearances. NYSDOT response is still pending. ESA notified LIRR that they will not open bids until the NYSDOT approval is received.
- GEC has started work on the eight items in PCO-211 that include changes for cost savings as well as LIRR's request to revise the variance package for geometric alignment and vertical track clearance for underground pipelines. The GEC is proceeding with the work under an ESA Direction to Proceed while negotiations are in progress with ESA. The PMOC notes that the GEC completed the vertical profiles for 11 tracks, changed the turnout frogs, relocated the EO turnouts and provided a submittal schedule for the balance of the work items prior to December 31, 2016, as requested by ESA-PMT.
- Construction sequencing meetings are ongoing to coordinate CQ033 work scope with adjacent site/civil and force account packages. The CM has requested changes in the contract staging to improve access to adjacent work areas. These changes have been included in Addendum #2.
- GEC completed work on drawings for approval from NYCT on overhead clearance beneath the No. 7 Line elevated structure over the proposed LIRR tracks. NYCT has provided preliminary approval. The complete document package, including signed and sealed plans, was submitted to NYCT in November 2016 for NYCT's final approval.
- Demolition of 1,300 LF of existing third-rail by LIRR will be completed by LIRR force account and will not be included as a contract option.

Status of Construction Packages Not Advertised:

Contract CH058A will include construction of the Tunnel B/C Approach Structure. The 90% design submission was made on June 17, 2016, and the ESA Project Management Team (PMT)/GEC team has received comments from the ESA Construction Manager and LIRR. The 90% package was sent to Amtrak on October 28, 2016. The PMOC notes that Amtrak advised MTACC that Amtrak had committed to reviewing the 90% CH058A package after they had completed their review of the FHA03 package. This will delay Amtrak's review of the CH058A package. As of December 31, 2016, MTACC continued to await Amtrak review comments on the 90% submission.

Contract CH058B will include construction of the Eastbound Reroute. The GEC is developing the scope of work for finalizing the tunnel design based on a cut-and-cover construction method. The final design for package CH058B has been awaiting the completion of a rail traffic simulation study for Harold Interlocking. The first part of the study, operations without Temporary Eastbound LIRR Passenger (TELP) Track, has been completed, and the results indicate minimal impact to Harold Interlocking under peak load conditions. Based on this result and the fact that the TELP Track would have significant cost and schedule impacts to the planned CIL cutovers, the PMT has recommended to LIRR that the GEC complete the CH058B design without the TELP Track. The

GEC and PMT have also recommended that the tunnel be constructed using the cut-and-cover method. LIRR has approved the construction method and the GEC PCO to make this change is expected to be finalized in January 2017. LIRR has agreed to the track outages required to support the cut-and-cover construction but has requested additional rail traffic simulations. The simulation proposal was submitted on November 29, 2016, and is currently under review.

Contract CS086 (formerly GEC Contract CS284), Tunnel Signal Installation, is a stand-alone package. The MOU with LIRR for inclusion of Positive Train Control (PTC) in this contract is nearing completion. 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. The scope of this change order included a refresh of the package and changes control of Plaza Interlocking from Penn Station Control Center to the GCT Train Operations Center. The ESA-PMT had previously advised that this change originated with LIRR operations acting through the ESA/LIRR Special Projects Group and that the change was approved by the Change Control Committee. The scope of work of PCO C184 does not include PTC. The bid advertisement date is now forecast for January 10, 2017, a delay of three months from the previously forecast date of October 11, 2016.

Contract VS086, Systems Package 3 – Signal Equipment Procurement, is a contract for procurement of Signal equipment and systems for installation under the future CS086 Tunnel Systems Package 2 – Signal Installation contract. Design of the various equipment and systems has been underway since NTP was given in September 2014. Progress, however, on the interim design milestones on this contract is significantly behind schedule; although the substantial completion (SC) date of October 14, 2019, remains unchanged from the original contractual date. MTACC is currently in discussions with Ansaldo STS, the contractor, to re-establish interim milestone dates.

Status of MTACC and LIRR Review and Approval of Systems Contractors' Final Designs:

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 its October 2016 ESA Monthly Progress Report, the MTACC indicates that the contractor's Control System Designs will be completed by December 2016; nine months later than originally scheduled, and two months later than that reported by the PMOC in its September 2016 Quarterly Report. The PMOC also indicated in that quarterly report that the December 2016 completion date for the final designs of ten Control Systems was achievable as long as the MTACC aggressively pursued the closure of design questions. 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 must be re-submitted for further review and approval and one other system's final design has yet to be discussed in a final design review meeting. **[Ref: ESA-125-Sep16]**

(**Note:** The information presented for this CS084 contract comes from discussions at a mid-January 2017 Progress Meeting that reviewed contract progress for December 2016).

The CS084 contractor continued to transmit contractual submittals and substation design documents. As noted in previous PMOC reports, the contractor continues to assert that previous delays related to design submittals were caused by MTA and have impacted its ability to meet its own original design, procurement, fabrication, and installation schedules. The ESA CS084 CM

took measures to mitigate any potential delays associated with submittal reviews; and, a very significant improvement in reducing the backlog of submittal reviews was noted by the PMOC during discussions in the latest monthly progress meeting. The ESA CS084 CM attributes this improvement to the addition of design consultant resources engaged by the LIRR to address the backlog issue. However, while acknowledging the significant reduction in the backlog, the contractor voiced a concern about the quality and validity of some of the returned submittal comments; citing comments made on certain submittals that were only appropriate to different submittals. The MTACC acknowledged this concern, indicating that it too had seen comments on submittals that were not germane to a specific submittal but, rather, seemed to be referencing some other design submittal. Sorting through all the submittal responses to see what responses are valid for that particular submittal will be a time-consuming challenge to all parties that could further impact the contract schedule. While the SCADA SOW is complete, the MTACC and the contractor must still negotiate and agree upon the cost and implementation strategy for the SCADA work. Further, the contractor contends that the lack of information on the Programmable Logic Controllers (PLCs), that it needs so its substation fabricator can proceed with substation design and fabrication, is causing a day-to-day delay to the C05 substation fabrication schedule**.**

Observation:

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

Concerns and Recommendations:

MTACC needs to focus on achieving intermediate milestones in a timely fashion and work closely with the GEC to make this happen. The continual shifting of scope among various packages has made finalizing design documents and drawings extremely difficult. Additionally, MTACC management needs to more actively engage outside stakeholders such as building owners, Amtrak, and the LIRR to resolve lingering design issues. The PMOC notes ESA PMT and senior management's increased efforts to resolve contractors' systems design reviews with GEC and LIRR management; and, the significant improvement to the GEC and LIRR review and approval of the CS084 designs. The PMOC recommends that the PMT develop a design milestone tracking process for the remaining design work on the project in order to more effectively manage the design effort. The PMOC notes the significant improvement to the GEC and LIRR review and approval of the CS084 final designs **[Ref: ESA-125-Sep16]**.

2.2 Procurement

As of end of October 2016, the Cost Report showed total procurement activity on the project as 83.8% complete, with $8.533 billion in contracts awarded out of the $10.177 billion current reported budget.

Status:

MTACC received bids for Contract CH061A, Tunnel A Approach Structure, on August 2, 2016, and subsequently identified an apparent low bidder. MTACC deferred the Notice of Award and Notice to Proceed, however, based on the planned availability for construction site access and protection by limited railroad force account resources. MTACC awarded the contract on November 22, 2016. MTACC forecasts that the NTP date will be January 27, 2017, a three month delay from the previously forecast date of October 28, 2016. Total Notice to Proceed delay since January 1, 2016, is eight months.

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 has been extended from December 22, 2016, to January 19, 2017. This contract will be an Invitation for Bid (IFB) procurement. Total bid advertisement delay since January 1, 2016, is six months.

[redacted]

Concerns and Recommendations:

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

2.3 Construction

The PMT reported in its October 2016 Monthly Progress Report (November 1, 2016, data date) that the total construction progress reached 66.1% complete vs. 70.3% planned.

Manhattan Contracts

CM005 – Manhattan South Structures

Status: MTACC retroactively declared Substantial Completion (SC) for April 22, 2016. ESA is no longer reporting activity for the CM005 contract.

Construction Progress: During December 2016, ESA stated that the contractor continued punchlist work activity and resumed installation of pressure resistant doors.

Please see Appendix J for current Cost performance

Observations/Analysis: ESA stated that some items remain to be transferred to another contract for completion.

Concerns and Recommendations: ESA and the contractor must remain diligent to resolve issues to complete contract work as the site was turned over to the CM007 contract in early October 2016.

CM006 – Manhattan North Structures

Status: As of November 1, 2016, MTACC decreased its Forecast at Completion for CM006 to $356,017,671. The MTACC forecast for Substantial Completion remained at June 1, 2017. Actual construction progress for October 2016 was 2.3% versus 2.1% planned. Cumulative progress through July 31, 2016, was 88.7% actual versus 91.0% planned. ESA continued review of the new CPM schedule.

Construction Progress: During December 2016, the CM006 contractor continued rehabilitation/remediation work at the 63rd St. Tunnels and Structures, which included: CMU walls, doors, slabs, conduit bench, and crash wall extension. The contractor completed waterproofing and continued arch construction at the 55th St. Vent Facility. The contractor continued wall construction at Cross Flue. The contractor also continued arch construction at the GCT 3 Crossover. The contractor continued arch and duct bench construction at Tunnel WB3, and grouting and punch list at Tunnel EB4. The contractor may adjust its work shifts starting in January 2017, by eliminating the graveyard shift.

Please see Appendix J for current Cost performance.

Observations/Analysis: The new CPM schedule is being used to track construction progress.

Concerns and Recommendations: The PMOC observes that ESA and the contractor continued to work well together.

CM007 - GCT Station Caverns and Track:

Status: MTACC reports that, through November 1, 2016, the Forecast at Completion decreased slightly to $712,311,733. The Substantial Completion date is January 28, 2020. Actual monthly construction progress versus planned and cumulative progress through the end of the reporting month, actual versus planned, will be reported when available from MTACC.

Construction Progress: During December 2016, the contractor continued to prepare submittals, mock-ups, and readiness reviews for the work. The contractor prepared the arch/walls PAC Mockup in the LIRR Amityville Yard in Queens for MTA review. Other activities included:

concrete construction of column and mezzanine floor at South Back of House (East-and Westbound Caverns), continued takeover of the temporary ventilation system, and preparation for drilling of the elevator piston shafts in the Caverns. In the Caverns, the contractor installed temporary supports and began installation of mezzanine level precast cantilever beams. Production casting of beams and panels continued at the upstate NY precast manufacturer's facility. The contractor continued the distribution of MTA supplied rail in the tunnels, and is performing acceptance inspection of the MTA supplied rail. The sixth monthly Construction Progress Meeting was held on December 8, 2016.

Please see Appendix J for current Cost performance.

Observations/Analysis: A Composite Schedule, required by contract, a tool to track the critical interface activities for contracts CM006, CM007, and CS179, was submitted by the contractor and reviewed by ESA. The Baseline Schedule remains under review. The delays in the CM014B wellways may give the CM007 contractor time to make significant advancement in the Westbound Cavern precast erection.

Concerns and Recommendations: Both the contractor and ESA have reported there are no "Buy America" issues with the procurement of turnouts under this contract.

CM014A – GCT Concourse & Facilities Fit-Out

Status: MTACC reports that, as of October 31, 2016, the forecast project cost at completion remains $57,717,875. MTACC has advised that it intends to declare Substantial Completion retroactively to November 1, 2015, following negotiations with the contractor and the contractor's bonding company. MTACC reports there was zero actual construction progress for October 2016, as the contractor has had minimum presence on site. Cumulative progress through November 1, 2016, remained 97.0% versus 100.0% planned. This has remained the same throughout 3Q2016 and 4Q2016, and indicates that there has been very little progress since June 2016, or generally, since the 6 power feeds were energized.

Construction Progress: The contractor for this contract is Yonkers Contracting Company (YCC). Through December 31, 2016 progress in completing the remaining equipment testing continued to be very slow. This particularly continues to include SCADA programming and testing, which is only partially complete. The CM has advised the PMOC that LIRR is planning a redesign of portions of the SCADA system. This will be a change order to the contractor. Another change order is being completed for the CM014A contractor to provide and maintain temporary air conditioning units in the equipment rooms to address the large heat buildup in the rooms from the energized equipment. This issue will be permanently resolved once the CM014B HVAC system is operational. As of December 31, 2016, no date for when the HVAC system would be operational had been established.

Please see Appendix J for current Cost performance.

Observations/Analysis: The ongoing presence of this contractor at the site is now impacting the CM014B contractor, who wants access to some rooms. However, the CM014A electricians must have a continuous presence at the site to maintain all of the active feeds until the B30 substation is turned over to MTACC/CM014B.

Concerns and Recommendations: The PMOC is concerned that the noted equipment issues and apparent necessity to redesign portions of the SCADA 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, as of October 31, 2016, the final forecast cost at completion remains at $463,617,500. The extended Substantial Completion date remains January 21, 2019, from the previous August 18, 2018. Ongoing delays impacting the original August 18, 2018, Substantial Completion date have included late critical structural steel submittals, which are on the contractor's critical path for Zone 1. Other delays have been 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 October 2016 was 1.2% versus 5.3% planned. Cumulative progress through October 31, 2016, was 25.5% actual versus 54.6% planned.

Through December 31, 2016, the Surveying in the Concourse continued and will be on-going throughout this contract.

Schedule

The CCM has acknowledged to the PMOC that the project has experienced significant delays. Accordingly, a recovery schedule was requested from the contractor. The contractor's Update #19, submitted on December 19, 2016, included the requested recovery schedule, which is under review.

Milestone #1 (Complete Terminal Management Center, Communication Room C-2 & Communication Closet C-5) –The milestone is complete. The purge system for the FM200 fire suppression remains, but the design for it has not been completed.

Milestone #2 (50th St; Room CR102, Tunnel Fan Control Room, Electrical Room #126 & ICC Room), June 4, 2016, now April 2017 - The Elevator #9 shaft work, which is delaying this milestone, is proceeding with erection of CMU shaft walls. The Tunnel Fan Control Room work has been delayed by this work.

Milestone #3 (Comm. Closets CC-C1, CC-C2, CC-C6, MTAPD and BCS Conduit) August 4, 2016 – This milestone is complete.

Milestone #4 (Comm. Closets CC-C3, CC-C7, & Room B3265) March 5, 2017 – Construction of these rooms is underway.

Milestone #5 (44th St. Vent Building) June 4, 2017 – Construction in Shaft #1 is complete. The Gantry Crane has been dismantled and removed from the site. This allowed for the completion of the building second floor structure, architectural building skin, and equipment installation. Second Floor structural steel erection and deck placement is underway.

Milestone #5A (Completion of 48th St. Entrance) November 25, 2016 – This has been delayed until April 2017 (previously March) due to previous delays in demolition of the MTA Building in the Concourse and transfer of personnel to the new 52nd St. Entrance. The personnel transfer is complete and the 48th St. construction access has been closed. Demolition of the MTA Building is complete. There is discussion underway to possibly transfer some of this scope to the future CM015 contract.

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

Concourse

Stantec Repairs (repairs to existing structural columns in Madison Yard not owned by MTA) continue throughout. 3rd Party Inspections continue for concrete, shotcrete, rebar, masonry, bolting, welding and firestops. Electricians continued with grounding to columns and rough-in work in CMU walls. Installation of US 5-8 equipment conduit nears completion. Plumbers continued trenching and backfilling for underslab plumbing. Installation of domestic water piping, fire standpipe, and overhead plumbing is ongoing. Installation of fire protection continues with the 8" main, branch lines and sprinkler heads. Placement of the final concrete slab invert is approximately 80% complete throughout the Concourse. Masonry material deliveries have been shaken out throughout the concourse and erection of walls for rooms proceeds from south to north.

Wellways

Work has stopped in Wellway #1 due to contractor issues with finding an acceptable ceiling finish subcontractor. The new subcontractor for this work has just been hired and the submittals process must begin for the radial ceiling panels and supports prior to the commencement of fabrication. This is one of the issues that is the cause of the significant schedule delays. Pull Box installation, wire pulling and installation of furring rails is underway in Wellways #2, #3 and #4. Unistrut installation continues in Wellway #4.

Biltmore Connection

MNR continues to remove existing conduit that is blocking the work on day and night shifts.

Dining Concourse Connection

Installation of the permanent structural steel has resumed. The escalator trusses for this area are on site.

Shaft #3

Lift #1 for the concrete walls is complete. The Head house slab has been placed.

Elevator T-01

Installation of permanent structural steel and decking is complete. Placement of the platforms is complete.

43rd Street Entrance

Erection of temporary steel is complete.

45th Street Cross Passageway (CPW)

Erection of CMU walls is ongoing. Drilling of the elevator piston shaft started December 19, 2016.

48th Street

Waterproofing of the NE & SE corners is complete. Placement of Electric Manhole #M58664 was completed.

50th Street Vent Building

Chopping and CMU erection is ongoing in the Elevator 9 shaft. Installation of communication conduit and pull boxes continues at the 1st Basement Level. Installation of VFDs (Variable Frequency Drives) and conduit was completed in the 300 Park building.

North Transfer Station

Work continued for grading & excavating for utilities, footings, sump, and installation of structures.

Please see Appendix J for current Cost performance.

Observations/Analysis: The PMOC observes that at the current rate of production MTACC will have to extend substantial completion through 2019 to complete the work.

Concerns and Recommendations: Other than the schedule, none at this time.

Queens Third-Party Contracts

CQ032 Contract – Plaza Substation and Queens Structures

Status: As of November 1, 2016, the Forecast at Completion for CQ032 increased slightly to $264,869,580. MTACC Forecast for Substantial Completion slipped from November 18, 2016, to January 2, 2017. MTACC reports actual construction progress for October 2016 was 0.1% versus 0.2% planned. MTACC reports cumulative progress through November 1, 2016, was 98.0% actual versus 98.3% planned.

Construction Progress: During December 2016, the CQ032 contractor continued architectural finishes, floor, lighting, and final cleaning work at the Yard Services Building (YSB). The contractor resumed water infiltration repairs at Plaza by internal grouting in the old Early Access Chamber and launch block areas. Fence and curb installation resumed in the parking lot of the YSB and Plaza Facility buildings. The contractor continued punchlist work activity and preparation of as-built drawings.

Please see Appendix J for current Cost performance.

Observations/Analysis: ESA reported that contract de-scoping activity continued to transfer the following remaining work items to other contracts: to Contract CS179, work at the 23rd St., fireproofing of the Amtrak bridge, and painting in the Plaza; to contract CQ033, all yard site work including landscaping, paving and curbs.

Concerns and Recommendations: As previously reported, the contractor needs to re-double its construction efforts in order to complete construction operations and contract closeout.

CH057 Contract – Harold Structures Part 3

Status: MTACC's Forecast at Completion for CH057 increased slightly to $92, 470,273 during October 2016 due to the execution of 4 contract modifications. MTACC's forecast for Substantial Completion remained at September 27, 2017. Actual construction progress for October 2016 was 6.2% versus 6.9% planned. Cumulative progress through October 31, 2016, was 59.5% actual versus 75.8% planned.

Construction Progress: During December 2016, the CH057 contractor continued to pour concrete roof deck and sidewalls in the transition area between the TBM reception pit and the secant pile area of Tunnel D, completed initial base slab and began to place sidewall re-bar in the secant pile area, and continued to place concrete base slab and sidewall re-bar in the Option 10 section of the East Approach Structure. The contractor also continued to excavate and place sewer line at the

39-S6 retaining wall and miscellaneous catenary pole foundation construction in Harold Interlocking.

Please see Appendix J for current Cost performance.

Observations and Analysis: The contractor continued its field construction during December 2016 without incident, although it continues slightly behind schedule.

Concerns and Recommendations: ESA and the CH057 contractor continue to work well together and construction continues at a satisfactory pace. As a result, the PMOC has no concerns or recommendations for the CH057 contract at this time.

Contract CH057A – Part 3 Westbound Bypass

Status: MTACC's Forecast at Completion for the CH057A contract remained at $156,982,212 during October 2016. MTACC extended its forecast for Substantial Completion by one month to December 8, 2017. Actual construction progress for October 2016 was 2.6% versus 3.0 planned. Cumulative progress through October 31, 2016, was 42.5% versus 43.5% planned. Due to the continued inactivity of the tunnel shield, the PMOC estimates that the CH057A contract is at least 11 months behind its original construction schedule.

Construction Progress: During December 2016, the CH057A contractor began placement of sidewall concrete in the West Approach Structure, completed placement of the invert slab and began sidewall re-bar placement east of Honeywell St. overhead bridge in the East Approach Structure of the Westbound Bypass, and completed installation of secant piles for the pump station. The contractor was unable to resume mining of the Westbound Bypass Tunnel, however, as it continued to wait for design revisions and materials to make the necessary modifications to its "box shield" that would prevent the uplift that it experienced during its initial operation. As of the December 22, 2016, monthly Harold Oversight meeting, the ESA PMT does not believe that the mining of the tunnel will resume until mid-1Q2017, at the earliest.

Please see Appendix J for current Cost performance.

Observations and Analysis: The contractor and the ESA PMT continued to explore revisions to the "box shield" during December 2016 that would prevent the uplift problems. Earlier in 4Q2016, the parties requested that the contractor's senior management and excavation experts review the uplift issue and develop design modifications to the shield in order to prevent it. Modifications will be made during January 2017, but the ESA PMT is not confident that they will be complete prior to early-to-mid February 2017.

