

## **PMOC MONTHLY REPORT**

### **Second Avenue Subway Phase 1 (MTACC-SAS) Project**

Metropolitan Transportation Authority

New York, New York

**Report Period July 1 to July 31, 2015**



PMOC Contract No. DTFT6014D00017

Task Order No. 2, Project No. DC-27-5287, Work Order No. 1

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Length of time on project: Five 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 the FTA's Full Funding Grant Agreement (FFGA) program, FTA and its Project Management Oversight Contractor (PMOC) use a risk-based assessment process to review and validate a project sponsor's cost, 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 may change from month to month, based on relevant factors for the current month and/or previous months.

## **REPORT FORMAT AND FOCUS**

This monthly report is submitted in compliance with the terms of the Federal Transit Administration (FTA) Contract No. DTFT6014D00017. 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 Second Avenue Subway (SAS) Phase 1 Project managed by MTACC. MTA is the Grantee and financed by the FTA FFGA.

## **MONITORING REPORT**

### **1.0 PROJECT STATUS**

During July 2015, the MTACC continued advancing SAS Phase 1 to meet a Revenue Service Date (RSD) of December 30, 2016, within its Current Working Budget (CWB) of \$4.451 billion (exclusive of financing). The overall project is approximately 79.1% complete. Substantial Completion has been achieved on three of the eight active construction contracts. Progress this reporting period featured the following accomplishments:

- C-26005 (C2A) "96th Street Site Work and Heavy Civil" Substantial Completion was achieved on November 5, 2013. Contract close out is pending resolution of water leaks and delivery of "As Built" drawings. A major improvement in the water leaks has been seen as a result of the grouting process. Three of the four Volumes of the "As-Built" drawings have been signed off by the contractor.
- C-26010 (C2B) "96th Street Station Civil, Architectural, and MEP". Milestone 6, 7 and 8 were partially completed; select rooms were turned over to the C6 contractor.
- C-26006 (C3) "63rd Street Station Rehabilitation". The focus of the work effort continues to be Area 5 and Entrance #1. The C6 contractor continues work at the site and

system testing is ongoing. At Entrance #1 installation of escalators (2) continues. Site work at the 63rd St. Plaza and finishes at Entrances (#2, #3, and #4) is underway.

- C-26007 (C4B) “72nd Street Station Cavern Mining and Lining” Substantial Completion was achieved on January 14, 2014. Contract closeout is underway.
- C-26011 (C4C) “72nd Street Station Architectural and MEP Systems”. At Ancillary #2, above-grade concrete frame for all four floors of the building has been completed. At Ancillary #1, work has reached the 2nd Floor with completion of the 2nd Floor slab and the start of 2nd Floor wall placement. At the Entrance #3, the contractor completed placement of the 1<sup>st</sup> Floor slab.
- C-26008 (C5B) “86th Street Station Cavern Mining and Lining”. Substantial Completion of all contract work was achieved on December 16, 2014. The contractor completed sandblasting the Entrance #2 incline arch and walls. The architectural finish on the incline at Entrance #1 is also being reviewed to determine if sandblasting will also be required there. This is a punchlist item.
- C-26012 (C5C) “86th Street Station Architectural and MEP”. At Ancillary #1, construction continues at the top level of the underground portion of the building and placement of the roof level deck is ongoing. Escalator installation continues in Entrance #2.
- C-26009 (C6) “Track, Power, Signals and Communication Systems”. Installation of signals, traction power, communication equipment and cables is ongoing throughout the various station and tunnel zones. Track installation has been re-sequenced to mitigate delays due to shared access.

#### **a. Procurement**

Procurement of construction contractors for SAS – Phase 1 is complete. Three construction contracts are currently in the closeout process.

#### **b. Construction**

As of July 31, 2015, there are eight (8) active construction contracts on the SAS Phase 1 Project. Construction progress on the active contracts during this period includes:

##### **Contract C-26005 (C2A) 96th Street Site Work and Heavy Civil**

- Substantial Completion was achieved on November 5, 2013.
- Contract closeout is pending the submission of the final Volume (4) of the “As Built” drawings and mitigation of various water leaks.

##### **Contract C-26010 (C2B) 96th Street Station Civil, Architectural, and MEP**

- Station Area 1 Grid Line (GL) 1-8 (91st to 93rd Street)

The contractor completed the Over Track Exhaust (OTE) duct installation, installation of the ductwork in different rooms, continued working on fan coil units, miscellaneous plumping, lighting conduits and installation of conduits, flooring and painting and completion of rooms, tunnel lighting and utility work at street level, installation of guiderail and stair railing, running interconnecting conduit at the low voltage

switchboard, installation of the bus duct, termination and tag for indication and control and removing utilities and decking beams at the west side street work.

- Station Area 2 GL 8-18 (93rd to 95th Street)

The contractor completed the OTE ductwork at the track level and OTE duct support. The contractor continues working on the installation of the platform conduit, platform plumbing pipes, duct installation of Acoustic Board (AM3), completion of concrete stairs and masonry walls at the platform and panel system and completion of rooms and installation of the electrical equipment and installation of the steel duct and utility work at the East side street level .

- Station Area 3 GL 18-36 (95th to 99th Street)

The contractor continues working on installation of above platform conduits, fast response sprinklers, lighting fixtures at the platform level. Contractor's efforts includes working on installation of the service carrier, emergency lighting fixtures, mezzanine lighting fixtures and conduits, panel boards, platform service carrier and installation of interconnecting conduits, mimic panel conduits, pulling and terminating MV SWG and transformers, bus ducts and battery equipment.

- Ancillary #1 GL 8-9.5 (Northeast corner 2nd Ave. and 93rd St.)

The contractor continued working on building walls up to lower roof level, installation of duct insulation, concrete curbs and pads and continued working on rebuilding the ECS manhole (12x12x19) at 93rd Street masonry walls, duct installation, completion of lower and upper roof slab and installation of the parapet walls, installation masonry walls, duct at the mezzanine level and installation.

- Ancillary #2 GL 28-29.5 (Southwest corner 2nd Ave. and 97th St.)

The contractor completed the lower and upper roof slab and parapet walls. Continue working on installation of power and lighting conduit at the mezzanine level.

- Entrance #1 GL 13-14 (Southwest Corner 2nd Ave. and 94th St.)

Ongoing work includes building the masonry walls and stairs for Entrance 1.

- Entrance #2 GL 13-14 (Northeast Corner 2nd Ave. and 94th St.)

Work continued with the building of masonry walls and building invert at escalator pit. Coordination between the C2B contractor and the C6 contractor continues in order to resolve access to rooms for equipment installation related to Milestones 7 and 8 and reduction in delays due to addition work orders.

### **Contract C-26006 (C3) 63rd Street Station Rehabilitation**

- Surveying of the Deformation Monitoring Points (DMPs) is ending and removal of all instrumentation from existing buildings began.
- The focus of the work effort remains at Area 5 and the progress at Entrance #1.
- **Area 5 (Reconstruction consists of mezzanines and the deck plaza roof)**
  - In Area 5 inspections by NYCT user groups resumed in Mezzanines #1 and #4.

- Stainless steel elevator entrance frames are complete throughout and 3 of the 4 traction elevator cabs have been installed.
- Continued pulling wire on the 6<sup>th</sup> Mezzanine.
- **Entrances (#1, #2, #3 and #4)**
  - At Entrance #1, the subcontractor continued with escalators installation and work in the motor room.
  - At Entrance #1, the ceiling work has begun.
  - At Entrance #2, the hydraulic elevator kiosk has been delivered and installed. Brackets and rails installation continued.
  - Granite cladding for street Entrances #3 and #4 has been delivered and work has started at Entrance #4.
  - Framing for the architectural glass canopies has been delivered and installation began.
- **Platforms**
  - Completed installation of channels for the operable glass in the G4 Lobby. Began work in the G3 Lobby.
  - Completed installation of the stone bases and pavers in the Elevator Lobbies at the G-4 platform.
  - Installation of porcelain track wall tiles, top stainless steel band & station lettering on the G3 and G4 platforms nears completion.
  - Granite installation continues at the “Link” (Platform – Platform) Stairs.
- **Site**
  - Sewer work, plaza fire hydrant and ConEd work has been completed.
  - Removal of site temporary facilities has begun.
- **Testing & Commissioning**
  - Testing and commissioning meetings with SAS Management takes place bi-weekly.
  - Test Procedures Tracking is being issued by the contractor on a regular basis for the FIAT, FIST, and FSTP.
  - Testing is ongoing daily for the station systems, including: fan plants (2), air handling units, building management system (BMS), chilled and condenser water pumps, cooling towers (Ancillary #1), cycle test for tunnel and station smoke management (TSSM) dampers, sprinkler system, supervisory control panels, etc.

#### **Contract C-26007 (C4B) 72nd Street Station Cavern Mining and Lining**

- Substantial Completion was achieved on January 14, 2014
- Submittal of contract closeout documentation is ongoing.

#### **Contract C-26011 (C4C) 72nd Street Station – Station Finishes, MEP, Ancillary Buildings and Entrances**

- **Ancillary #2/Entrance #2**
  - The entire 4 floor above-grade concrete frame for the building has been completed.
  - Continued with placing equipment pads and electrical work in the sub-basement and basement in the Facility Power Rooms.

