

## **PMOC MONTHLY REPORT**

### **East Side Access (MTACC-ESA) Project**

Metropolitan Transportation Authority

New York, New York

Report Period April 1 – April 30, 2016



PMOC Contract No. DTFT6014D00017

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

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

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## **THIRD PARTY DISCLAIMER**

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

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

## **REPORT FORMAT AND FOCUS**

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

This report covers the project 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 March 1, 2016.

## **MONITORING REPORT**

### **1.0 PROJECT STATUS**

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

As of the end of February 2016 (March 1 Data date), MTACC reported that the overall engineering effort was 99.0% complete, based on Earned Value for Design Deliverables, compared with a planned status of 100.0%. MTACC's Cost Report shows that 92.0% of the overall "EIS and Engineering" category has been invoiced and 92.0% of the "Design" category (including Design Settlement) has been invoiced.

Design work on the new, stand-alone CH061A package (completion of Queens Tunnel "A") has been completed. The 100% review submission has been accepted and the drawings were sealed on February 22, 2016. Contract advertisement had originally been scheduled for December 14, 2015, and then revised to March 1, 2016, but this is being delayed pending final MTA approval. The Change Control Committee (CCC) approved the budget adjustments to provide funding and ESA is currently awaiting final MTA approval based on NYS- Capital Program Review Board (CPRB) sign-off on the Intent to Advertise.

On Contract CM015 (48<sup>th</sup> St. Entrance), the MTA Board had previously approved the design agreement with the building owner. The building owner agreed to provide the designs for the relocation of the existing interior utilities and to complete some limited structural design. The contract package will be revised and finalized based on the agreements reached during negotiations between the building owners and MTACC. MTACC is continuing discussions with the building owner and is nearing completion of the required easements and construction agreements. The GEC 100% design submittal date has been adjusted and is currently forecast for June 16, 2016.

The work scope for Contract CH058 has been divided and repackaged into two separate contracts: CH058A will include construction of the Tunnel B/C Approach Structure and the Loop Box structure will be transferred to CH059; CH058B will include construction of the East Bound Re-route. Current Forecast dates for CH058A include: advertise July 17, 2017; bids due September 13, 2017; NTP November 13, 2017. These revised dates represent a three month delay from the dates reported in January 2016. Design work for this package is currently on hold pending approval of the GEC Proposed Change Order for which negotiations have been completed. Additionally, the final design for package CH058B is awaiting the completion of a rail traffic simulation study for Harold Interlocking, which was not yet completed as of early April 2016. The study is only partially complete: the first part of the study, operations without Temporary Eastbound LIRR Passenger (TELP) Track, has been completed; the second part of the study, operations with TELP, is nearing completion. The PMOC understands that this study is expected to be completed and submitted to LIRR for review early in May 2016. Based on the results of the study, LIRR will then make the final decision on building the TELP track.

Final resolution has been reached on the west end of the Mid-Day Storage Yard (CQ033) regarding what work is to be performed by Amtrak (track and signals) to tie into the ERT (East River Tunnels) and what work will be performed by the CQ033 contractor. Regarding the Arch Street Yard tie-in, resolution is still required between MTACC and LIRR for final determination on the scope of LIRR Force Account (FA) work. A potential new issue may arise regarding the design variances required for the track clearances in the Mid-Day Storage Yard. The GEC has noted that there are a large number of variances being requested, but is confident that the necessary approvals will be obtained. The design package requires the design variance approvals regarding LIRR track standards and clearances in order to provide sufficient yard capacity to store the planned 24 twelve-car train-sets. Several design variance meetings have been held since mid-January 2016. LIRR action is required. The advertise date for CQ033 has been delayed two additional months and is now forecast for July 2016.

Contract CS284 (GEC CS086), Tunnel Signal Installation, is a stand-alone package. The MOU with LIRR for inclusion of Positive Train Control (PTC) in this contract is being finalized. MTACC reports that the proposed Change Order to the GEC for the addition of PTC was being issued and that the GEC has been meeting with the LIRR to confirm the PTC-related scope. The bid advertisement date previously forecast for April 1, 2016, has been delayed again and advertisement is now anticipated during late 2Q to early 3Q2016.

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

As noted in earlier reports, the ESA CS179 CM advised that the backlog of submittal and RFI reviews was an area of focus for the CS179 project team. Although the GEC has increased its efforts to reduce the backlog of overdue design reviews and submittals, this issue remains a concern to the ESA CS179 CM. In April 2016, over 150 design-related documents requiring review by the GEC and other contract stakeholders were submitted. While the contract's Control System designs are progressing, it appears that some additional coordination meetings between the designers and the various user groups should be held to ensure that proposed systems designs meet the operational requirements of the LIRR user groups. These additional meetings need to take place well before the designers move on to the final design phase. Additional details regarding specific System design for the CS 179 contract are provided later in Section 1.0c. under CS179.

The ESA CS084 CM continues to raise concern that it is taking far too long to obtain comments on and responses to contractor submittals and RFIs. Additionally, the approval of critical facility designs and the GEC's completion of re-designs to address design issues identified in various locations continue to be items the contractor cites as critical schedule issues. As noted in previous PMOC reports, the extended length of time being taken to approve substation layout and equipment designs has enabled the contractor to assert that contract Milestone Nos. 1 and 2 are already delayed and will continue to be delayed on a day-to-day basis until the designs are approved. At the monthly progress meeting in April 2016, the contractor advised the MTA that the uncertainty regarding the number of sensor points needed for the SCADA system has contributed to the facility design delays and, that this system design is now the contract's Critical Path. The ESA CS084 project controls group will need to perform a detailed analysis of the contractor's schedule to determine the validity of the contractor's assertions.

## **b. Procurement**

As of the end of February 2016, the ESA Cost Report showed that total procurement activity for the project was 72.1% complete, with \$7.34 billion awarded out of the \$10.178 billion current projected budget.

Final presentations by the proposers for the CM007 contract were completed in January 2016. MTACC was able to complete the initial negotiations with the apparent low bidder and the contract was approved by the MTA Board on January 27, 2016. Award was delayed pending completion of negotiations on the Best and Final Offer (BAFO) schedule and acceptance of the final contract price and schedule as well as approval by the apparent low bidder of modifications to the three other ESA contracts he holds (CM006, CQ032 and CS179) related to contract milestone adjustments. The CM007 was awarded on April 11, 2016 with the Notice to Proceed as the same date. Delay to the program critical path is approximately 3.5 months.

## **c. Construction**

The PMT reported in its February 2016 Monthly Progress Report that total construction progress reached 61.9% complete versus 63.7% planned.

**CM005 - Manhattan South Structures:** The MTACC Forecast at Completion for CM005 increased slightly in February 2016 to \$243,243,951. The MTACC forecast for Substantial Completion (SC) remained March 31, 2016, but this date was not achieved. Actual construction progress for February 2016 was 1.7% versus 1.6% planned. Cumulative progress through February 29, 2016, was 96.7% actual versus 97.6% planned.

Construction Progress: The contractor completed the crash wall in the upper level GCT 1 & 2 West Wye. During April 2016, the contractor completed placement of pneumatically applied concrete (PPAC) on archway and masonry wall construction at the upper level TT1. At the 37<sup>th</sup> St. upper vent facility, the contractor continued walls and slab concrete construction, and utility work. The contractor continued door installation site-wide. The contractor continued grouting and final cleaning site-wide. The contractor continued punch list work site-wide. The contractor plans to complete all work including punch list activity by the end of May 2016.

**CM006 – Manhattan North Structures:** The MTACC Forecast at Completion for CM006 increased to \$362,707,288 in February 2016. The MTACC forecast for Substantial Completion remained at June 1, 2017. Actual construction progress for February 2016 was 7.5% versus 3.1% planned. Cumulative progress through February 29, 2016, was 67.5% actual versus 83.7% planned. ESA reports that as part of CM007 contract negotiations, a CM006 contract modification will be formalized in March 2016 to delete Milestone #2 and extend Milestone #3 and Substantial Completion, to align the milestones with CM007 contract access requirements.

Construction Progress: During April 2016, the CM006 contractor completed lead abatement work and continued duct bank construction at the 63<sup>rd</sup> St. Tunnels & Structures. The contractor continued to install waterproofing at GCT 3 West Wye, and continued to install side wall rebar prior to starting concrete placement next month. Concrete wall construction continued at the GCT 4 East & West Wyes. Wall and slab construction continued for the 53<sup>rd</sup> St. Sump Pump. Arch construction continued at Cross Passage 8. The contractor continued lining construction including waterproofing, rebar & concrete for Tunnels WB3, EB4, and the 300 series Tunnels. Contact grouting continued for Tunnels WB1 and EB2. At the north end of the Westbound Cavern BOH, the contractor completed the upper level slab and started side walls & stairs construction. From the north end of the Eastbound Cavern to 50<sup>th</sup> St. the contractor continued exterior wall construction of the air duct. The contractor continues to work two shifts for the 63<sup>rd</sup> St. Tunnels work, but is now down to one shift for the remaining work. ESA needs to execute a contract modification for a revised CPM schedule so that a realistic schedule is available to track construction progress.