Observations 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 doing everything possible to do so. The only recommendation the PMOC can offer is that both the ESA PMT and the contractor continue to work together, persevere, make the necessary revisions, and resume mining as quickly as possible.

Systems Contracts

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

Status: VH051 Part 1 and 2 are procurement packages for LIRR Communications and Signal (C&S) system equipment and apparatus for the Harold and Point Interlocking Central Instrument Locations (CILs) (Part 1) and Harold Tower Supervisory Control System (Part 2), respectively.

Purchase of all materials has already been made. The Harold Tower Supervisory Control System (Part 2) is in service. To date, both the "H4" and "H3" CILs in Harold Interlocking have been placed in service. Cutovers for the "H1", "H2", "H5", "H6", and Location 30 Central Instrument Locations (CILs) are now scheduled for 2Q2018.

CS179 - Systems Package 1-Base Contract

Status: Despite stating in its October 2016 Monthly Progress Report (MPR) that the CS179 contract Forecast is within the Budget, the MTACC shows in that report a Forecast of $619,044,937 versus a Budget of $606,938,540; a variance of $12,106,397. There is no explanation from MTACC in its MPR as to why the Forecast was increased to the $619M figure from the $606.9M Forecast reported in its September 2016 (3Q2016) report. In its October 2016 Monthly Report, MTACC shows a progress curve for the CS179 contract that presents actual contract progress as 28.3% versus a planned 51.1%; numbers that are based on actual versus projected costs, not physical construction efforts. As presented, these progress numbers continue to imply that the contract is moving further behind schedule from previous reports. MTACC is continuing its evaluation of the contractor's monthly schedule updates. However, a comprehensive analysis of the contractor's schedule cannot be made until the schedule update includes an "approved" Integrated System Test Plan (ISTP) schedule. As of the end of December 2016, the contractor had yet to re-submit an ISTP schedule, that addressed MTA comments, for review and approval. The MTA's reported Substantial Completion date for this contract remains, as previously reported at July 1, 2020; an approximate seven-month delay from the original November 19, 2019, SC date. As of the end of December 2016, all but two Contract Options (Option Nos. 4 and 5) were exercised. The ESA CS179 CM indicates that these remaining two contract Options will be exercised in 2017 as per the schedule identified in Contract Modification No. 18. There are still two potential Buy/Ship America issues that pose schedule risks to the successful and timely completion of this contract. The ESA CS179 CM advised that a Buy/Ship America waiver request letter for the HVAC equipment was submitted to the FTA in October 2016. However, the waiver request letter for the video display panels is still under review by MTA Legal staff. MTACC was unable to forecast a date for when the MTA Legal staff will complete its review. Only when the MTACC is assured through its evaluation that the contractor's schedule and ISTP submissions are comprehensive and reasonably executable will it be possible to perform an analysis of the contract schedule to validate contractor assertions regarding delays.

Design Progress: The CS179 contractor continues to work on the design development of the various contract required systems. As noted in previous reports, the reduction of the backlog of submittal and RFI reviews remains as a serious issue and, although this continues to be an area of focus for the CS179 project team, only limited progress on reducing the backlog has occurred. Discussions on ways to remedy this issue continue between MTACC-ESA senior management and LIRR management. In its October 2016 ESA Monthly Progress Report, MTACC indicated that the contractor's Control System Designs will be completed by December 2016; nine months later than originally scheduled, and two months later than that reported by the PMOC in its September 2016 Quarterly Report. The PMOC also indicated in that quarterly report that the December 2016 completion date for the final designs of ten Control Systems was achievable as long as the MTACC aggressively pursued the closure of design questions. 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 must be re-submitted for further review and approval and one other system's final design has yet to be discussed in a final design review meeting. The contractor contends that the extended FDR meeting dates are a result of the lack of answers to design

questions. Additionally, the contractor also continues to state that other design and coordination issues are causing schedule delays.

Construction Progress: During December 2016, the CS179 contractor continued various elements of work (installation of conduit, cable, fire stopping, fire standpipe, etc.) at the B10; Roosevelt; Vernon; 12th St.; 39th St., Queens Plaza; and 63rd St. facilities. At present, water infiltration issues have been identified at five locations: Vernon, Roosevelt, 12th St., 23rd St. and 29th St. Water infiltration remediation work is complete at the Vernon, 23rd St., and 29th St. facilities. Assembly of equipment racks in the subcontractor's off-site facility is underway. There continue to be seven Stop Work Orders (SWOs) on this contract. One SWO is related to the requirement for an Undercar Deluge System at GCT and another is related to the requirement for a transformer at 43rd Street. These two original work scope items will be deleted from the CS179 contract via a contract modification. All five of the remaining SWOs need to be resolved by MTACC; and, while the GEC is still working on designs and solutions to these SWOs, no dates have been forecast for the completion of the designs or the rescinding of the SWOs.

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. 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-January 2017 Progress Meeting that reviewed contract progress for December 2016).

Status: In its October 2016 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. The PMOC previously reported that, in its September 2016 (3Q2016) ESA Monthly Progress Report (MPR), MTACC cited two different Substantial Completion (SC) dates for the CS084 contract; December 2019 and July 2020. In its October 2016 MPR, MTACC now cites a February 2020 SC date acknowledging the schedule slippage from December 2019 to February 2020. In its October 2016 ESA MPR, MTACC shows a progress curve for the CS084 contract that presents actual progress as 11.4% versus a planned 59.0%; numbers that are based on actual versus projected costs, not physical construction efforts. The actual versus planned progress numbers contained in MTACC's October 2016 MPR appear to indicate that this contract is significantly behind schedule. However, the contractor contends that the variance in the actual versus planned costs is because funds have not been expended as originally projected due to delays in approving and moving forward with the substation designs and equipment. An analysis of the status of the work activities shown on the approved baseline schedule is necessary to determine the status of the progress of physical work on this contract. The PMOC has recommended that to make tracking of actual versus planned progress more useful as a management tool, MTACC and the contractor

may want to consider modifying the MTACC's Progress Curve to reflect the current and projected progression of the contract. In September 2016, the contractor advised that six of seven contract Milestones (Nos. 1, 2, 3, 4, 6, and 7) were delayed as a result of delays associated with the approval of substation designs and the resolution of Supervisory Control and Data Acquisition (SCADA) requirements. Additionally, the contractor continues to assert that any further delay in the issuance of the SCADA-related modifications, the delivery of the required PLC information, and the approval of the C08 substation equipment (on the contract's critical path in September 2016), will result in additional schedule impacts. MTACC indicated that, once the contractor's schedule submission issues were resolved, it would review and evaluate the contractor's schedule submission to determine the validity of these assertions.

Please see Appendix J for current Cost performance.

Design Progress: The contractor continued with the transmission of contractual submittals and its design development of the substations. As noted in previous PMOC reports, the contractor continues to assert that previous delays in receiving comments back from the MTACC on the C05 facility switchgear, the number of SCADA point sensors, 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 previously acknowledged that these comments were taking too long to process and worked with LIRR senior management and the General Engineering Consultant (GEC) to focus on the priority of these designs. In the latest Monthly Progress meeting, a very significant improvement in reducing the backlog of submittal reviews was noted by the PMOC. The ESA CS084 CM attributes this improvement to the addition of design consultant resources engaged by the LIRR to address the backlog issue. However, while acknowledging the significant reduction in the backlog, the contractor voiced a concern about the quality and validity of some of the returned submittal comments; citing comments made on certain submittals that were only appropriate to different submittals. MTACC acknowledged this concern, indicating that it too had seen comments on submittals that were not germane to a specific submittal; but, rather, seemed to be referencing some other design submittal. Sorting through all the submittal responses to see what responses are valid for that particular submittal will be a time-consuming challenge to all parties that could further impact the contract schedule. The PMOC previously reported that the LIRR and MTACC reached an agreement on the required number of SCADA sensors and that the contractor would be requested to submit a cost proposal to modify the SCADA design accordingly. In December 2016, the MTA completed the SOW related to the SCADA system changes and requested that the contractor provide a cost proposal for the work. MTACC indicates that there will be two contract modifications issued to address this modified SCADA work. One modification will address the number of SCADA sensor points, agreed upon several months ago, and the other will address newly identified additional equipment that is required. The contractor indicates that it will submit a Time Impact Analysis (TIA) along with its proposal, as it contends that the lack of clarity on SCADA has caused delays to its contract schedule. 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. Implementation of these design changes must be negotiated with the CS179 contractor and progressed before the CS084 contractor begins work in the C05 facility. One other previously reported design issue that needs timely resolution is the routing of DC cables at the Vernon (C05) substation facility. The identification of this issue was made several months ago; but, as of December 2016, the remediation effort to address this issue does not appear to be progressing. The GEC needs to produce a design to remedy the problem and then, once a design is approved

by all parties, MTACC will need to determine who – the CS179 or the CS084 contractor – will implement the re-design effort so that the CS084 contractor can install the DC cables. The PMOC continues to have concerns 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 there is some additional work (the installation of panel heaters and lightning arrestors), identified in November 2016, that must take place. MTACC is in discussions with the contractor trying to determine how this extra work will be accomplished. 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. Work in the Vernon (C05) facility cannot begin until all water infiltration issues at the facility are resolved by the CS179 contractor; the last of which (remediation of water leakage through an access hatch) is underway. MTACC continues to advise the contractor that access to the affected C05 room will not be possible until February 2017; and, the contractor continues to cite this access restraint as one more item impacting its ability to meet its contract schedule. In its October 2016 ESA MPR, MTACC indicates that a transfer of construction work scope from this contract to the CS179 contract is being considered to address the installation of positive and negative DC traction power cabling for the C08 substation. This cabling, which can only be installed once the CH058A contractor completes the installation of ductwork between the C08 substation and the track, is necessary to perform the testing of the C08 substation and the integrated and dynamic testing of all the CS084 substations. The CS084 contract schedule calls for the testing to be performed before the ductwork is installed under the CH058A 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 – in this case the CS179 contract.

Please see Appendix J for current Cost 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. The MTACC should prioritize the delivery of requested design information related to the PLCs, the approval of substation switchgear equipment, and the execution of SCADA-related contract modifications so as to preclude any further impact to substation design and fabrication.

VS086 – Systems Package 3 – Signal Equipment Procurement

Status: In its October 2016 ESA Monthly Progress Report, the MTACC indicates that both the Forecast and Budget for this contract is at $21,835,022. While the forecasted SC date remains the same as that established at contract award (October 14, 2019), five interim contract milestones show delays of anywhere from 12 to 23 months. The MTACC indicates in its report that it is currently in discussions with the contractor to re-establish interim milestone dates. Additionally, only in July 2016, almost two (2) years after NTP, did the contractor submit its baseline schedule; a schedule that shows the original interim milestone dates. The use of an updated/re-baselined schedule, once the MTACC and the contractor agree on revised interim milestone dates, will be helpful for the MTACC to effectively manage this contract. Further, due to the departure of the

originally assigned MTACC construction manager (CM), the MTACC just assigned a new management team for this contract.

Design Progress: As has been observed on other ESA Systems contracts being managed by MTACC, the contractor is raising concerns over the timeliness of responses from the MTA on design submittals and inquiries. The contractor indicates that the design of the Plaza Interlocking Central Control Room is a critical design that needs to be completed without delay; and, there are several design issues that require a resolution or direction from the MTA. Additionally, the contractor indicated that coordination efforts with the ESA CS179 contractor need to be established to facilitate the Factory Acceptance Testing of some of the signal equipment. Finally, the LIRR has recently requested that the contractor replace the incandescent lights in the signal units with Light Emitting Diodes (LEDs); a change to the contract requirements and to designs already underway. Replacement of the lights could pose significant delays to the completion of the signal designs. The VS086 CM indicated that this request is under review by MTACC senior management.

Concerns and Recommendations: The PMOC is concerned that there is no effective schedule in place that would allow the MTACC to effectively manage this contract and encourages the MTACC to quickly complete discussions regarding the re-establishment of interim contract milestones to address this managerial issue. Also, the PMOC encourages the new 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 October 2016. MTACC's forecast for Substantial Completion was shortened by 5 days to January 19, 2017. Actual construction progress for October 2016 was 0.0% versus 0.0% planned. Cumulative progress through October 31, 2016, was 98.8% actual versus 100.0% planned.

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

Please see Appendix J for current Cost performance.

Observations and 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 for FHA01 construction at this time.

Harold Early Stage 2 Amtrak FA (FHA02)

Status: MTACC's Forecast at Completion for FHA02 remained at $60,150, 231 during October 2016. The MTACC forecast for Substantial Completion remained at May 20, 2018. Actual construction progress for October 2016 was 0.3% versus 0.0% planned. Cumulative progress through October 31, 2016, was 85.1% actual versus 81.0% planned.

Construction Progress: During December 2016, Amtrak Electric Traction personnel continued catenary system installation for AC operation over the new RPR (Relocated Primary Route) Track, which is expected to be completed by mid-1Q2017.

Please see Appendix J for current Cost performance.

Observations and Analysis: The PMOC believes that ESA's re-scheduling of Amtrak former Stage 2 construction activities will not have an impact on the overall completion of the remaining Harold work.

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

Loop Interlocking CIL Amtrak FQA65

Status: MTACC's Forecast at Completion for FQA65 remained at $33,287,863 during October 2016. The MTACC forecast for Substantial Completion remained at July 16, 2023. Actual construction progress for October 2016 was 0.0% versus 0.9% planned. Cumulative progress through October 31, 2016, was 19.8% actual versus 57.7% planned. The MTACC "Hold" on FQA65 construction continued through October 2016, and it does not appear to the PMOC that it will be removed any time soon.

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

Please see Appendix J for current Cost performance.

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

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

Harold Stage 1 LIRR FA (FHL01)

Status: MTACC's Forecast at Completion for FHL01 remained at $24,379,363 during October 2016. The MTACC forecast for Substantial Completion was extended by 28 days to May 29, 2017. Actual construction progress for October 2016 was 0.5% versus 0.0% planned. Cumulative progress through October 31, 2016, was 88.6% versus 100.0% planned.

Construction Progress: During December 2016, LIRR 3rd Rail personnel installed 3rd rail on the RPR Track and, along with Signal personnel, placed the track in service for DC operation. 3rd Rail personnel also completed installation of traction power conduits into the new G02 Substation.

Please see Appendix J for current Cost performance.

Observations and Analysis: The resumption of this former LIRR Stage 1 work was necessary to place the RPR Track in service, but current ESA PMT priorities will remain with former Stages 2 and 3 work.

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

Harold Early Stage 2 LIRR FA (FHL02)

Status: MTACC's Forecast at Completion for FHL02 remained at $92,932,559 during October 2016. MTACC's forecast for Substantial Completion remained at April 15, 2020. Actual

construction progress for October 2016 was 1.4% versus 1.0% planned. Cumulative progress through October 31, 2016, was 96.1% actual versus 98.7% planned.

Construction Progress*:* During December 2016, LIRR Signal personnel continued to install and terminate signal cables at the new "H1" and "H2" CILs and their respective signal cases, continued to make ESA 501 signal revisions at the Location 30 and ESA 603 signal revisions (GEC designations) at the new "H6" CIL and other miscellaneous signal construction necessary for the CIL cutovers planned for 2018.

Please see Appendix J for current Cost performance.

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

Concerns and Recommendations: The PMOC remains concerned that LIRR Stage 2 work may not be completed on schedule and will continue to accumulate along with leftover Stage 1 and Stage 3 work if the LIRR does not pursue its portion of the ESA construction more aggressively. The PMOC recommends that LIRR develop more aggressive Track and Electric Traction programs in future years and that it develop a master list of incomplete or unstarted tasks to ensure that all critical items needed for RSD are properly addressed.

2.4 Operational Readiness

Status: While no Quarterly Operational Readiness (OR) briefings were held during 4Q2016, the PMOC met with the Operational Readiness (OR) director, to gather information on the progress of the 11 OR Task Working Groups (TWGs). The OR Director provided documentation regarding the status of various OR Task Working Groups (TWGs) to the PMOC. A review of that documentation, along with follow up telephone calls, revealed that The Asset Management TWG continues to make significant progress on compiling the LIRR Asset database and then implementing interim maintenance processes for assets installed on ESA contracts that have reached Substantial Completion. The other TWGs continue to meet to develop documentation and plans to operate ESA when it is ready for revenue service. In meetings with the Director of ESA Operational Readiness, the PMOC was advised that a schedule showing the completion of construction safety certificates was to be incorporated into the overall ESA Project IPS. This would link the completion of construction safety certificates to the completion of the various contract construction schedules; especially important if the construction schedules change for any reason. However, MTACC must still develop and implement a schedule that identifies the process and timing to complete safety certifications for contracts that are, or will be, in the design phase. The MTACC must also provide Security Certifications for the various ESA contracts that reflect the methodology that MTA will use to address perceived security threats identified in the Threat Vulnerability Assessment made for ESA facilities and operation. In December 2016, the OR Director advised the PMOC that the leader of TWG No. 7, the TWG responsible for Safety and Security certifications and other Safety/Security-related items, will be leaving the ESA project in mid-January 2017 – a significant concern to the PMOC.

Observation: The PMOC notes that the meetings with the Director of Operational Readiness provide the PMOC with the general status of the progress of all the TWGs; and, when necessary,

the meetings can focus on specific aspects of the TWG products (e.g., safety and security certifications, fleet readiness, and LIRR staffing and training requirements).

Concerns and Recommendations: The PMOC is significantly concerned that the imminent departure from the ESA Project of the individual who was the primary person leading the Safety certification process will have an adverse impact on the MTACC's ability to effectively further develop and implement the Safety and Security Certification processes. The PMOC recommends that MTACC take measures to ensure that safety and security requirements are identified and addressed through the execution of the appropriate certifications for contracts that are, or will be, in the design phase.

2.5 Vehicles

Status:

The LIRR Vehicle Procurement Schedule for the M-9 (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 December 31, 2016, however, the RFP had not been issued and was still under development by the LIRR. The current target date for RFP solicitation is 1Q2017. Additionally, the PMOC notes that LIRR has developed two different schedules for the M-9A delivery – one for the 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 November 2021 and December 2022 (a seven month time lag).

Observations and Analysis: In addition to completion of the contract documents, LIRR must receive MTA approval to issue the RFP. If this does occur during 1Q2017, present delay to the original procurement of the M-9A vehicles will be approximately 10 months.

Concerns and Recommendations: Based on the LIRR Procurement Schedule, the start of M-9A vehicle delivery is not required prior to April 2021. The PMOC is concerned, however, that MTACC and the LIRR do not have a good historical procurement track record and that the 10 month delay already incurred could extend even longer. The PMOC recommends that the LIRR complete development of the contract documents as soon as possible and concurrently solicit MTA's approval to advertise the RFP.

2.6 Property Acquisition and Real Estate

Status/Observations:

In addition to the real estate activities discussed in Section 3.b "Real Estate Acquisitions", above, the October 2016 ESA Monthly Report also indicates that MTA Real Estate continues to negotiate the easement and work agreements with the owners of 415 Madison Avenue and that negotiations with the owners of 335 Madison Avenue concerning almost 50 items of work are nearing completion.

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

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

2.7 Community Relations

Status:

The October 2016 ESA Monthly Report indicates that ESA Community Relations efforts during October were focused on outreach to the community around 37th St. in Manhattan to mitigate concerns about the CM005 contractor's de-mobilization at street level and the schedule for remaining work in the area. ESA Community Relations also focused similar attention on the community surrounding 51st and 52nd Sts. concerning on-going and future construction in those areas.

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 the outstanding FTA/PMOC evaluation comments. MTACC and the PMOC continue working toward resolution of the remaining minor comments. MTACC submitted the next revision to the PMP in June 2016 that reflects ESA organizational changes along with some additional updates and revisions to certain sections.

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

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

3.1 PMP Sub-Plans

Status:

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

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

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.

Observations:

MTACC has revised its TCC 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.

4.0 PROJECT SCHEDULE

4.1 Integrated Project Schedule

Status:

This report is based on the submitted ESA IPS file entitled "BR09-UPDT87-11-2016-FINAL" which has a data date of November 1, 2016, and incorporates progress over the month of October 2016 (November 1, 2016 IPS). The IPS and its associated report track two different Revenue Service Date (RSD) milestones – the Target RSD and the Late RSD, which the PMT now also refers to as the Public Date. As of the November 1, 2016 IPS, ESA reports that the Target RSD of February 12, 2021, and the Late RSD of December 13, 2022, have remained unchanged since the previous update [redacted]

During 4Q2016, the forecasted start of CIL pre-cutover testing, which controls the Program's Critical Path, was delayed approximately two months over the 3-month period. A more detailed analysis of the delays experienced along the Program's Critical Path are in Section 4.3 of this report. The Program's Critical Path reported by the PMT for the November 1, 2016 IPS update goes through the following contracts and tasks, leading to the Late RSD of December 13, 2022:

- FHL02 – Fabrication and Installation of the Power Case Transformer Hatch; Transformer Installation; Implementation of Cut-over sequencing plans (phases 0, I, and II); and H5/H6/Loc 30 and H1/H2/Loc 30 CIL Cutover Pre-testing and Cutovers;
- CH057D – Northeast Quadrant work;
- FHL04 – Catenary work;
- CH058/CH058A – Civil work on the 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 continues to note the following observations and concerns resulting from its analysis of the ESA IPS Updates over the last quarter, 4Q2016.