- At Entrance #2 completing installation of remaining wall tile brackets and conduit.
- **Ancillary #1**
  - Work has reached the 2nd floor with completion of the slab and the start of wall placement.
  - MEP work continued in the sub- basement and basement level.
- **Cavern Mezzanine (Public, North and South)**
  - The Mezzanine smoke exhaust system nears completion.
  - At the North and South Mezzanines, work is continuing with MEP installation in Fan/Chiller rooms.
  - Installation of bus ducts, conduit and wiring in the North and South Electrical Distribution Rooms (EDR) is continuing.
  - Continued installing the precast fascia panels in the South Mezzanine.
- **Platform**
  - Began installation of ceiling framing & panels.
  - Installation of mezzanine to platform escalators (#1, #2 and #3) and machine room work nears completion pending permanent power.
  - Began installation of granite pavers.
- **Entrance #1:**
  - The bulkhead separating the upper and lower incline work has been removed and work resumed on the entire invert slab placement.
  - Drilling/placement of micro-piles in the Garage are underway.
  - Completed installation of structural steel shoring for the penetration through the existing building foundation
- **Entrance #3 (Elevator Bank)**
  - At Entrance #3, placement of the street level slab for the elevator shaft was completed.

### **Contract C-26008 (C5B) 86th Street Station Cavern Mining and Lining**

- Substantial Completion of all contract work was achieved on December 16, 2014.
- The C5B contractor completed sandblasting of the architectural finish arch and walls on the incline of Entrance #2. This work was required to correct deficiencies noted by NYCT architects in the finish. A mockup of the proposed surface finish coating was completed and reviewed by the MTACC and the Architect. The architectural finish on the incline at Entrance #1 is also being reviewed to determine sandblasting will also be required there.

## **Contract C-26012 (C5C) 86th Street Station Finishes, MEP Systems, Ancillary Buildings & Entrances**

### **▪ General**

- The 87th S. Shaft remains open to allow for continued deliveries by the C6 contractor.

### **▪ Cavern (Public, North & South Mezzanines)**

- Installing ductwork, condenser & chilled water piping in the 1st Upper Mezzanine.
- Completing CMU walls in the North Mezzanine.
- MEP work is ongoing throughout.
- Facility Power Room equipment has been delivered and set in place in both North & South Mezzanines. Conduit and wiring work is underway.

### **▪ Entrance #1**

- Continues to be the prime ingress/egress zone for the project. No appreciable work is underway.

### **▪ Entrance #2**

- The subcontractor continues installation of the “short run” escalators at Entrance #2.

### **▪ Ancillary #1**

- Installation of formwork continues to the top of the below-street portion of the building. Placement of the street level roof deck is ongoing. The contractor has continued working 6 days, 2 weekday shifts in this area.

### **▪ Ancillary #2**

- Continued with waterproofing and wall erection to Elevation 125 and placement of floor slab up to the 2nd Mezzanine Level. This work has advanced slowly, as it was not previously a schedule priority. However, the contractor has advised that additional personnel resources will be added to the area of the work.

### **▪ Platform**

- Continued installation of ductwork and dampers.
- Continued installing door frames at the North Platform.
- Continued installation of LAN/WAN conduit and ductwork/dampers.

### **▪ Schedule**

- Permanent power is still forecast to be energized by the end of December 2015.
- The CCM and the contractor continue to be at odds on schedules for completing/turning over milestone rooms. This has been ongoing for some time. To date there is no reliable milestone room turnover date schedule for this contract.



## **Contract C-26009 (C6) Track, Power, Signals and Communication Systems**

### **▪ 63rd Street Station**

- Communication and Signal Rooms – the contractor has completed 4 communication rooms. The 147 Signal Room has been completed and the contractor is in the process of starting wayside testing.
- Circuit Breaker House (CBH) – the upper level room has been built out as far as possible. The contractor is waiting for the turnover of the lower rooms (basement) in order to start the cable pulling operation.
- Street Mezzanine (Area 5) – local antenna cable work commenced and has progressed up Zone 6. Work has progressed as far as it can go.
- Lexington Ave Relay Room (upper and lower levels) – rack installation and pulling of cables have been completed. Breakdown testing is still ongoing.
- Track Work (Zones 3 and 4) – contact rail and concrete placement on G3 and G4 tracks was complete.

### **▪ 72nd Street Station**

- Tunnel Work (Zone 3) – the contractor has completed the pulling of all fiber, communication, power and signal cable.
- Communication and Signal Rooms – partial turnover of 3 of the 5 communication rooms and equipment has been installed. Equipment has been installed in the Signal Room and the CBH room.
- Cable pulling and termination is ongoing.

### **▪ 86th Street Station**

- Communication and Signal Rooms – contractor is awaiting room turnover.

### **▪ 96th Street Station**

- Tunnel work (Zone 2) – all signal cable is pulled. Fiber and communication cable has progress as far as possible. The contractor is awaiting turnover of Zone 11.
- Tunnel work (Zone 1) – the contractor has completed pulling of all fiber, communication, power and signal cables.
- Communication and Signal Rooms – Communication rooms are partially turned over and equipment installed. The contractor is still awaiting turnover of the CBH room and the control center.
- Track Work (Zones 1 and 2) – contact rail and concrete placement for tracks S1 and S2 are complete.
- Track Work (Zones 5 and 6) – track construction in Zone 5 (on S1 track) is complete. S2 track has been surfaced; leveled and concrete placement is ongoing.

### c. Quality Assurance and Quality Control (QA/QC)

#### Quality

##### Status:

During July 2015, the Second Avenue Subway Quality Management team continued holding Quality Meetings and Quarterly Quality Oversight of the Contractor with CCM, the MTACC, and the PMOC participation. They participated in the job progress meetings, monitored quality matters in the field for each construction contract, reviewed and provided comments for Quality Work Plans, and participated in Preparatory Phase Meetings for numerous construction processes.

##### Observations:

**Project Quality Manual (PQM):** The SAS Quality Manager prepared a draft of Revision 3 to the PQM that reflects the new MTACC QO checklist requirements and other changes that have occurred since the last revision was issued. The PMOC received a draft of Revision 3 to review and returned comments to the SAS Project Quality Manager. A Final Draft of Revision 3 is being reviewed by the PMOC.

**Daily Inspection Reports:** At the end of July 2015, the following contractors were behind in entering their Daily Inspection Reports into the Contractor Management System (CMS):

Contractor	Weeks Behind
C2B	2
C5C	3

**C2B Contractor:** Of the 75 open nonconformance reports (NCRs), 53 are for concrete that was out of specification. A concrete analysis was prepared on May 6, 2015. The designer approved the analysis on June 9, 2015, but requested that concrete cylinder break results be added to each NCR. Once this is done, 30 NCRs can be closed. 22 non-concrete NCR's remain open. 15 of these have been open for three to ten months.

**C5C Contractor:** Besides being three weeks behind in submitting Daily Inspection Reports and not following its approved nonconformance reporting system, the C5C contractor is not implementing its approved Contractor's Quality Plan (CQP). Among the requirements that have not been followed are:

- Work is still being performed without approved Quality Work Plans (QWPs);
- Most Preparatory Phase Meetings are not held;
- Mock-up work is still proceeding without approval;
- Mechanical/electrical/plumbing (MEP) hold point inspections continue to be bypassed;
- Electrical issues have not been documented on nonconformance reports (NCRs); and
- External quality audits are still not performed.

At the suggestion of the PMOC, the contractor hired two assistants for their Quality Manager. Both of them started work in June 2015. NCRs are starting to be entered into CMS and the C5C SAS Quality Manager has reported that 15 non-concrete NCRs will be closed in early August 2015 and that the concrete statistical analysis will be submitted in August 2015. Bi-weekly Quality Management Meetings continue.

<b>Contract Package C2B</b>	
<b>Status:</b>	Through July 31, 2015, a total of 119 NCRs have been issued. Forty-four (44) have been closed and 75 are still open. In July 2015, 8 new NCRs were written and 2 were closed.
<b>Observation:</b>	In June 2015, the contractor hired two additional employees to assist the Quality Manager. Entry of Daily Inspection Reports into CMS is 2 weeks behind. Bi-weekly Quality Management Meetings, as suggested by the PMOC, are still being held.
<b>Concerns and Recommendations:</b>	Despite the increase of Quality staff, the PMOC is concerned that 15 NCRs have been open for three to ten months. The contractor has established artificial closure dates that are not being met. The PMOC recommends that a realistic schedule for closure of these open NCRs be established and that the contractor make an effort to meet these dates.
<b>Contract Package C3</b>	
<b>Status:</b>	Through July 31, 2015, a total of 108 NCRs have been issued. Ninety-six (96) have been closed and 12 are still open. In July 2015, 3 new NCRs were written and 1 was closed.
<b>Observation:</b>	Entry of Daily Inspection Reports into CMS is current.
<b>Concerns and Recommendations:</b>	The PMOC has no concerns.
<b>Contract Package C4C</b>	
<b>Status:</b>	Through July 31, 2015, a total of 153 NCRs have been issued. One hundred and nine (109) have been closed and 44 NCRs are still open. In July 2015, 11 NCRs were written and 52 were closed.
<b>Observation:</b>	128 of the 153 NCRs are for concrete that was out of specification. Seven of the eleven NCRs generated in July were for concrete. Submittal of Daily Inspection Reports is current.
<b>Concerns and Recommendations:</b>	In June and July 2015, 64 NCRs were closed. Most of these were for concrete that was out of specification. The PMOC has no concerns.
<b>Contract Package C5C</b>	
<b>Status:</b>	Through July 31, 2015, 125 NCRs have been identified. 85 NCRs have been written and entered in CMS. 40 have been assigned a number but

	have been identified either as “not issued” or “not submitted in CMS”. Of the 85 that have been issued, 11 have been closed and 74 NCRs are still open. Of the 74 still open, 52 have been identified as “statistical analysis to be submitted”. In July 2015, 15 new NCRs were written and none were closed. In the past 5½ months only 1 NCR was closed.
<b>Observation:</b>	Submittal of Daily Inspection Reports is 3 weeks behind. When an NCR is written, it should be issued and entered into CMS immediately. Bi-weekly Quality Management Meetings, as suggested by the PMOC, are still being held.
<b>Concerns and Recommendations:</b>	In February 2015, the PMOC recommended that all NCRs be issued and entered into CMS immediately and that the contractor establish a schedule to close the non-concrete NCRs. This has still not occurred. In June 2015, the contractor hired two assistants for their Quality Manager and some improvement with entering and closing NCRs is occurring. Additional PMOC concerns are listed in the front of this section.
<b>Contract Package C6</b>	
<b>Status:</b>	Through July 31, 2015, a total of 37 NCRs have been issued. Seventeen (17) have been closed and 20 NCRs are still open. In July 2015, one new NCR was written and none were closed. Entry of Daily Inspection Reports into CMS is current.
<b>Observation:</b>	Eighteen of the open NCRs are for concrete placement that is out of specification. The contractor submitted Waiver #23 to extend the time of concrete placement from 90 minutes to 120 minutes. The Designer of Record will not approve this waiver. The contractor prepared and submitted an analysis of concrete strength, and was requested to provide additional information, and is in the process of updating the analysis.
<b>Concerns and Recommendations:</b>	The PMOC has no concerns.