**CM014A – Concourse and Facilities Fit-Out Early Work:** MTACC reports that through March 1, 2016, the project final cost at completion is forecast at \$58,222,843, slightly reduced from the previous \$58,414,993. MTACC reports in their Monthly Report for the period through March 1, 2016 that the forecast date for Substantial Completion is April 29, 2016. Through April 30, 2016 this was not accomplished. The Project Office has advised the PMOC that substantial completion will be based on completion of energization of all six permanent power feeds. Through April 30, 2016 five of the six power feeds have been energized. MTACC reports there was 3.7% construction progress for the month of February 2016, with no progress planned. Cumulative progress to March 2016, remained 97.1% versus 100.0% planned.

Construction Progress: During this period progress in completing outstanding work items, outside of substation energization continues to be slow. The number of outstanding items continues to be reduced from the previous 150 items, but the CCM had no definitive number of remaining items. Electrical testing is continuing. All six (6) feeders must be energized to complete the SCADA testing. The issue with the 51G Alarm on the 87 Relay will be addressed during the SCADA testing. The FM-200 fire suppression testing was completed on Monday April 4, 2016.

As-Built Drawings are required in order for the Code Compliance Unit (CCU) to perform its final inspections. As-Built must also include electrical equipment survey data which includes dimensions of the distance from the wall, etc. In the Sewer Ejection Room, the contractor is disputing that they are responsible for furnishing and installing the pump.

**CM014B – Concourse and Facilities Fit-Out:** MTACC reports that, through March 1, 2016, the final cost at completion forecast increased to \$463,617,500 from the previous \$461,057,357. The Substantial Completion date remains August 18, 2018. Actual construction progress for the month of February 2016 was 1.2% versus 1.7% planned. Cumulative progress to March 1, 2016, was 13.2% actual versus 10.7% planned.

Construction Progress: Through March 1, 2016, the Surveying in the Concourse is continuous and will be on-going throughout this contract. Work trains are loaded/unloaded at the B/N Yard.

Milestone #1 (Complete Terminal Management Center TMC), Communication Room C-2 & Communication Closet C-5) – The extended milestone date continues to be June 1, 2016.

Milestone #2 (50<sup>th</sup> St. Room CR102, Tunnel Fan Room, Electrical Room #126 & ICC Room), June 4, 2016: The CCM reports that this milestone will also be delayed. The reason is some of the rooms, except the ICC Room, have walls that are adjacent to the Elevator #9 shaft which has out of align CMU walls that must be torn out and reconstructed. The raised floor installation in the ICC will begin on May 9, 2016. In the ICC Room installation of sprinkler heads, conduit and power panels continued. Installation of ductwork was completed.

Concourse (Madison Yard): Installation of underslab utilities is approximately 80% complete. Waterproofing, rebar installation, forming & placement of cast-in-place manholes and ejector pits continued. Continued placing PAC (Pneumatically Applied Concrete) headers at the top of the CMU, UA walls in Zone #3 & #4 along Track 115 is ongoing and construction of CMU walls for rooms at the south end of the Concourse began. Drywall installation and painting in the TMC Room was completed and installation of the FM200 fire suppression system, AHUs (Air Handling Units), HVAC diffusers/grilles and ceiling support grid began. Placement of CLSM (Controlled Low Strength Material) backfill continues from south to north. Four chillers were set on pads in the north end Back of House areas.

Demolition (Hog Houses & MTA Building): Demolition remains delayed by MTACC. Relocation of personnel will be to the new trailer park on E. 52<sup>nd</sup> St. which is not completed. The issue is with establishing an approved emergency egress from the area. This work is being performed by the CM005 contractor. The MTA CCU has advised that demolition permits must be issued for this work, but the contractor reports that they are having problems with CCU issuing the permits.

Biltmore Connection: This work continues to be temporarily on hold while structural steel shop drawings for structural steel and Construction Work Plans (CWP) are approved.

Wellways: Conduit, racks and sprinkler piping installation is underway in Wellways #1 & #2.

Dining Concourse Connection: Waterproofing of the foundations/pits and concrete placement began. Structural steel fabrication continues for the upper floor deck framing of the escalator opening.

East 48<sup>th</sup> St. Entrance: Lead abatement and placement of the mud slab is complete. Line drilling, and rubble wall demolition at the SE & NE corners continues and installation of perforated drain

pipe and drainage stone backfill began. Protection concrete was placed. Milestone #5A to complete this work is November 25, 2016.

44<sup>th</sup> St. Vent Building: Completed concrete placement of Lift #1 & #2 in Shaft #1 and began Lift #3.

East 50<sup>th</sup> St. Vent Building: Block wall erection continues throughout. Conduit installation continued at the Concourse and 2<sup>nd</sup> Basement Level. Installation of sprinkler piping continues throughout. A change order has been completed for CM014-B to perform the Elevator #9 shaft alignment corrective work that was previously installed by the CM013 contract. This was noted above in relation to the delay in Milestone #2.

### **Systems Contracts:**

**CS084 – Traction Power Substations:** In its February 2016 Monthly Report, MTACC reports that, the Budget for the CS084 contract remained at the \$79,717,772 level previously reported. The MTACC's February 2016 Monthly Report shows a forecasted contract substantial Completion (S/C) date in December 2019. The contractor, in its Monthly Schedule Update No. 3 (Data Date March 1, 2016), also indicates a December S/C date. However, in the same schedule update, the contractor notes that two contract Milestones are already delayed and will continue to be delayed on a day-to-day basis until certain substation and equipment designs are approved. As of the April 2016 monthly progress meeting, the designs issues remained unresolved and the impact this additional month and a half of design delay will have on the contract S/C is yet to be determined.

In its February 2016 Monthly Report, MTACC shows a progress curve for the CS084 contract that presents actual contract progress as 6.1% versus a planned 10.5%; numbers that are based on actual versus projected costs, not physical construction efforts. An analysis of the status of the work activities shown on the approved baseline schedule is necessary to determine the status of the progress of physical work on this contract. To accomplish this, the PMOC continues to request a copy of the CS084 approved baseline schedule in Primavera format for analysis.

**Design Progress:** The contractor continued with the transmission of contractual submittals and its design development of the substations. The contractor continues to assert that delays in receiving comments back from the MTA on the C05 facility switchgear, the number of SCADA points sensors, and the general C08 substation design are impacting its ability to meet its own design, fabrication, and installation schedules. The ESA CS084 CM previously acknowledged that these comments were taking too long to process and met with LIRR senior management and the General Engineering Consultant (GEC) to focus on the priority of these designs. In April 2016, the ESA CS084 CM advised that the LIRR was looking to engage additional resources to assist in the review of CS084 design submittals. The previously reported potential issue with an equipment vault ingress/egress is resolved. As previously reported, the GEC continues to make changes to the C05 substation (Vernon) design to address the interference issue between a ventilation duct and the equipment hatch. The GEC also continues to work on design changes to address the penetration to the track level and room beam height issues at this facility. Implementation of the design changes must be negotiated with the CS179 contractor and progressed before the CS084 contractor begins work in the C05 facility. While the ESA CS084 CM acknowledged that these design efforts were taking too long to complete and need to be accelerated to preclude schedule slippage, as of mid-April 2016, these design efforts remain on-



going. 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 the GEC has still not produced a re-design to remedy the problems. Exacerbating this issue is the fact that once a revised design is approved by all parties, MTACC will need to determine who – the CS179 or the CS084 contractor – will implement the design fix so that the CS084 contractor can install the DC cables.

**Construction Progress:** As of mid-April 2016, the only field construction effort, other than surveying field and facility locations, acted upon by the CS084 contractor was electrical preparation work associated with the L3 electrical service installation to supply electrical power from Consolidated Edison to various signal locations in Harold interlocking. In March 2016, MTACC advised that a \$527,000 retroactive contract modification for the L3 service work was fully executed. The contractor continues to advise the CS084 ESA CM that the water infiltration issue at the Vernon facility needs to be permanently mitigated before any equipment is installed. As previously noted, that the grouting effort tried in this location by the CS179 contractor did not mitigate the problem. More investigation and identification of alternative methods to mitigate the condition needs to be undertaken by the GEC. At the April 2016 monthly progress meeting, the CS084 contractor advised the ESA CS084 CM that it appeared that, per the CS084 contract schedule, the testing of the C08 substation is scheduled to occur before the conduit from the C08 substation to the track 3<sup>rd</sup> rail is installed by another contractor. If this is an accurate observation, then it would mean that this would impact the CS084 contractor's ability to provide meaningful testing of the C08 substation in accordance with the contract specifications. The ESA CS084 CM advised that schedule coordination between the two contracts needed to be examined to determine contract impacts.