1. Lack of progress along the Program's Critical Path. Discussed more in Section 4.3 of this report.
2. The PMOC continues to observe that the IPS contains a large amount of open-ended activities. An open-ended activity is defined as an activity that is not logically connected to the rest of the CPM schedule network – i.e. that it does not have a predecessor and/or successor activity. This results in an incomplete network within the IPS. Good scheduling practices require that the only activity in a CPM schedule without a predecessor is the first activity or milestone, and the only activity that should not have a successor is the last activity or milestone. FTA requires that the schedule be "mechanically correct and complete," which the PMOC understands to include a complete logic network throughout the IPS.
    a. The PMOC acknowledges that the PMT had been actively working to address this issue. However, the discussion of this effort is not contained within the November 1, 2016 IPS Report. The table provided in the previous update, the October 1, 2016 IPS Report, shows the following:

	Completed Activities							In-Progress Activities							Not-Started Activities						
IPS Update	1-May	1-Jun	1-Jul	1-Aug	1-Sep	1-Oct	Trend	1-May	1-Jun	1-Jul	1-Aug	1-Sep	1-Oct	Trend	1-May	1-Jun	1-Jul	1-Aug	1-Sep	1-Oct	Trend
ESA	333	343	354	190	131	105		40	42	40	18	9	7		181	169	145	55	49	45	
Manhattan	87	91	95	43	30	19		21	21	18	5	3	1		41	42	46	15	12	8	
Queens	77	77	77	60	53	38		6	6	6	5	3	3		23	23	18	13	10	7	
Harold	160	164	167	85	48	42		8	8	10	3	3	3		89	76	69	27	27	1	
Systems	9	11	15	2	0	6		5	7	6	5	0	0		28	28	12	0	0	29	
ESA/LIRR																					
Op Readiness	24	24	31	29	21	21		34	34	33	33	29	29		100	100	131	128	97	97	
Totals	357	367	385	219	152	126		74	76	73	51	38	36		281	269	276	183	146	142	

The PMOC notes that good progress has been made to ensure a complete CPM network exists within the IPS, especially regarding in-progress and not-started activities. However, the lack of discussion regarding this topic in the most recent IPS report and the time it has taken to create appropriate logic ties within the IPS concerns the PMOC. The PMOC recommends that the PMT provide a timeframe in which it foresees completing the logic network within the IPS. If the PMT wishes to maintain some open-ended activities with the use of constraints, as it has stated in the past, the PMOC recommends that the PMT submit a list of each activity with this situation, noting the reason for using a constraint and not a logic tie.

3. The PMOC continues to observe changes in the Late RSD controlling Harold's longest path, with regard to durations, logic, and sequencing of activities. The PMOC previously recommended that the PMT explain any changes to the program's critical path in detail in its IPS report, and this has begun to be addressed. However, the PMOC notes that this discussion and effort is missing in the PMT's November 1, 2016 IPS Report. The PMOC will continue to monitor and report changes to the program.

4. The PMOC is concerned about the lack of Amtrak Force Account (FA) support being received by current contracts. The PMOC has prepared an analysis that identified upcoming contracts that will require these resources and attempted to model the impact, if any, on the Program schedule if these resources remained at their current levels. This was an ongoing concern over 4Q2016.

[redacted]

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 – 1Q2017 and 2Q2017 Upcoming Contract Procurement Milestones

Contract Description	Advertise Date	Bid Date	NTP	Project Period	Substantial Completion
CM015 48th Street Entrance	1/5/2017	3/14/2017	5/1/2017	30 Months	10/18/2019
CQ033 Mid-Day Storage Yard	10/20/2016A	12/22/2016	2/22/2017	40 Months	6/22/2020
CH061A Tunnel A	5/23/2016A	8/2/2016A	1/27/2017	16 Months	5/29/2018
CS086 Systems Package 2: Signal	1/10/2017	3/10/2017	5/8/2017	38 Months	7/1/2020
QMP-1 Civil/Neighborhood Beautification	10/20/2016A	11/29/2016	1/20/2017	10 Months	10/31/2017
QMP-2 Lighting/CCTV Security	2/23/2017	4/12/2017	5/30/2017	13 Months	7/2/2018

The PMOC notes that the CQ033 Advertise Date was delayed slightly over 4Q2016, from a planned date in the August 1, 2016 IPS of September 8, 2016, to an actual date of October 20, 2016. This appears to not have impacted the remaining forecasted procurement milestone dates, however. For example, the planned NTP and Substantial Completion dates for CQ033 have only been delayed by one week. This appears to be due to the reduction of the planned contract duration by one month. The PMT has not commented on this change to the planned contract duration or how it was determined. The PMT notes in its November 1, 2016 IPS Report that an addendum planned to release in December 2016 could have an impact on the procurement schedule and delay NTP.

The Advertise Date for the CM015: 48th Street Entrance contract has also experienced delays over 4Q2016. The August 1, 2016 IPS forecasted this contract to be advertised on November 29, 2016. However, the November 1, 2016 IPS forecasts this contract to be advertised on January 5, 2017, or a delay of approximately five weeks. This delay has impacted the Bid Date by approximately four weeks, however, the PMT has kept the planned dates for NTP and Substantial Completion the same. The forecasted procurement milestone dates for CS086 have remained unchanged over 4Q2016.

The November 1, 2016 IPS Report notes that the planned date for NTP on CH061A remained relatively unchanged over 4Q2016, at January 27, 2017. The PMOC reviewed the PMT's submitted November 1, 2016 IPS P6 file, which shows that the planned Substantial Completion date for CH061A remained unchanged over the quarter as well, at May 29, 2018.

The PMT has added two new procurement contracts to its table to track, QMP-1 and QMP-2.

The PMOC is concerned about the delays to contract procurements that has occurred over the last year. For example, the advertisement of CQ033: Mid-Day Storage Yard was delayed six months, the bid advertisement for CM015: 48th St. Entrance has been delayed four months and has yet to

be issued, and the bid advertisement for CS086: Tunnel Systems has been delayed nine months and has yet to be issued. [redacted]

4.3 Critical Path Activities

The following table summarizes the contracts and key dates along the ESA Program's Critical Path, as reported by the PMT in its November 1, 2016 IPS Report.

TABLE 4.3 – November 1, 2016 IPS ESA Program Critical Path

Activity Name	Original Duration	Start	Finish
FHL02 CIL Cutover Work	565	01-Nov-16	20-May-18
CH057D Northeast Quadrant Work and FHA/L03 Catenary Work	116	21-May-18	14-Sep-18
FHA/L04 Switch work and FHL02 Retire Harold CIL	70	17-Sep-18	26-Nov-18
CH058 and CH058A B/C Approach work	638	26-Nov-18	25-Aug-20
FHL04 Testing and Cutover LK1, U1, LK2, R1/R2 (1143) 4C	49	26-Aug-20	14-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.

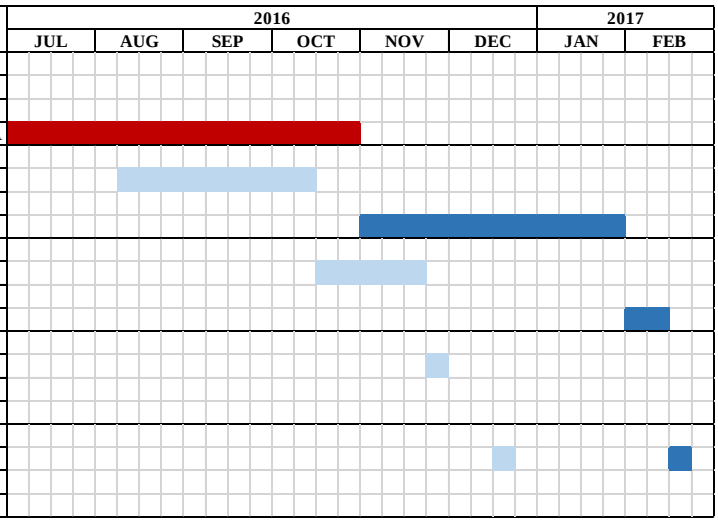
The PMOC has tracked and analyzed progress along the ESA Program's Critical Path over the last quarter. The PMT has reported over the previous quarter that the CIL Cutover work at Harold Interlocking controls the Program's Critical Path from now until May of 2018. The majority of that time there is one activity that is on the critical path, the pre-testing related to the cutover of H1/H2/H5/H6/Loc30, which currently has a duration of 309 work days, or approximately 437 calendar days. The PMOC is very concerned with the long duration of this critical activity, as it limits the ability to adequately manage the progress of the Program's Critical work over a significantly large period of time.

The PMOC notes that there are two paths of work controlling the start of the Critical Harold CIL cutover pre-testing in the IPS – the completion of signal power separation and the finalization of the Arinc software. Both of these paths have experienced delays over the previous quarter, as shown below. The light blue bars show the planned progress along these paths as of the August 1, 2016 IPS, the red bars show actual progress made over the quarter, and the dark blue bars show the planned work as of the November 1, 2016 IPS. Please note these are simplified diagrams for the purpose of presentation showing the driving activities only, i.e. there are more predecessor and successor relationships besides what are shown. Also, note that the activity IDs, descriptions, and paths of work are from the November 1, 2016 IPS and any changes between that update and the August 1, 2016 IPS update are noted below each figure and within the report text.

Path Leading to Milestone FHL02-CSR290: Ready to start testing / Revision

Below is the diagram showing one of the paths of work that is considered critical in the November 1, 2016 IPS update.

Path through Arinc Software	IPS	Start	Finish
FHL02-CSR200: LIRR procurement of H5/H6/Loc 30 Arinc resequencing screenshot changes	1-Aug	N/A	N/A
	1-Nov	3/11/2016 A	10/28/2016 A
FHL02-CSR1180: H5/H6/L30 Arinc Resequencing screen shot changes*	1-Aug	8/15/2016	10/17/2016
	1-Nov	10/29/2016 A	1/31/2017
FHL02-CSR210: Arinc Resequencing screen shots on site installation/Test/Resolve issues	1-Aug	10/18/2016	11/14/2016
	1-Nov	2/1/2017	2/17/2017
FHL02-CSR290: Ready to start testing / Revision	1-Aug	-	10/25/2016
	1-Nov	-	2/17/2017
FHL02-CSR1160: Pre-Testing - H1/H2/H5/H6/Loc 30**	1-Aug	12/22/2016	-
	1-Nov	2/20/2017	-



*This activity description was taken from the Nov. 1, 2016 IPS. The activity in the Aug. 1, 2016 IPS that most resembles this description is shown for comparison - FHL02-CSR200: ARINC Screenshot changes.

**This activity was previously identified as FHL02-CSR300 in previous IPS updates.

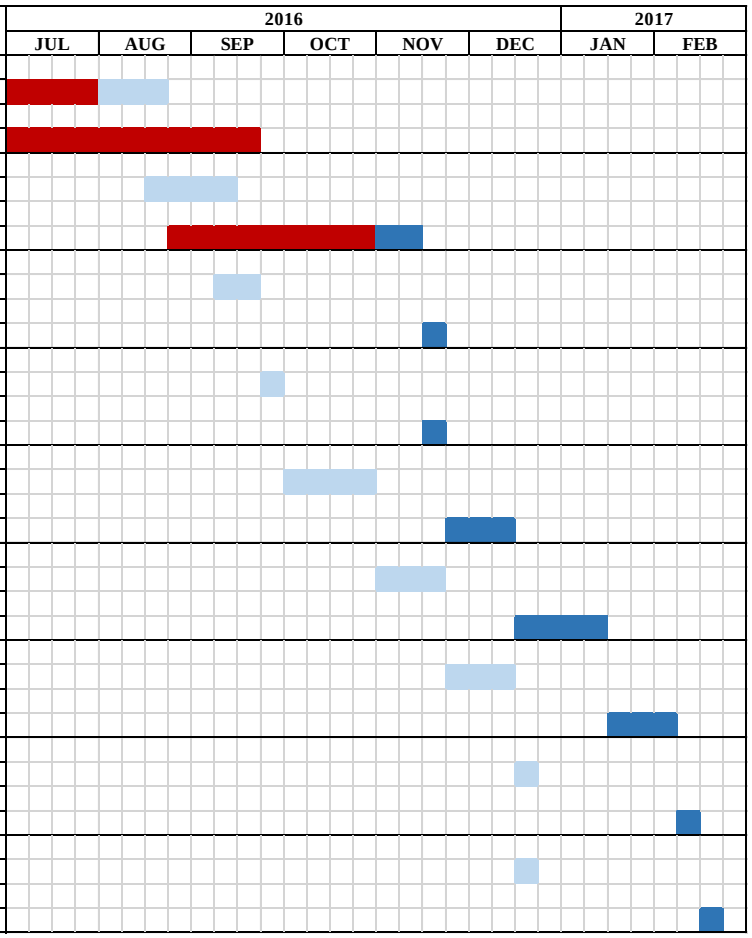
During its analysis, the PMOC has noted that the work driving milestone FHL02-CSR290: Ready to start testing/Revision changed over 4Q2016. In the November 1, 2016 IPS, the work shown to drive milestone FHL02-CSR290 is related to ARINC resequencing screenshots. However, the August 1, 2016 IPS shows that the work driving the same milestone is activity FHL02-SIL30170: Remove all cables and wiring. (Clean Up). What is of concern to the PMOC is that the path of work involving the ARINC resequencing screenshots is contained within the August 1, 2016 IPS, but is not logically tied to milestone FHL02-CSR290, as in the most recent IPS update. Instead, the path of work involving ARINC resequencing, ending in activity FHL02-CSR210: ESA tests ARINC/comment/discuss/resolve (which resembles FHL02-CSR210: Arinc Resequencing screen shots on site installation/Test/Resolve issues shown to drive milestone FHL02-CSR290), is tied to the H5/H6/Loc30 Cutover planned to occur in 2018.

The PMT has not commented on why there was such a significant change in logic to the IPS, which changed the driving work along the entire ESA Program's Critical Path. The PMOC recommends that the PMT provide a brief analysis and description of this issue. The PMOC wishes to emphasizes that, while the delays to the ARINC screenshots are of concern, of even greater concern is the fact that this work was not logically tied to critical work in previous IPS updates. This significantly limits the ability of the PMOC to analyze and be aware of growing issues impacting critical milestone dates for the Program.

Path to Completion of Signal Power Separation

Below is a diagram showing the other path of work that is considered critical in the November 1, 2016 IPS update.

Path through Signal Power Separation	IPS	Start	Finish
FHL02-30230: Issue PO to Fabricator By CH057	1-Aug	5/27/2016 A	8/18/2016
	1-Nov	5/27/2016 A	9/20/2016 A
FHL02-30200: Fabricate hatch - By contrator through CH057	1-Aug	8/18/2016	9/16/2016
	1-Nov	8/26/2016 A	11/11/2016
FHL02-30240: Install Hatch (2 weekends) - By contrator through CH057	1-Aug	9/17/2016	9/25/2016
	1-Nov	11/12/2016	11/13/2016
FHL02-30220: Install Transformer	1-Aug	9/26/2016	9/27/2016
	1-Nov	11/14/2016	11/18/2016
FHL02-2220: Implementing Cut-over Sequencing Plan - Phase I*	1-Aug	9/28/2016	10/25/2016
	1-Nov	11/21/2016	12/19/2016
FHL02-5140: Implementing Cut-over Sequencing Plan - Phase II*	1-Aug	10/28/2016	11/22/2016
	1-Nov	12/20/2016	1/20/2017
FHL02-30140: Implementing Cut-over Sequencing Plan - Phase III*	1-Aug	11/23/2016	12/21/2016
	1-Nov	1/23/2017	2/17/2017
FHL02-3260: LIRR Cutover MG SPS (SPS Complete) w/o EO Control	1-Aug	-	12/21/2017
	1-Nov	-	2/17/2017
FHL02-CSR1160: Pre-Testing - H1/H2/H5/H6/Loc 30**	1-Aug	12/22/2016	-
	1-Nov	2/20/2017	-



*These activities had the same IDs in the August 1, 2016 IPS, but were designated as Phases 0, I, II, respectively.

During its analysis, the PMOC has noted that the work driving milestone FHL02-3260: LIRR Cutover MG SPS (SPS Complete) w/o EO Control has been delayed and has impacted the start of Program Critical Path work related to the CIL pre-Cutover testing. The cause of this appears to be the delay to both the issuance of the PO to the hatch fabricator, and the fabrication of the hatches themselves. Based on the delays to these predecessor items, the installations of the transformer hatches, which are needed to separate signal power have been impacted and delayed from a planned start of September 17, 2016 to November 12, 2016. This approximate two-month delay has carried through the path of work and impacted the start of CIL Pre-Cutover testing similarly.

The PMOC will continue to track the development of these critical activities.

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 November 1, 2016 IPS report:

TABLE 4.4 - CS179 Contractor Milestone Dates

Milestone	Description	Contract Date	Last Month	Current Month	*Delta (CD)
MS #1	Complete All Work in TPSS C05 at Vernon Blvd Ventilation Facility	12/31/2016	11/23/2016	3/17/2017	-72
MS #3	Complete All Work Plaza Rooms (CIR, Signal Reactor, Interlocking 1D, TPSS C06 & C07)	12/31/2016	12/30/2016	3/9/2017	-68
MS #4A	Complete All Work in Traction Power S/S C04 on Level P1 in 2nd Ave. Vent Facility	2/1/2017	4/27/2017	7/28/2017	-177
MS #5	Complete All Work in GCT-6 CIR to Room Ready Condition	4/30/2017	4/14/2017	4/25/2017	5
MS #6	B10Complete All Work in Bulk Power Substation for Energization of 13.2 kV Cables	1/31/2017	3/1/2017	4/27/2017	-86
MS #7	Complete All Work in GCT-5 CIR to Room Ready Condition	4/30/2017	4/30/2017	4/27/2017	3
MS #8	Complete All Work in GCT-4 CIR to Room Ready Condition	4/30/2017	4/30/2017	5/12/2017	-12
MS #9	Complete All Work in Traction Power Substations C01 and C02 - Tail Tracks	6/8/2017	6/8/2017	6/21/2017	-13
MS #10	Complete All Work in GCT-3 CIR to Room Ready Condition	9/6/2017	9/6/2017	10/3/2017	-27
MS #11	Complete All Work in Traction Power Substations C03 at 55th Street Vent Facility	3/25/2018	2/27/2018	3/15/2018	10
MS #12A	Complete All Work in the TMC, TOC, BCS, and FON to Commence IST	9/1/2018	12/15/2018	12/28/2018	-119
MS #12B-1	Complete Integrated Testing of all equipment installed under Contract CM007	3/23/2020	7/1/2020	3/23/2020	0

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

The PMOC notes a delay to the forecasted date for MS1, representing the completion of all work in TPSS C05 at Vernon Blvd Ventilation Facility. Over 4Q2016, the forecasted completion of this milestone has slipped approximately six months. The August 1, 2016 IPS reported a planned date for MS1 at September 20, 2016, while the November 1, 2016 IPS shows a forecasted date of March 13, 2017. The PMOC notes similar delays over 4Q2016, as follows:

MS3 from 12/28/16 to 3/9/17.

MS4A from 3/1/17 to 7/28/17.

MS5 from 2/9/17 to 4/25/17.

MS6 from 3/1/17 to 4/27/17.

MS7 from 3/10/17 to 4/27/17.

MS10 from 7/27/17 to 10/3/17.

Milestones 12B-1 through 12B-3 have all shown a forecasted savings, from July 1, 2020 in the August 1, 2016 IPS to March 23, 2020 in the November 1, 2016 IPS. However, the MS13: Substantial Completion has shown no associated savings and remains at July 1, 2020.

5.0 PROJECT COST

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

5.1 Budget/Cost

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

Observations: ESA has indicated that the results of the Harold Schedule Status update and the Force Account Overrun Analysis will increase project costs by $246 million. ESA also reports 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. There will also be an unknown, but highly likely further demand on Amtrak resources when Amtrak's own "hardening" work in the East River Tunnels commences. In addition, the detailed results of the in-depth risk assessment for Contract CQ033 have not yet been reported.