## 2.0 SCHEDULE DATA

### Status:

The Integrated Project Schedule (IPS) is a management level schedule that integrates all ten construction packages along with design, procurement, startup and other support activities. IPS Update #108 was received on July 31, 2015 and is based on a Data Date of July 1, 2015. This update contains the “.XER” schedule files for the IPS and active construction contracts as well as a narrative report.

There are several significant changes included within Update #108:

- This period SAS Primary Schedule Contingency increased from 33 WD (45 CD) to 35 WD (50 CD). This increase is attributed to the “full” incorporation of the C6 Contractors’ testing and commissioning activities in the IPS.
- Contemporaneous C2B schedule updates indicate a Substantial Completion date of November 23, 2016. The MTACC has chosen to hold the C2B Substantial Completion date in the IPS to November 11, 2016.
- After a previous acceleration initiative, the MTACC again reports delays to track installation. If unaddressed, the MTACC forecasts these delays could delay project RSD to as late as March 9, 2017. The MTACC reports several new acceleration initiatives are under consideration. Neither the current trackwork delay nor the potential acceleration initiatives are included in this update of the IPS.
- As noted in IPS Update #107, the MTACC has agreed to a delay mitigation plan at the 96th Street Station to recover 53 CDs of delay. The summary of this mitigation plan is included in IPS #108; however, MTACC has yet to receive a detailed recovery plan from the C2B Contractor.

IPS Update #108 forecasts the completion of all construction and NYCT Pre-Revenue Training & Testing activities on November 11, 2016, with approximately 50 calendar days (CD) or 33 work days (WD) of contingency, resulting in a forecast Revenue Service Date (RSD) of December 30, 2016.

Schedule contingency based on IPS Update #108 is summarized as follows:

	Dates	Contingency (CD)	
MTACC Completion	11/15/2016	50	MTACC Contingency
MTACC RSD	12/30/2016	184	Additional Contingency
ELPEP Threshold	7/3/2017	240	Minimum ELPEP Contingency
FTA RSD	2/28/2018	474	TOTAL

**Observations:**

**Project Critical Path:**

The MTACC’s schedule narrative identifies three independent float paths as “critical”. Each of these paths has no more than 3 WD of schedule float. The PMOC concurs with the MTACC’s evaluation of the relative importance of these paths and for consistency, will follow the same reporting format.

**1st Critical Path (TF=0):** This period SAS’s Critical/Longest path begins with structural and utility work to complete Entrance 2, followed by backfilling, lighting at the Entrance 2. The path

continues through the installation of Escalators at Entrance 2, and concludes with Escalator FIAT, SIST, and FSIT testing, followed by Substantial Completion of Contract C2B on November 11, 2016, and the completion of Phase 1 Construction. The Critical Path concludes with 35 WD (49 CD) of Schedule Contingency leading to a RSD date of December 30, 2016.

**2nd Critical Path (TF=2):** The 2nd Critical Path begins with construction of system wide track work in Zones 5, 6, 4, 7, 8, 10 and 11, followed by wayside signal work at 86th Street. This is followed by NYCT signal and operational activities leading to the Operational Revenue Service Date of November 9, 2016, where the path joins the primary critical path at Phase 1 Construction Complete with 2 WD (2 CD) of float.

**3rd Critical Path (TF=3):** The 3rd Critical Path begins with communications work – PACIS, fire alarm, clock, radio – by the C6 contract at the 86th Street Station and continues through testing for all communications systems at the 86th Street Station and concludes with the Substantial Completion of Contract C6 on November 7, 2016, where the path joins the primary critical path at Phase 1 Construction Complete with 3 WD (3 CD) of float.

**Secondary Paths:** Other secondary float paths of significance to the overall status of the project include:

- +6 WD:** This path involves architectural construction in the platform area of the 96th Street Station between 92nd and 95th Streets. This work extends continuously from the current data date to C2B Substantial Completion, followed by 35 WD of schedule contingency and the project RSD of December 30, 2016.
- +8 WD:** This path involves completion of the new water and sewer mains, scheduled for completion on July 13, 2015, followed by FIAT, SIST and FSIT testing of HVAC systems within Ancillary #1 at the 96th Street Station. This work extends continuously from the current data date to C2B Substantial Completion, followed by 35 WD of schedule contingency and the project RSD of December 30, 2016.
- +21 WD:** This path involves development of engineering submittals, review and approval of submittals, fabrication, installation and commissioning and testing of the platform elevator at the 96th Street Station. This work extends continuously from the current data date to C2B Substantial Completion, followed by 35 WD of schedule contingency and the project RSD of December 30, 2016.
- +21 WD:** This path involves installation and testing of traction power equipment at the 86th Street station. This work was forecast to begin on July 15, 2015 and is controlled by C5C MS #10 (Access to all other Traction Power Rooms at 86<sup>th</sup> Street Station). Once underway, this work will continue until the in-service traction power testing at 86th Street is successfully completed and Systems Integrated Testing is able to start.
- +27 WD:** This path involves installation and field installation testing of traction power substation equipment at the 86th Street station. This work was forecast to begin on July 16, 2015 and is controlled by C5C MS #9 (Access to Traction Power Rooms North End of 86th Street Station). This work is forecast to be completed on July 1, 2016, and is followed by system level testing of the traction power system at 86th Street Station.

- +34 WD:** This path represents the most critical path involving construction of Entrance #1 at the 72nd St. Station. Structural rock excavation is forecast to be completed on July 24, 2015, and will be followed by structural steel, MEP and finish work, and escalator installation. All work at Entrance #1 is forecast to be complete by September 16, 2016.
- +45 WD:** This path represents installation of equipment, third party testing, and inspection and acceptance by ConEd required for permanent power at the 72nd Street Station. Following the “Permanent Power Available” date of December 30, 2015, this path merges with numerous other paths involving the testing and acceptance of equipment throughout the station. The “Permanent Power Available” date and schedule float associated with this work was unchanged over this update period.
- +85 WD:** This path represents fabrication, installation and testing of permanent power equipment at the 86th Street Station. Following the forecast “Permanent Power Available” date of January 28, 2016, the path follows component and system testing of mechanical and electrical equipment throughout the station. The “Permanent Power Available” date experienced a 21 WD delay this period; however approximately 38 WD of schedule float was gained.
- +88 WD:** This path represents procurement, installation and testing of permanent power equipment at the 96th Street Station. Following the forecast “Permanent Power Available” date of December 4, 2015, the path follows component and system testing of mechanical and electrical equipment throughout the station. The “Power Available” date experienced a 21 WD delay this period; however approximately 36 WD of schedule float was gained.

**Milestone Summary:** For contracts actively under construction, an evaluation of reported progress for IPS schedule milestones includes:

1. Status of Milestones forecast to complete this update period ( 06/01/15 to 06/30/15):

<b>Pkg</b>	<b>MS</b>	<b>Description</b>	<b>UD #108 Date</b>	<b>Status</b>
C2B	6B	Full access to Comms Rooms & Closets	<b>06/24/15</b>	Incomplete
C2B	6C	Full access to Comms Rooms & Closets	<b>06/24/15</b>	Incomplete
C2B	7A	Full access to Signals Rooms	<b>06/08/15</b>	Incomplete
C2B	7B	Full access to Signals Rooms	<b>06/24/15</b>	Incomplete
C2B	7C	Full access to Signals Rooms	<b>06/24/15</b>	Incomplete
C5C	2	Limited Access; Sta. 1209+00- >1198+00	<b>06/12/15</b>	Incomplete
C5C	3	Shared Access; Sta. 1209+00- >1198+00	<b>06/12/15</b>	Incomplete
C5C	7	Turnover of Signal Rooms	<b>06/19/15</b>	Incomplete
C5C	7A	Room-to-Room Conduit Ready	<b>06/19/15</b>	Incomplete
C4C	7B	Complete Work Ancillary #1	<b>06/25/15</b>	Incomplete
C5C	8	Turnover of Signal Rooms	<b>06/19/15</b>	Incomplete
C5C	8A	Room-to-Room Conduit Ready	<b>06/19/15</b>	Incomplete
C5C	9	Turnover Traction Power Rooms	<b>06/19/15</b>	Incomplete
C5C	9A	Room-to-Room Conduit Ready	<b>06/19/15</b>	Incomplete
C5C	10	Turnover Traction Power Rooms	<b>06/09/15</b>	Incomplete
C5C	10A	Room-to-Room Conduit Ready	<b>06/09/15</b>	Incomplete
C5C	11	Full access @ Station Service Center(s)	<b>06/08/15</b>	Incomplete
C5C	14b	Limited Access all locations	<b>06/05/15</b>	Incomplete



