

PMOC MONTHLY REPORT

Second Avenue Subway Phase 1 (MTACC-SAS) Project

Metropolitan Transportation Authority

New York, New York

Report Period November 1 to November 30, 2014



PMOC Contract No. DTFT60-09-D-00007

Task Order No. 7, Project No. DC-27-5235, Work Order No. 2

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

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THIRD PARTY DISCLAIMER

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For projects funded through an FTA Full Funding Grant Agreements (FFGA) 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 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. DTFT60-09-D-00007. 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 MTACC (Capital Construction) Second Avenue Subway (SAS) Mega-Project managed by MTACC and MTA as the grantee and financed by the FTA FFGA.

MONITORING REPORT

1.0 PROJECT STATUS

During November 2014, MTACC continued advancing SAS, Phase 1 to meet a Revenue Service Date (RSD) of December 30, 2016 within its Current Working Budget (CWB) of \$4.451B (exclusive of financing). The overall project is approximately 71.5% complete. Progress continued on the eight (8) active construction contracts and featured the following accomplishments:

- C-26005 (C2A) "96th Street Site Work and Heavy Civil" Substantial Completion was achieved on November 5, 2013. The contract closeout process is ongoing.
- C-26010 (C2B) "96th Street Station Civil, Architectural, and MEP". Work is progressing to complete Milestones 6, 7 and 8 by December 31, 2014. Shared access to 6 of the 19 rooms has been provided to the C6 contractor.
- C-26006 (C3) "63rd Street Station Rehabilitation". The focus of the work effort continues to be Area 5, the progress at Entrance #1 and meeting the milestones for turnover of rooms to the C6 contractor. At Entrance #1 the permanent micro-piles were completed.

- 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”. Continued construction of permanent stairs from the Mezzanine to Platform. Continued advancing Ancillary Buildings #1 & #2 walls & floors to street level. Removing street decking at Entrance #3 & Ancillary #2 as work moves to the street level.
- C-26008 (C5B) “86th Street Station Cavern Mining and Lining”. Completion of Entrance #2 work remains on track for forecast December 2014 completion. The contractor began demobilizing from the site.
- C-26012 (C5C) “86th Street Station Architectural and MEP”. Continued erection of formwork and placement of Mezzanine deck slabs. Continued construction of the South Upper Mezzanine.
- C-26009 (C6) “Track, Power, Signals and Communication Systems”. Installation of signals, traction power, communication equipment and cables is ongoing throughout the various work zones. Work associated with the Local Area Network (LAN) and Wide Area Network (WAN) is being expedited.

a. Procurement

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

b. Construction

As of November 30, 2014, 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.
- Submittal of contract closeout documentation is ongoing.

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

Near term Milestones

- Milestone 6: Completion of all work in the nine Communication Rooms and the installation of conduits between the rooms to allow full access to the C-26009 (C6) Contractor. Work is progressing to have all rooms and installation of the room to room conduits completed by December 31, 2014. One room has been completed and turned over to the C6 contractor. The C6 contractor has also been provided shared access to five of the other rooms.
- Milestone 7: Completion of all work in the six Signal Rooms and the installation of conduits between the rooms to allow full access to the C-26009 (C6) Contractor. Work is progressing to have five of the rooms and installation of the room to room conduits completed by December 31, 2014. One room is delayed because of a change in space requirements (AWO) and is expected to be completed by July 15, 2015. The C6 contractor has been provided shared access to one of the rooms.

- Milestone 8: Completion of all work in the four Traction Power Sub-Station rooms and the installation of conduits between the rooms to allow full access to the C-26009 (C6) Contractor. Work is progressing to have all rooms and installation of the room to room conduits completed by December 31, 2014. The C6 contractor has been provided shared access to one of the rooms.
- Ancillary #1
 - Ongoing work at the invert, mezzanine and street levels includes: framing, rebar installation and concrete placement for floor and wall slabs (2nd and 3rd floors); installation of floor drains; and waterproofing.
- Ancillary #2
 - Ongoing work at the street level includes: framing, rebar installation and concrete placement for the slab and walls.
- Entrance #1
 - Ongoing work includes: framing, rebar installation and concrete placement for upper walls, staircase and roof slab and waterproofing of sand walls.
- Entrance #2
 - Ongoing work includes: drain placement, framing rebar installation and concrete placement for upper and lower invert slab; framing rebar installation and concrete placement for CIP walls.
- Entrance #3
 - Ongoing work includes: removal of bracing beneath girder for equipment; delivery of electrical equipment.
- Roof Level
 - Ongoing work includes: removal of deck beams on the Eastside of 2nd Ave; installation of new utilities; and backfilling

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

- Surveying of the Deformation Monitoring Points (DMPs) is ongoing and will continue throughout the project. There continues to be no issues with the instrumentation monitoring results during micro-pile installation and excavation at Entrance #1.
- The focus of the work effort remains Area 5 and the progress at Entrance #1.
- **Area 5 (Reconstruction consists of 6 mezzanines and the deck plaza roof)**
 - Continued setting traction elevator equipment in the Elevator Machine Rooms and the Elevator Shafts, running power connections to the elevators and continued installation of the elevators moving platforms.
 - Continued installation of power & communication conduits throughout.
 - Completing erection of CMU walls on the 4th & 6th Mezzanines.
- **Milestones**