**CS179 – Systems Package 1:** As of the end of February 2016, MTACC's Budget and forecast for CS179 remained at \$606,938,540. In its February 2016 Monthly Report, MTACC shows a progress curve for the CS179 contract that presents actual contract progress as 19.5% versus a planned 51.6%; numbers that are based on actual versus projected costs, not physical construction efforts. As presented, these progress numbers imply that the contract is moving significantly further behind schedule from previous reports. In the Milestones chart of its February Monthly Progress Report for this CS179 contract, MTACC continued to show the November 2019 forecasted substantial completion (SC) date. However, in April 2016, MTACC executed Contract Modification No. 18 that revised access restraints and contract milestones. This contract modification now cites a SC date (Milestone No. 13) of July 1, 2020. In comparison to the original November 2019 SC date for the contract, this is an approximately seven month delay in the SC for this contract and, as noted in Modification No. 18, this SC is dependent upon the work progress and schedule of Contract CM007. Contract CM007 was awarded on April 11, 2016, with a Notice to Proceed on the same date. The previously reported delay in achieving contract Milestone No. 1 was eliminated with the execution of Contract Modification No.18, which now shows a Milestone No. 1 date of December 31, 2016. As previously noted, the original delay in the completion of Milestone No.1 was also causing a schedule impact to the CS084 contract. The assessment of any potentially corresponding delay to Contract CS084 must now be re-evaluated based on the issuance of contract Modification No. 18 to CS179. To enable it to perform an assessment of contract progress, the PMOC continues to request a copy of the contractor's monthly schedule updates and MTACC comments on those updates. Several CS179 contract options, or parts thereof, have been exercised to date as a

result of the appropriate funding becoming available. As noted in earlier PMOC reports, the Options exercised in November 2015 are Option Nos. 2A, 6, and 7. The other portion of the original Option No. 2, was designated “Option No. 2B – Manhattan” and was to be exercised when funding became available. Contract Modification No. 18 has further split Option No. 2B into two separate Options: “Option 2B1 – Manhattan North #1” and “Option No. 2B2 – Manhattan North #2”. Option No. 2B1 was to be exercised on April 30, 2016 and Option No. 2B2 has an “exercise” date of July 31, 2016. As of the writing of this report, Option No. 2B2 has yet to be exercised. Contract Modification No. 18 also indicates that “Option 3A – GCT Concourse 1” should have been exercised 50 calendar days after Option Nos. 2A, 6, and 7; a date somewhere around the end of December 2015 or the beginning of January 2016 and, that “Option No. 3B – GCT Concourse 2” would be exercised approximately 97 days after Option 3A, or by the end of April 2016. The exercising of all three of these Options (Nos. 2B2, 3B1, and 3B2) remain dependent on the availability of funding from the MTA’s Capital Program and, since that funding was not forthcoming as of the end of April 2016, the Options were not exercised. MTACC did indicate that the funding issue may be resolved by the end of May 2016. As the systems designs progressed, several potential Buy/Ship America compliance issues with contract material and systems equipment were, or are being, identified. These potential issues include CCTV equipment, Heating Ventilation and Air Conditioning (HVAC) units, variable frequency drives (VFDs) for motors, door hardware for pressurized doors, and DC transfer switches. The ESA CS179 CM reports that while the HVAC, VFD, and CCTV equipment remain as potential Buy America issues, there appears to be resolutions to ensure that the door hardware and DC Transfer Switches are compliant.

Design Progress: As of the end of April 2016, all of the required Preliminary Design Review (PDRs) were held. By April 29, 2016, 4 of the 11 Control System Second Design Reviews (SDRs) had also taken place and, presently, all 11 of the Final Design Reviews (FDRs) are forecast for completion by mid-October 2016. The PMOC has observed at several of the PDRs and SDRs that many questions and clarifications regarding user expectations for various proposed designs need to still be addressed. Proactive communications between user groups, CS179 PMT members, and the contractor will need to be implemented to ensure that the proposed Control System designs meet the intent of the contract requirements and can be operationally implemented and utilized by the various user groups. As noted in previous reports, the reduction of the backlog of submittal and RFI reviews continues to be an area of focus for the CS179 project team; a problem acknowledged by MTACC. Although the GEC now has the equivalent of 29 full-time personnel focusing on this area, the CS179 PMT will continue to work with the GEC to reduce the backlog even further. One other previously reported design problem is that various facility design issues are still in the re-design stage with the GEC. The extended length of time being taken to complete these re-designs to produce clarification of design issues by the GEC has already enabled the contractor to assert that it is being delayed.

Construction Progress: During April 2016, the CS179 contractor continued various elements of work (conduit installations, concrete work, temporary power installations, etc.) at the 2<sup>nd</sup> Ave.; B10; Roosevelt; Vernon; Tunnels Tracks A, B/C and D; Yard Lead Tunnel; 29<sup>th</sup> St.; Queens Plaza; 39<sup>th</sup> St. and 63<sup>rd</sup> St. facilities. The two Stop Work Orders (SWOs) for work in the control rooms at the Vernon and B10 facilities are still in effect. As previously reported, these SWOs were issued because of the design conflict between the room sizes and equipment layouts in the control rooms. The GEC is still working on solutions to this issue and no date was given for the

rescinding of the SWOs. Work at the 23<sup>rd</sup> Street facility remains on hold as a result of an issue with water infiltration through the concrete floor and discussions with the CQ032 contractor regarding the mitigation of this issue continue. New work that will start within the next six weeks includes the modification of piping at the 2<sup>nd</sup> Avenue facility; the delivery of transformers at the B10 facility; weekend work in the Tunnels (Tracks A, B/C, D and LL); hatch installation and concrete pads at 12<sup>th</sup> Street facility; and conduit installation at the track level in GCT.

### **Queens Contracts:**

**CQ032 – Plaza Substation and Queens Structures:** The MTACC Forecast at Completion for CQ032 remained at \$261,737,072 in February 2016. The MTACC Forecast for Substantial Completion slipped over two months from July 6, 2016, to September 21, 2016. ESA reports that contract modification alternatives are being assessed to mitigate schedule impacts due to the vent shaft issue at the 23<sup>rd</sup> St. Facility. Actual construction progress for February 2016 was 5.0% versus 0.9% planned. Cumulative progress through February 29, 2016, was 99.9% actual versus 96.1% planned.

Construction Progress: During the month of April 2016, the CQ032 contractor continued masonry, MEP, and lighting & sprinkler drops in the Yard Services Building (YSB). The contractor continued clean-up and punch list activity at the Plaza Vent Structure (PVS). The contractor continued Plaza site works. After the completion of site work, the contractor will start BMT underpinning removal on the north side of Northern Blvd. The contractor completed the Tunnel A fire standpipe, tested & in-service. The construction of duct bench in the Bellmouth continued. The excavation work at the SW & NW vent shafts of 23<sup>rd</sup> St. facility has been stopped by encountering underground obstruction. ESA reports a later forecast Substantial Completion date now caused by another re-design to work around the underground obstruction at the 23<sup>rd</sup> St. facility.

### **Harold Interlocking Contracts:**

**CH053 Contract – Harold Structures Part 1 and G.0.2 Substation:** MTACC's Forecast at Completion for the CH053 contract decreased slightly during February 2016 to \$290,321,730 as the contractor continued remaining minor construction items after Substantial Completion, at 95% complete, was achieved on February 29, 2016. Actual reported construction progress for February 2016 was 0.2% versus 0.0% planned (the contract was supposed to be complete by now). Cumulative progress through February 29, 2016, was 96.1% actual versus 100.0% planned.

Construction Progress: During April 2016, the CH053 contractor completed construction of the trackbed for the Westbound Bypass Track between 48<sup>th</sup> and 43<sup>rd</sup> Sts. and continued to make miscellaneous catenary modifications and punchlist repairs throughout Harold Interlocking.

**CH057 – Harold Structures Part III:** MTACC's Forecast at Completion for the CH057 contract remained at \$87,870,844 during February 2016. The Substantial Completion date remained at June 19, 2017, for the base contract (this contract has several options which could extend the eventual Substantial Completion date). Actual construction progress for February 2016 was 2.2% versus 1.0% planned. Cumulative progress through February 29, 2016, was 4.1% actual versus 2.4% planned.

Construction Progress: During April 2016, the CH057 contractor completed installation of piles for Support of Excavation (SOE) at both ends of the 48<sup>th</sup> St. under grade bridge, removed the bridge structure, and began demolition of the existing bridge abutments. The contractor also continued to install secant and soldier piles for SOE of the Tunnel D Approach Structure near 39<sup>th</sup> St. in Harold Interlocking.

**CH057A – Part 3 Westbound Bypass:** The MTACC’s Forecast at Completion for the CH057A contract increased to \$148,124,988 during February 2016 due to inclusion of pending and potential contract modifications. MTACC’s forecast for Substantial Completion was extended by 3 weeks to May 12, 2017. Actual construction progress for February 2016 was 0.9% versus 4.2% planned. Cumulative progress through February 29, 2016, was 31.1% actual versus 100.0% planned.

Construction Progress: During April 2016, the CH057A contractor continued to de-water the entire construction site and excavate the East Approach Structure of the Westbound Bypass Tunnel in preparation for construction of the launch block for the “jacked box” tunnel shield to push against for excavation under Lines 2 and 4. The contractor also began excavation of the West Approach Structure during April 2016. The contractor estimates that it will begin tunnel shield excavation in late May 2016.