2. Milestones forecast to complete during previous update period (05/01/15 to 05/31/15)

<b>Pkg</b>	<b>MS</b>	<b>Description</b>	<b>UD #106 Date</b>	<b>UD# 107 Date</b>	<b>UD #108 Forecast</b>
C2B	7A	Full access to Signals Rooms	<b>05/08/15</b>	06/08/15	<b>07/08/15</b>
C2B	8A	Full access to Traction Power Rooms:	<b>05/08/15</b>	07/15/15	<b>08/06/15</b>
C2B	10	Complete all remaining Comms, Signal , & Traction Power work	<b>05/14/15</b>	07/27/15	<b>08/10/15</b>
C3	4c	Compl Lwr/Uppr Platforms & Signal Rms	05/14/15	05/27/15A	<b>Complete</b>
C4C	7B	Complete Work Ancillary #1	05/29/15	06/25//15	<b>07/31/15</b>
C4C	12	Full access @ Station Service Center(s)	<b>05/29/15</b>	07/15/15	<b>08/07/15</b>
C5C	2	Limited Access; Sta. 1209+00->1198+00	<b>05/04/15</b>	06/12/15	<b>07/01/15</b>
C5C	9	Turnover Traction Power Rooms	<b>05/21/15</b>	06/19/15	<b>07/15/15</b>
C5C	9A	Room-to-Room Conduit Ready	<b>05/21/15</b>	06/19/15	<b>07/15/15</b>
C5C	10	Turnover Traction Power Rooms	<b>05/15/15</b>	06/09/15	<b>07/09/15</b>
C5C	10A	Room-to-Room Conduit Ready	<b>05/15/15</b>	06/09/15	<b>07/09/15</b>
C5C	11	Full access @ Station Service Center(s)	<b>05/20/15</b>	06/08/15	<b>07/09/15</b>
C5C	14b	Limited Access all locations	<b>05/21/15</b>	06/05/15	<b>07/08/15</b>

3. Milestones forecast for completion during the next update period (07/01/15 to 07/31/15):

<b>Pkg</b>	<b>MS</b>	<b>Description</b>	<b>UD #107 Date</b>	<b>UD #108 Date</b>	<b>UD #108 Float</b>
C2B	6B	Full access to Comms Rooms & Closets	06/24/15	07/08/15	73
C2B	6C	Full access to Comms Rooms & Closets	06/24/15	07/08/15	73
C2B	7A	Full access to Signals Rooms	06/08/15	07/08/15	15
C2B	7B	Full access to Signals Rooms	06/24/15	07/24/15	15
C2B	7C	Full access to Signals Rooms	06/24/15	07/24/15	149
C4C	7B	Complete Work Ancillary #1	06/25/15	07/31/15	265
C5C	2	Limited Access; Sta. 1209+00->1198+00	06/12/15	07/01/15	152
C5C	3	Shared Access; Sta. 1209+00->1198+00	06/12/15	07/15/15	142
C5C	7	Turnover of Signal Rooms	06/19/15	08/13/15	70
C5C	7A	Room-to-Room Conduit Ready	06/19/15	08/13/15	71
C5C	8	Turnover of Signal Rooms	06/19/15	07/22/15	70
C5C	8A	Room-to-Room Conduit Ready	06/19/15	07/22/15	71
C5C	9	Turnover Traction Power Rooms	06/19/15	07/22/15	27
C5C	9A	Room-to-Room Conduit Ready	06/19/15	07/15/15	119
C5C	10	Turnover Traction Power Rooms	06/09/15	07/15/15	24
C5C	10A	Room-to-Room Conduit Ready	06/09/15	07/09/15	123
C5C	11	Full access @ Station Service Center(s)	06/08/15	07/09/15	163
C5C	14b	Limited Access all locations	06/05/15	07/08/15	344

4. Milestones with unusual schedule variances, generally defined as a forecast date change approximately equal to or exceeding the duration of the reporting period are listed in the following table.

<b>Pkg</b>	<b>MS</b>	<b>Description</b>	<b>UD #107</b>	<b>UD #108</b>	<b>Variance</b>
C6	5A	Complete LAN - 63rd St. Station	07/01/15	<b>09/14/15</b>	75
C6	5B	Complete WAN - 63rd St. Station	07/01/15	<b>09/14/15</b>	75
C6	3A	Complete LAN - 86th St. Station	02/18/16	<b>03/30/16</b>	41
C6	3B	Complete WAN - 86th St. Station	02/18/16	<b>03/30/16</b>	41
C4C	7B	Complete Work Ancillary #1	06/25/15	<b>07/31/15</b>	36
C5C	3	Shared Access; Sta. 1209+00- >1198+00	06/12/15	<b>07/15/15</b>	33
C5C	7	Turnover of Signal Rooms	06/19/15	<b>07/22/15</b>	33
C5C	7A	Room-to-Room Conduit Ready	06/19/15	<b>07/22/15</b>	33
C5C	8	Turnover of Signal Rooms	06/19/15	<b>07/22/15</b>	33
C5C	8A	Room-to-Room Conduit Ready	06/19/15	<b>07/22/15</b>	33
C5C	14b	Limited Access all locations	06/05/15	<b>07/08/15</b>	33
C5C	11	Full access @ Station Service Center(s)	06/08/15	<b>07/09/15</b>	31
C2B	7A	Full access to Signals Rooms	06/08/15	<b>07/08/15</b>	30
C2B	7B	Full access to Signals Rooms	06/24/15	<b>07/24/15</b>	30
C2B	7C	Full access to Signals Rooms	06/24/15	<b>07/24/15</b>	30
C5C	10	Turnover Traction Power Rooms	06/09/15	<b>07/09/15</b>	30
C5C	10A	Room-to-Room Conduit Ready	06/09/15	<b>07/09/15</b>	30
C5C	15	Comp. Permanent Power	12/30/15	<b>01/28/16</b>	29
C5C	9	Turnover Traction Power Rooms	06/19/15	<b>07/15/15</b>	26
C5C	9A	Room-to-Room Conduit Ready	06/19/15	<b>07/15/15</b>	26
C4C	12	Full access @ Station Service Center(s)	07/15/15	<b>08/07/15</b>	23

<b>Pkg</b>	<b>MS</b>	<b>Description</b>	<b>UD #107</b>	<b>UD #108</b>	<b>Variance</b>
C2B	8A	Full access to Traction Power Rooms:	07/15/15	<b>08/06/15</b>	22
C2B	8B	Full access to Traction Power Rooms:	07/15/15	<b>08/06/15</b>	22
C2B	8C	Full access to Traction Power Rooms:	07/15/15	<b>08/06/15</b>	22
C5C	6	Turnover of Comm. Rooms	07/22/15	<b>08/13/15</b>	22
C5C	6A	Room-to-Room Conduit Ready	07/22/15	<b>08/13/15</b>	22
C5C	2	Limited Access; Sta. 1209+00- >1198+00	06/12/15	<b>07/01/15</b>	19
C2B	9	Full access to Station Service Centers	11/13/15	<b>11/30/15</b>	17

5. Milestones with unusual float variances, generally defined as a forecast date change approximately equal to or exceeding the duration of the reporting period are listed in the following table.

<b>Pkg</b>	<b>MS</b>	<b>Description</b>	<b>UD #107</b>	<b>UD #108</b>	<b>Variance</b>
C2B	6B	Full access to Comms Rooms & Closets	134	73	<b>-61</b>
C2B	6C	Full access to Comms Rooms & Closets	134	73	<b>-61</b>
C2B	7A	Full access to Signals Rooms	72	15	<b>-57</b>
C2B	7C	Full access to Signals Rooms	232	149	<b>-83</b>
C2B	7B	Full access to Signals Rooms	93	15	<b>-78</b>
C2B	8A	Full access to Traction Power Rooms:	98	26	<b>-72</b>
C2B	10	Complete all remaining Comms, Signal , & Traction Power work	178	83	<b>-95</b>
C4C	7A	Complete Work in all Comm Rooms	182	291	<b>109</b>
C4C	7B	Complete Work Ancillary #1	31	265	<b>234</b>
C4C	12	Full access @ Station Service Center(s)	204	75	<b>-129</b>
C4C	12	Full access @ Station Service Center(s)	204	75	<b>-129</b>
C4C	SS	Substantial Completion w/o Ent. #1	47	105	<b>58</b>
C5C	2	Limited Access; Sta. 1209+00->1198+00	120	152	<b>32</b>
C5C	6A	Room-to-Room Conduit Ready	79	51	<b>-28</b>
C5C	10	Turnover Traction Power Rooms	63	24	<b>-39</b>
C5C	15	Comp. Permanent Power	111	85	<b>-26</b>
C5C	11	Full access @ Station Service Center(s)	235	163	<b>-72</b>
C5C	14b	Limited Access all locations	368	344	<b>-24</b>

<b>Pkg</b>	<b>MS</b>	<b>Description</b>	<b>UD #107</b>	<b>UD #108</b>	<b>Variance</b>
C6	3A	Complete LAN - 86th St. Station	114	82	<b>-32</b>
C6	3B	Complete WAN - 86th St. Station	114	82	<b>-32</b>
C6	4A	Complete LAN - 72nd St. Station	127	154	<b>27</b>
C6	4B	Complete WAN - 72nd St. Station	127	154	<b>27</b>
C6	5A	Complete LAN - 63rd St. Station	260	154	<b>-106</b>
C6	5B	Complete WAN - 63rd St. Station	260	154	<b>-106</b>

**ELPEP/SMP Compliance:** The MTACC considers the IPS and the associated schedule management procedures to be in compliance with the ELPEP and Schedule Management Plan.