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

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

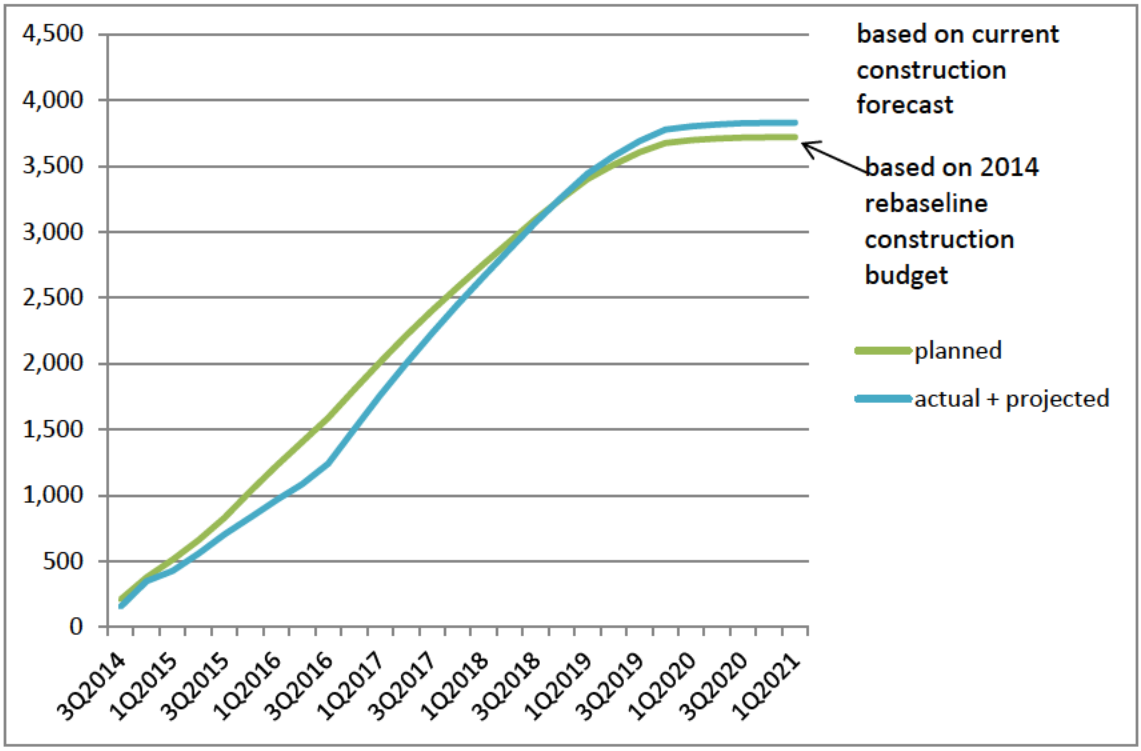
Standard Cost Category (SCC) No.	FFGA SCC baseline (YOE $) M	Amended FFGA SCC baseline (YOE $) M	June, 2014 Re-Plan (YOE $)	4Q 2015	1Q 2016	2Q 2016	3Q 2016	Oct-16	CBB Variance from FFGA %	CBB Variance from Amended FFGA %
10	1,989	3,353	3,405	3,420	3,443	3,467	3,475	3,475	74.71%	3.64%
20	1,169	2,327	2,238	2,338	2,314	2,326	2,325	2,326	98.97%	-0.04%
30	356	451	474	472	472	473	472	472	32.58%	4.66%
40	205	562	611	593	594	594	592	592	188.78%	5.34%
50	619	628	606	566	569	568	582	582	-5.98%	-7.32%
60	165	192	220	218	216	215	215	215	30.30%	11.98%
70	494	880	210	210	210	210	210	210	-57.49%	-76.14%
80	1,184	1,809	1,975	1,976	1,977	1,978	1,978	1,978	67.06%	9.34%
[redacted]										
100	1,036	1,116	1,036	1,036	1,036	1,036	1,036	1,036	0.00%	-7.17%
[redacted]										

5.2 Project Cost Management and Control

Status:

The PMT has reported that, as of October 31, 2016, the actual total project progress was 66.4% vs. 69.2% 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 66.1% actual vs. 70.3% planned. Table 5.2 shows the planned construction spending through completion at the target RSD vs. actual spending through 3Q2016, and projected required spending.

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



Construction Cash Flow Starting at 2014 Rebaseline

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

[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 October 31, 2016

Elements	Baseline Total Budget (June 2014)	Current Baseline Budget (October 2016)	Actual Awards (October 2016)	Paid to Date (October 2016)	Actual % Budget Paid
Construction	$7,379,296,706	$ 7,491,580,185	$ 6,572,305,754	$ 4,818,339,823	64.32%
Soft Costs Subtotal	**$2,798,474,304**	**$2,686,190,825**	**$1,960,665,986**	**$1,793,116,721**	**66.75%**
Engineering	$720,615,810	$723,521,828	$698,546,546	$680,914,292	94.11%
OCIP	$282,613,620	$282,613,620	$282,613,620	$266,214,943	94.20%
Project Mgmt.	$972,168,644	$972,168,644	$862,039,151	$730,034,331	75.09%
Real Estate	$182,076,230	$178,049,776	$117,466,669	$115,953,155	65.12%
Rolling Stock	$202,000,000	$202,000,000	$0	$0	0.00%
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]

Concerns and Recommendations:

The PMOC recommends that ESA include known cost overruns in the current forecast. The current cost forecast shown in ESA's Monthly Progress Report remains misleading until the significant overruns of force account, OCIP, and GCT Concourse fit-out additions are shown.

5.3 Change Orders

Table 5.4 below shows the executed mods greater than $100,000 during October 2016:

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

Contract	Mod #	Description	Executed Date	Amount
Harold Structures Part 3 WBBP – CH057A	20	Secant Shutdown for Cat B-923W Installation	10/13/16	$114,400
GCT Concourse/Facilities fit-out – CM014B	40	Hardwired Flushometers	10/17/16	$181,500
GCT Concourse/Facilities fit-out – CM014B	42	Revise 48th St Drainage for Future Canopy	10/17/16	$249,212
Systems Facility Package No. 1 – CS179	27	Plaza C06 Sloped Floor & Electrical Gear	10/15/16	$334,831
Plaza Substation & Queens Structures – CQ032	79	Water Infiltration Remediation	10/13/16	$1,906,959
Vertical Circulation – VM014	10	Settlement of Claim for Equitable Adjustment	10/20/16	$4,000,000
Vertical Circulation – VM014	11	Alignment of VM014 Access Restraints & Milestones with CM014B Schedule	10/20/16	$200,000
Vertical Circulation – VM014	12	Fabrication Phase II Wrap Up	10/19/16	$269,000

Status/Observation:

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

5.4 Project Funding

a) Federal Funding

As shown in Table 5.3, above, as of October 31, 2016, the PMT has awarded a total of $8.5 billion in contract work. The Federal share of awarded contracts is $1.97 billion. The total Federal funding commitment, as of July 31, 2016, remained at $2.699 billion. Note that the Federal Share value was decreased from what was reported in September 2016. The revised

value has been reconciled with the MTA Controller's Office, as reported in the October 2016 MPR.

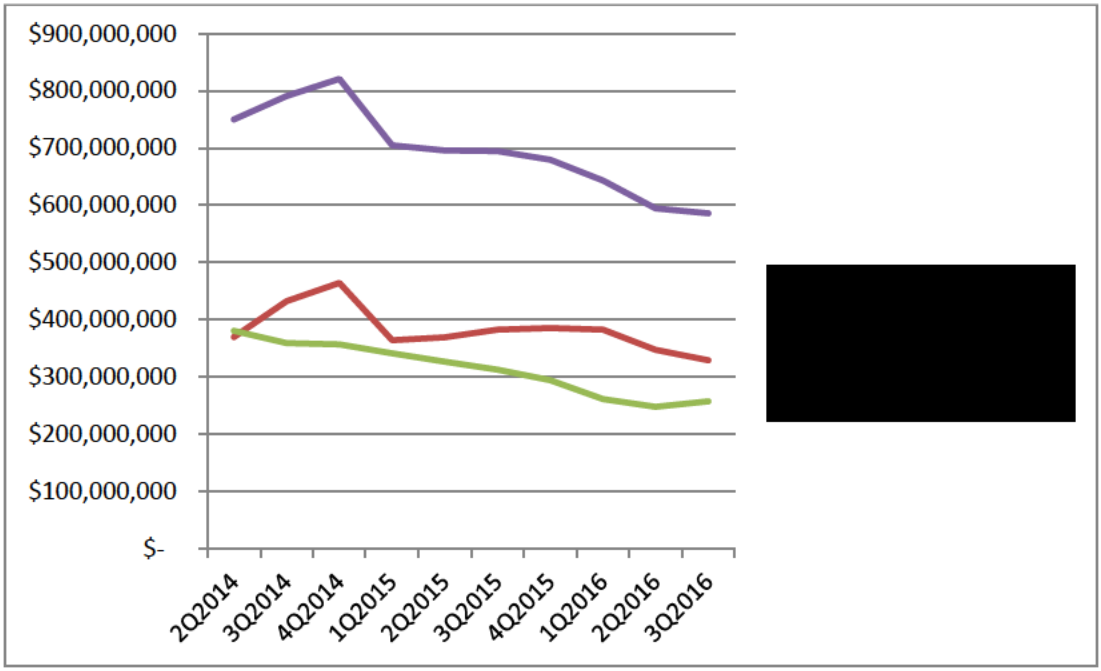
b) Local Funding

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

5.5 Cost Variance Analysis

[redacted]

[redacted]



6.0 RISK MANAGEMENT

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

With regard to the implementation of the "ESA First" Harold Re-sequencing of late 2014, the PMOC notes that, through 2015 and 2016, Amtrak has not been able to provide even the reduced level of force account resources that was planned in support of the schedule. [redacted] ESA has completed a comprehensive study to identify and evaluate the reasons for inadequate level of force account resources required to support the Harold schedule and to make recommendations to revise the schedule and to plan for the increasing force account costs. Based on the outcome of the study, the revised project schedule indicates that the Harold critical path has now become the ESA program critical path and leads the

secondary Manhattan/Systems critical path by approximately three months. Cost impacts have been evaluated and ESA estimates the additional Amtrak and LIRR force account cost to be $200-300 million for support of all remaining Harold Interlocking work to complete the Revision 14-4M Alignment. 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. 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 2020. However, no noticeable impacts to availability of Amtrak force account resources through December 2016 were observed due to work in the ERT Lines 3 and 4. 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 work needed to commence LIRR service into GCT. Amtrak's decision will, however, impact Contract CH058B, Harold Structures – Part 3B, Eastbound Re-Route, a Regional Investment initiative that is not required to provide the connection to GCT for LIRR service. The ESA-PMT has indicated that there is no work-around plan for this situation, during which ERT Line 1 would have to be taken out of service in order to construct the Eastbound Re-Route.

6.1 Risk Process

Status/Observations:

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

Concerns and Recommendations:

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

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

6.2 Risk Register

Status/Observation:

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

Concerns and Recommendations:

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

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

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

6.3 Risk Mitigations

Current Risk Mitigation Efforts:

The PMOC notes that the PMT is implementing mitigation strategies for a number of identified risks. Examples include advancing procurement of the eight CILs for the Mid-Day Storage Yard, actively engaging Amtrak to develop some specific strategies to mitigate many of the identified risks, and to pursue labor agreements that will provide flexibility and additional resources to allow more third-party work in Harold Interlocking. Implementation of the Harold schedule re-sequencing to support the "ESA First" approach of advancing work elements required to provide LIRR service into GCT was done to mitigate some of the schedule delay risks. However, implementation of the Harold re-sequenced schedule has not met the established goals because Amtrak has not been able to provide the necessary force account support to the third-party contractors and complete their own force account construction work elements on schedule. As a result, MTACC has reviewed the 2015 Harold schedule re-sequencing plan to determine the

detailed causes of the schedule slippage. MTACC has revised the Harold schedule to reflect the current status and expected level of support from Amtrak and LIRR. The associated revision to the Integrated Project Schedule shows that the remaining work in the Harold Interlocking is now on the program critical path. MTACC re-evaluated the cost of force account support going forward and has forecast the cost growth to be in the range of $200-300 million.

Concerns and Recommendations:

MTACC has completed several programmatic risk assessments and multiple package level risk reviews. The PMOC believes that MTACC is capable of developing effective mitigation strategies for the risks identified, tracking and reporting on them on a regular basis as required by the RMP. MTACC has demonstrated its capabilities 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. The developments made known to the FTA and the PMOC during 2Q2016 and 3Q2016 with regard to the schedule performance of the remaining work in the Harold Interlocking are certainly not encouraging. Many external stakeholder issues with Amtrak and LIRR will remain beyond MTACC's direct control, however, and are likely to complicate development and acceptance of the specific problem resolutions essential to completion of the project.

The PMOC notes that ESA has been unable to develop a sustainable schedule for the remaining Harold Interlocking work that can be achieved despite the most recent full re-plans in 2013-2014 and again in 2015 as the "ESA First" Harold Re-Sequencing. Based on insufficient support from Amtrak during 2015 and into 2016, ESA has undertaken another Harold re-plan effort that reflects the continued inadequacy of Amtrak support with regard to force account resources and track outages for ESA work. The results of the study, along with the recent Amtrak decision about the ERT tunnel program, do not provide any basis for optimism going forward, especially considering that the situation has deteriorated so quickly since the current baseline was established only 30 months ago:

- [redacted]
  - The Harold critical path has now become the ESA Program Critical Path and leads by three months, the secondary Manhattan/Systems critical path; and,
  - Amtrak's decision to take ERT Line 2 out of service first for an extended outage of one year or more will not support the current ESA planning to complete all of the remaining Harold work, including the High Speed Rail work, by 2020. The PMOC does note, however, that MTACC believes that Amtrak's decision about ERT Line 2 will not impact the remaining work in Harold Interlocking required to provide LIRR service to Grand Central Terminal.

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 continues to deteriorate and the PMOC recommends that the PMT engage senior management in MTACC and MTA to assist with resolution of this problem **[Ref: ESA-124-Jun16]**.

During 4Q2016, the PMT reported that Amtrak has been providing consistent levels of support over the last few months and this allows ESA to more effectively plan work in Harold on a week-to-week basis. The PMT does acknowledge, however, that the level of support remains less that required to adequately support the Harold baseline schedule. This continuing problem may prevent ESA from completing the Harold work planned for 2017-18 that is critical to achieving the target RSD of February 2021. The PMT further noted that Amtrak's New York Division, which is responsible for the force account resources assigned to the ESA Harold Interlocking work, is very attentive to directives from the New York State governor's office. Currently, the Moynihan Station project is Amtrak's top priority for assignment of force account resources. The PMOC believes that MTA senior management needs to engage the governor's office and elected officials to build the case for Amtrak to prioritize its support for the remaining
ESA Harold work.

[redacted]

Number/ Date Initiated	Section	Issues/Recommendations	[redacted]
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 July 2016, the PMOC notes that the ESA project continues to be partially non-compliant with ELPEP and is not meeting some of the more important requirements of the SMP and CMP sub-plans to the PMP. Status Update: Specific areas of non-compliance were provided to MTACC at the September 12, 2013, ELPEP Quarterly Review Meeting and additional details provided on October 30, 2013. MTACC provided preliminary draft responses (partial) to the PMOC list of ELPEP non-compliances at the December 12, 2013, ELPEP Quarterly Compliance Meeting. MTACC and the PMOC met on February 27, 2014, to discuss the FTA and PMOC's concerns. At that meeting, MTACC acknowledged the need for more transparency/clarity in documenting the cost/schedule management processes to support traceability in the decision making process. Since that time, the PMOC has endeavored to engage the ESA Project Controls in productive discussions regarding improvements to cost and schedule reporting during the monthly cost and schedule review meetings. [redacted]	[redacted]

Number/ Date Initiated	Section	Issues/Recommendations	[redacted]
		[redacted]	
ESA-122-Jun16	1.6 Project Quality	Quality Staff Insufficient and Quality Manager has resigned: The original Quality Staff in 2015 consisted of Quality Assurance Manager and a staff of five Quality Managers/Engineers. Status Update: A new ESA Quality Manager was hired and began work in October 2016. At the same time, an ESA Quality Engineer was promoted to Deputy Quality Manager. She has been out on a six-week leave of absence and is expected to return to work on January 9, 2017. A new Quality Engineer, possessing electrical, system, and transit experience has been hired and will start work in early February 2017.	[redacted]

Number/ Date Initiated	Section	Issues/Recommendations	[redacted]
		Recommendation: The PMOC believes that when the new employee begins work that the ESA function will be adequately and capably staffed to perform their required functions.	
ESA-123-Jun16	1.4b Federal Regulations	Track Turnouts for LIRR – continued delays to finalizing specification. Status Update: There are approximately 41 turnouts remaining (from former Stages 3 and 4) to be installed in Harold Interlocking. These turnouts need to be "Buy America" compliant. During 3Q2015, the ESA PMT authorized the GEC to develop compliant specifications for, and in coordination with, the LIRR. During the 3rd week of September 2016, the GEC completed its development of draft compliant specifications and transmitted them to the LIRR for review and approval. As of September 30, 2016, the LIRR had not yet approved the specifications. Recommendation: The GEC completed its final "Buy America"-compliant revisions to the LIRR turnout specifications in late November 2016. The GEC is presently preparing the procurement package, which is expected to be completed by mid-1Q2017 and will be used to solicit the order for the turnouts. The PMOC believes that ESA will be in a position to solicit these turnouts by early-to-mid 2Q2017.	[redacted]
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 4Q2016, 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, CH053, CH057, and CH057A continued through 4Q2016. Additionally, the ESA PMT has reported that it does not receive all the track outages it requires to do the work that it schedules. The ESA PMT has stated that both of these conditions have been major factors for why Harold construction recently became the critical path of the ESA Project. Additional issues arose during 3Q2016 that contributed to the problem,	[redacted]

Number/ Date Initiated	Section	Issues/Recommendations	[redacted]
		including reduced availability of priority weekend track outages and increased demand for track foreman to cover individual construction work activities. Recommendation: The PMOC recognizes ESA's efforts to rebaseline the remaining work in the Harold Interlocking to reflect more realistic expectations of Amtrak support and to more effectively engage Amtrak at the management level. However, the situation continues to deteriorate and the PMOC recommends that the PMT engage senior management in MTACC and MTA to assist with resolution of this problem. MTA should consider approaching both the New York State governor's office and key elected officials to build the case for Amtrak to prioritize its support for the remaining ESA Harold work.	
ESA-125-Sep16	2.1 Engineering/ Design and CPS	On Contracts CS179 and CS084, there are continued issues with late completion of review and approval of contractors' final systems designs and closure of RFIs. Current Status: The PMOC has been reporting delays in the process of GEC and LIRR review and approval of the contractors' final systems designs and closure of RFIs. Schedule impacts have been significant on both contracts. Contributing factors include technical capacity and capability shortcomings as well as coordination issues between the CM, GEC, and LIRR. Efforts by ESA PMT to resolve issues have been ongoing but, to date, have only been effective on the CS084 contract; which, in December 2016, saw a significant improvement in the reduction of the backlog of submittal reviews and comments. This issue still requires improvement on the CS179 contract. ESA senior management has recently elevated discussions involving ESA PMT and CM, the GEC and LIRR. Recommendation: The PMOC recognizes MTACC's efforts, especially recently, to resolve the many issues and to engage higher levels of management for all the involved parties. It is recommended that these efforts continue, on a critical priority basis, until the contributing issues are resolved, the work backlog is significantly reduced and there are no longer delays to the systems' design review and approval.	[redacted]

8.0 GRANTEE ACTIONS FROM QUARTERLY AND MONTHLY MEETINGS

[redacted]

Number with Date Initiated	Section	Grantee Actions	[redacted]	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.	[redacted]	1/31/17

APPENDIX A - LIST OF ACRONYMS

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

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

APPENDIX B - PROJECT OVERVIEW AND MAP

Project Overview and Map – East Side Access

East Side Access Project Map

MTA/LIRR East Side Access Project

Scope

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

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

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

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

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

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

Original Schedule

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

Cost ($)

4,300 million	Total Project Cost ($YOE) at Approval Entry to PE
4,350 million	Total Project Cost ($YOE) at Approval Entry to FD
7,386 million	Total Project Cost ($YOE) at FFGA signed
11,936.0 million	Total Project Cost ($YOE) at Revenue Operations
11,972.1 million	Total Project Cost ($YOE) at date of this report including $ 1,036.1 million in Finance Charges & Regional Investment Program
6,611.5 million	Amount of Expenditures as of October 31, 2016, based on the Total Project Budget of $10,177.8 million
66.4	Percent Complete, based on the Re-plan budget of $10,177.8 million and invoices in the October 2016 report
[redacted]	[redacted]
66.1	Construction Percent Complete vs.70.3% planned
66.4	Overall Project Percent Complete vs. 69.2% 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.