- The Project Office has advised that Milestone #3 will finally be totally completed on January 22, 2015. This milestone was supposed to be completed in March 2014.
- **Ancillary #2**
 - Erection of the above-grade concrete structure is complete.
- **Entrance #1**
 - Completed the installation of permanent micro-piles and began load testing. After successful testing excavation to the station will resume.
- **Entrance #2 (Street Elevator)**
 - Began installation of angles and grating.
- **Platforms**
 - Continued installation of platform pavers and room bases on the G4 platform and installation of wall tiles on the inactive side of the G4 platform.
 - Continued installation of track wall tiles on the inactive side of the G3 platform level and continued installation of ceiling panels.

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 & Entrances

- **Ancillary #1 and Ancillary #2**
 - The erection of the concrete walls and slabs in Ancillary #2 has reached street level and contractor began removing the street level decking.
 - Placed 2nd Upper Mezzanine slab & began 2nd Upper Mezzanine walls in Ancillary #1.
- **Main Cavern**
 - Conduit installation continues throughout the North, South & Public Mezzanines.
 - CMU wall erection continued in the Public Mezzanine.
 - Escalators #1, 3, 5 and 12 will undergo Factory Acceptance Testing (FAT) December 8 – 12, 2014.
 - Architectural “Coffer Tiles” for the Public Mezzanine ceiling will be delivered January 15, 2015.
 - Continued construction of permanent concrete stairs from the mezzanine to the platform.
 - Work in the Chiller Rooms, including equipment installation, is forecast to be completed by February 15, 2015.
- **G3/G4 Tunnels**
 - The C6 contractor has begun advancing rail installation in the G4 Tunnel.

- **Platform**
 - Completion of construction of the platform deck is forecast for mid-December 2014.
- **Entrance #1:**
 - Excavation & rock dowels continue at the garage level.
 - Arch & walls waterproofing continued along the incline.
- **Entrance #3**
 - The street deck was removed and the structure erection has moved near street level.
- **Schedule**
 - Milestones #10, Completion of all Traction Power Rooms at the North Mezzanine for full C6 Access was previously scheduled for October 29, 2014. This remains delayed to December 12, 2014 due to lighting changes, redesign to equipment & power feeders and changes to the Egress Passageway.
 - Milestone #11 (Traction Power Rooms South) & Milestone 3 (shared access @ 72nd St. shaft) was completed on November 29, 2014.

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

- **Entrance #2**
 - Completed backfilling to street level.
- **Site**
 - Continuing with sidewalk and curb restoration along E. 86th St.
 - Continued demobilizing from the site.

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

- **Main Cavern**
 - The Mezzanine north slab placements are continuing and have passed the access to Entrance #2.
 - Continuing with placement of the Upper Mezzanine slabs.
 - Began placement of mezzanine curbs.
- **Ancillary #1**
 - Began placement the north end of the East Mezzanine slab.
- **Ancillary #2**
 - Continued with waterproofing to the street level.
- **South Tunnels**
 - The work for the low & high benches/embedded ducts in the East & West Tunnels neared completion.
- **Platform**

- Continued the architectural precast panel installation at the Platform Level where space is available. This work has advanced considerably.
- Drilling/installing dowels and preparing surface to begin erection of Platform knee walls.

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

- Track:
 - Completed concrete pour on the northbound Track S2 between 86th and 96th Street Station
 - Concrete placement for southbound Track S1 between 86th and 96th Street is ongoing
 - Rail required for special track work at 96th Street was delivered
- Communication:
 - Fiber optic cable testing for 63rd Street Milestone 5A/5B Wide Area Network (WAN) and Local Area Network (LAN) is ongoing
 - Cables required for inter-station communication room connectivity between 63rd and 72nd Streets have been installed
 - Emergency Alarm (EA) and sound power phones end devices with associated conduit between 63rd and 72nd Street station tunnels have been installed
- Signal (63rd Street Station)
 - Installation of wayside signal conduits and wayside signal equipment in the 63rd Street Station and north of 96th Street Station is ongoing
 - Cable tray installation und the platform at 63rd Street Station is ongoing
 - Installation of line and local cables, conduits and wayside signal equipment is ongoing
 - Installation of racks and wall equipment in 147 Central Instrument Room at 63rd Street Station
 - Continued installation of rack steel in the relay room at the 96th Street Station
- Procurement: Majority of the equipment has been delivered. Outstanding equipment as follows:
 - ALU: Network, CCTV and IAC for 63rd, 72nd, and 96th Street Stations are due before December 24, 2014. NYCT personnel required to support the revised factory acceptance tests schedule.
 - MKJ: PACIS Cabinets and speakers for 63rd, 72nd, and 96th Street Stations are due before December 24, 2014. NYCT personnel required to support the revised factory acceptance tests schedule.
 - PRI (HVAC SCADA) design information from 63rd Streets contractor is still needed.
- Submittal Progress
 - Total projected submittals: 5,908
 - Total submitted to date: 4,059

- Total projected to complete: 1,849
- Percent completed: 69.0%
- Pending MTA response: 293

C. Quality Assurance and Quality Control (QA/QC)

Status:

During November 2014, the Second Avenue Subway Quality Management team continued holding Quality Meetings and Quarterly Quality Oversight of the Contractor with CCM, MTACC, and 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 Sessions for numerous construction processes.