Forecast Revenue Service Date (RSD) and minimum schedule contingency:

- ELPEP Requirement: February 28, 2018 (RSD); and
- ELPEP Requirement: 240 CD (measured against February 28, 2018).
- Minimum Allowable Float - Real Estate Acquisition
  - ELPEP Requirement: 60 CD
    - Current Forecast: All Real Estate takings are complete as of November 1, 2011 with the last “Title Vesting” occurring on October 25, 2011.
- Minimum Allowable Secondary Float Path
  - ELPEP Requirement: Minimum 25 Calendar Days (approximately 18 WD) of schedule float for all secondary “near-critical” paths;
  - Numerous secondary float paths with Total Float (TF) <= 25 CD. Many of these paths have multiple subsidiary paths branching off the independent paths; and
  - Compliance with this requirement is not consistent with maintaining the project budget.
- Secondary Schedule Mitigation (critical path compression)
  - ELPEP Requirement: 125 CD; and
  - Mitigation opportunities will be pursued as they are identified.

### **Schedule Performance Indicators:**

In an effort to corroborate the IPS forecast, the PMOC has reviewed schedule performance to date in an effort to develop performance metrics that can assist in evaluating CPM schedule forecasts.

In its periodic reports to the FTA, the MTACC details the Budgeted Cost of Work Scheduled (BCWS) versus the Budgeted Cost of Work Performed (BCWP) for each active construction contract. At a summary level, the resulting “S-curves” compare planned versus actual performance and can provide insight into performance trends and schedule forecasts. For each active construction contract, the following table compares the planned vs. actual monthly level of achievement in terms of value earned by completed construction work. This “earned value” can be used to estimate a variance in planned vs actual schedule performance. June 2015 is the latest month for which this information is available.

<b>Value Earned</b>		<b>June-15</b>		<b>Plan Month for Actual Invoice \$</b>	<b>Months Ahead (+) or Behind (-)</b>	<b>Est. Completion Date</b>
<b>Contract \$ (x100,000)</b>	<b>Plan</b>	<b>Actual</b>				
C2B	\$324	\$305	\$235	Oct-14	-7.6	7/9/2016
C3	\$176	\$176	\$161	May-13	-24.9	5/1/2016
C4C	\$258	\$234	\$151	Oct-14	-7.6	4/5/2017
C5C	\$208	\$157	\$92	Jan-15	-4.5	9/16/2016
C6	\$261	\$212	\$151	Jan-15	-4.5	12/5/2016
<b>TOTAL</b>	<b>\$1,227</b>	<b>\$1,084</b>	<b>\$790</b>	<b>Nov-14</b>	<b>-6.6</b>	

The PMOC notes the following:

- This evaluation uses base contract values only. AWOs can be considered a partial cause of the variances indicated.
- Schedule float is also not considered. The significant schedule delay to contract C3 does not pose a risk to achieving the RSD.
- The interrelationship between contracts is not fully represented in this analysis. C6 cannot complete all its work until all station contracts are complete. As such, this analysis suggests the RSD may not be achieved until several months after the completion of the C4C contract (April 5, 2017).
- Between May 2015 and June 2015, this methodology identifies schedule slippage for each contract and a negative variance for the overall project. These results are consistent with “stacking” activities later in the schedule and the observed increase in “near-critical” paths and reduction in overall schedule float.

### **Concerns and Recommendations:**

Based on the PMOC’s review of IPS Update #108:

- During IPS #108 update period (6/1/15 to 6/30/15), eighteen milestones were scheduled for completion. None of these milestones were achieved.

- At the 86th Street Station, all milestones experienced delay approximately equal to the total duration of the update period.
- At the 96th Street Station, seven of eleven active milestones experienced delay approximately equal to the total duration of the update period. Except for Substantial Completion, all milestones experienced significant delay.
- Of the 46 active milestones, eighteen (18) are forecast for completion during the next update period (July 2015).
- The narrative report accompanying IPS Update #108 identifies several delay scenarios, none of which have been modeled in the IPS.
- In addition to the critical and near-critical paths previously described, the PMOC notes that there are numerous paths with less than 18 WD (approximately 25 CD) of schedule float involving 72nd, 86th, and 96th Street Stations. The risk delay to any of these paths affecting the overall project schedule is significant.
- Of the 28 active schedule milestones experiencing significant schedule variance, all of these variances indicated continuing delays to milestone completions. The delayed completion of milestones is a steadily increasing trend, which appears to represent a general trend where construction generally takes longer than forecast by the IPS and respective project schedules.
- The PMOC again notes frequent instances where milestone schedule delays and increases in schedule float while the schedule end date remains unchanged. This counterintuitive circumstance suggests downstream schedule revisions (reducing duration, changing logic ties) at either the contract or IPS level that may not be sustainable.

Contributing to the concerns noted above is the extended time it takes to resolve the “time impact analysis” associated with the various milestones. It is recommended that MTACC improve the process of negotiating “time impact analysis”.

### **3.0 COST DATA**

Based upon financial expenditures reported by the MTACC through July 31, 2015, SAS Phase 1 is approximately 79.1% complete. The completion status of the individual construction contracts through July 31, 2015, also based upon reported expenditures through that date, is as follows:

- C26002 (Tunnel Boring) – 100.0%;
- C26005 (96th Street Station) – 100.0%;
- C26010 (96<sup>th</sup> Street Station) –74.2%;
- C26013 (86th Street Station) – 100%;
- C26008 (86<sup>th</sup> Street Station) – 99.6%;
- C26012 (86<sup>th</sup> Street Station) – 45.0%;
- C26006 (63<sup>rd</sup> Street Station) – 91.9%;
- C26007 (72nd Street Station) – 99.9%;
- C26011 (72<sup>nd</sup> Street Station) – 61.1%; and



- C26009 (Systems) – 58.4%

Aggregate Construction % Completion:

- 100% of all construction has been bid;
- 100% of all construction is under contract;
- 83.5% of base contract construction (excluding AWOs) is complete; and
- 84.5% of all construction is complete.

Based upon cost data received from the MTACC for the period through July 31, 2015:

- Value of construction in place this period = \$46,013,506;
- Estimated value of construction remaining = \$274,628,769 (base contract only);
- Target construction completion = November 15, 2016; and
- Number of months remaining = 15.6.

Soft Cost expenditures (not including real estate, OCIP, etc.) reported this period by the MTACC totaled \$7.3M; due primarily to TA Labor and Engineering Force Account expenditures. At current expenditure levels, the available budget should be sufficient through 2016, however significant expenditures beyond 2016 may require the transfer of additional funds from contingency. Any significant construction delays beyond December 2016 may also require additional contingency transfer.

**Cost Growth:** The value of AWOs reported by the MTACC/NYCT in July 2015 is summarized as follows:

	<u>Executed AWOs</u>	<u>AWO Exposure</u>
<b>Jul-15</b>	\$195,240,278	\$234,072,360
<b>Jun-15</b>	<u>\$191,228,978</u>	<u>\$229,818,439</u>
Δ	\$4,011,300	\$4,253,921
Δ	2.10%	1.85%

The changes in AWO Exposure for each construction contract are summarized as follows:

Const. Pkg.	AWO Exposure			
	Jul-15	Jun-15	Period Δ	Changes this Period
Completed Packages	\$47,612,118	\$47,612,118	\$0	Final values for Packages C1 and C5A as reported by MTACC.
C2A	\$47,615,409	\$47,615,409	\$0	No change reported this period.
C2B	\$32,305,659	\$32,628,812	-\$323,153	Net decrease is based on revised estimates for AWO #s 38, 99, 105, 116, 130, 142 and initial estimates for AWO #s 152, 153, 154, 159, 164, 169.

Const. Pkg.	AWO Exposure			
	Jul-15	Jun-15	Period Δ	Changes this Period
C3	\$33,971,758	\$32,579,796	\$1,391,962	Net increase is based on revised estimates for AWO #s 151, 190, 194, 196, 197, 200, 207, 211, 214, 217, 218, 220 through 227 and initial estimates for AWO #s 228 through 238.
C4B	\$1,325,639	\$1,325,639	\$0	No change reported this period.
C4C	\$31,232,604	\$27,836,744	\$3,395,860	Net increase is based on revised estimates for AWO #s 68, 101, 123 and initial estimates for AWO #s 18, 19, 93, 114, 118, 129, 144, 148, 149, 151, 154, 162, and 163.
C5B	\$24,114,600	\$24,535,222	-\$420,622	Net increase is based on revised estimates for AWO # 35.
C5C	\$8,009,156	\$7,979,813	\$29,343	Net increase is based on revised estimates for AWO #s 6, 15, 21, 25, 30, 47, 52, 56, 80, 91 and initial estimates for AWO #s 20, 84, 95, 101, 103, 104, 107, 109, 112, and 113.
C6	\$7,885,417	\$7,704,886	\$180,531	Net increase is based on revised estimates for AWO #s 67, 72, 78, 84, 93, 94 and initial estimates for AWO #s 90, 91, 99, 100, 103, 104, 110, 114, 115, 116, 119, and 120.
Totals	\$234,072,360	\$229,818,439	\$4,253,921	

The changes in Executed AWO Value are summarized as follows:

Const. Pkg.	Executed AWOs			
	Jul-15	Jun-15	Period Δ	Changes this Period
Completed Packages	\$47,612,118	\$47,612,118	\$0	Final values for Packages C1 and C5A as reported by MTACC.
C2A	\$47,615,409	\$47,615,409	\$0	No change reported this period.
C2B	\$27,271,560	\$26,380,087	\$891,473	Increase is based on execution of AWO #s 84, 99, 130, 157, 159.
C3	\$16,864,949	\$15,811,949	\$1,053,000	Increase is based on execution of AWO #s 147, 155, 166, 168, 206, 207, 217, 218, 228, 231, and 232.
C4B	\$1,325,639	\$1,325,639	\$0	No change reported this period.