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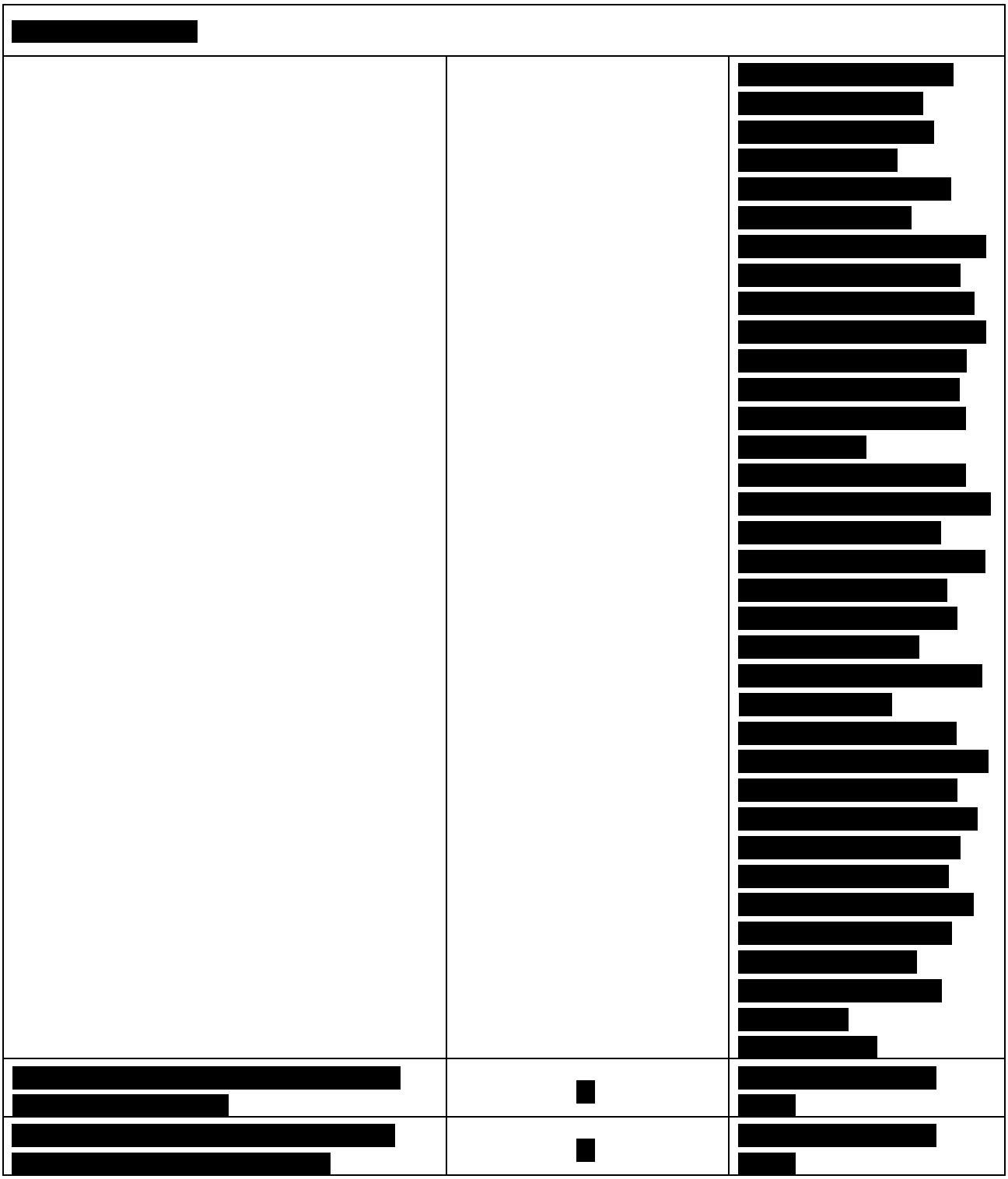


APPENDIX E – ON-SITE PICTURES
(TRANSMITTED AS A SEPARATE FILE)

APPENDIX F - COST AND SCHEDULE ANALYSIS TABLES

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

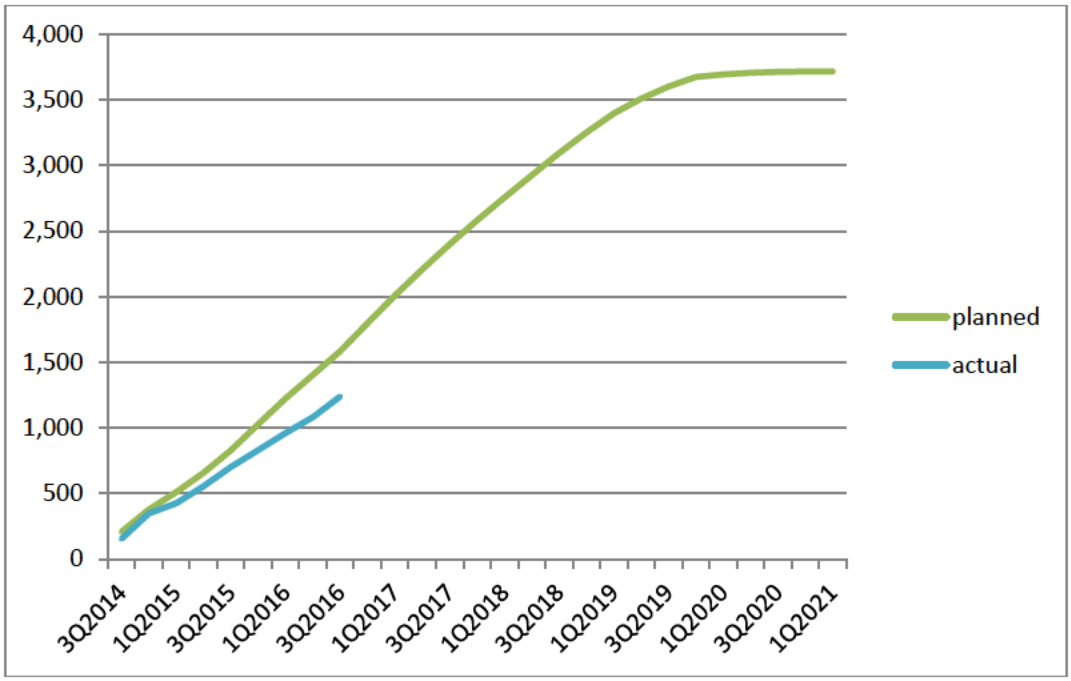


Table F-1 - The "planned" curve shows construction cash flow that was planned by ESA at the 2014 re-baselining in order to reach revenue service by the 1st quarter of 2021. The vertical axis is $million, starting at $0 at the time of the re-baselining. The "actual" curve, up to the 2nd quarter of 2016,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

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

ACTIVITY ID	ACTIVITY DESCRIPTION	START	FINISH
CH057: Harold Structure - Part 2/3 Loop Box Approach, & EBRR West Approach & Tunnel			
CH057-3040	Procure Catenary material (12 Weeks)	16-Feb-16 A	09-Sep-16 A
CH057-3110	Complete Catenary / Signal Tower Relocation for L & T CIH Cutover		01-Nov-16
CH057-3370	Construct "D" Pit (Incl TBM Recovery) - For Cutover New Main Line 4	14-Dec-15 A	9-Feb-17
CH057A - Westbound Bypass Structure (exclude Slab)			
N/A	No Milestones in IPS over the next 90 days	N/A	N/A
CH061A: Tunnel A			
CH061A-2130	CH061A - Bid Due Date		2-Aug-16 A
CH061A-2170	Issue Notice of Award		23-Nov-16
CH061ANTP	NTP CH061A – A Approach	27-Jan-17	
CH058A: Harold Structures - B/C Structure/ Catenary Structure			
CH058A-0020	Develop/Finalize 100% Design Documents - CH058A	22-Jun-16 A	2-Feb-17
CH058B: Harold Structures - Eastbound Reroute Structure			
CH057-MS1000	Remove Signal Hut "B" - after H3 CIL cutover		13-Oct-18
FHL01: Harold Stage 1 - LIRR F/A			
FHL01-1150	Complete Trough H2 to H3 (Track A)		09-Jan-17
FHL02: Harold Stage 2 - LIRR F/A			
FHL02-5160	Cutover Harold Emergency Generator		14-Nov-16
FHL02-SI5010	Install Remaining Conduit and Pull boxes in H5-CIL Location	08-Dec-16	13-Dec-16
FHL02.MS.00095	Cutover #L-2 Service for H3, H4 CIL's		1-Nov-16
FHL03: Harold Stage 3 - LIRR F/A			
FHL03500710	Signal Works for Removing 843 Switch	28-Feb-18	09-Mar-18

ACTIVITY ID	ACTIVITY DESCRIPTION	START	FINISH
FHA01: Harold Stage 1 - Amtrak F/A			
FHA01-H0229	ET Catenary: FTAB SW H22 - Complete Installation & Electrification		04-Nov-16
FHA01-1000	ET Catenary: Complete Catenary Work for Stage 1		19-Jan-17
FHA02: Harold Stage 2 - Amtrak F/A: Balance Work			
FHA02-1060	CH054A - Completed SMUS 1 & 2 / Install New RTU		08-Nov-16
FHA02-1220	Cutover F1/F2 Crossover (771): **WITH NEW SNOW MELTER CASE**	10-Dec-16	11-Dec-16
FHA02-1230	Cutover ZJ1/ZJ2 Crossover (747) **WITH OUT NEW SNOW MELTER**	05-Nov-16	06-Nov-16
FHA02-1350	Cutover DN2 (743B)	14-Oct-17	15-Oct-17
FHA02-1540	Cutover: ZJ1/ZJ2 (747) (signal)	05-Nov-16	06-Nov-16
FHA02-1730	Circuit Revision and Testing for LP1A cutover	20-Oct-17	16-Nov-17
FHA02-1780	Cutover New RTU with SMUS 1&2	22-Nov-16	06-Dec-16
SUMFHA02-1540	Cutover - ZJ1/ZJ2 (747)		06-Nov-16
SUMFHA02-1560	Cutover - DN2 (743B)		15-Oct-17
FHA03: Harold Stage 3 - Amtrak F/A			
FHA03-1210	Remove Existing Cables and Cases after Cutover Stage 2	06-Jun-14 A	24-Jan-17
VH051A (Part 1): Harold & Point CILs			
VH51C0340	FIAT COMPLETED (w/HTSCS Contract)		30-Dec-16
VH051B (Part 2): Harold Tower SCS			
VH51H0300	As-Built Drawings	01-May-15 A	30-Jan-17
VH051C: 250 Hertz Misroute/ Tunnel Collision Avoidance			
VH051C	VH051C - 250 Hz Track Circuits		09-Jul-23
VH052: Cab Simulator			
VH052	VH052 - Cab Simulator	20-May-18	09-Jul-23
VHA03: Procure Materials for Harold Stage 3 - Amtrak F/A			

ACTIVITY ID	ACTIVITY DESCRIPTION	START	FINISH
VHA03	VHA03 -Procure Amtrak Materials - Harold Stage 3	05-May-14 A	27-Oct-22
VHA04: Procure Materials for Harold Stage 4 - Amtrak F/A			
VHA04-1000	NTP VHA04 - Procure Materials Stage 4 - Amtrak	01-Sep-16 A	
VHL02: Procure Materials for Harold Stage 2 - LIRR F/A			
VHL02-1010	Procure ZE Crossover	30-Jul-14 A	01-Nov-16
VHL03: Procure Materials for Harold Stage 3 - LIRR F/A			
VHL03-1000	VHL03 - Procure LIRR Materials - Harold Stage 3	01-Jun-14 A	16-Jan-22
VHL04: Procure Materials for Harold Stage 4 - LIRR F/A			
VHL04-1000	NTP VHL04 - Procure Materials stage 4 - LIRR	01-Sep-16 A	
FML-LIRR	FML05, FML06, FML07 - Cavern,63rd Tunnel Rehab & Bellmouth-LIRR	09-Sep-13 A	28-Jan-20
CM005: Manhattan South Structures			
CM005-TO50	CM005 MS #4 Turnover to CS284 AR (LL Tail Tracks)	11-Oct-16 A	29-Dec-16
CM005-TO55	CM005 MS #4 Turnover to CM007 Unlimited NTP	22-Apr-16 A	11-Oct-16 A
CM005-1050	Milestone 5 Final Completion - MS70 (May 6, 2016)		1-Dec-16
CM013A: 55th Street Vent Facility			
CM013A-280	CM13A - MS#3 Final Completion		06-Nov-16
CM004: 245 Park Ave. Entrance & 44th Street Vent Structure			
CM04-C0940	CM004 Contractual Final Completion (ML#2 Date 820 CDs from NTP)		29-Nov-16

ACTIVITY ID	ACTIVITY DESCRIPTION	START	FINISH
CM006: Manhattan North Structures			
CM006-MS2A	CM006 Milestone #2A (55th Street Vent Facility Complete - 702 days from NTP (3/2/16)		25-Apr-17
CM006-MS5	CM006 Milestone #5 (GCT 4 Facility Room - 460 CD from NTP (7/4/2015)		2-Nov-16
CQ032: Plaza Substation & Queens Structures			
CQ032-TO20	CQ032 MS #2 Turnover to Other Contracts: YL Track Level Complete	30-Dec-16	2-Jan-17
FQA65: Loop Interlocking - Amtrak F/A			
FQA65-3010	CH057: Complete Catenary Structure for Loop and T CIHs (65-0) Part 2		01-Nov-16
VQ065: Loop Interlocking CIL (Amtrak)			
VQ065RI	VQ065 RI - Loop Interlocking	12-Sep-12 A	15-Dec-19
CQ033: Mid-Day Storage Yard Facility (Procurement Status TBD)			
CQ033-1020	CQ033 Ready for Procurement	29-Sep-16 A	24-Oct-16 A
CQ033-1015	LIRR/DOT Permit to Demo Montauk Cutoff Structure - 4 MONTHS COMPLETE BY NTP	1-Nov-16	1-Mar-17
CS084: Tunnel Systems Package 4 – Traction Power Systems			
CS084-MS001	MILESTONE # 1- Energize Traction Power Substation C08		7-May-19
CS084-MS002	MILESTONE # 2- Energize Traction Power Substation C04 and C05		9-Jul-19
CS084-MS003	MILESTONE # 3- Energize Traction Power Substation C06 and C07		28-Aug-19
CS084-MS004	MILESTONE # 4- Energize Traction Power Substation C01 and C02		3-Jul-19
CS084-MS005	MILESTONE # 5- Energize Traction Power Substation C03		14-May-19
CS084-MS006	MILESTONE # 6- Complete Local testing of all substation/Start Integration		30-Oct-19

ACTIVITY ID	ACTIVITY DESCRIPTION	START	FINISH
CS084-MS007	MILESTONE # 7- Substantial completion & Final Completion		25-Feb-20
CS179: System Package 1 - Facilities Systems			
MILE-63rd	63rd St Tunnel - Complete Start-up and Local Testing		30-Nov-16
CS179-WB1-C10	Completion of WB1 Cable Pulling		19-Dec-16
CSU99: Systems Utility Relocations			
CSU99	CSU99 - Systems Utilities Relocations	30-Sep-14 A	7-Sep-23
VS086: System Package 3 - Signal Equipment Procurement			
VS086-1005	Prepare/Furnish Signal Equipment Catalog Cuts	12-Dec-14 A	12-Jun-17
FSA79: Communication, Controls, Security and Fire Detection - Amtrak F/A			
FSA79	FSA79-Power, Signals, Comm & Security Systs	31-Mar-14 A	01-Nov-16
FS099: Force Account Support			
FS099	FS099 - Force Account Support	30-Sep-14 A	03-Aug-20
LIRR 3.3.7	Take Over Preparation for GCT Building Management System (BMS)	31-Dec-16	28-May-19

*Constrained date by contract schedule

APPENDIX G – MTA EAST SIDE ACCESS PROJECT –
BUY AMERICA STATUS SUMMARY
TABLE G – CONTRACT CS179 (As of December 31, 2016)

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. The MTA 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 is being assembled.

APPENDIX H – AMTRAK REMAINING ESA ELECTRIC TRACTION CONSTRUCTION*

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

Last Activity in IPS ID# String	Scope	IPS Start	IPS Finish	Status
FHA03-3150*A*	Install 1,100 LF CA RPR Track	11/11/16	11/13/16	Amtrak continued catenary system construction on the RPR Track during 4Q2016, with completion scheduled for 1Q2017.
CH057A-6280	Install 7,100 LF CA WBY Track (or FHA02-1830)	6/28/17	6/28/17	CH057A has not started any predecessor catenary construction.
FHA03-1200	Install 2,500 LF CA cutover 771/EWD/RPR Track		11/14/16	Amtrak continued catenary construction on ELIP Track in conjunction with work on RPR Track during 4Q2016. CH057 installed catenary pole B911-3/4 during November 2016.
CH057A-2050	Install 6 CAs LIRR/3rd Party Crossovers	11/19/18	11/26/18	None of the predecessor Crossovers have been installed yet.
CH057-C1740	Relocate cross catenary east of 39th St. as result of construction of Tunnels A, B/C, and D	1/17/17	1/17/17	Tunnel B/C predecessor construction has not started yet. Amtrak will install CAs during and after construction is complete.
FHA04-1030	Install 1,000 LF (est.) CA MDSY Sub 4 to Line 2 Connection	9/12/19	10/11/19	CQ033 not awarded yet. CQ033 to install catenary poles prior to Amtrak installation of CAs.
FHA04-1050	Install 3,600 LF CA EBRR Track	3/1/21	5/13/21	CH058B not awarded yet. CH058B to install catenary poles prior to Amtrak installation of CAs.
FHA02-1850	Install CAs 5 other locations FHA02	8/6/15	2/5/21	#771 and #747 crossovers are complete. Remainder not started.
FHA03-1490	Install CAs 11 other locations FHA03		8/1/19	Not started yet.
FHA04-1020	Install CAs 3 other locations FHA04	7/27/20	8/10/20	Not started yet.
FHA02-1280	Cutover Loop 1A	11/18/17	11/19/17	Amtrak Loop 1A Track construction partially complete. Intermittent Amtrak ET catenary system construction began during 4Q2016.
CH057-CPR4-55101	Wire Transfer for demolition of Montauk Cutoff Platform	5/17/17	6/23/17	CQ033 not awarded yet. CQ033 to install catenary poles prior to Amtrak installation of CAs.
FQA65-1092	Install CAs 24 Turnouts in Loop and T Interlockings - FQA65	6/7/16	6/8/23	Loop and T Interlocking construction on "hold" by MTACC. Not required until late in program.

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

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

APPENDIX 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

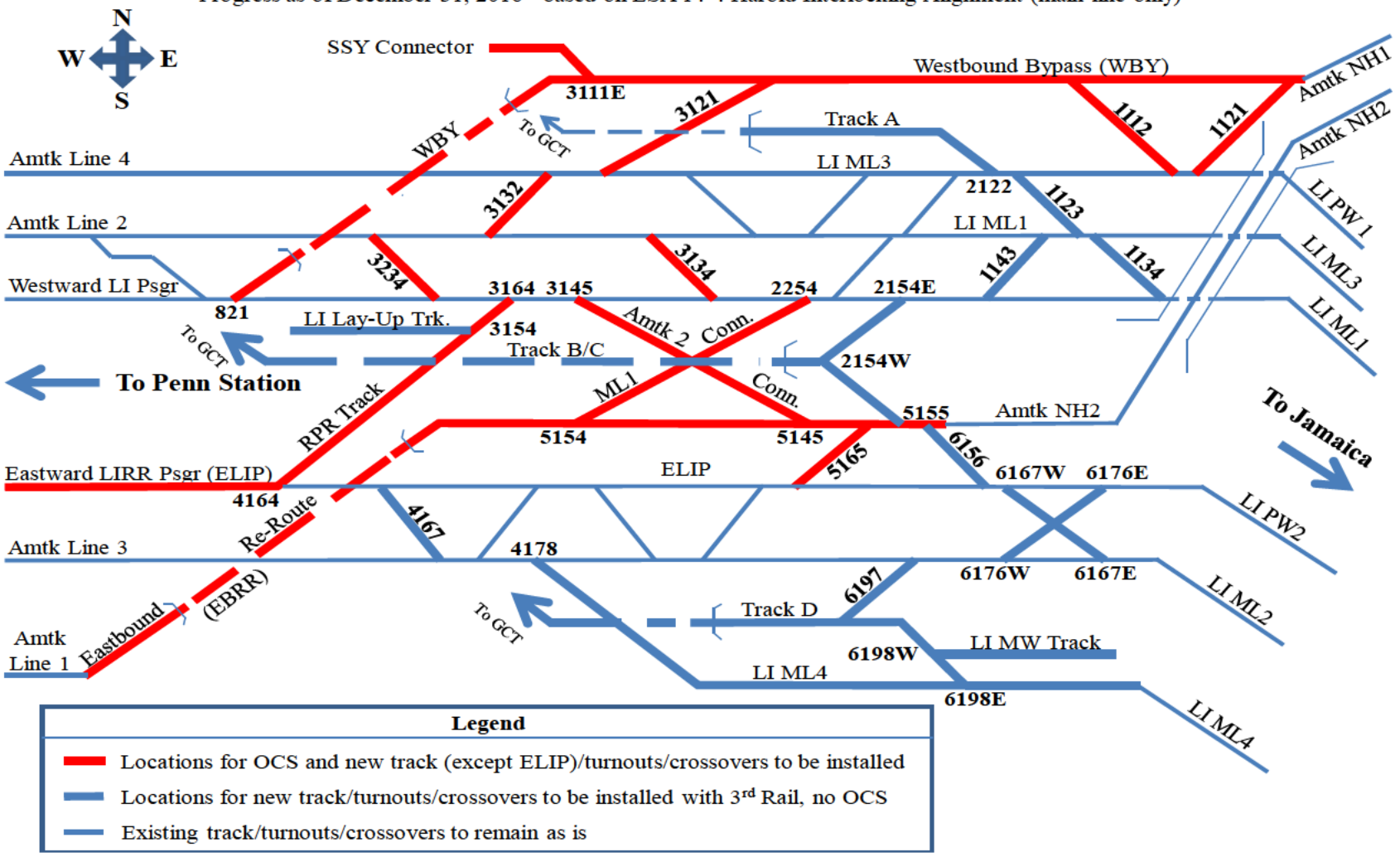
This diagram depicts, along with existing tracks, crossovers, and turnouts that will not be renewed, the present construction status ESA constructed tracks, crossovers, and turnouts that have been or will be installed to make LIRR service into GCT possible. Existing trackage that will not be renewed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