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

**FHA01 – Harold Stage 1 Amtrak:** MTACC’s Forecast at Completion for FHA01 remained at \$18,824,861 during February 2016. MTACC extended its forecast for Substantial Completion by one week to September 22, 2019. Actual construction progress for February 2016 was 0.0% versus 0.3% planned. Cumulative progress through February 29, 2016, was 98.8% actual versus 99.9% planned.

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

**FHA02 – Harold Stage 2 Amtrak:** MTACC’s Forecast at Completion for FHA02 remained at \$60,150,231 during February 2016. The MTACC forecast for Substantial Completion remained at December 6, 2020. Actual construction progress for February 2016 was 0.0% versus 0.0% planned. Cumulative progress through February 29, 2016, was 100.0% actual versus 97.8% planned (MTACC did not offer an explanation for this discrepancy in its February 2016 Monthly Report, although the PMOC notes that it reports construction progress based on accumulated project cost rather than actual construction).

Construction Progress: During April 2016, Amtrak C&S personnel installed signal trough around a catenary pole near Signal Bridge #35. Amtrak Electric Traction personnel installed catenary wires over the new #747 crossover in “F” Interlocking, transferred feeder and signal wires at the B-913 and B-915E catenary poles, and performed other miscellaneous catenary work in Harold Interlocking.

**FQA65 – Loop Interlocking Amtrak:** MTACC’s Forecast at Completion for FQA65 remained at \$33,287,863 during February 2016. The MTACC forecast for Substantial Completion remained at December 12, 2022. Actual construction progress for February 2016 was 0.8% versus 2.8% planned. Cumulative progress through February 29, 2016, was 17.7% actual versus 53.9% planned.

Construction Progress: During April 2016, Amtrak C&S personnel continued construction of a retaining wall east of the F2J signal hut in “F” interlocking.

**FHL01 – Harold Stage 1 LIRR:** MTACC’s Forecast at Completion for FHL01 remained at \$24,379,363 during February 2016. MTACC extended its forecast for Substantial Completion by one month to October 18, 2016. Actual construction progress for February 2016 was 0.0% versus 0.0% planned. Cumulative progress through February 29, 2016, was 86.8% versus 100.0% planned.

Construction Progress: LIRR personnel did not perform any significant Stage 1 construction during April 2016.

**FHL02 – Harold Stage 2 LIRR:** MTACC’s Forecast at Completion for FHL-2 remained at \$92,932,559 during February 2016. MTACC extended its forecast for Substantial Completion by one month to July 17, 2019. Actual construction progress for February 2016 was 1.0% versus 1.4% planned. Cumulative progress through February 29, 2016, was 84.2% actual versus 90.4% planned.

Construction Progress: During April 2016, LIRR Signal personnel installed signal trough at the “H1” CIL, installed signal conduit at Signal Bridge #24 and the “H4” CIL, relocated signal conduits and cables at the Point Interlocking phase break, installed 5 signals on the new Signal Bridge #16 in Harold Interlocking, continued to identify, organize, and terminate signal cables at the “H6” CIL, and continued to pull, terminate, test, and make circuit revisions at the “H2” CIL. Traction Power personnel installed new wires and removed old wires from the T68 and T69 signal tower separation towers, and pulled and terminated signal power separation cables between poles #36 and #40.

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

ESA Quality Staff: The ESA Quality Manager has assessed his requirement needs against all existing and future contracts. He has determined that he needs one additional person. He expects to begin reviewing candidates in May 2016 and have approval to hire one person in June 2016.

GEC Quality: The GEC Quality Manager has been approved by the ESA Quality Manager who will perform an audit of the GEC in May or June 2016.

CM013: A closeout audit on this contract was held to determine whether any quality issues will prevent this contract from closing. There is an open nonconformance report (NCR) for pipes fabricated in China that were installed and are now inaccessible. Closure of this NCR still awaits resolution between MTACC Legal and the FTA. Based on the closeout audit, as-built drawings are being given a further review and some have been sent back for corrections and additions.

CM014B: Some issues have been identified with as-built drawings. The ESA Quality Manager has met with the contractor and expects to have a resolution in May 2016.

CM005: The ESA Quality Manager performed a walkthrough with the CM office in April 2016. The CM office had an 11-page “punchlist” of items that must be closed. The PMOC is concerned that there are so many actions still to be completed before this contract can be closed.

## 2.0 SCHEDULE DATA

**Status:** This report is based on the submitted ESA IPS #79, data date March 1, 2016, and its variance report. The IPS reflects a change from an early Revenue Service Date (RSD) of August 19, 2020 to February 8, 2021 (a variance loss of 173 Calendar Days of IST Contingency), a target RSD of February 12, 2021, inclusive of 4 (reduced from previous 177 remaining calendar days reported in IPS #78) calendar days of IST contingency, and a late RSD of December 13, 2022, inclusive of 4 days of IST contingency plus 669 days of program-level contingency. Overall, the IPS now has 673 calendar days, a reduction of 320 calendar days, from 993 calendar days of contingency since the July 1, 2014, baseline. This amount of contingency is equivalent to 27% of the remaining 2,478 IPS duration. See variance table below for additional information:

ESA IPS #78			Check Calc. End Date from previous
Data Date:	2/1/2016	Cal. Days	1514
Early RSD	8/19/2020	Cal. Days	1661
			Variance
IST Contingency		Cal. Days	177
Early RSD	8/19/2020	Cal. Days	177
Target RSD	2/12/2021	Cal. Days	177
Remaining IPS Cal. Days (Early RSD+Target RSD)		Cal. Days	1838
Remaining IPS Contingency %		Cal. Days	9.63%
Program-Level Contingency		Cal. Days	669
Target RSD	2/12/2021	Cal. Days	669
Late RSD	12/13/2022	Cal. Days	669
Total Contingency Cal. Days (Target + Late RSD)=		Cal. Days	846
Total IPS Duration in Cal. Days (Early RSD + TC)		Cal. Days	2507
Contingency % of IPS Duration		Cal. Days	33.75%

  

ESA IPS #79			Check Calc. End Date from previous
Data Date:	3/1/2016	Cal. Days	1632
Early RSD	2/8/2021	Cal. Days	1805
			Variance
IST Contingency		Cal. Days	4
Early RSD	2/8/2021	Cal. Days	4
Target RSD	2/12/2021	Cal. Days	4
Remaining IPS Cal. Days (Early RSD+Target RSD)		Cal. Days	1809
Remaining IPS Contingency %		Cal. Days	0.22%
Program-Level Contingency		Cal. Days	669
Target RSD	2/12/2021	Cal. Days	669
Late RSD	12/13/2022	Cal. Days	669
Total Contingency Cal. Days (Target + Late RSD)=		Cal. Days	673
Total IPS Duration in Cal. Days (Early RSD + TC)		Cal. Days	2478
Contingency % of IPS Duration		Cal. Days	27.16%

ESA's IPS #79 is indicating that February's IPS has two primary critical paths. ESA stated that the first critical path, the Manhattan/IST critical path follows the same program critical path as the previous month. ESA has also stated, the second critical path flows through the Harold portion of the ESA Work. Harold's Contract Completion date has shifted from December 13, 2022 to April 24, 2023, a variance change of 133 Calendar Days. As stated by the PMT the difference exist due to Harold consisting of two groups; the first group impacts the ESA Revenue Service and the those tasks impacting overall Harold Completion including completion of all High Speed Rail (HSR) work including the East and West Bypass. In addition, the PMT has stated that ESA and LIRR have on-going evaluation of the schedule to validate durations and sequencing of activities regarding Civil Speed Enforcement and the implementation of Positive

Train Control or PTC that affect other program areas. ESA has stated that they will continue to make improvements.

ESA reported the Manhattan/IST critical path followed the same critical path as reported the previous month. In contrast, the PMOC has identified that additional CM007 GCT East Cavern construction activities for North and South Upper Level, installation for Elevator #7, #8, #19 are now critical this period. The critical path continues through Contract CM007 milestone MS #6 – Caverns Ready for IST with an early finish date of August 6, 2019. The Critical Path then shifts to contract CS179 GCT Cavern Communication/ Facility Power/Fire Detection/ Security/ BMS/ Fire Protection/ Communication IST/ and CS179 Contract Contingency duration, reduced this period from 25 to 3 workdays, with an early finish date of November 25, 2019. Previous critical CM007 areas are no longer critical this period and are as follow: All West and East Cavern GCT Mezzanine Deck and Closure Work; all West and East Cavern GCT Mechanical/Electrical/Architectural and CM007 Milestone 7 & 8; CM007 Punchlist and CM007 Milestone MS #10 IST Testing Completion. The current primary path then continues through critical activity CS179 Milestone MS#13- Substantial Completion including Completion of IST as previously reported. A new activity has been added for issuance of Addendum 30 for procurement of CM007 that caused the significant change in extended Milestone 10 to an Early finish date of 4/6/20 with a duration 133 calendar days. This critical path continues through the IST Target Finish Contingency followed by the IST Program Contingency. ESA reported no impact to the Target RSD of February 12, 2021 and no impact to the Late RSD of December 13, 2021. The PMOC performed a variance as shown above between UPD78 (DD: 02-01-16) and UPD79 (DD: 03-01-16).