Observation:

Major Issues

The major issues noted by the PMOC during November 2014 include:

- Nonconformance Reports (NCRs)

The C4C and C5B contractors are delinquent in issuing NCRs when the nonconformance occurred. The SAS Program Executive has directed that NCRs for concrete that is out of specification be generated each week. As of September 30, 2014, the C4C contractor is two months behind and the C5B contractor is five weeks behind. The C5B contractor is not documenting concrete failures on an NCR until concrete break results are obtained, months after the nonconformance occurs. When the C5B contractor does issue an NCR, it is for a three month period rather than for the required one NCR each week.

The C5C contractor's Quality Manager has indicated that he will not prepare the required concrete statistical analysis until the end of the contract. Also, he has listed ten NCRs in the log but has not issued them even though NCRs must be issued when the nonconformance is identified.

- Inspection Daily Reports

At the end of September 2014, the C4C and C5C contractors are both four weeks behind in entering their Daily Inspection Reports into the Contractor Management System (CMS).

- Project Quality Manual

Revision 3 of the SAS Project Quality Manual (PQM) was issued in April 2009. The SAS Quality Manager prepared a draft of Revision 4 to reflect the new MTACC QO checklist requirements and other changes that have occurred since Revision 3 was issued. The PMOC received a draft of Revision 4 to review. Comments will be returned to the SAS Project Quality Manager in October 2014.

Contract Package C2B	
Status:	Through September 30, 2014, a total of 48 NCRs have been issued. 33 have been closed and 15 NCRs are still open. In September 2014, one new NCR was written and none were closed.
Observation:	Of the 15 open NCRs, 12 are for concrete that was out of specification. A concrete analysis was submitted and is awaiting approval from the designer of record. Entry of Inspection Daily Reports is current.
Concerns and Recommendations:	None.
Contract Package C3	
Status:	Through September 30, 2014, a total of 86 NCRs have been issued. 68 have been closed and 18 NCRs are still open. In September 2014, three new NCRs were written and none were closed.
Observation:	Of the 18 open NCR's, 7 were written by the contractor on one of their subcontractors. Four of these NCRs have been open 7 to 14 months. Entry of Inspection Daily Reports into CMS is current.
Concerns and Recommendations:	No NCRs have been closed in the past 3 ½ months. The PMOC is concerned that 9 of the 18 open NCRs have been open for 7 to 13 months. The SAS C3 Quality Manager had stated that he and the C3 Contractor's Quality Manager would try to close 5 of the 7 subcontractor NCRs in September 2014. This did not occur.
Contract Package C4C	
Status:	Through September 30, 2014, a total of 62 NCRs have been issued. Three have been closed and 59 NCRs are still open. In September 2014, no new NCRs were written and none were closed.
Observation:	53 of the 59 open NCRs are for concrete that was out of specification. The contractor has performed two concrete analyses, one for each of its suppliers. The concrete analyses are awaiting approval from the designer of record. Submittal of Inspection Daily Reports is four weeks behind.
Concerns and Recommendations:	The PMOC is concerned that the contractor did not generate the out of spec concrete NCRs that occurred in July until the end of August. Out of spec concrete NCRs have not been generated for August and September. The PMOC recommends that the NCRs be generated each week as directed by the SAS Program Executive. The PMOC is also concerned that submittal of Daily Reports is four weeks behind.

Contract Package C5B	
Status:	Through September 30, 2014, a total of 87 NCRs have been issued. Of the 87 that have been issued, 69 have been closed and 18 NCRs are still open. In September 2014, three new NCRs were written and none were closed.
Observation:	Of the 18 open NCRs, 12 are for concrete that was out of specification. One NCR was written for concrete that failed over a four month period, from February to May 2014 and a second for concrete that failed over a two month period, from June to July 2014. The contractor's corrective action statement on the NCRs that "No corrective actions required. All concrete cylinder test results met the compressive strength requirement" is unacceptable. Entry of Inspection Daily Reports into CMS is current.
Concerns and Recommendations:	The PMOC is concerned that the contractor is not documenting concrete failures each week as directed by the SAS Program Executive and that corrective action is inadequate. The corrective action statement on the NCRs is justification for an Accept As Is disposition and is not corrective action to preclude the nonconforming condition from occurring again. The PMOC recommends that MTACC Quality management resolve this issue.
Contract Package C5C	
Status:	Through September 30, 2014, 21 NCRs have been issued. . Of the 21 that have been issued, 3 have been closed and 18 NCRs are still open. In September 2014, 6 new NCRs were written and none were closed.
Observation:	The six NCRs written in September were all for concrete that was out of specification the previous week. This complies with the direction of the SAS Program Executive. The Contractor's Quality Manager has stated that he will not prepare the concrete statistical analysis until the end of the contract. The NCR log lists ten NCR numbers (16-21, 23, and 29-31) with a description and the comment "Not Issued". Submittal of Inspection Daily Reports is four weeks behind.
Concerns and Recommendations:	The PMOC was concerned that nonconformance reports for concrete that was out of specification in May, June, and July 2014 were not written until August 2014. The PMOC recommended that the contractor generate NCRs for out of specification concrete each week as directed by the SAS Program Executive. This recommendation has been followed and preparation of NCRs for out of specification concrete is now up to date. The PMOC had expressed its concern to the SAS C5C Quality Manager that the Contractor's Quality Manager will not prepare the concrete statistical analysis until the end of the contract. The Contractor's Quality Manager is the same person who prepared the original concrete statistical analysis on the C4B contract and it is surprising that he has taken this position. The PMOC is further