Const. Pkg.	Executed AWOs			
	Jul-15	Jun-15	Period Δ	Changes this Period
C4C	\$25,060,529	\$24,246,442	\$814,087	Increase is based on execution of AWO #s 68, 92, 117, 119, 144, 149, 150, 153, and 162 .
C5B	\$19,084,053	\$18,323,553	\$760,500	Increase is based on execution of AWO #s 46, 59, 101.
C5C	\$3,224,339	\$2,884,589	\$339,750	Increase is based on execution of AWO #2 and 18.
C6	\$7,181,682	\$7,029,192	\$152,490	Increase is based on execution of AWO #s 67, 78, 84, 93, 104, 110.
Totals	\$195,240,278	\$191,228,978	\$4,011,300	

As of July 31, 2015, the status of Additional Work Orders (AWOs) for each construction contract on Phase 1 of the Second Avenue Subway Project is summarized as follows:

Contract / (Package)	% Complete	Award	Exposure		Executed	
			\$	% of Award	\$	% of Award
C26002 (1)	100.00%	\$337,025,000	\$41,086,647	12.19%	\$41,086,647	12.19%
C26005 (2A)	100.00%	\$325,000,000	\$47,615,409	14.65%	\$47,615,409	14.65%
C26010 (2B)	74.23%	\$324,600,000	\$32,305,659	9.95%	\$27,271,560	8.40%
C26006 (3)	91.91%	\$176,450,000	\$33,971,758	19.25%	\$16,864,949	9.56%
C26007 (4B)	99.93%	\$447,180,260	\$1,325,639	0.30%	\$1,325,639	0.30%
C26011 (4C)	61.07%	\$258,353,000	\$31,232,604	12.09%	\$25,060,529	9.70%
C26013 (5A)	100.00%	\$34,070,039	\$6,525,471	19.15%	\$6,525,471	19.15%
C26008 (5B)	99.63%	\$301,860,000	\$24,114,600	7.99%	\$19,084,053	6.32%
C26012 (5C)	45.03%	\$208,376,000	\$8,009,156	3.84%	\$3,224,339	1.55%
C26009(6)	58.42%	\$261,900,000	\$7,885,417	3.01%	\$7,181,682	2.74%
<b>TOTAL TO DATE</b>		\$2,674,814,299	\$234,072,360	8.75%	\$195,240,278	7.30%

To date, \$2,234,164,236 (83.5%) worth of all base contract construction work has been completed. As a percentage of work completed, the AWO exposure for these contracts = 10.48% and the executed AWO % = 8.74%.

The PMOC notes that total AWOs currently exceed the original AWO budget. The PMOC also notes that exposure values are not included in a significant number of logged AWOs. Based on current AWO trends, the final AWO value is estimated at approximately \$260 million, which is consistent with the \$262 million adjusted AWO Budget currently maintained in the MTACC CWB.

The MTACC maintains an AWO forecast which includes input from its Risk Registers. The MTACC AWO EAC Forecast through July 31, 2015, is \$327,772,464. This value is somewhat

greater than the PMOCs AWO forecast and will be used as part of the overall contingency/EAC analysis.

**Cost Contingency:** Based upon the MTACC Current Working Budget, expenditures as of July 31, 2015 reported by the MTACC and the current AWO Exposure analyses; the PMOC has developed the following contingency analysis:

	<u>Current</u>	<u>@ Completion</u>
Phase 1 Budget	\$4,451,000,000	\$4,451,000,000
Construction Awards	\$2,674,814,299	\$2,674,814,299
Soft Cost Expended	\$1,120,208,430	\$1,120,208,430
Soft Cost Forecast to Complete	\$187,899,655	\$258,924,772
AWO Exposure	\$234,072,360	\$327,772,464
Total Contingency	\$234,005,256	\$69,280,035
Reserved Contingency	\$160,000,000	\$69,280,035
Available Contingency	\$74,005,256	
	Transfer from Reserved Contingency =	\$90,719,965

Notes:

- (1) Forecast to complete includes increases in OCIP, A/E & CM Services, Engineering Testing and FOC installation;
- (2) AWO Exposure @ Completion incorporates MTACC “risk-informed” forecast through May 2015;
- (3) Total Contingency = budget balance after forecast expenditures;
- (4) Final Contingency Balance reflects current forecast transfer of \$90,719,965 from “Reserved Contingency; and
- (5) Minimum Available Contingency required by ELPEP is approximately \$45,000,000; 100% Construction Bid, 85% Construction Complete).

Conclusions based upon this analysis include:

- The project can be completed within the current MTACC CWB of \$4.451 billion;
- Current forecast indicates it will be necessary to utilize approximately 50% of funds from the “Executive” or “Reserved” Contingency in order to cover forecast project costs; and
- Current available contingency of approximately \$234 million is greater than ELPEP-required minimum.

**ELPEP/CMP Compliance:** The SAS Project Team maintains an EAC for all construction cost, which is updated monthly. Revision #10 of the Project Cost Estimate, which includes a complete forecast of remaining soft costs has been prepared and incorporated into the project CWB. It is the opinion of the PMOC that SAS Phase 1 is in substantial compliance with the metrics, deliverables, and intangible goals enumerated for Cost Management in the Enterprise

Level Project Execution Plan (ELPEP), dated January 15, 2010 (Section IV. b, page 8), and as further described by the Cost Management Plan (CMP).

#### **4.0 RISK MANAGEMENT**

##### Status

Major risks challenging the SAS Project Team at this time are primarily schedule related. The Project maintains individual Risk Registers for each active contract. The resulting cost and schedule contingency curves are consistent with the previous discussions contained within this report.

##### Observation and Analysis:

For several months, the MTACC has reported that the SAS Contract Risk Registers and Risk Analysis were performed in late December 2014, and that results of this analysis were reviewed with the MTACC Executive Management in March 2015. To date, the resulting schedule and cost contingency forecast curves have not been released.

The PMOC's review of Risk Registers contained in the June 2015 Monthly Risk Report includes the following:

- Risk 2B113 – “Changes to design as a result of code compliance inspections/ preferences lead to additional cost & schedule delay”. Based on the Register, this risk is unique to the C2B Contract. This risk appears to have been omitted from the C3 and C4C sections of the Register;
- Testing and Commissioning Risks – Each station contains six separate items related to NYCT testing and commissioning of the facility. Given the frequency as well as the cumulative cost and schedule consequences of these risks, it seems appropriate that they be elevated to a discussion item(s) at the Risk Mitigation Meetings; and
- Four risks for Traction Power and integration of new work at the Power Control Center. Facility power at each station has benefitted from inclusion in the risk management process. These four (4) risks may benefit from inclusion in the process.

**Track Installation Delay:** Installation of track and related work was on the project's primary critical path. Resequencing of the work mitigated previous delays and significantly increased schedule float associated with this work.

IPS Update #108 indicates new delays have occurred and schedule float has been reduced to 2 WD. Current issues including lack of adequate tunnel ventilation and tunnel ventilation plans as well as reduced physical access for material delivery due to the progression of station construction work that were not anticipated.

New schedule acceleration initiatives are under consideration by the C6 systems contractor and the station contractors to mitigate the impact of these delays.

The MTACC and the Systems Contractor continue to hold bi-weekly meetings to resolve track work issues and expedite the submittal development and review process.

**72nd Street Station Entrance 1:** In December 2014, the MTACC and the 72<sup>nd</sup> Street Station Contractor executed a change order to accelerate construction at 72nd Street Station Entrance 1 from January 27, 2017 to September 16, 2016. Work is currently on schedule however concern remains due to limited availability of mitigation options.

**Facility Power:** Timely availability of permanent facility power at the new stations is necessary to ensure the timely completion of system installation, testing, and commissioning activities. The current IPS indicates that all stations will be energized by December 2015. All contractors reportedly support this date.

**72nd Street Station:** Construction of Ancillary #1 and #2 must be completed. Equipment is on site.

**86th Street Station:** Equipment installation in the south rooms has commenced and is expected to start in the north rooms in late summer.

**96th Street Station:** Equipment installation is underway.

Various technical and commercial issues have affected this work at each of the stations. The MTACC continues to work through these issues. As currently forecast, permanent power will be available at each station in time to support testing and commissioning activities.

### Conclusions

The MTACC has used the risk management process to assist in identifying potential cost/schedule risks to the project and develop mitigation strategies in a timely and effective manner.