ESA reported this period that portion of Harold is a second critical path that starts with preconstruction work in include including H5 Design for Systra GEC/LIRR concurrent review and comment. The critical path concludes with the LIRR training and burn-in tasks and terminates at the Early Revenue Service milestone date of February 8, 2021. The PMOC performed a variance as shown above between UPD78 (DD: 02-01-16) and UPD79 (DD: 03-01-16). Harold's Critical Long Path continues past Late RSD date of December 13, 2022 to April 24, 2023, a variance loss of 133 Calendar Days.

The PMOC finds the DRAFT IPS Schedule for UPD79 report contains conflicting information as to how the variance between this period and last period's IST schedule contingency is being reported. The variance as shown by the PMOC above indicates a reduction of Contingency to Early Revenue Service date was reduced by 173 Calendar Days from August 19, 2020 (UPD78) to February 8, 2021 (UPD79). In contrast, the PMT reported a variance loss of 14 Calendar Days between IPS UPD78 and IPS UPD79.

After finishing Contract CM007, the ESA Critical Path shifts to Substantial Completion of CS179 work within the Train Operation Center (TOC) and finally through Integrated Systems Testing (IST), Starting, Commissioning and RSD. ESA has a significant number of contracts that are "near critical", which by definition are within 45 days of the Critical Path. These contracts listed in the IPS report as follows:

- CS179: System Facilities – Package 1 (IST) – Future Contract (hand off from CM007, via critical path);
- CM007: GCT Tunnels;

- CH057D: Harold Track Work: Cutover 3B (Track A) – Future Contract;
- CH058A: Harold Structures – Part 3A, B/C Approach Structures (ESA);
- FHL02/03/04: Harold LIRR Force Account Work; and,
- FQA65: Loop Interlocking.

The PMOC has found in Section 05 of IPS #79 the following Projects were identified in the PMT's Bar Charts as Near Critical Path with Total Float less than 45, but were not listed by the PMT in their report as containing less than 45 Days of Float:

- CM014B: GCT Concourse and Facilities Fit Out – Access Restraints & Milestones;
- CM005: Manhattan South Structures – AT 1&2/WB GCT 1&2/LL Walls/North Horseshoe Tunnel (Invert & Arch);
- CM006: Manhattan North Structures – Tunnels 301 – 304/WB3/ EB4;
- CQ033: Mid-Day Storage Yard Facility – Area 1 – Lumber Yard – Demo Platform;
- CH053: Harold Structures - Equipment Pads & Ductbank at Woodside/L4;
- CH054A: Harold Structures – Part 2A - Equipment Installation;
- CH057: Harold Structures Part 3 – Catenary Structure – RPR/771;
- CH057A: Harold Structures Part 3 – Catenary/ Signal Tower Relocation;
- CH058B: Eastbound Reroute Structure (hands off to CH059 – Harold Structures – Part 4 (Car Washer & Loop Box Structure Extension); and,
- FHA01/02/03: Harold Amtrak Force Account Work.



Table 2-1, below shows ESA's upcoming contract procurement schedule:

**Table 2-1<sup>1</sup>: Future Procurement Schedule**

Contract Description	Advertise Date	Bid Date	NTP	Project Contract Period	Substantial Completion
CM007 <sup>2</sup> GCT Caverns	12/19/2014 (A)	Technical Proposal: 9/15/2015 (A)	4/15/2016	46 Months	1/31/2019
		Cost Proposal: 10/27/2015 (A)			
CM015 48 <sup>th</sup> Street Entrance- Rev #3	8/25/2016	10/20/2016	1/3/2017	24 Months	1/3/2019
CQ033 <sup>3</sup> Mid-Day Storage Yard	6/7/2016	8/5/2016	10/10/2016	40 Months	1/9/2020
CH061A, Tunnel A	4/12/2016 (p)	5/17/2016 (p)	7/5/2016 (p)	16 Months	11/6/2017 (p)
CS284, Tunnel Systems Package 2 – ESA Signal Installation (CS086)	9/6/2016	10/17/2016	12/12/2016	36 Months	12/2/2016
FHL04, LIRR Harold Stage 4-F/A	N/A	N/A	5/19/2016	67 Months	12/21/2021
FHL04, LIRR Harold Stage 4 – Force Account	N/A	N/A	9/30/2016	73 months	11/7/2022

<sup>1</sup> The PMOC notes that the PMT updated its variance report to reflect the latest changes in its IPS

<sup>2</sup> NTP date has slipped one month to February 15, 2016. CM007 is now one of two primary critical paths. Harold is the second critical path. The Early RSD contingency has been draw down due to Addendum #30 and BAFO proposals incorporated changes to the CM007 access restraints and Milestone #7 (completion of IST testing). PMOC notes that CM007 received award and NTP on April 11, 2016.

<sup>3</sup> CQ033 Division 1 is still progressing to include additional scope. Advertisement date has moved to June 2016.

<sup>4</sup> CH061A – (p) – intent to advertise approval is pending Governor's office approval.

Table 2-2, below, shows important 90 day Look-Ahead milestone schedules:

**Table 2-2: Critical Milestones 90 Day Look Ahead (from ESA IPS #79)**

Activity ID	Activity Name	Start	Finish	Total Float
<b>CM014B: GCT Concourse and Facilities Fit Out</b>				
CM014B-MS1 To 10	CM014B Provide CS179 Access to GCT Concourse Zone 1 (CS 179 AR10A)	1-Mar-16	24-Mar-16	304
<b>CM005: Manhattan South Structures</b>				
CM005-1040	Milestone 4 Complete Balance of Project (Substantial Completion) - MS60 - (February 6 2016)		31-Mar-16	-25
CM005-1050	Milestone 5 Final Completion – MS70 (May 6, 2016)		31-May-16	773
<b>CM006: Manhattan North Structure</b>				
CM006-MS5	CM006 Milestone #5 (GCT 4 Facility Room -460 CD from NTP (7/4/2015))		6-Apr-16	488
CM006-MSLL	CM006 Milestone 32 (Lower Level Tunnels & 50 <sup>th</sup> )		24-May-16	99
<b>CM007: GCT Caverns</b>				
CM007-0160	CM007 Notice of Award		14-Apr-16	0
CM007-1020	CM007 NTP	15-Apr-16		0
<b>CQ032: Plaza Substation &amp; Queens Structures</b>				
CQ032-MS11	Milestone 311 Complete YLT Duct bench work between Station 1181+89—1225+10		21-Apr-16	45

Activity ID	Activity Name	Start	Finish	Total Float
<b>CQ033: Mid-Day Storage Yard Facility</b>				
CQ033-P1310	GEC 100% Design Resubmission		11-Apr-16	132
CQ033-1060	CQ033 Begin Advertisement	1-Jun-16		132
<b>CH057A: Westbound Bypass Structure (exclude Slab)</b>				
DMCH057A-CAT2016	Catenary Structures for WBBY (11 Strs)-CH057A	20-Apr-20	30-Jun-16	538





### 3.0 COST DATA

**Funding:** The MTA Board has approved the \$29.5 billion Capital Plan of April 2016. \$2.6 billion of the Capital Plan is earmarked for the completion of ESA. The State Assembly has not yet approved the Plan. Near term funding of \$1.066 billion through June 2016 has been made available in order to award CM007, VQ033, CS179 Options scheduled to expire before June 2016, OCIP, and other needs. In order to balance available funding, new awards are deferred, including CQ033, Tunnel A (CH061A), VH051C, VH052, Harold Stage 4, a portion of CS179 Option 2B, etc. During April 2016, however, MTACC did note progress and now anticipates that this issue will be resolved by the end of May 2016 based on the following:

- The NYS legislature approved the 2015-19 Capital Plan in early April 2016.
- On April 24, 2016, the MTA board voted to amend the budget.
- MTA submitted the amended budget to Capital Program Review Board (CPRB) during the week of April 25, 2016.
- MTA anticipates CPRB's approval of their budget by May 31, 2016 or sooner.

**Budget/Cost:** The ESA February 2016 Progress Report (March 1 Data date) shows that the total project progress was 61.7% versus 62.9% planned against the Current Baseline Budget (CBB) of \$10.178 billion. Total construction progress was 61.9% versus 63.7% planned based on the total invoiced amount of construction (details of project budget and expenditures are shown in Appendix B, Tables 2 and 3). A PMOC review of the ESA Planned Cash Flow Chart shows that it is based on a Feb 2021 completion date. This now aligns with the Early Revenue Service date resulting from the March 1 data date of the IPS. Based on the cash flow report from ESA, as of the end of the 4<sup>th</sup> quarter of 2015 construction expenditures are 92% of what was planned since the rebase lining in 2014. Given the above, this suggests that MTACC's probability of making its projected Early Revenue Service Date (RSD) is low.