	concerned that ten NCRs are listed in the log but have not been issued. The PMOC recommends that when a nonconformance occurs, the NCR be documented and issued immediately. The PMOC is also concerned that submittal of Daily Reports is four weeks behind. Last month, submittal was current so the contractor submitted no Daily Reports in September.
Contract Package C6	
Status:	Through September 30, 2014, a total of nine NCRs have been issued. Six have been closed and three NCRs are still open. In September 2014, one new NCR was written and none were closed. None of the nine total NCRs were for concrete placement. Entry of Inspection Daily Reports into CMS is current.
Observation:	The contractor is managing their quality program satisfactorily.
Concerns and Recommendations:	None.

Concerns and Recommendations:

Refer to previous section.

2.0 SCHEDULE DATA

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 #100 was received on December 7, 2014 and is based on a Data Date of November 1, 2014. This update contained “.XER” schedule files for the IPS and several current contract schedule updates. The IPS forecasts the completion of all construction and NYCT Pre-Revenue Training & Testing activities on October 10, 2016, with approximately 84 calendar days (CD) or 60 work days (WD) of contingency, resulting in a forecast Revenue Service Date (RSD) of December 30, 2016.

Project Critical Path:

The project critical/longest path begins through construction of Entrance #1 at the 72nd St. Station. Support of excavation is followed by excavation and is forecast to complete on July 8, 2015. The path then continues through the structural underpinning, which is concurrent with waterproofing and concrete lining of the incline and adit. Structural work is forecast to complete on April 7, 2016 and is followed by installation and testing of Escalator #12 which is forecast to complete on September 16, 2016.

The critical path then continues through local MEP testing and commissioning, followed by integrated MEP, COMM testing and commissioning. The Critical Path then completes with 60 WD (84CD) of Schedule Contingency leading to a RSD date of December 30, 2016.

The PMOC notes that escalator testing is forecast for completion on September 16, 2016 and all testing, commissioning and other startup activities are forecast for completion by October 10, 2016. It is recognized that these activities represent work at Entrance #1 only; however a 24 CD duration for these activities appears optimistic.

Secondary Paths: Major secondary float paths of significance to the overall status of the project.

+2/+3 WD: This path involves signal equipment installation and testing at the 86th Street Station. The path is initiated by Activity # C5C-11668 “Conduit installation below platform; LAN/WAN conduits Column Line 4-15”. A negative lag of -39 WD allows completion of Milestones #7 and #8; currently forecast for March 27, 2015. Signal system installation is initiated by Activity # C6C5-370, “Signal Rooms @ 86th – Install Kindorf system, rack steel, service equipment, conduit, grounding, trough bus and wiring”.

This path continues through pull and megger PLC couplers, dressing and termination of rack to rack wiring, forecast to complete on through September 9, 2015. Construction activities are completed with the installation and testing of relays in the signal rooms. Once relays are tested the path then continues through signal room FIAT, forecast to complete on May 11, 2016.

Installation and local testing are followed by proof of operations tests, dispatch tower tests, and traction power operational tests which are forecast to complete on August 24, 2016. Upon completion of traction power testing, proof of route familiarization training is performed for 40 day leading to the Operational Revenue Service Date (ORD) on October 3, 2016.

+3 WD: This path involves the construction of Ancillary #2 at the 96th Street Station. The path is initiated by Activity # C2B A2-176, “Build Columns & Walls to Upper Mezz., Build Upper Slab” which is currently underway and forecast to complete on December 17, 2014. The path then follows the construction of Ancillary #2 through the fourth level, at which time; the path switches to mechanical equipment installation, electrical installation and architectural finishes concluding with the substantial completion of C2B on October 4, 2016. The Critical Path then completes with 60 WD (84 CDs) of Schedule Contingency leading to a RSD date of December 30, 2016.

The PMOC notes that field inspection and testing activities within the 96th Street Station are somewhat concurrent with plumbing and fire protection piping installation within Ancillary #2. These concurrencies appear somewhat optimistic and delays in executing this schedule as currently presented should be anticipated.