Appendix I: Harold Progress Monitoring Schematic

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

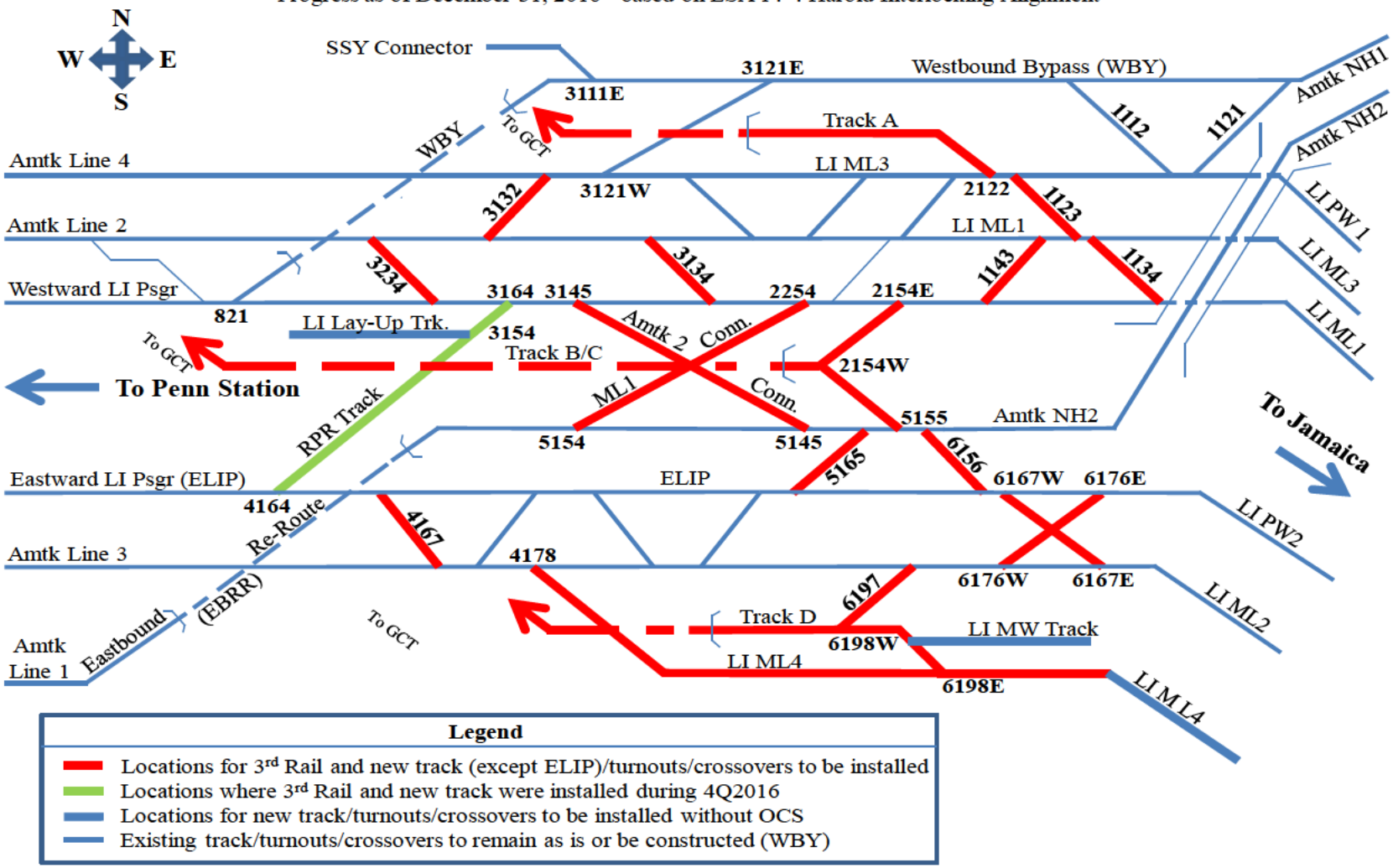
Progress as of December 31, 2016 - based on ESA 14-4 Harold Interlocking Alignment (main line only)



Appendix I: Harold Progress Monitoring Schematic

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

Progress as of December 31, 2016 - based on ESA 14-4 Harold Interlocking Alignment



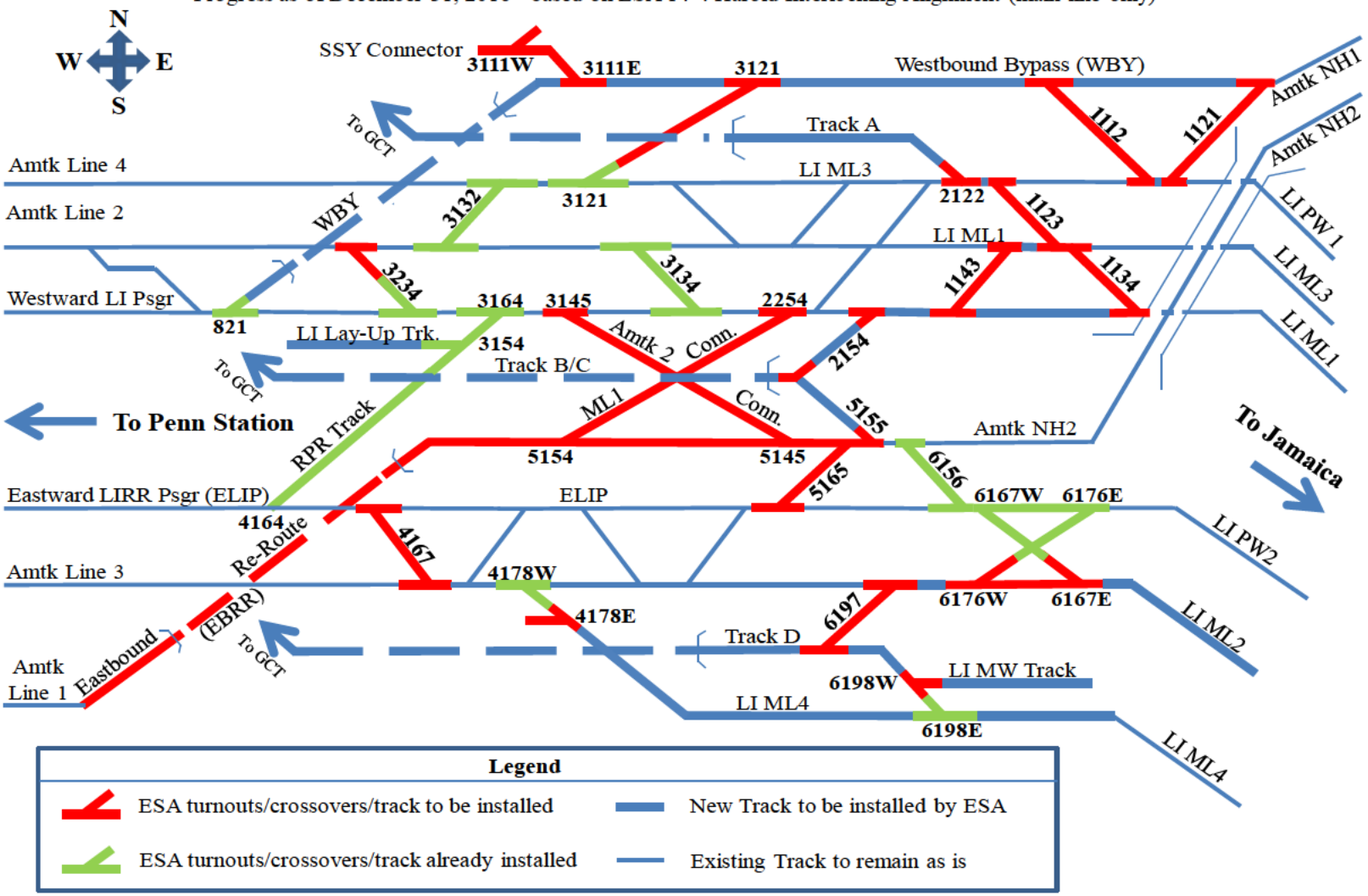
Legend

- Locations for 3rd Rail and new track (except ELIP)/turnouts/crossovers to be installed
- Locations where 3rd Rail and new track were installed during 4Q2016
- Locations for new track/turnouts/crossovers to be installed without OCS
- Existing track/turnouts/crossovers to remain as is or be constructed (WBY)

Appendix I: Harold Progress Monitoring Schematic

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

Progress as of December 31, 2016 - based on ESA 14-4 Harold Interlocking Alignment (main line only)

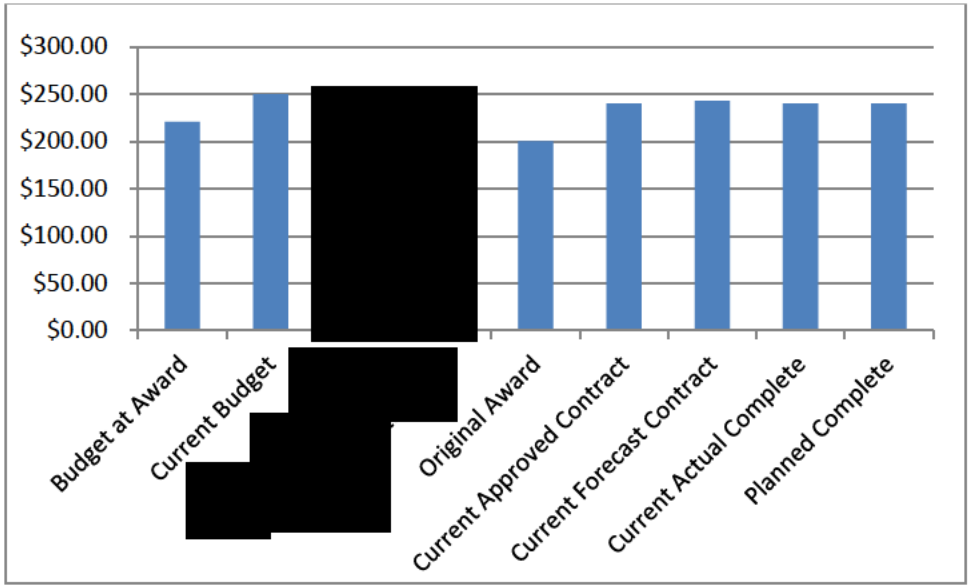


APPENDIX J – COST PERFORMANCE

APPENDIX J – COST PERFORMANCE - CM005

CM005 - Manhattan South Structures - at Oct 2016

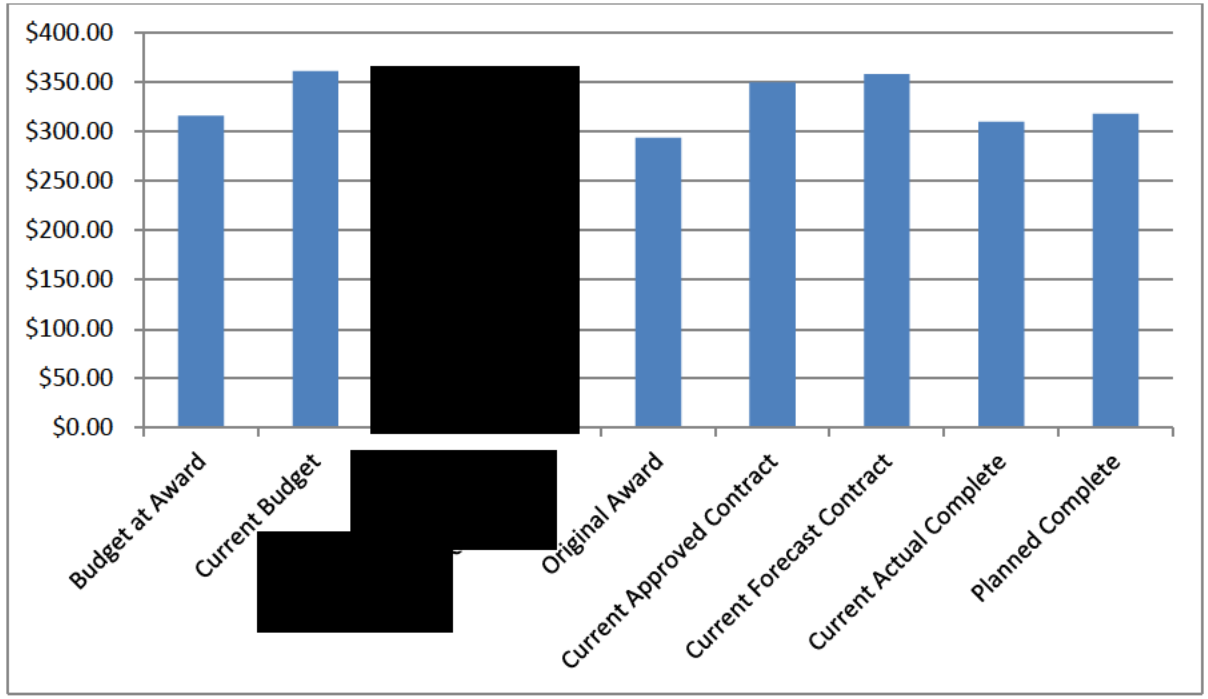
1	2	3	4	5	6	7	8
Budget at Award	Current Budget	Change from Original to Current	Contract at Award	Current Approved Contract	Change from Original to Current	Current Forecast	Change from Current Forecast to Budget at Award
$M	$M	$M	$M	$M	$M	$M	$M
		(2-1)			(5-4)		(7-1)
$220.7	$249.8	$29.1	$200.6	$240.2	$39.6	$243.0	$22.3
Percent Complete		Actual Prgress	Last 12 Months	Actual Prgress	Last 6 Months	Average	Required Progress
Planned	Actual	Total	Avg/Mo	Total	Avg/Mo	to reach	forecast SC
100.0%	100.0%	N/A	N/A	N/A	N/A		N/A



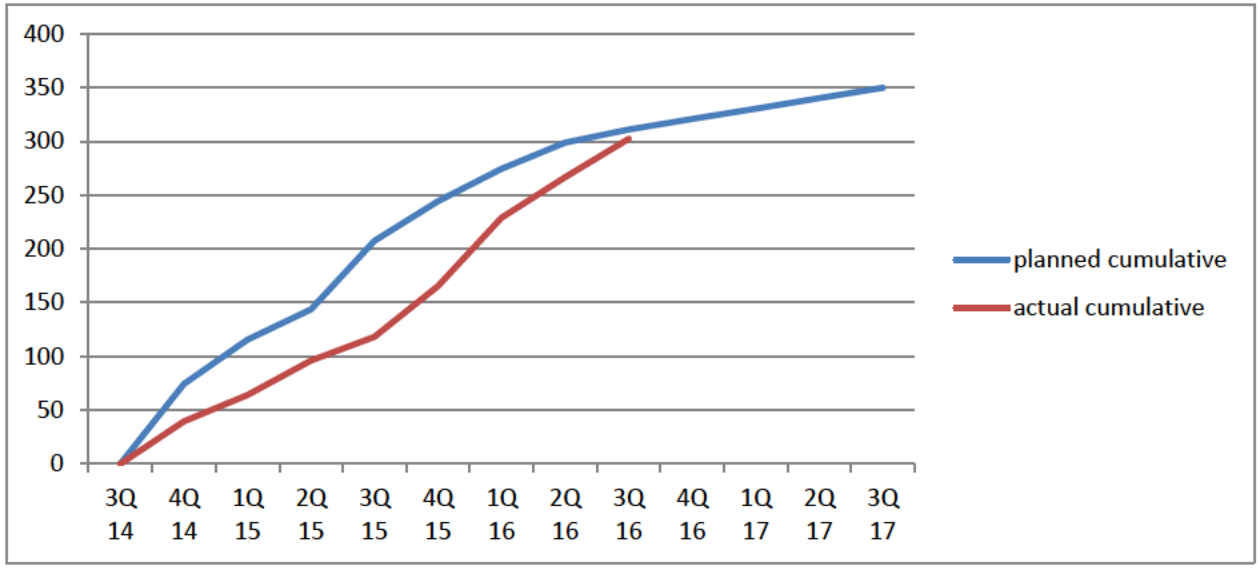
CM005 - Manhattan South Structures - at Oct 2016
(vert axis in $M)

APPENDIX J – COST PERFORMANCE - CM006

CM006 - Manhattan North Structures - at Oct 2016							
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
$M	$M	$M	$M	$M	$M	$M	$M
		(2-1)			(5-4)		(7-1)
$316.3	$361.6	$45.3	$294.2	$350	$55.8	$358.6	$42.3
Percent Complete		Actual Prgress	Last 12 Months	Actual Prgress	Last 6 Months	Average	Required Progress
Planned	Actual	Total	Avg/Mo	Total	Avg/Mo	to reach	forecast SC
91.0%	88.7%	52.70%	4.40%	21.51%	3.59%	1.89%	per month



CM006 - Manhattan North Structures - at Oct 2016
(vert axis in $M)



CM006 - Manhattan North Structures - at 3Q2016
(vert axis in $M)

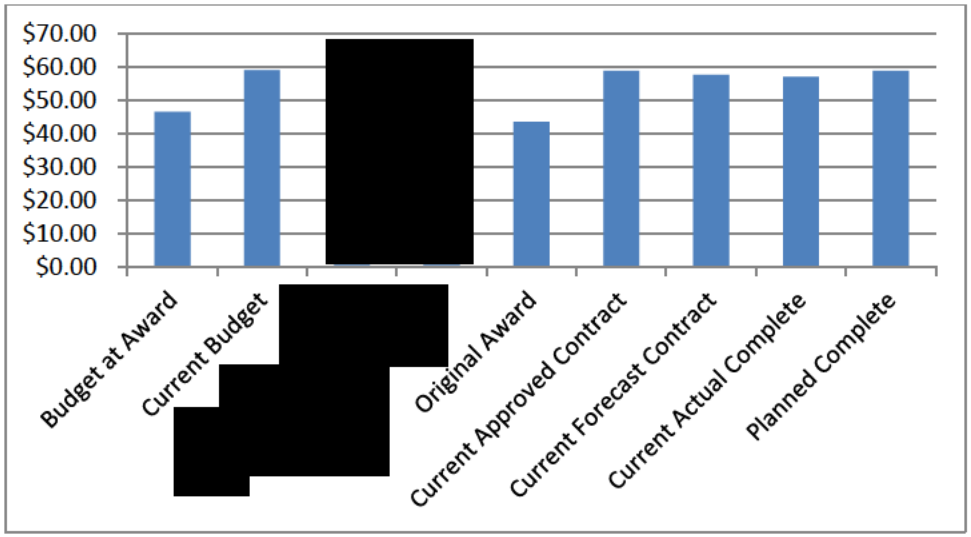
APPENDIX J – COST PERFORMANCE - CM007*

CM007 - GCT Caverns - at Oct 2016							
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
$M	$M	$M	$M	$M	$M	$M	$M
		(2-1)			(5-4)		(7-1)
$712.3	$712.3	$0.0	$663.1	$663	$0.0	$712.3	$0.0
Percent Complete		Actual Prgress	Last 12 Months	Actual Prgress	Last 5 Months	Average	Required Progress
Planned	Actual	Total	Avg/Mo	Total	Avg/Mo	to reach	forecast SC
N/A	3.3%	N/A	N/A	3.3%	0.66%	2.48%	per month

* CM007 has not generated sufficient history to develop the remaining graphs for this report.