Several significant items were discussed at the Monthly Cost Review meeting of April 14, 2016. ESA indicated that Force Account forecasts are currently being finalized, and will be presented to FTA and PMOC shortly. They had previously indicated that the Force Account Forecast

study would reveal that budget adjustments on the order of \$50 million will be required for Access & Protection and Amtrak/LIRR Direct Stage 2 work. In addition, their ongoing Harold Schedule Status update will likely result in the transfer of work from Amtrak FA to 3<sup>rd</sup> Party contracts. Finally, the forecast for Project wide Reserve is \$275.6 million. This is \$110.3 million below the current budget and \$163.4 million below the baseline amount.

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

**Change Orders/Budget Adjustments:** The PMT reported that, during February 2016, seven (7) construction Change Orders over \$100,000 were executed for a total of \$4,455,903.

#### **4.0 RISK MANAGEMENT**

The PMOC had previously expressed its concern that the risk management area has not been adequately supervised since the re-assignment of the long serving Risk Manager in late 2Q2015 and the subsequent resignation of the replacement Risk Manager in October 2015. The current Risk Manager, who started work on the project in January 2016, held a program-wide risk meeting with the PMOC on March 14, 2016, the first such meeting since January 2015. ESA has made the commitment to hold dedicated program-wide risk meetings with the FTA and the PMOC on a quarterly basis. The PMOC believes that the risk management process on ESA will be restored to its proper functioning as a key input to the PMT's decision making process. The

Risk Manager has arranged for a comprehensive risk review of the CQ033 contract for the Mid-Day Storage Yard to be conducted in May 2016.

In the PMOC's opinion, funding availability continues to be a significant risk on the ESA project. Funding uncertainty has resulted in the PMT's delay of the CM007 contract award until early 2016 due to budget constraints and the restructuring of the CS179 contract by splitting it into a base contract with seven options, based on access restraints imposed by the CM006, CM007, and CM014B packages, which will significantly increase the interface risks. The PMOC does note, however, that MTA has been successful in arranging temporary funding to continue work. In early January 2016, ESA was provided an interim funding allocation of approximately \$941 million in 2015- 2019 funds consisting of \$777 million for CM007 and funding for support costs and program management through 2016. Budget adjustments have been implemented to provide sufficient funds to progress CS179 Options, award new contracts and support the railroads' Force Account work. Although MTACC has been working closely with MTA to arrange for adequate funding to meet schedule requirements for award of contracts as detailed above, this effort relies on arrangements, both internal and external to the ESA project, involving multiple temporary funding shifts and transfers. This approach is not sustainable in the longer timeframe and is subject to change as new and unexpected financial challenges arise. In late October 2015, the MTA presented a \$29 billion program to its Board for the 2015 – 2019 funding cycle. Although an agreement has been reached with the Governor, the Capital Plan funding had not been formally appropriated to the ESA project as of April 30, 2016. However, during April 2016, some significant progress was made in this area:

- The NYS legislature approved the 2015-19 Capital Plan in early April 2016.
- On April 24, 2016, the MTA board voted to amend the budget.
- MTA submitted the amended budget to the Capital Program Review Board on April 26, 2016.
- MTA anticipates CPRB's approval of their budget by May 31, 2016 or sooner.

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. MTACC continues to work with the FRA to resolve the funding drawdown issues.

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. Amtrak has not yet provided any specific details about the ERT Lines 3 and 4 hardening work, but 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. There is also concern that track outages required for the hardening work may conflict with ESA needs to support the planned Harold work. Delays in completing work as scheduled in the Harold Re-Sequencing Plan may result in essential ESA work being

pushed back into the timeframe for Amtrak's extended outages for ERT Lines 1 and 2. The PMOC notes that Amtrak's recent decision to take ERT Line 2 out of service first for an extended outage of 1 year or more will not support the current ESA planning to complete all of the remaining Harold work by 2020.

With regard to the implementation of the "ESA First" Harold Re-sequencing of late 2014, the PMOC notes that through 2015 and into 2016, Amtrak has not been able to provide even the reduced level of force account resources that was planned in support of the schedule. Additionally, the projected force account costs are trending noticeably higher than planned and the force account contingency budget line item is nearly depleted. Since late 2015, ESA has been working on 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 now indicates that the Harold critical path will run parallel to the Manhattan/Systems critical path with a lag of 4 calendar days. Cost outcomes are still being evaluated.

## 5.0 ELPEP COMPLIANCE SUMMARY

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

- **Technical Capacity and Capability (TCC):** The FTA requested MTACC to update its TCC Plan in response to the FTA/PMOC comments that were generated in November 2013 as a result of significant changes in key ESA upper management level positions. The MTACC submitted its revised Technical Capacity and Capability Plan (ESA and SAS) on April 13, 2015. The PMOC returned comments to the FTA on May 7, 2015. The MTACC submitted a revised TCC Plan in response to FTA/PMOC comments on June 12, 2015. In August 2015, the PMOC provided the FTA with its evaluation of the MTACC responses to the PMOC review comments and recommended a meeting with MTACC to resolve remaining issues. The FTA subsequently provided MTACC with the evaluation. MTACC responded with a reply on September 24, 2015.
- **Continuing ELPEP Compliance:** The following ELPEP components continue to need improvement or are deficient: Management Decision; Design Development; Change Control Committee (CCC) Process and Results; Stakeholder Management; Issues Management; Procurement; Timely Decision Making; and Risk-Informed Decision Making. The PMOC had been particularly concerned about the effectiveness of the risk management process since June 2015 due to the staffing change at that time and the lack of continuity of leadership because the ESA Risk Manager position was vacant from October 2015 through early January 2016. The PMOC does note, however, that the new ESA Risk Manager has been actively working to status and update the risk management process since January 2016 and held a long overdue program level risk meeting with the PMOC on March 14, 2016. The PMOC anticipates seeing continuing improvements in the risk management process.
- **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 continues to coordinate with MTACC, arranging working meetings with ESA chapter authors and the corresponding PMOC reviewers to resolve the remaining outstanding FTA/PMOC evaluation comments. Several working meetings have been held since June 2015 and continued through December 2015. MTACC and the PMOC are working to schedule the few remaining meetings required to complete this process.

The PMOC notes that, since June 2013, the ESA project has continued to be non-compliant with ELPEP and is not meeting some of the more important requirements of the Schedule Management Plan (SMP) and Cost Management Plan (CMP) sub-plans to the PMP. The PMOC's opinion is that this continues to be a serious deficiency and needs to be resolved as soon as possible. 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 non-compliant, in part, with requirements for Integrated Project Schedule (IPS) Updating, Forecasting, and Schedule Contingency Management against a current baseline schedule. Given that the new budget and schedule are in place, the PMOC expected that the MTACC would start to meet the requirements set forth in its SMP in the above-referenced areas. The revised SMP was submitted on 4Q2015, and the PMOC is working to complete its review.
- **Cost Management Plan (CMP):** The ESA project remains partially non-compliant with requirements for Project Level EAC Forecasting, Project Level EAC Forecast Validation, and MTACC Cost Contingency Management 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 continues work on evaluating the PMOC's recommendations in six areas. MTACC provided an initial draft of the revised CMP on December 15, 2015, and the PMOC is nearing completion of its review.

**Revisions to the ELPEP Document:** As part of the process of updating the ELPEP document, the PMOC has performed an independent evaluation of the minimum required cost and schedule contingencies going forward. The PMOC's recommendations were presented at several meetings with the MTACC. On January 15, 2016, MTACC and the ESA PMT accepted the FTA/PMOC proposed ELPEP minimum cost contingency hold point values. In conclusion, MTACC has accepted the FTA/PMOC recommended ELPEP cost and schedule contingency hold points, values and curves for the remainder of the program. The PMOC is working on a draft revision to the ELPEP document that reflects these agreements.

The next ELPEP Quarterly Review Meeting with the MTACC, FTA-RII, the SAS and ESA projects and the PMOC had been scheduled for June 16, 2016.

## 6.0 SAFETY AND SECURITY

Table 6-1, below, shows the ESA Lost Time and Recordable injury ratios through March 31, 2016, for CY2016. The PMOC developed this table to demonstrate the effectiveness of ESA's most recent safety efforts rather than its cumulative safety record, which it includes in each of its monthly reports. The PMOC believes that this provides a more accurate measure of ESA's current safety performance than the cumulative record does.

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

	Lost Time Ratio	Recordable Ratio
2015 BLS Ratio (used by OSHA) (2016 BLS Ratio -used by OSHA not available)	1.80	3.20
ESA March 2016 Ratio	0.24	0.24
ESA CY2016 Ratio	0.73	2.49
ESA Reported Ratio (Cumulative since beginning of project as of February 29, 2016)	1.7	ESA does not report cumulative Recordable Injury Rates

Additionally, the ESA PMT did not report any significant security issues in its First Quarter 2016 Progress Report.