+7 WD: This path involves structural concrete masonry block wall and other architectural finish work in the 86th Street Station mezzanine area. This work is currently underway and forecast for completion on May 7, 2015. This significance of this work is that it controls the achievement of C5C Milestones # 7, 8, 9 and 11. Until this work is complete, the installation of signal and traction power systems will be constrained from fully starting. Currently, the signal and traction power work in these rooms is connected to their respective milestones via negative lags, allowing the systems installation work to start before the rooms are completed. To a certain extent this overlapping of work may be achievable, but it is unlikely the 1.5 to 2 month overlap currently modelled in the IPS can be fully achieved. Further delays along this path are considered likely.

- +12/13WD:** This path involves track and third rail installation and follow-up wayside signal installation. The path is initiated by Activity #C6C3-A125 “Access to G3 and G4 Trackways through 63rd Street Station”, forecast to complete on November 3, 2014. The path then follows track and appurtenance installation through Zones 3, 4, 5, 6, 7, 8, 10 and 11 which is forecast to complete on April 8, 2016. This path then shifts to the installation of the wayside equipment at 86th Street which starts with Activity #C6C2-1575 “Wayside @86th – Install Boards, Signs, Ladders, Handrails, Finishes” and completes with Activity # C6C2-1585 “Wayside @86th – MTA inspect and provide punch list, perform punchlist work” on August 15, 2016. The completion of the wayside equipment punchlist at 86th Street then ties to Activity # C6C5-SIGCOMPL – “86th Street Station Signals Complete-Ready Operational & Train Tests” followed by Activity # SASSIGREADY and Activity # SASSIGPROOF “SAS, Perform Systemwide Operational & Train” Tests which is forecast for completion on August 22, 2016.
- +20 WD:** This path involves wayside signal system installation in the area of the 96th Street Station. The start of this work is forecast for February 14, 2015 and is controlled by C2B, Milestone #7. Milestone #7 is achieved by C2B via completion of all signal rooms, platform and back-of-house spaces and conduits. System installation work includes conduit, cable trays, cables riser boxes and cases, which is forecast for completion on July 2, 2015. The path then follows relay installation and cable megger testing, installation of signs, ladders and handrails and breakdown testing of the wayside relays, which is forecast to complete on March 14, 2016. This work is followed by system testing until August 15, 2016, at which time the signal system in this area is ready Systemwide operational testing.
- +22 WD:** This path involves the installation and inspection of escalators #1 and #3 at the 72nd Street Station. This work is forecast to start on November 10, 2014. Precedent station construction has completed. The scheduled start of escalator installation is controlled by a lag from the start of escalator fabrication; as such, it is unclear what physical achievements are necessary to initiate the start of this work. Installation is forecast to complete on February 23, 2016. Escalator inspection and testing followed by station systems testing and commissioning follow installation and are forecast to complete on September 7, 2016.
- +26/27 WD:** This path involves the construction of Ancillary #1 and subsequent installation of permanent power infrastructure at the 72nd Street Station. This path is initiated by Activity # C4C-ANC1-UMZ-10001-1 “Anc. #1 Upper Mezz WP, Rebar, Slab & Walls” which is currently in progress. Electrical installation of the grounding grid and any other construction resulting in “room ready” status for permanent power equipment is forecast for completion on May 13, 2015. Subsequent power and control wiring and testing lead to Con-Ed acceptance of permanent power facilities in both Ancillary #1 and Ancillary #2 on February 23, 2016. As of this date, permanent power is available for LAN/WAN testing from 72nd to 63rd Street Stations.

Milestone Summary: For contracts actively under construction, periodic progress of construction and schedule-related issues based on changes to contractual milestones includes the following.

1. Milestones completed this period:

Pkg.	MS	Description	Due Date	Completion Date	Variance (WD)
C3	#4b	Compl Lwr/Uppr Platforms & Signal Rms	10/14/13	6/16/2014A	-245
C5C	MS #1	Vehicle access thru 86th Street Station 1209+00 -> 1198+00	10/23/14	10/31/2014A	-8

For Contract 3, Milestone #4b was completed approximately one year later than required by contract.

2. Milestones forecast for completion during the period 11/1/14 through 11/30/14:

Pkg.	MS	Description	UD #99 Forecast	UD #100 Forecast
C4C	3	Shared access thru 72nd Street Station 1172+40 ->1163+00	11/26/14	12/22/14
C4C	11	Complete south power rooms	11/26/14	11/26/14

Neither of the milestones forecast for completion during this period were reported as complete.

3. Milestones forecast for completion during the period 12/1/14 through 12/31/14:

Pkg.	MS	Description	UD #100 Forecast	Float
C4C	MS #7	Turnover of Communications Rooms to Systems Contractor	12/05/14	254
C4C	MS #10	Complete north power rooms	12/12/14	156
C4C	MS #9	Complete all Signal Roms except M8	12/12/14	77
C4C	MS #14	Complete all remaining Comm, Signal & Traction Power Rooms	12/12/14	77
C2B	MS #8B	Full access to Traction Power Rooms:	12/15/14	475
C2B	MS #8C	Full access to Traction Power Rooms:	12/15/14	475
C2B	MS #7B	Full access to Signals Rooms	12/15/14	475
C2B	MS #7C	Full access to Signals Rooms	12/15/14	475
C4C	MS #3	Shared access thru 72nd Street Station 1172+40 ->1163+00	12/22/14	105

C5C	MS #5	Turnover of Comm. Rooms	12/22/14	68
C5B	SS	Substantial Compl/All Work incl. Ent. #2	12/22/14	114

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.