## **5.0 ELPEP**

The most recent ELPEP Quarterly Review Meeting was held on June 12, 2015. The next ELPEP Quarterly Review Meeting with the MTACC, the FTA-RII, SAS and ESA projects and the PMOC is scheduled for September 17, 2015. With respect to SAS, the current status of each of the main ELPEP components is summarized as follows:

- **Technical Capacity and Capability (TCC):** The MTACC has resolved all remaining FTA/PMOC comments and has issued the final revised PMP;
- **Schedule Management Plan (SMP):** The MTACC's position is that the SAS management processes remain ELPEP compliant;
- **Cost Management Plan (CMP):** The PMOC comments for both SAS and ESA have been consolidated and forwarded to the FTA. The MTACC's position is that the SAS management processes remain ELPEP compliant; and
- **Risk Mitigation Capacity Plan (RMCP) and Risk Management Plan (RMP):** The MTACC's position is that the SAS management processes remain ELPEP compliant.

The SAS Project Team has implemented the principles and requirements embodied in the ELPEP. The procedural changes triggered by the ELPEP have become an integral part of the management of the project and gives the FTA/PMOC greater insight into the risk, cost and schedule elements of the project.

## **6.0 SAFETY AND SECURITY**

Each construction contractor continued implementation of the Safety Requirements as specified in Section 01 11 50 of the General Requirements. During July 2015, each contractor participated in OSHA's National Safety Stand-down week of activities. These activities included training, demonstrations and tool box talks, on various safety topics including fall protection, tool safety, and respirator safety. CCM Safety and OCIP representatives promptly investigated safety

incidents. Safety Oversight by the CCM continued with Quarterly Assessments of selected contractors and sharing of Lessons Learned during the project wide monthly Safety Meeting. Site visits by MTA's office of Risk Management continued during the month.

As of June 30, 2015, a total of 10,986,762 construction hours have been logged on the project with 91 lost time and 167 recordable incidents documented. The total hours and incidents equates to a Lost Time Rate (LTR) of 1.60 and a Recordable Rate (REC) of 4.70. The LTR is below and the REC is above the US Bureau of Labor Statistics (BLS) national rate (Heavy & Civil construction) of 1.8 and 3.2 respectively. Although the REC is above the BLS national rate, it has shown a steady downward trend for the last twelve months.

**Safety and Security Certification:** Implementation of the Safety and Security Certification Requirements as specified in Section 01 77 12 of the General Requirements for each Station Contract and the System Contract is ongoing. Technical Working Group meetings are held monthly with each station contractor and the system contractor to review the status of the process. Specific instructions were provided to the contractors on the different Body of Evidences (BOEs) required to support the verification of completed Certifiable Items List (CIL). System Safety Certification program would require various BOEs as follows:

- Factory Acceptance Test (FAT) Report;
- Field Installation Acceptance Test (FIAT) Report;
- Certificate of Compliance (COC);
- Field Inspection Report (FIR); and
- Photos.

## **7.0 ISSUES AND RECOMMENDATIONS**

**Schedule Performance:** Completing all work and implementing new service on or near the schedule RSD is the primary issue of concern. There are several issues affecting the current schedule forecast with which the PMOC has concerns:

- The MTACC forecasts are generally over-optimistic. For example, in IPS Update #108, several delays are identified in the narrative (96th Street Station, trackwork installation), however, in each case, the MTACC does not include these delays in the IPS. Conversely, an alleged schedule delay mitigation plan (C2B) is incorporated in the IPS for several months without receipt of a supporting documented construction plan;
- The PMOC has documented numerous instances where an activity or milestone experiences a delay over an update period while also experiencing an increase in schedule float, while the end date of the project remains essentially constant. This circumstance can only occur if significant changes are made to downstream activities along the same float path. The frequency with which this situation occurs within the SAS IPS suggests, at best, the schedule remains insufficiently developed and cannot be relied upon for accurate forecasts of activity performance periods and relative "criticality" or work tasks;
- The system contractor and station contractors performance do not support the schedule forecast made by the IPS; and
- Ongoing direct observations made by the PMOC at contract progress meetings indicate that contractor(s) are not supportive of the schedule goals identified by the IPS.

The MTACC has overcome significant problems in successfully managing the project schedule to date. However, the PMOC is concerned that the MTACC has lost focus on realistic schedule goals as well as the resolution of those issues most likely to cause major delay to the project RSD.



## **APPENDIX A - ACRONYMS**

A/A	AECOM/Arup
AFI	Allowance for Indeterminates
ARRA	American Recovery and Reinvestment Act
AWO	Additional Work Orders
BA	Budget Adjustment
CCM	Consultant Construction Manager
CD	Calendar Days
CMP	Cost Management Plan
CSSR	Contact Status Summary Report
CIL	Central Instrument Location
CPRB	Capital Program Review Board
CPP	Contract Packaging Plan
CWB	Current Working Budget
CY	Cubic Yards
DCB	Detailed Cost Breakdown
DMP	Deformation Monitoring Points
EAC	Estimate at Completion
ELPEP	Enterprise Level Project Execution Plan
EPC	Engineering-Procurement-Construction
FFGA	Full Funding Grant Agreement
FTA	Federal Transit Administration
GO	General Outage
IPS	Integrated Project Schedule
MO	Month
MPT	Maintenance Protection of Traffic
MTA	Metropolitan Transportation Authority
MTACC	Metropolitan Transportation Authority – Capital Construction
N/A	Not Applicable
NOA	Notice of Award
NTP	Notice to Proceed
NYCT	New York City Transit

NYSPTSB	New York State Public Transportation Safety Board
OSS	NYCT Office of System Safety
PE	Preliminary Engineering
PEP	Project Execution Plan
PMOC	Project Management Oversight Contractor (Urban Engineers)
PMP	Project Management Plan
PQM	Project Quality Manual
QA	Quality Assurance
RAMP	Real Estate Acquisition Management Plan
RMCP	Risk Mitigation Capacity Plan
RMP	Risk Management Plan
ROD	Revenue Operations Date
ROW	Right of Way
RSD	Revenue Service Date
SAS	Second Avenue Subway
SCC	Standard Cost Category
SMP	Schedule Management Plan
SOE	Support of Excavation
SSCC	Safety and Security Certification Committee
SSOA	State Safety Oversight Agency
SSPP	System Safety Program Plan
TBD	To Be Determined
TBM	Tunnel Boring Machine
TF	Total Float (Schedule)
TCC	Technical Capacity and Capability
VE	Value Engineering
WBS	Work Breakdown Structure
WD	Work Days

**APPENDIX B – TABLES**

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**Table 1 - Summary of Schedule Dates**

	FFGA (March 2015)	Forecast Completion	
		Grantee	PMOC
Begin Construction	January 1, 2007	March 20, 2007A	March 20, 2007A
Construction Complete	August, 2016	November 11, 2016	October 2017
Revenue Service	February 28, 2018	December 30, 2016	February 2018

A = Actual

**Table 2 - Schedule Contingency**

IPS Update #	102	103	104	105	106	107	108
Data Date	1/1/15	2/1/15	3/1/15	4/1/15	5/1/15	6/1/15	7/1/15
	Contingency (CD)						
RSD=12/30/2016							
Risk Mitigated	69	38	38	49	43	45	50
Risk Realized	69	38	38	49	43	45	50
RSD=02/28/2018							
Risk Mitigated	492	461	461	473	467	469	474
Risk Realized	492	461	461	473	467	469	474

**Table 3 – Schedule Milestone Comparison**

Pkg	MS	Description	Dates			Variance		Sch. Float 108	Float Δ
			Adjusted	UD #107	UD #108	Contract	Month		
C2B	6B	Full access to Comms Rooms & Closets	08/21/14	06/24/15	<b>07/08/15</b>	-321	14	73	<b>-61</b>
C2B	6C	Full access to Comms Rooms & Closets	08/21/14	06/24/15	<b>07/08/15</b>	-321	14	73	<b>-61</b>
C2B	7A	Full access to Signals Rooms	08/21/14	06/08/15	<b>07/08/15</b>	-321	30	15	<b>-57</b>
C2B	7B	Full access to Signals Rooms	08/21/14	06/24/15	<b>07/24/15</b>	-337	30	15	<b>-78</b>
C2B	7C	Full access to Signals Rooms	08/21/14	06/24/15	<b>07/24/15</b>	-337	30	149	<b>-83</b>
C2B	8A	Full access to Traction Power Rooms:	08/21/14	07/15/15	<b>08/06/15</b>	-350	22	26	<b>-72</b>
C2B	8B	Full access to Traction Power Rooms:	08/21/14	07/15/15	<b>08/06/15</b>	-350	22	194	<b>-4</b>
C2B	8C	Full access to Traction Power Rooms:	08/21/14	07/15/15	<b>08/06/15</b>	-350	22	194	<b>-4</b>
C2B	9	Full access to Station Service Centers	11/21/14	11/13/15	<b>11/30/15</b>	-374	17	245	<b>-17</b>
C2B	10	Complete all remaining Comms. Signal , & Traction Power work	09/21/14	07/27/15	<b>08/10/15</b>	-323	14	83	<b>-95</b>
C2B	SS	Substantial Completion	12/21/15	11/11/16	<b>11/11/16</b>	-326	0	0	<b>-2</b>
C3	SS	Substantial Completion	05/13/14	02/19/16	<b>02/22/16</b>	-650	3	186	<b>-7</b>
C4C	7A	Complete Work in all Comms. Rooms		02/29/16	<b>09/17/15</b>	-42264	-165	291	<b>109</b>
C4C	7B	Complete Work Ancillary #1		06/25/15	<b>07/31/15</b>	-42216	36	265	<b>234</b>
C4C	10	Complete north power rooms	2/25/15	09/30/15	<b>09/30/15</b>	-217	0	66	<b>17</b>
C4C	12	Full access @ Station Service Center(s)	08/28/14	07/15/15	<b>08/07/15</b>	-344	23	75	<b>-129</b>
C4C	SS	Substantial Completion w/o Ent. #1	11/13/15	09/30/16	<b>07/30/16</b>	-260	-62	105	<b>58</b>
C4C	SS	Substantial Completion - Ent. #1	10/07/16	09/15/16	<b>09/16/16</b>	21	1	40	<b>-3</b>
C5C	2	Limited Access; Sta. 1209+00->1198+00	01/22/15	06/12/15	<b>07/01/15</b>	-160	19	152	<b>32</b>
C5C	3	Shared Access; Sta. 1209+00->1198+00	05/22/15	06/12/15	<b>07/15/15</b>	-54	33	142	<b>23</b>
C5C	5	Turnover of Comm. Rooms	09/23/14			41905	0	<del>50</del>	<b>0</b>
C5C	6	Turnmover of Comm. Rooms	03/24/15	07/22/15	<b>08/13/15</b>	-142	22	50	<b>6</b>
C5C	6A	Room-to-Room Conduit Ready	03/24/15	07/22/15	<b>08/13/15</b>	-142	22	51	<b>-28</b>
C5C	7	Turnover of Signal Rooms	02/25/15	06/19/15	<b>07/22/15</b>	-147	33	70	<b>5</b>
C5C	7A	Room-to-Room Conduit Ready		06/19/15	<b>07/22/15</b>	-42207	33	71	<b>4</b>
C5C	8	Turnover of Signal Rooms	02/25/15	06/19/15	<b>07/22/15</b>	-147	33	70	<b>5</b>
C5C	8A	Room-to-Room Conduit Ready	02/25/15	06/19/15	<b>07/22/15</b>	-147	33	71	<b>4</b>
C5C	9	Turnover Traction Power Rooms	02/26/15	06/19/15	<b>07/15/15</b>	-139	26	27	<b>12</b>