APPENDIX J – COST PERFORMANCE – CM014A

CM014A - GCT Concourse / Facilities Fit Out Early Work - at October 2016							
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
$M	$M	$M	$M	$M	$M	$M	$M
		(2-1)			(5-4)		(7-1)
$46.50	$59.10	$12.60	$43.50	$59	$15.40	$57.70	$11.20
Percent Complete		Actual Prgress	Last 12 Months	Actual Prgress	Last 6 Months	Average	Required Progress
Planned	Actual	Total	Avg/Mo	Total	Avg/Mo	to reach	forecast SC
100.0%	97.0%	3.70%	0.31%	0.0%	0.0%		N/A

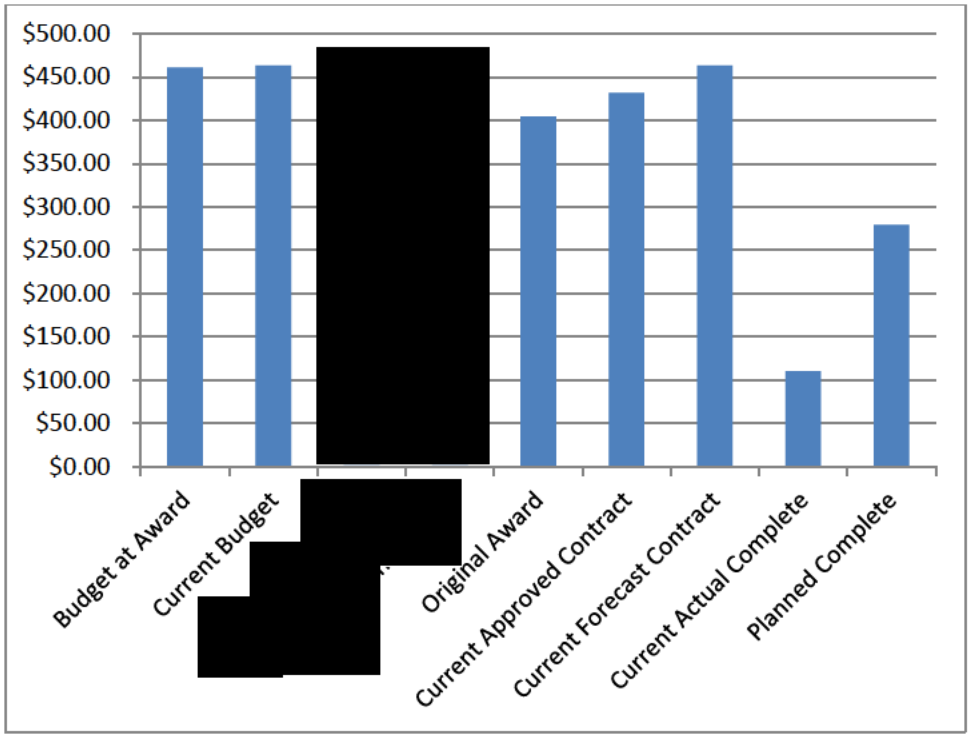


CM014A - GCT Concourse / Facilities Fit Out Early Work - at October 2016
(vert axis in $M)

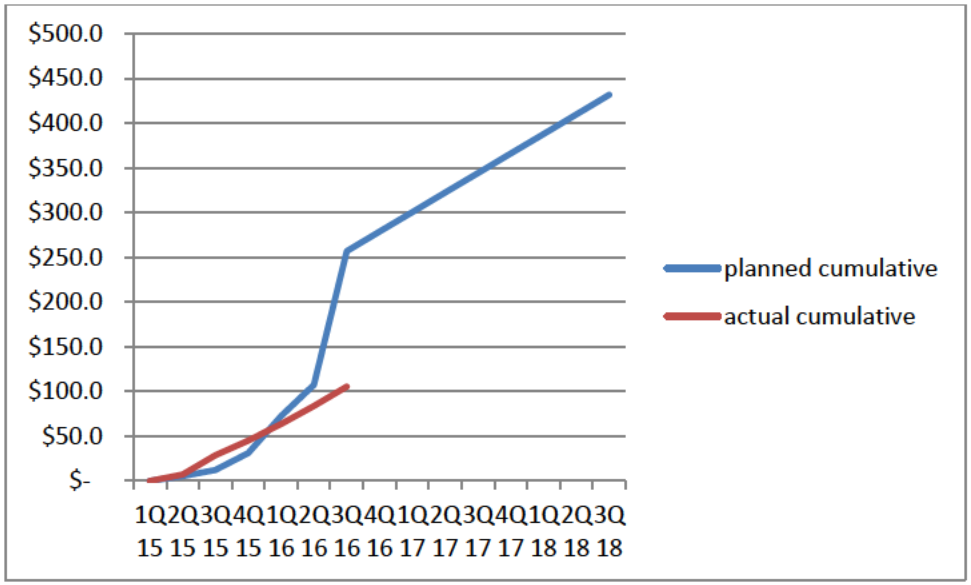
APPENDIX J – COST PERFORMANCE – CM014B

CM014B - GCT Concourse / Facilities Fit Out - at October 2016

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
$M	$M	$M	$M	$M	$M	$M	$M
		(2-1)			(5-4)		(7-1)
$461.10	$463.60	$2.50	$404.60	$432	$27.20	$463.60	$2.50
Percent Complete		Actual Prgress	Last 12 Months	Actual Prgress	Last 6 Months	Average	Required Progress
Planned	Actual	Total	Avg/Mo	Total	Avg/Mo	to reach	forecast SC
64.6%	25.5%	17.80%	1.48%	9.2%	1.5%	3.3%	per month



CM014B - GCT Concourse / Facilities Fit Out - at October 2016
(vert axis in $M)

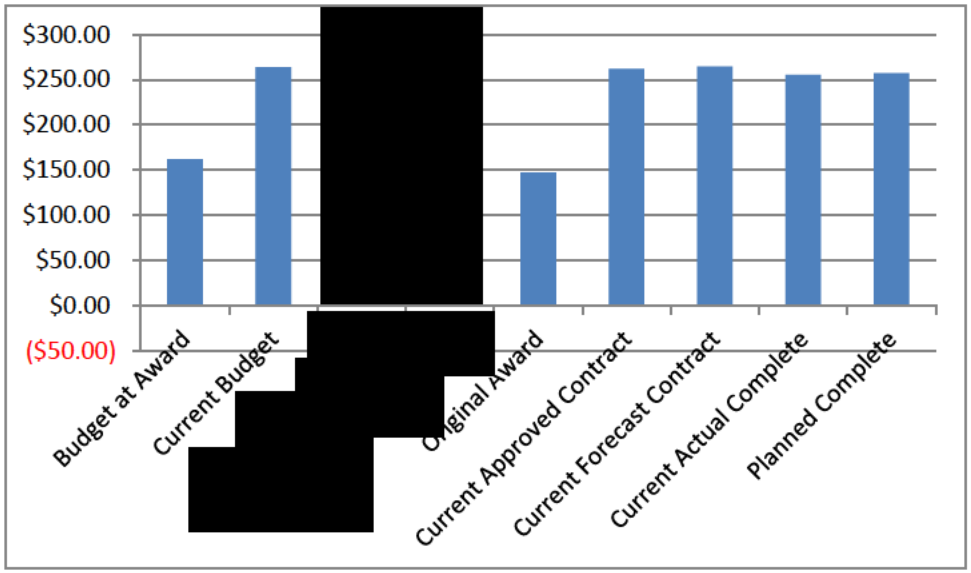


CM014B - GCT Concourse & Facilities Fit-Out - at 3Q2016
(vert axis in $M)

APPENDIX J – COST PERFORMANCE – CQ032

CQ032 - Plaza Substation & Queens Structures - at Oct 2016

1	2	3	4	5	6	7	8
		Change from		Current	Change from		Change from
Budget	Current	Original to	Contract	Approved	Original to	Current	Current Forecast to
at Award	Budget	Current	at Award	Contract	Current	Forecast	Budget at Award
$M	$M	$M	$M	$M	$M	$M	$M
		(2-1)			(5-4)		(7-1)
$162.1	$263.9	$101.8	$147.4	$262.0	$114.6	$264.9	$102.8
Percent	Complete	Actual Prgress	Last 12 Months	Actual Prgress	Last 6 Months	Average	Required Progress
Planned	Actual	Total	Avg/Mo	Total	Avg/Mo	to reach	forecast SC
98.3%	98.0%	23.0%	1.9%	3.9%	0.7%		N/A

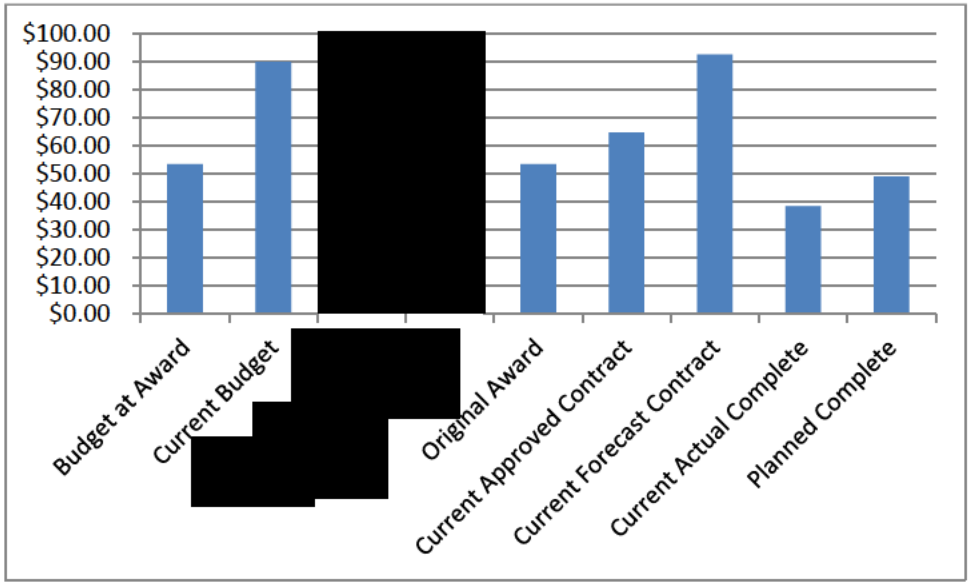


CQ032 - Plaza Substation & Queens Structures - at Oct 2016
(vert axis in $M)

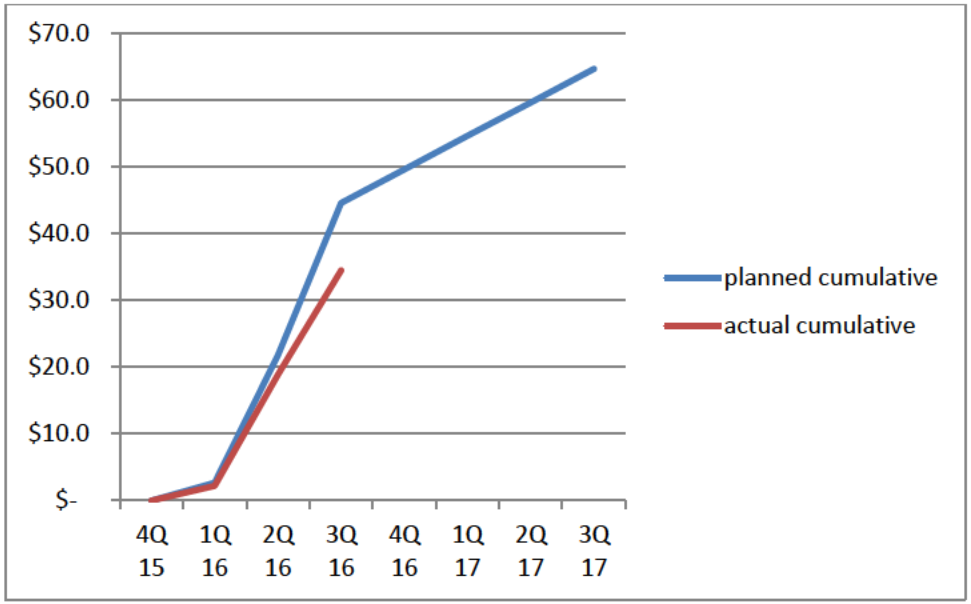
APPENDIX J – COST PERFORMANCE – CH057

CH057 - Harold Structures Part 3 - at Oct 2016

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
$M	$M	$M	$M	$M	$M	$M	$M
		(2-1)			(5-4)		(7-1)
$53.4	$89.9	$36.5	$53.4	$64.7	$11.3	$92.5	$39.1
Percent	Complete	Actual Prgress	Last 10 Months	Actual Prgress	Last 6 Months	Average	Required Progress
Planned	Actual	Total	Avg/Mo	Total	Avg/Mo	to reach	forecast SC
75.8%	59.5%	59.5%	6.0%	44.8%	7.5%	5.06%	per month



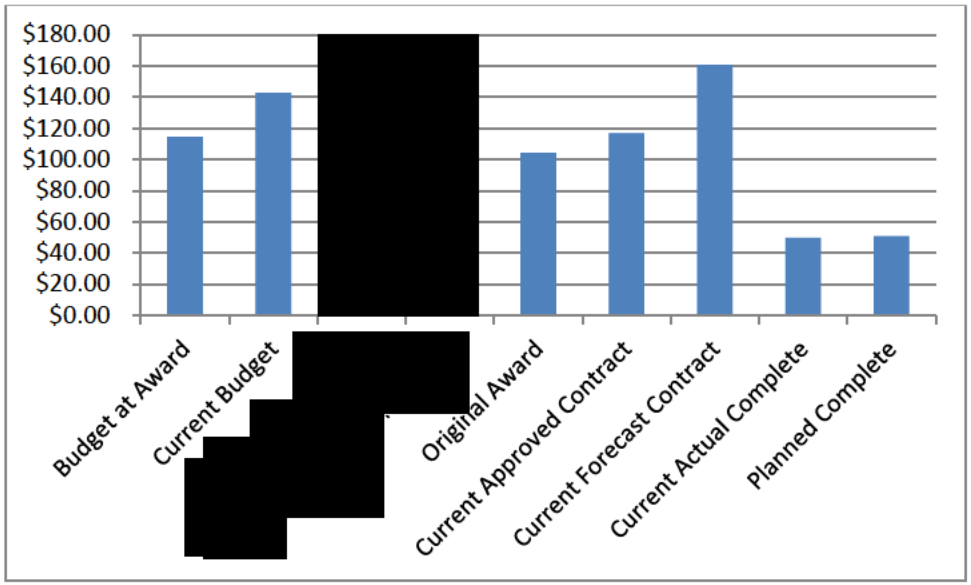
CH057 - Harold Structures Part 3 - at Oct 2016
(vert axis in $M)



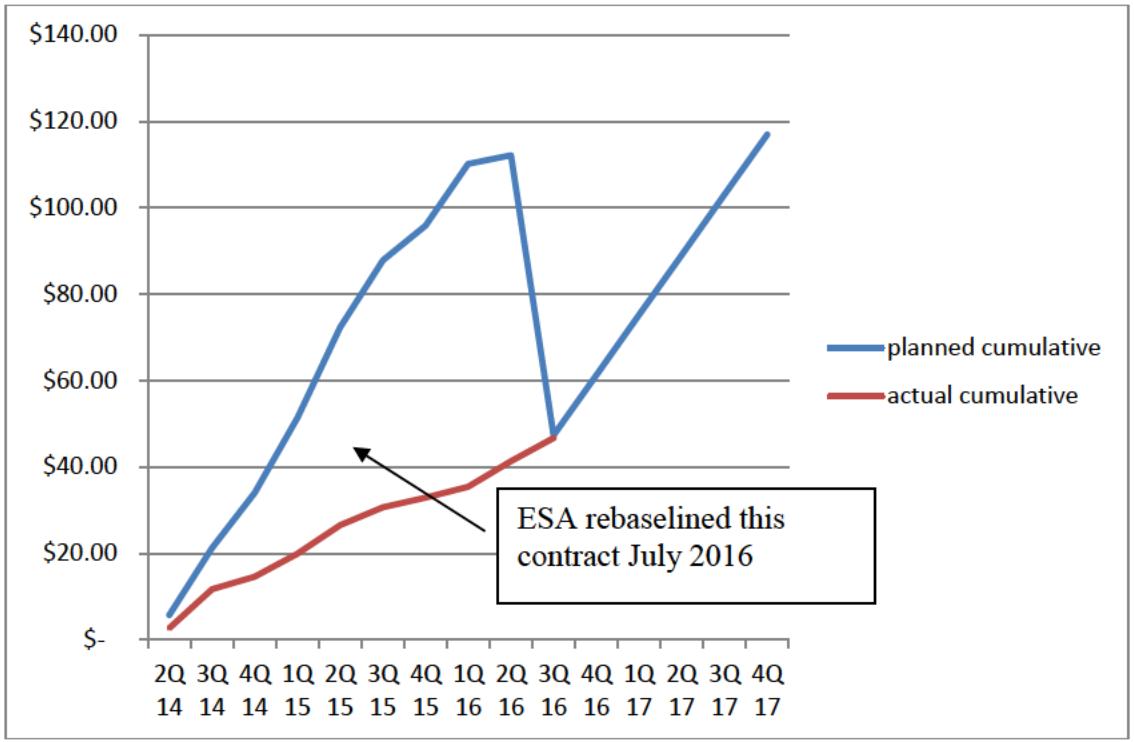
CH057 - Harold Structures Part 3 - at Q32016
(vert axis in $M)

APPENDIX J – COST PERFORMANCE – CH057A

	CH057A - Westbound Bypass - at Oct 2016 (945% Regional Investment)							
	1	2	3	4	5	6	7	8
	Budget at Award $M	Current Budget $M	Change from Original to Current $M (2-1)	Contract at Award $M	Current Approved Contract $M	Change from Original to Current $M (5-4)	Current Forecast $M	Change from Current Forecast to Budget at Award $M (7-1)
Total	$114.7	$116.9	$2.2	$104.3	$116.9	$12.6	$160.7	$46.0
RI	$113.6	$116.9	$3.3	$103.3	$109.9	$6.6	$152.2	$38.6
	Percent Complete		Actual Prgress	Last 12 Months	Actual Prgress	Last 6 Months	Average	Required Progress
	Planned	Actual	Total	Avg/Mo	Total	Avg/Mo	to reach	forecast SC
RI	43.5%	42.5%	8.9%	0.74%	10.1%	1.7%	5.30%	per month



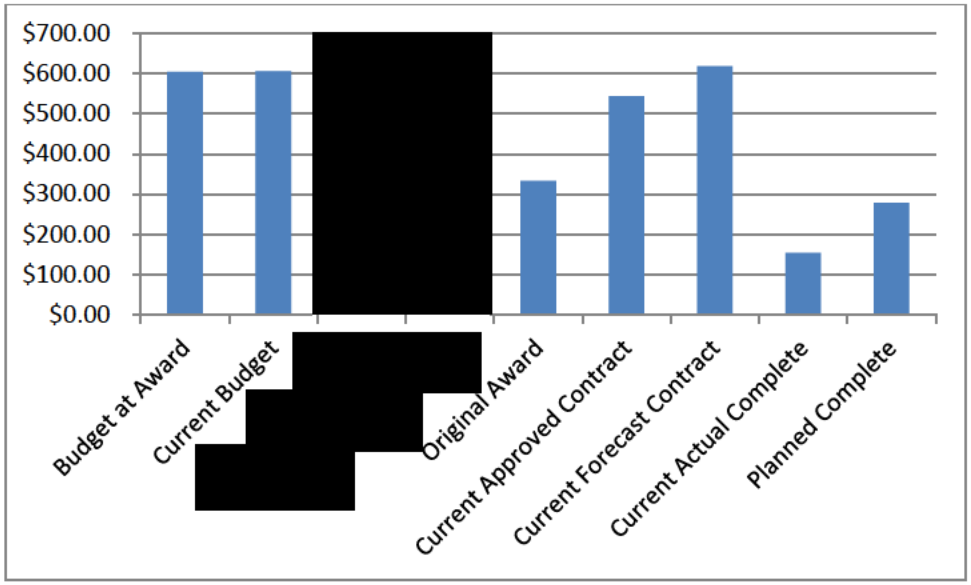
CH057A - Westbound Bypass - at Oct 2016 (94.5% Regional Investment)
(vert axis in $M)



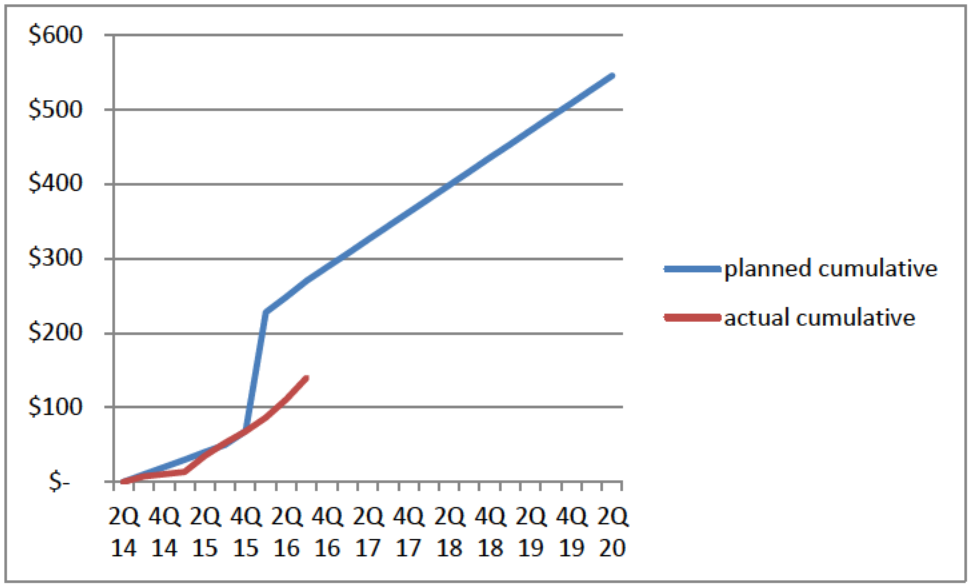
CH057A - Westbound Bypass - at Q32016
(vert axis

APPENDIX J – COST PERFORMANCE – CS179

CS179 - Systems Package 1 - at Oct 2016							
1	2	3	4	5	6	7	8
Budget at Award	Current Budget	Change from Original to Current (2-1)	Contract at Award	Current Approved Contract	Change from Original to Current (5-4)	Current Forecast	Change from Current Forecast to Budget at Award (7-1)
$605.40	$606.90	$1.50	$333.60	$545.6	$212.00	$619.00	$13.60
			**	***	(options + mods)		
Percent Planned	Complete Actual	Actual Prgress Total	Last 12 Months Avg/Mo	Actual Prgress Total	Last 6 Months Avg/Mo	Average to reach	Required Progress forecast SC
51.1%	28.3%	16.02%	1.33%	11.03%	1.84%	1.63%	per month
** Contract at Award ($333.6M + Planned Options ($216.8 M) = $550.4 M							
***Current Approved Contract = $333.6 M at award + $204.7 M options + $7.3 M mods							



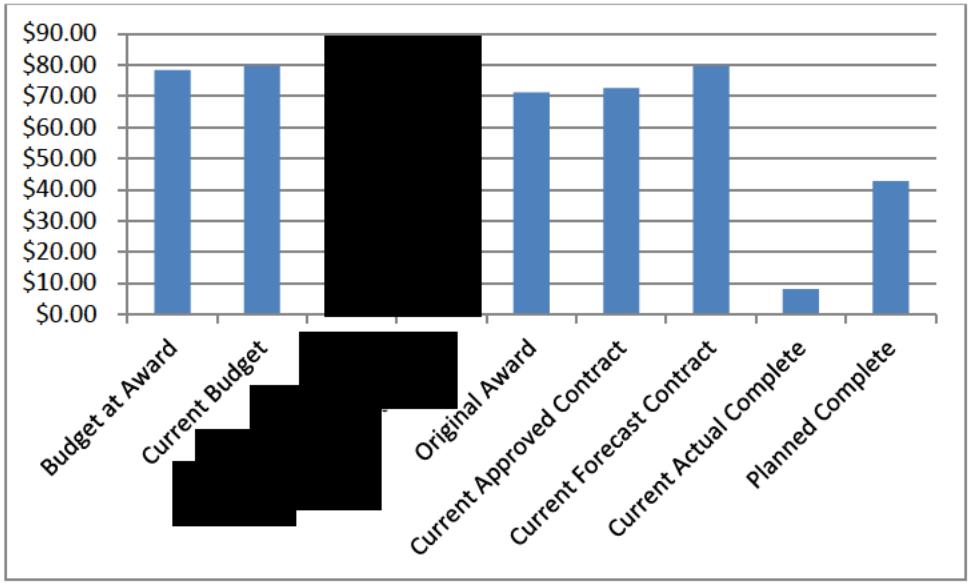
CS179 - Systems Package 1 - at Oct 2016
(vert axis in $M)