Pkg	MS	Description	Ud #99	Ud #100	Variance
C6	#5C	Complete all 63rd St. Station work	07/31/15	11/16/15	108
C3	#4c	Compl Lwr/Uppr Platforms & Signal Rms	02/03/15	05/14/15	100
C4C	MS #13	Full access @ Lubrication Room(s)	08/29/14	11/21/14	84
C5C	MS #8A	Turnover of Signal Rooms	02/24/15	04/27/15	62
C5C	MS #6A	Turnmover of Comm. Rooms	04/30/15	06/29/15	60
C2B	MS #6B	Full access to Comms Rooms & Closets	01/20/15	03/16/15	55
C2B	MS #6C	Full access to Comms Rooms & Closets	01/20/15	03/16/15	55
C6	#2A	Complete LAN - 96th St. Station	12/02/15	01/11/16	40
C6	#2B	Complete WAN - 96th St. Station	12/02/15	01/11/16	40
C5C	MS #9A	Turnover Traction Power Rooms	02/25/15	04/02/15	36
C5C	MS #10A	Turnover Traction Power Rooms	04/16/15	05/22/15	36
C5C	MS #3	Shared Access; Sta. 1209+00- >1198+00	03/27/15	04/29/15	33
C5C	MS#14b	Limited Access all locations	04/02/15	05/05/15	33
C6	#4A	Complete LAN - 72nd St. Station	03/31/16	05/02/16	32
C6	#4B	Complete WAN - 72nd St. Station	03/31/16	05/02/16	32
C5C	MS #7	Turnover of Signal Rooms	02/24/15	03/27/15	31
C5C	MS #8	Turnover of Signal Rooms	02/24/15	03/27/15	31
C2B	MS #10	Complete all remaining Comms, Signal , & Traction Power work	03/17/15	04/17/15	31
C3	SS	Substantial Completion	11/03/15	12/04/15	31

Pkg	MS	Description	Ud #99	Ud #100	Variance
C3	#3d	Mezz 6 & Platform Level Conduit & Station Fare Array	01/21/15	02/20/15	30
C5C		Substantial Completion	06/02/16	06/30/16	28
C4C	MS #3	Shared access thru 72nd Street Station 1172+40 ->1163+00	11/26/14	12/22/14	26
C5C	MS #6	Turnover of Comm. Rooms	04/30/15	05/26/15	26
C4C	SS	Substantial Completion w/o Ent. #1	08/15/16	09/08/16	24
C2B	MS #8A	Full access to Traction Power Rooms:	01/12/15	02/04/15	23
C4C	MS #9	Complete all Signal Roms except M8	01/05/15	12/12/14	-24
C4C	MS #14	Complete all remaining Comm, Signal & Traction Power Rooms	01/05/15	12/12/14	-24
C2B	MS #8B	Full access to Traction Power Rooms:	01/12/15	12/15/14	-28
C2B	MS #8C	Full access to Traction Power Rooms:	01/12/15	12/15/14	-28
C2B	MS #7B	Full access to Signals Rooms	01/15/15	12/15/14	-31
C2B	MS #7C	Full access to Signals Rooms	01/15/15	12/15/14	-31
C2B	MS #9	Full access to Station Service Centers	09/11/15	08/06/15	-36
C2B	MS #2	Shared site access @ 93rd Street shaft	12/30/14	11/01/14	-59
C4C	MS #7	Turnover of Communications Rooms to Systems Contractor	03/06/15	12/05/14	-91

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.

Pkg	MS	Description	Ud #99	Ud #100	Variance
C2B	MS #7B	Full access to Signals Rooms	30	475	445
C2B	MS #7C	Full access to Signals Rooms	30	475	445
C2B	MS #8B	Full access to Traction Power Rooms:	33	475	442
C2B	MS #8C	Full access to Traction Power Rooms:	33	475	442
C5C	MS #8A	Turnover of Signal Rooms	16	379	363