Pkg	MS	Description	Dates		Variance		Sch. Float 108	Float Δ	
			Adjusted	UD #107	UD #108	Contract			Month
C5C	9A	Room-to-Room Conduit Ready	02/26/15	06/19/15	<b>07/15/15</b>	-139	26	119	<b>2</b>
C5C	10	Turnover Traction Power Rooms	02/25/15	06/09/15	<b>07/09/15</b>	-134	30	24	<b>-39</b>
C5C	10A	Room-to-Room Conduit Ready	02/25/15	06/09/15	<b>07/09/15</b>	-134	30	123	<b>-3</b>
C5C	11	Full access @ Station Service Center(s)	03/24/15	06/08/15	<b>07/09/15</b>	-107	31	163	<b>-72</b>
C5C	14b	Limited Access all locations	09/23/14	06/05/15	<b>07/08/15</b>	-288	33	344	<b>-24</b>
C5C	15	Comp. Permanent Power		12/30/15	<b>01/28/16</b>	-42397	29	85	<b>-26</b>
C5C	SS	Substantial Completion	05/31/16	08/12/16	<b>08/12/16</b>	-73	0	64	<b>-2</b>
C6	#1	Completion of Signal Block Design	08/18/12			41139	0		<b>0</b>
C6	2A	Complete LAN - 96th St. Station	05/18/15	12/30/15	<b>01/08/16</b>	-235	9	132	<b>-9</b>
C6	2B	Complete WAN - 96th St. Station	05/18/15	12/30/15	<b>01/08/16</b>	-235	9	132	<b>-9</b>
C6	3A	Complete LAN - 86th St. Station	07/18/15	02/18/16	<b>03/30/16</b>	-256	41	82	<b>-32</b>
C6	3B	Complete WAN - 86th St. Station	07/18/15	02/18/16	<b>03/30/16</b>	-256	41	82	<b>-32</b>
C6	4A	Complete LAN - 72nd St. Station	02/18/15	02/16/16	<b>01/07/16</b>	-323	-40	154	<b>27</b>
C6	4B	Complete WAN - 72nd St. Station	02/18/15	02/16/16	<b>01/07/16</b>	-323	-40	154	<b>27</b>
C6	5A	Complete LAN - 63rd St. Station	04/18/14	07/01/15	<b>09/14/15</b>	-514	75	154	<b>-106</b>
C6	5B	Complete WAN - 63rd St. Station	04/18/14	07/01/15	<b>09/14/15</b>	-514	75	154	<b>-106</b>
C6	5C	Complete all 63rd St. Station work	04/18/14	04/18/16	<b>04/05/16</b>	-718	-13	154	<b>3</b>
C6	SS	Substantial Completion	08/18/16	10/24/16	<b>11/07/16</b>	-81	14	<b>0</b>	<b>0</b>

**Table 4 - Project Budget/Cost** 

	FFGA			FFGA Amend	MTA Current Working Budget (CWB)		Expenditures as of July 31, 2015	
	\$ Millions	% of Total	Obligated (\$ Millions)	3/17/2015	\$ Millions	% of Total	\$ Millions	% of Total
Grand Total Cost:	4,866.614	100	4,572.942	5,574.614	5,267.614	100	3,520.429	66.83
Financing Cost	816.614	16.78		816.614	816.614	15.50		
Total Project Cost:	4,050.000	83.22	4,572.942	4,758.000	4,451.00	84.50	3,520.429	66.83
Total Federal:	1,350.693	27.75	1,063.942	1,373.893*	1,350.693	24.60	1,102.595*	20.93
Total FTA share:	1,300.000	96.25	990.049	1,300.000	1,300.000	23.68	1,102.595	20.93
5309 New Starts share	1,300.000	100	990.049	1,300.000	1,300.000	23.68	1,0.702	19.53
Total FHWA share:	50.693	3.75	73.893	73.893	50.693	0.96	73.893	1.40
CMAQ	48.233	95.15	71.433	71.433	48.233	0.88	71.433	1.35
Special Highway Appropriation	2.460	4.85	2.460	2.460	2.460	0.04	2.460	0.05
Total Local share:	2,699.307	55.47	3,509.000**	3,384.107	3,509.000 **	63.92	2,417.834	45.90
State share	450.000	16.67	100.000		450.000	8.20		
Agency share	2,249.307	83.33	1,145.782		3,059.000	55.72		
City share	0	0			0	0		

\* Obligated and expended amounts obtained from the Transportation Electronic Award Management (TEAM) system and MTACC's Grant Management Department.

\*\* Current MTA Board approved budget.

**Table 5 - Estimate at Completion**

Category	Current Working Budget	EAC Forecast
<b>Total Construction</b>	\$2,674,814,299	\$3,002,586,763.00
<b>Engineering Services Subtotal</b>	\$622,862,000	\$684,157,000.00
<b>Third Party Expenses</b>	\$554,086,273	\$562,086,000.00
<b>TA Expenses</b>	\$131,160,085	\$132,890,202.00
<b>Contingency</b>	\$468,077,343	
<b>Total</b>	\$4,451,000,000	\$4,381,719,965

**Table 6 - Allocation of Current Working Budget to Standard Cost Categories**

<b>Std. Cost Category (SCC)</b>	<b>Description</b>	<b>FFGA (January 2008)</b>	<b>FFGA Amended (March, 2015)</b>	<b>MTA's Current Working Budget (June, 2015)</b>
10	Guideway & Track Elements	\$612,404,000	\$195,346,781	\$622,478,000
20	Stations, Stops, Terminals, Intermodal	\$1,092,836,000	\$1,666,605,679	\$1,277,642,000
30	Support Facilities	\$0	\$0	\$0
40	Site Work & Special Conditions	\$276,229,000	\$793,118,232	\$524,561,000
50	Systems	\$322,707,000	\$250,379,966	\$250,134,000
60	ROW, Land, Existing Improvements	\$240,960,000	\$281,500,000	\$281,500,000
70	Vehicles	\$152,999,000	\$0	\$0
80	Professional Services	\$796,311,000	\$1,026,608,168	\$1,185,742,929
90	Unallocated Contingency	\$555,554,000	\$544,441,174	\$308,942,010
Subtotal		\$4,050,000,000	\$4,758,000,000	\$4,451,000,000
Financing Cost		\$816,614,000	\$816,614,000	\$816,614,000
<b>Total Project</b>		<b>\$4,866,614,000</b>	<b>\$5,574,614,000</b>	<b>\$5,267,614,000</b>

**Table 7 - Core Accountability Items**

<b>Project Status:</b>		<b>Original at FFGA</b>	<b>Current*</b>	<b>ELPEP**</b>
<b>Cost</b>	Cost Estimate	\$4,050 million	\$4,451 million	\$4,980 million
<b>Contingency</b>	Unallocated Contingency	\$555.554 million	\$224 million	\$45 million
	Total Contingency (Allocated plus Unallocated)	\$555.554 million	\$234 million (July 2015)	\$45 million
<b>Schedule</b>	Revenue Service Date	June 30, 2014	December 30, 2016	February 28, 2018
<b>Total Project Percent Complete</b>	Based on Expenditures	79.1%		
	Based on Earned Value	N/A		
<b>Major Issue</b>		<b>Status</b>	<b>Comments</b>	
<b>Construction Schedule Delay</b>		Open	Achieving the current RSD of December 30, 2016 is the major risk issue on the project. Over recent periods, there has been a general inability to maintain planned construction schedule progress. Consistently delayed achievement of milestone dates and other schedule commitments may ultimately impact the project RSD.	
<b>Date of Next Quarterly Meeting:</b>		TBD		

\* MTACC's Current Working Budget

\*\* Enterprise Level Project Execution Plan (ELPEP), reflecting median level of risk mitigation

Schedule data based upon IPS Update #108; Data Date = 07/1/2015

Financial data based upon MTACC reporting through 07/31/2015