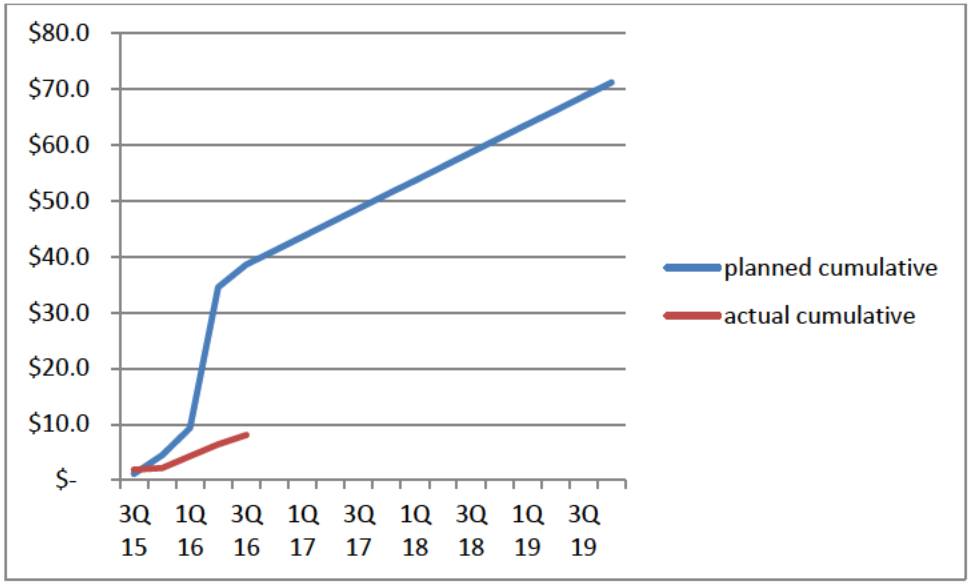
CS179 - Systems Package 1 - at Q32016
(vert axis in $M)

APPENDIX J – COST PERFORMANCE – CS084

CS084 - Tunnel Systems Package 4 - at Oct 2016							
1	2	3	4	5	6	7	8
Budget at Award	Current Budget	Change from Original to Current (2-1)	Contract at Award	Current Approved Contract	Change from Original to Current (5-4)	Current Forecast	Change from Current Forecast to Budget at Award (7-1)
$78.40	$79.70	$1.30	$71.20	$73	$1.40	$79.70	$1.30
Percent Complete		Actual Prgress	Last 12 Months	Actual Prgress	Last 6 Months	Average	Required Progress
Planned	Actual	Total	Avg/Mo	Total	Avg/Mo	to reach	forecast SC
59.00%	11.40%	8.50%	0.70%	3.44%	0.57%	2.40%	per month



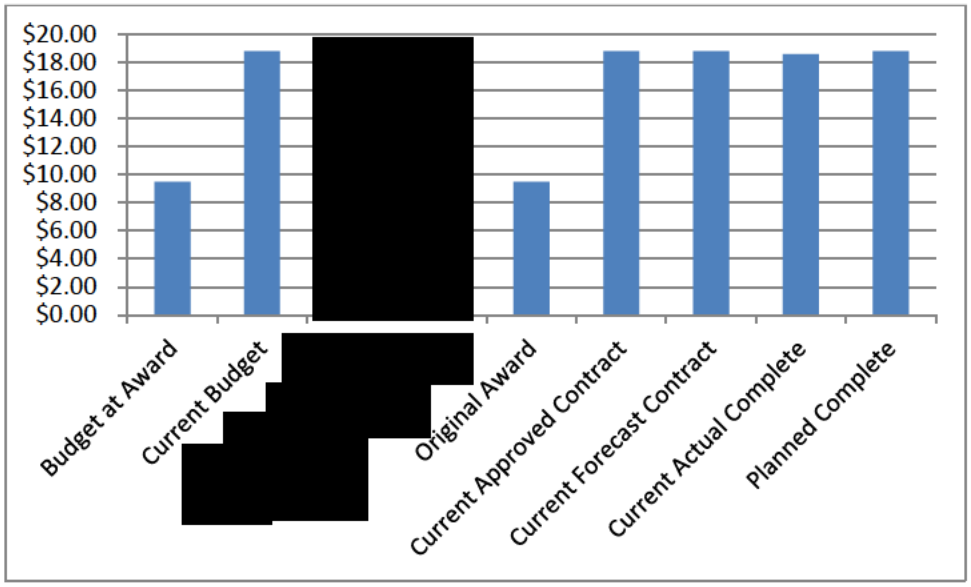
CS084 - Tunnel Systems Package 4 - at Oct 2016
(vert axis in $M)



CS084 - Tunnel Systems Package 4 - at Q32016
(vert axis in $M)

APPENDIX J – COST PERFORMANCE – FHA01

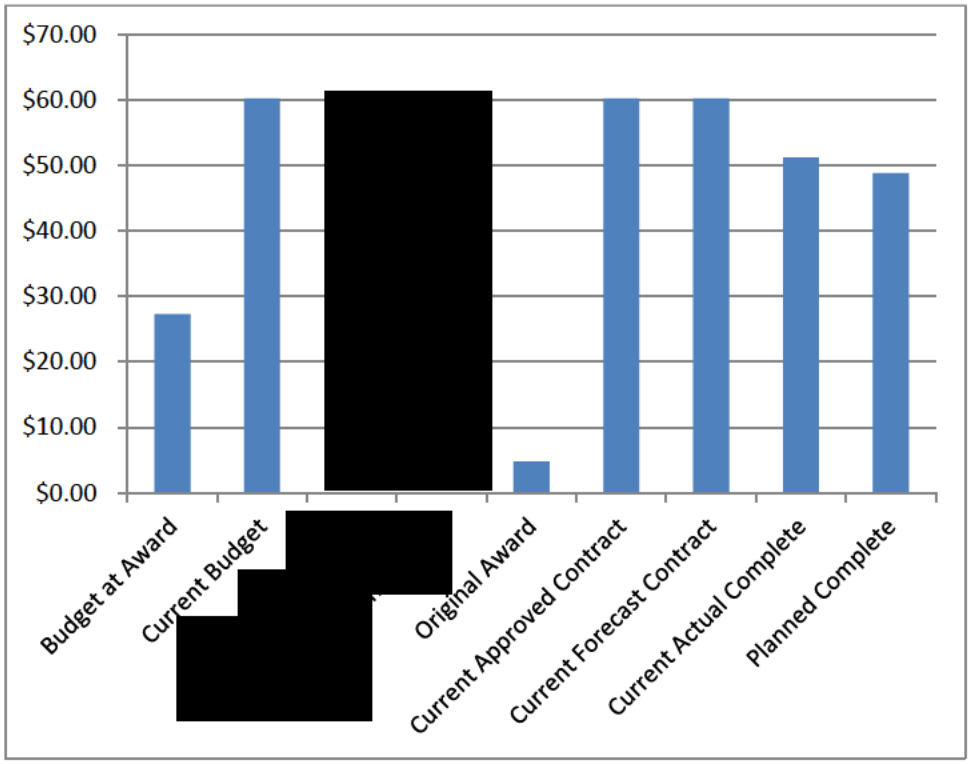
FHA01 - Harold Stage 1 - AMTRAK FA							
1	2	3	4	5	6	7	8
Budget at Award $M	Current Budget $M	Change from Original to Current $M (2-1)	Contract at Award $M	Current Approved Contract $M	Change from Original to Current $M (5-4)	Current Forecast $M	Change from Current Forecast to Budget at Award $M (7-1)
$9.5	$18.8	$9.3	$9.5	$18.8	$9.3	$18.8	$9.3
Percent Complete		Actual Prgress	Last 12 Months	Actual Prgress	Last 6 Months	Average	Required Progress
Planned	Actual	Total	Avg/Mo	Total	Avg/Mo	to reach	forecast SC
100.0%	98.8%	1.1%	0.09%	0.0%	0.0%		N/A



FHA01 - Harold Stage 1 - AMTRAK FA
(vert axis in $M)

APPENDIX J – COST PERFORMANCE – FHA02

FHA02 - Harold Stage 2 - AMTRAK FA							
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
$M	$M	$M	$M	$M	$M	$M	$M
		(2-1)			(5-4)		(7-1)
$27.3	$60.2	$32.9	$4.8	$60.2	$55.4	$60.2	$32.9
Percent Complete		Actual Prgress	Last 12 Months	Actual Prgress	Last 6 Months	Average	Required Progress
Planned	Actual	Total	Avg/Mo	Total	Avg/Mo	to reach	forecast SC
81.0%	85.1%	9.3%	0.80%	7.8%	1.3%		2%



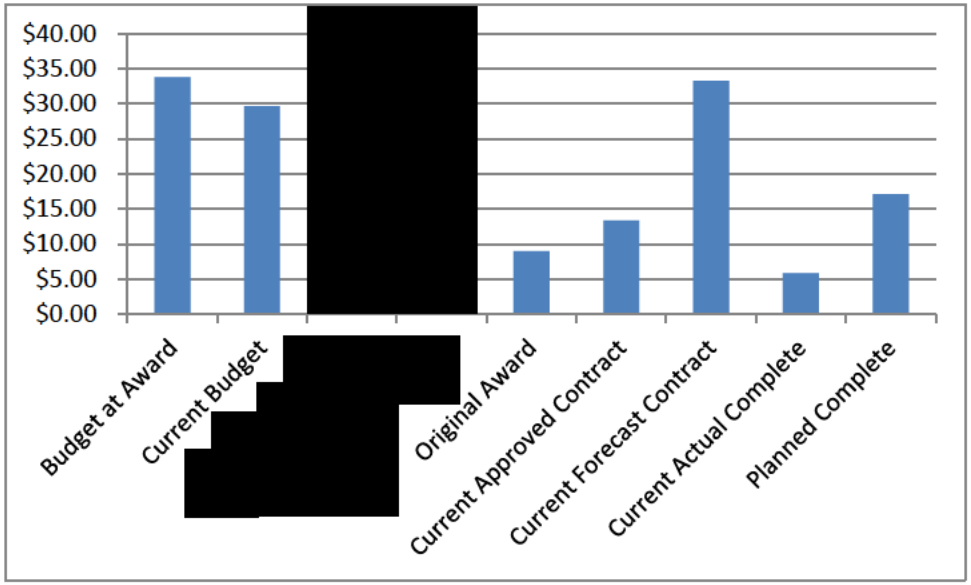
FHA02 - Harold Stage 2 - AMTRAK FA
(vert axis in $M)

APPENDIX J – COST PERFORMANCE – FQA65

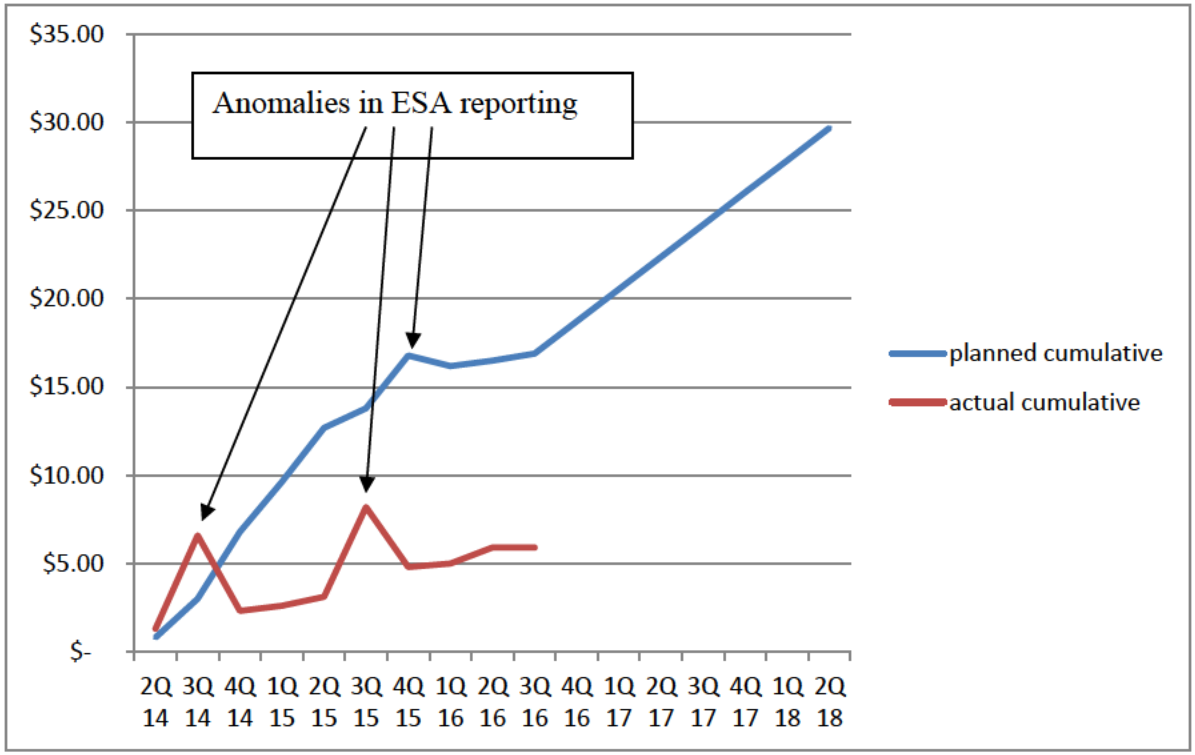
FQA65 - AMTRAK Loop Interlocking CIL - Regional Investment

1	2	3	4	5	6	7	8
Budget at Award $M	Current Budget $M	Change from Original to Current $M (2-1)	Contract at Award $M	Current Approved Contract $M	Change from Original to Current $M (5-4)	Current Forecast $M	Change from Current Forecast to Budget at Award $M (7-1)
$33.8	$29.7	($4.1)	$9.0	$13.4	$4.4	$33.3	($0.5)

Percent Complete		Actual Prgress	Last 12 Months	Actual Prgress	Last 6 Months	Average	Required Progress
Planned	Actual	Total	Avg/Mo	Total	Avg/Mo	to reach	forecast SC
57.7%	19.8%	6.7%	0.56%	0.68%	0.11%		3.73%



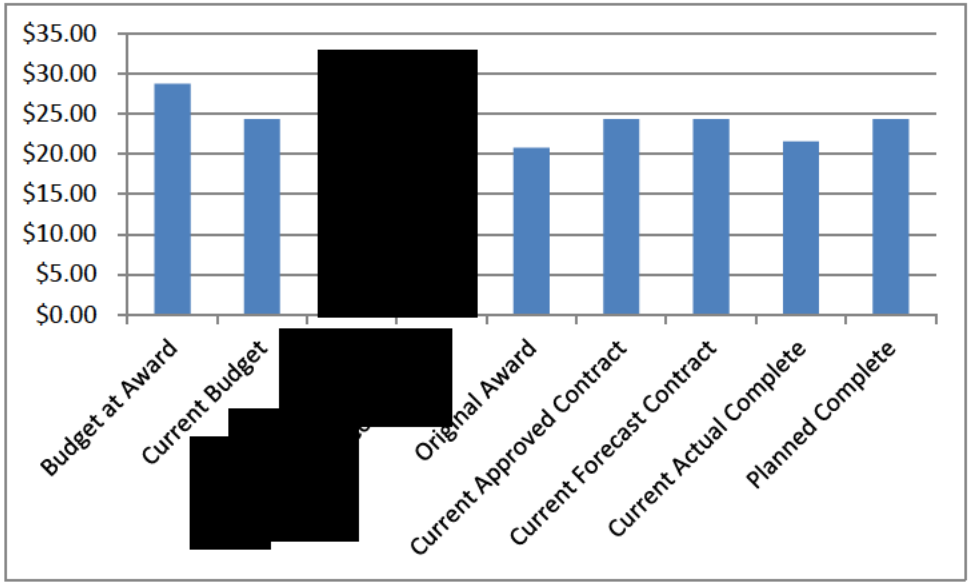
FQA65 - AMTRAK Loop Interlocking CIL - Regional Investment
(vert axis in $M)



FQA65 - AMTRAK Loop Interlocking CIL at Q32016 - Regional Investment
(vert axis in $M

APPENDIX J – COST PERFORMANCE – FHL01

FHL01 - Harold Stage 1 - LIRR FA							
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
$M	$M	$M	$M	$M	$M	$M	$M
		(2-1)			(5-4)		(7-1)
$38.8	$24.4	($14.4)	$20.8	$24.4	$3.6	$24.4	($14.4)
Percent Complete		Actual Prgress	Last 12 Months	Actual Prgress	Last 6 Months	Average	Required Progress
Planned	Actual	Total	Avg/Mo	Total	Avg/Mo	to reach	forecast SC
100.0%	88.6%	2.9%	0.24%	1.6%	0.3%		N/A

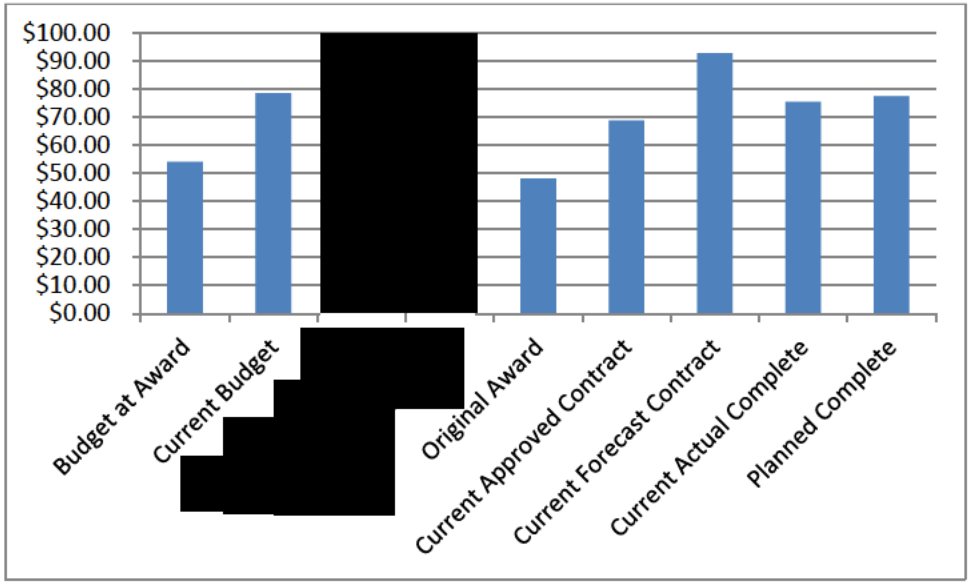


FHL01 - Harold Stage 1 - LIRR FA
(vert axis in $M)

APPENDIX J – COST PERFORMANCE – FHL02

FHL02 - Harold Stage 2 - LIRR FA

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
$M	$M	$M	$M	$M	$M	$M	$M
		(2-1)			(5-4)		(7-1)
$54.1	$78.5	$24.4	$48.2	$68.8	$20.6	$92.9	$38.8
Percent Complete		Actual Prgress	Last 12 Months	Actual Prgress	Last 6 Months	Average	Required Progress
Planned	Actual	Total	Avg/Mo	Total	Avg/Mo	to reach	forecast SC
98.7%	96.1%	17.3%	1.44%	10.6%	1.8%		4.10%



FHL02 - Harold Stage 2 - LIRR FA
(vert axis in $M)

APPENDIX K - ESA CORE ACCOUNTABILITY ITEMS

Table K – 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			66.4% (ESA Figure)	
Project Performance Rate	Based on Earned Value***			78.2% (PMOC Calculation)	

Major Issue	Status	Comments
Project Schedule	[redacted]	The PMOC remains concerned about recent developments with regard to the remaining work in Harold Interlocking. [redacted] • Amtrak's decision to take ERT Line 2 out of service first for an extended outage of one year or more will not support the current ESA planning to complete all of the remaining Harold work, including the High Speed Rail work, by 2020.
Harold Re-planning	Based on continuing issues with inadequate railroad force account support, ESA completed a Harold schedule re-sequencing in December 2014, also known as "ESA First", that advances work elements required for the new LIRR service to GCT and delays the FRA funded High Speed Rail Work beyond 2017. The 2015 Harold Re-Sequenced schedule advanced completion of ESA elements but did not achieve goals due to insufficient Amtrak force account support. The schedule was again re-evaluated in 2016 and the ESA Program Critical Path now passes through the remaining work in the Harold Interlocking.	Work in Harold Interlocking is subject to influences outside of the control of ESA. Continuing issues with the level of Amtrak force account support, for the "ESA First" schedule, has further delayed completion of the Harold Interlocking work and has forced it onto the ESA Program Critical Path. New issues include: reduced priority weekend track outages; increased demand for track foremen to provide access/protection; Amtrak Program to harden Lines 3 and 4 prior to extended outages for ERT Lines 1 and 2 beginning in 2019.

* 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.

***78.2% is PMOC calculation of construction spending at 3Q2016 planned vs actual since re-baselining. Actual cumulative construction amount invoiced since project start is 94.4% of original plan.