Pkg	MS	Description	Ud #99	Ud #100	Variance
C5C	MS #9A	Turnover Traction Power Rooms	52	396	344
C5C	MS #6A	Turnover of Comm. Rooms	89	334	245
C5C	MS #10A	Turnover Traction Power Rooms	197	360	163
C4C	MS #7	Turnover of Communications Rooms to Systems Contractor	174	254	80
C5C	MS #11	Full access @ Station Service Center(s)	356	388	32
C2B	MS #9	Full access to Station Service Centers	63	91	28
C5C	MS #2	Limited Access; Sta. 1209+00->1198+00	167	194	27
C6	#2A	Complete LAN - 96th St. Station	131	107	-24
C6	#2B	Complete WAN - 96th St. Station	131	107	-24
C2B	MS #6B	Full access to Comms Rooms & Closets	27	0	-27
C2B	MS #6C	Full access to Comms Rooms & Closets	27	0	-27
C6	#5C	Complete all 63rd St. Station work	283	234	-49
C3	#4c	Compl Lwr/Uppr Platforms & Signal Rms	316	249	-67
C2B	MS #2	Shared site access @ 93rd Street shaft	339	54	-285
C2B	MS #4	Shared access in East & West trackways thru Sta (1238+50 ->1225+25); 97th -> 99th St Tunnel in 99th to 105th St Tunnels	325	32	-293

6. Based on the PMOC's review of IPS Update #100.

- Of the 58 active schedule milestones, 34 experienced extraordinary variance in forecast date over this reporting period. Of those variances, 23 were delays to the forecast date and 9 were improvements to the forecast date.
- Twenty milestones experienced extraordinary variance in schedule float over this reporting period. Of those variances 12 were increases in schedule float and 8 were decreases in schedule float.
- The extraordinary variances in forecast date and schedule float are attributed to both schedule performance and the ongoing reforecast of the IPS based upon major changes to the System Contract schedule. Variances of this nature generally correspond to a reduction in reliability of the schedule forecast results.

- Eleven of the 54 active milestones are forecast for completion during the next update period (December 2014).
- The PMOC notes that eight milestones have been added to the IPS this period. These milestones represent a portion of work previously controlled by another milestone. Generally, they represent completion of electric conduits between signal, power or communication rooms. MTACC has divided these milestones to model the fact that the systems contractor has been able to start work in these rooms prior to complete installation of these conduits.
- The PMOC is concerned that the extremely high float values associated with these new milestones is the result of incomplete schedule logic and successor relationships in the schedule that have not been included. Several of these milestones' successor relationships are limited to the respective contract substantial completion date. It is the opinion of the PMOC that this schedule logic is incomplete and misleading.

Schedule Contingency: IPS Update #100 there are 84 CD (60 WD) contingency between the calculated completion of all work on October 10, 2016 and MTACC target RSD of December 30, 2016. This result is not significantly different from recent IPS updates.

ELPEP/SMP Compliance: Based on its periodic audits, MTACC considers the IPS and the associated schedule management procedures to be in compliance with the ELPEP and Schedule Management Plan. The PMOC has identified those areas where it believes current SAS schedule practices compromise the accuracy and usefulness of the IPS.

- Forecast Revenue Service Date (RSD) and minimum schedule contingency:
 - ELPEP Requirement: February 28, 2018 (RSD)
 - 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: 25 Calendar Days (approximately 18 WD).
 - Secondary float paths with Total Float (TF) =1, 2, 3, 7 and 12 WD of schedule float.
 - Compliance with this requirement is not consistent with maintaining the project budget.
- Secondary Schedule Mitigation (critical path compression)
 - ELPEP Requirement: 125 CD
 - Mitigation opportunities will be pursued as they are identified.

Concerns and Recommendations:

Refer to specific issues discussed elsewhere in this section.

3.0 COST DATA

Based upon financial expenditures reported by the MTACC through November 30, 2014 SAS Phase 1 is approximately 71.5% complete. The completion status of the individual construction contracts through November 30, 2014, also based upon reported expenditures through that date, is as follows:

- C26002 (Tunnel Boring) – 100.0%
- C26005 (96th Street Station) – 99.8%
- C26010 (96th Street Station) – 51.0%
- C26013 (86th Street Station) – 100%
- C26008 (86th Street Station) – 98.4%
- C26012 (86th Street Station) – 20.6%
- C26006 (63rd Street Station) – 83.9%
- C26007 (72nd Street Station) – 99.9%
- C26011 (72nd Street Station) – 34.1%
- C26009 (Systems) – 41.0%

Aggregate Construction % Completion:

- 100% of all construction has been bid.
- 100% of all construction is under contract
- 74.2% of base contract construction is complete
- 72.1% of all construction is complete

Based upon cost data received from MTACC for the period through November 30, 2014:

- Value of construction in place this period = \$33,098,129
- Estimated value of construction remaining = \$552,063,462 (base contract only)
- Target construction completion = October 3, 2016
- Number of months remaining = 22.1

The estimated average rate of construction required to achieve target completion date is \$26,426,910 per month. The average progress (payments) achieved over the most recent six month period is \$35,157,672 per month. Based on a review of cost data for November 2014, it appears that adequate overall progress was made on the project to achieve the RSD of December 30, 2016. It is noted that the forecast volume of work going forward is based on original contract work only. Significant additional work may alter this forecast.

Soft Cost expenditures (not including real estate, OCIP, etc.) reported this period by MTACC totaled \$7.9M. This expenditure is somewhat higher than anticipated by the CWB. At the current rate of expenditure, the current soft cost budget will be sufficient through October 2016.