## 7.0 ISSUES AND RECOMMENDATIONS

**Design:** The PMT design management team needs to focus on achieving intermediate milestones in a timely fashion and working closely with the GEC to facilitate finalization of the scope of work for the remaining procurement and construction packages. The continued shifting of scope between packages has made finalizing design documents and drawings very challenging and time consuming. Also, approvals from the railroads are requiring more time than expected. The PMOC continues to recommend that the PMT develop a design milestone tracking sheet for the remaining design work on the project and engage upper level management to assist in resolution of the more challenging issues.

**Procurement:** The lack of stability in the contracting strategy and Contract Packaging Plan remains a concern. The scope shifting among different packages makes it difficult to fully understand the impact of these changes to the overall ESA Project. The PMOC continues to recommend that the ESA PMT should make an effort to adhere to the current version of the CPP and minimize shifting scope for the remainder of the project.

**Contract CS179:** As previously noted, the PMOC remains concerned that, because the equipment and material designs are still incomplete, Buy/Ship America compliance issues continue to be identified and, for most part, remain unresolved. The design work needs to be completed soon to ensure that all equipment and material, both compliant and potentially non-

compliant, is identified in a timely manner to provide time to address any Buy/Ship America issues that might impact the CS179 and overall ESA project schedule.

A fully tested solution to the numerous water infiltration issues in the equipment rooms remains a concern to the PMOC. Proposed mitigation solutions need to be quickly progressed to preclude contract schedule slippage.

The ESA CS179 PMT needs to ensure that the contractor has enough information related to LIRR operations to ensure that the contractor's proposed Control System designs meet the contract requirements and the operational requirements of the specific LIRR user groups. Proposing Control System designs that do not meet the expectations or the operational requirements of the various LIRR user groups could result in considerable delays in design completion. The ESA CS179 PMT might be able to mitigate some level of apparent operational requirement misunderstanding by all parties through the institution of face-to-face meetings among all parties to discuss requirements and expectations.

**Contract CS084:** The ESA CS084 CM needs to ensure that any revised designs that are implemented meet with the approval of LIRR; with special consideration for possible long-term maintenance issues for the LIRR. The PMOC continues to encourage the ESA CS084 CM to expedite resolution of any outstanding GEC/LIRR design comments on the C05 and C08 substations so that the final designs for these facilities can be approved and other substation designs can progress.

The PMOC remains concerned about the numerous water infiltration issues in the equipment rooms that are now being identified and the solutions that need to be developed and implemented to provide permanent mitigation of the water infiltration in rooms with electronic equipment. Previous attempts to mitigate the problem by grouting cracks in the concrete floor slabs have not worked and other solutions need to be quickly identified and implemented to preclude contract schedule slippage.

**Contract CH057A:** The CH057A contractor has continued to de-water the Westbound Bypass Tunnel and Approach Structure work sites and appears to have achieved a stable water table level below the design profile of the tunnel invert with the exception of one small location in the West Approach Structure for which the contractor has a viable plan to remediate when excavation reaches that location. The contractor also continued to excavate in the East Approach Structure during April 2016 to construct the launch block against which the "jacked box" tunnel shield will begin its excavation under the main line tracks. As a result, the PMOC believes that the contractor is beginning to build momentum and is no longer concerned about the previous problems which plagued the start of tunnel excavation.

**Contract CM006:** ESA has reported that the current schedule, which does not accurately reflect the work in progress, is being replaced by a new schedule. ESA reports that this new schedule aligns with the CM007 contract access requirements, eliminates milestones, and establishes new Substantial and Final Completion dates. ESA needs to execute a contract modification for the revised CPM schedule so that a realistic schedule is available to track construction progress.

**Contract CM007:** The PMOC had earlier expressed concern that the technical/schedule proposal due date was delayed a total of 4.5 months and the cost proposals were delayed an additional 3 weeks. This significantly reduced the time for negotiations on this very large contract that is currently on the program schedule critical path. MTACC was not able to meet its

original planned award date prior to December 31, 2015. MTACC was successful in expediting completion of the initial stages of the negotiating process and the MTA Board approved the CM007 contract on January 27, 2016. Award was delayed pending completion of negotiations on the Best and Final Offer (BAFO) schedule and acceptance of the final contract price and schedule as well as approval by the apparent low bidder of modifications to the three other ESA contracts he holds (CM006, CQ032 and CS179) related to contract milestone adjustments. The CM007 contract was awarded on April 11, 2016, with the Notice to Proceed as the same date. Delay to the program critical path is approximately 3.5 months. Because the project critical path includes a significant portion of the CM007 work, the PMOC remains concerned about the schedule impacts of the delayed award and NTP for the CM007 contract. The PMOC will be able to evaluate the impacts during its review of the IPS update for May 2016.

**Project Funding:** As stated in the Risk Management section above, the PMOC believes that the timing and availability of funding presents a significant schedule risk to the project. The timing of funding has already impacted the CS179 package (that was restructured with options due to concerns regarding funding availability) and the CM007 procurement that was delayed to the 1Q2016 for award and Notice to Proceed. The PMOC does note that MTACC is fully aware of this situation and the critical role that funding serves in the successful completion of the project. MTACC continues to work closely with the MTA finance group and keeps the FTA up-to-date on developments and issues. The PMOC notes that MTA has been successful in arranging temporary funding to continue work. In April 2016, there was progress in approving the 2014-19 Capital Plan and the budget for ESA. For details, see the discussion under Section 4.0, Risk Management.

**Project Budget:**

The PMOC remains concerned about the adequacy of remaining cost contingency to address major risks detailed in the Risk Management discussion below. Although contingency remained steady between January and February 2016, as erosion of 5% occurred between November 2015 and January 2016. The PMOC notes that the project's use of unallocated cost contingency continues to be significant, and the rate at which the Forecast cost increases continues to accelerate. Of significant concern is that the ESA forecasts for railroad force account activities in Harold are currently underestimated, with the result of further erosion of the remaining contingency.

The award and NTP of CM007 occurred on April 11, 2016, with the positive outcome that the award amount (\$663.1 M) was slightly below the expected bid. The process, however, took an incredible 1 year and 3 months from the date of RFP to date of award. The remaining large 3<sup>rd</sup> party contract, CQ033 (expected bid of \$260 M) is currently the subject of a risk review and assessment, with advertisement date currently scheduled for July 2016. It is expected that this exercise will identify and mitigate cost risks in the contract.

**Project Schedule:** The PMOC is concerned that, as stated by the PMT, that Amtrak is not providing enough resources to support the ESA's schedule critical work. The PMT has stated that they will continue to meet with Amtrak and has obtained clearances to transfer Amtrak work to 3<sup>rd</sup> parties to try to partially mitigate schedule delays. The PMOC is concerned that Harold Interlocking may already be the Project Critical Path as the new Harold Completion date went from December 13, 2022 to April 24, 2023 in one period. Furthermore, Harold is also one of two primary paths as discussed by the PMT this period. See above in Section 2.0 contingency

variance table and Table 2-3 ESA Critical path and its contingencies for 3 RSDs for additional information.

**Risk Management:** In the PMOC's opinion, funding availability continues to be a significant risk on the ESA project. Funding uncertainty has already resulted in the following:

- PMT's delay of the CM007 contract award until 2016 due to budget constraints; and
- The restructuring of the CS179 contract by splitting it into a base contract with seven options, based predominately on access restraints imposed by the CM006, CM007, and CM014B packages. This will significantly increase the construction contract interface risks.

This segmentation of construction packages has created multiple inter-contract interfaces and milestones. In the PMOC's opinion, the probability of successfully achieving all of them is low, and leads to the possibility of a ripple effect of delays and coordination difficulties between contracts. There is very limited opportunity, at best, for the contractors to make up any of the time lost to interface delays due to work site time and access constraints. 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. Funding was not in place to fully exercise the three options in the CS 179 contract package that were scheduled for November 6, 2015 and another option scheduled in January 2016. As noted in an earlier PMOC report, the Options exercised in November 2015, as scheduled, are Option Nos. 2A, 6, and 7 and the Option exercised in January 2016 is Option No. 3A. In the original baseline schedule, Access Restraints were correlated to the contract options; however, a review of the changes made as a result of Contract Modification No. 18 is required to determine to what extent these activities are still interconnected.

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

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

- Program Funding;
- 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 [increasing risk trend noted in 3Q through 4Q2015 and into 1Q2016]; and
- Continued availability of required track outages in Harold Interlocking.

The PMOC notes that, although MTACC has actively engaged Amtrak to develop some specific mitigations for the last two risks and continues to work on strategies for mitigating many of the other identified risks, continued shortcomings in provision of adequate force account resources threaten to adversely impact the current Harold schedule and may cause the remaining Harold work to become the ESA program schedule critical path. The developments made known to the FTA and the PMOC during April 2016 with regard to 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, ESA has undertaken another Harold re-plan effort that reflects the continued deterioration of Amtrak support with regard to force account resources and track outages for ESA work. The results of the study, along with the 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 less than 2 years ago:

- ESA has used all of the 10 months of schedule contingency embedded within the 2104 Harold schedule;
- The Harold critical path now parallels the Manhattan/Systems critical path and lags by only 4 CDs; 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 by 2020.

## **APPENDIX A - ACRONYMS**

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

IFB	Invitation for Bid
IPS	Integrated Project Schedule
IST	Integrated System Testing
LIRR	Long Island Rail Road
MOD	Contract Modification
MNR	Metro-North Railroad
MTA	Metropolitan Transportation Authority
MTACC	Metropolitan Transportation Authority Capital Construction
N/A	Not Applicable
NTP	Notice to Proceed
NYAR	New York and Atlantic Railroad
NYCT	New York City Transit
PAC	Pneumatically Applied Concrete
PDR	Preliminary Design Review
PEP	Project Execution Plan
PMOC	Project Management Oversight Contractor (Urban Engineers)
PMP	Project Management Plan
PMT	ESA Project Management Team
PQM	Project Quality Manual
PVS	Plaza Vent Structure
PWE	Project Working Estimate
QA	Quality Assurance
RAMP	Real Estate Acquisition Management Plan
RFI	Request for Information
RFP	Request for Proposal
RMP	Risk Management Plan
ROD	Revenue Operations Date
ROW	Right of Way
RPR	Relocated Primary Route
RSD	Revenue Service Date
RTU	Remote Terminal Unit
SC	Substantial Completion



SCADA	Supervisory Control and Data Acquisition
SCC	Standard Cost Category
SDR	Second Design Review
SMP	Schedule Management Plan
SMU	Snow Melter Unit
SOE	Support of Excavation
SSMP	Safety and Security Management Plan
SWO	Stop Work Order
TCC	Technical Capacity and Capability
TELP	Temporary Eastbound LIRR Passenger
WBY	Westbound Bypass Tunnel
YSB	Yard Services Building

## APPENDIX B – TABLES

**Table 1: Summary of Critical Dates**

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

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

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

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

	FFGA			MTA's Current Baseline Budget CBB		Expenditures	
	(Millions)	(% of Grand Total Cost)	Obligated				
5309 New Starts Share	\$2,632	35.6%	\$1,098				
Non New Starts Grants	\$51	0.7%	\$50				
ARRA	0	0.0%	0				
Local Share	\$3,667	49.6%	\$2,959				

**Table 3: Project Budget and Invoices as of February 29, 2016**

Elements					
Construction	\$7,379,296,706				
Engineering	\$720,615,810				
OCIP	\$282,613,620				
Project Mgmt.	\$972,168,644				
Real Estate	\$182,076,230				
Rolling Stock	\$202,000,000				
Management Reserve	\$439,000,000				

Note: ESA is currently carrying the Rolling Stock Reserve as an off-line cost, not in the Budget.

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

Standard Cost Category (SCC) No.	FFGA SCC baseline (YOE \$) M	June, 2014 Re-Plan (YOE \$)	December 2015 SSC (YOE \$) M	January 2016 SSC (YOE \$) M	February 2016 SSC (YOE \$) M	February 2016 % of Re-Plan	Jan '16 to Feb '16 Change \$ M	CBB Variance from FFGA %
10	1,989	3,405	3,420	3,419	3,419	100.41%	0	71.90%
20	1,169	2,238	2338	2,338	2,338	104.47%	0	100.00%
30	356	474	472	472	472	99.58%	0	32.58%
40	205	611	593	593	593	97.05%	0	189.27%
50	619	606	566	566	566	93.40%	0	-8.56%
60	165	220	218	217	217	98.64%	0	31.52%
70	957	210	210	210	210	100.00%	0	-78.06%
80	1,184	1,975	1,976	1,977	1,977	100.10%	0	66.98%
90	169	439	385	386	386	87.93%	0	128.40%
<b>Subtotal</b>	<b>6,813</b>	<b>10,178</b>	<b>10,178</b>	<b>10,178</b>	<b>10,178</b>	100.00%	0	<b>49.39%</b>
100	1,036	1,036	1,036	1,036	1,036	100.00%	0	0.00%
<b>Total Project Cost (10 – 100)</b>	<b>7,849</b>	<b>11,214*</b>	<b>11,214*</b>	<b>11,214*</b>	<b>11,214*</b>	100.00%	0	<b>42.87%</b>

**Table 5: Quarterly ESA Planned Cash Flow- Actuals to Date and Actuals Remaining (as of 4Q2015)**

Quarter/year	Construction \$(000)	Engineering \$(000)	OCIP \$(000)	Project Mgmt. \$(000)	Real Estate \$(000)	Rolling Stock \$(000)
<b>Paid To Date</b>	<b>3,660,194,771</b>	<b>646,377,892</b>	<b>155,604,955</b>	<b>580,041,291</b>	<b>112,634,547</b>	<b>0</b>
<b>Remaining</b>	<b>3,719,144,273</b>	<b>74,237,918</b>	<b>127,008,665</b>	<b>392,127,353</b>	<b>69,441,683</b>	<b>202,000,000</b>
3Q2014	209,340,620	-3,311,163	4,774,951	16,667,454	0	0
4Q2014	168,280,817	-3,290,689	4,774,951	16,667,454	75,948	0
1Q2015	134,568,200	-3,183,384	4,619,246	16,123,950	4,506,241	0
2Q2015	147,357,357	-3,290,689	4,774,951	16,667,454	4,658,137	0
3Q2015	169,688,509	-3,290,689	4,774,951	16,667,454	4,658,137	0
4Q2015	201,239,698	-3,290,689	4,774,951	16,667,454	4,658,137	0
<b>Remaining Planned</b>	<b>2,688,669,072</b>	<b>93,895,221</b>	<b>98,514,664</b>	<b>292,666,133</b>	<b>50,885,083</b>	<b>202,000,000</b>
<b>Remaining Actual</b>	<b>3,042,913,702</b>	<b>63,246,332</b>	<b>72,462,928</b>	<b>295,443,282</b>	<b>64,463,260</b>	<b>202,000,000</b>
1Q2016	193,275,933	-3,219,153	4,671,147	16,305,118	4,556,873	0
2Q2016	180,854,738	-3,290,689	4,774,951	16,667,454	4,658,137	8,666,545
3Q2016	181,988,455	-1,983,850	4,774,951	16,652,320	4,658,137	13,070,855
4Q2016	214,173,807	6,728,414	4,774,951	15,971,281	4,658,137	13,070,855
1Q2017	210,556,624	6,509,009	4,619,246	15,450,479	4,506,241	12,644,631
2Q2017	199,737,103	6,728,414	4,774,951	15,971,281	4,658,137	13,070,855
3Q2017	189,382,506	6,728,414	4,774,951	15,971,281	4,658,137	13,070,855
4Q2017	182,084,699	6,728,414	4,774,951	15,971,281	4,658,137	13,070,855
1Q2018	174,210,593	6,509,009	4,619,246	15,450,479	4,506,241	12,644,631
2Q2018	170,524,739	6,728,414	4,774,951	15,971,281	4,658,137	13,070,855
3Q2018	168,497,619	6,728,414	4,774,951	15,971,281	4,658,137	14,014,767
4Q2018	155,245,094	6,728,414	4,774,951	15,971,281	50,632	14,014,767
1Q2019	148,441,548	6,509,009	4,619,246	15,450,479	0	13,557,764
2Q2019	110,893,994	6,728,414	4,774,951	15,971,281	0	14,014,767
3Q2019	93,559,944	6,728,414	4,774,951	15,971,281	0	14,014,767
4Q2019	71,649,848	6,728,414	4,774,951	15,971,281	0	14,014,767
1Q2020	20,704,406	6,582,144	4,671,147	15,624,080	0	5,043,553
2Q2020	11,682,057	6,728,414	4,774,951	15,971,281	0	943,912
3Q2020	7,573,078	2,267,183	4,947,825	5,381,627	0	0
4Q2020	2,750,374	0	5,035,679	0	0	0
1Q2021	881,913	0	3,256,771	0	0	0
2Q2021	0	0	0	0	0	0
3Q2021	0	0	0	0	0	0
4Q2021	0	0	0	0	0	0

Standardized Cost Category	FFGA	May 2012 Re-Baseline	June 2014 Re-Plan	Awarded Value Febuary 2016	Paid To Date February 2016
[REDACTED]	[REDACTED]			\$2,843,300	\$2,232,665
[REDACTED]	[REDACTED]			\$1,642,007	\$1,206,253
[REDACTED]	[REDACTED]			\$228,279	\$207,255
[REDACTED]	[REDACTED]			\$446,681	\$453,468
[REDACTED]		[REDACTED]		\$427,615	\$299,662
[REDACTED]	[REDACTED]			\$153,683	\$151,941
[REDACTED]				\$7,838	\$5,549
[REDACTED]	[REDACTED]			\$1,589,791	\$1,557,749
[REDACTED]	[REDACTED]			\$0	\$0
[REDACTED]				\$7,339,194	\$6,114,542
[REDACTED]	[REDACTED]			\$617,607	\$617,607
[REDACTED]	[REDACTED]			\$7,956,801	\$6,732,149

[illegible]

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