Cost Growth: The value of AWOs reported by MTACC/NYCT in November 2014 is summarized as follows:

	<u>Executed AWOs</u>	<u>AWO Exposure</u>
November-14	\$145,142,345	\$210,214,458
October-14	\$137,487,650	\$199,293,034
Δ	\$7,654,695	\$10,921,424
Δ	5.57%	5.48%

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

Const. Pkg.	AWO Exposure			
	14-Nov	14-Oct	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	\$47,581,409	\$47,728,321	-\$146,912	Net decrease is based on revised estimates for AWO # 143, 159 and 181.
C2B	\$39,409,539	\$37,062,800	\$2,346,739	Net increase is based on revised estimates for AWO # 35, 52, 70, 81, 86, 98 and initial estimates for AWO # 22, 111, 112, 115, 119, 120 and 125.
C3	\$15,197,467	\$14,358,773	\$838,694	Net increase based on revised estimates for AWO # 46, 54, 101, 118, 145, 153, 154, 161, 167, 170, 172, 174, 175, 176 and initial estimates for AWO # 176 through 182.
C4B	\$1,325,639	\$1,325,639	\$0	No change this period.
C4C	\$27,915,064	\$21,942,667	\$5,972,397	
C5B	\$20,692,972	\$21,215,478	-\$522,506	
C5C	\$3,417,151	\$1,677,689	\$1,739,462	
C6	\$7,063,099	\$6,369,549	\$693,550	
	\$210,214,458	\$199,293,034	\$10,921,424	

The changes in Executed AWO Value are summarized as follows:

Const. Pkg.	Executed AWOs			
	14-Nov	14-Oct	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	\$46,945,746	\$43,130,746	\$3,815,000	Increase is based on execution of AWO # 94 and 161.
C2B	\$13,709,379	\$13,640,668	\$68,711	Increase is based on incorporation of AWO # 22, 113 and 114.
C3	\$10,541,985	\$10,541,985	\$0	No change this period.
C4B	\$1,289,639	\$1,289,639	\$0	No change this period.
C4C	\$4,586,852	\$1,418,868	\$3,167,984	
C5B	\$16,137,522	\$15,662,522	\$475,000	
C5C	\$293,000	\$235,000	\$58,000	
C6	\$4,026,104	\$3,956,104	\$70,000	
	\$145,142,345	\$137,487,650	\$7,654,695	

As of November 30, 2014, 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)	99.84%	\$325,000,000	\$47,581,409	14.64%	\$46,945,746	14.44%
C26010 (2B)	50.89%	\$324,600,000	\$39,409,539	12.14%	\$13,709,379	4.22%
C26006 (3)	83.88%	\$176,450,000	\$15,197,467	8.61%	\$10,541,985	5.97%
C26007 (4B)	99.94%	\$447,180,260	\$1,325,639	0.30%	\$1,289,639	0.29%
C26011 (4C)	34.11%	\$258,353,000	\$27,915,064	10.81%	\$4,586,852	1.78%
C26013 (5A)	100.00%	\$34,070,039	\$6,525,471	19.15%	\$6,525,471	19.15%
C26008 (5B)	98.43%	\$301,860,000	\$20,692,972	6.86%	\$16,137,522	5.35%
C26012 (5C)	20.61%	\$208,376,000	\$3,417,151	1.64%	\$293,000	0.14%
C26009(6)	41.00%	\$261,900,000	\$7,063,099	2.70%	\$4,026,104	1.54%
TOTAL TO DATE		\$2,674,814,299	\$210,214,458	7.86%	\$145,142,345	5.43%

To date, approximately \$1,985,777,983 (74.2%) worth of all base contract construction work has been completed. As a % of work completed, the AWO exposure for these contracts = 10.59% and the executed AWO % = 7.31%.

The PMOC notes an extremely high correlation between AWO exposure estimates and the final negotiated AWO value. Consequently, forecasting total AWO expenditures at completion based on the current AWO exposure values appear justified and reasonable. This forecast suggests the final AWO value will be approximately \$250M, which is significantly above the \$229M AWO contingency contained in the MTACC CWB. The PMOC considers this forecast to be conservative for the following reasons:

- This forecast assumes the RSD remains December 30, 2016.
- There remain a significant number of active AWOs for which there is no exposure estimate. As such, the value of these AWOs is not included in the PMOC forecast @ completion.
- The current soft cost budget appears insufficient for extended project operation beyond December 2017.

Cost Contingency: Based upon the MTACC Current Working Budget, expenditures as of November 30, 2014 reported by MTACC and the current AWO Exposure analyses; the PMOC has developed the following contingency analysis:

<u>Contingency Analysis</u>			
		<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	\$	1,066,522,736	\$ 1,066,522,736
Soft Cost Forecast to Complete	\$	241,585,349	\$ 308,585,349
AWO Exposure	\$	210,214,458	\$ 283,155,841
Total Contingency	\$	257,863,158	\$ 117,921,775 (1)
Reserved Contingency	\$	160,000,000	\$ 117,921,775 (2)
			\$
Available Contingency	\$	97,863,158	-

Notes:

- (1) Total Contingency = budget balance after forecast expenditures.
- (2) Reflects current forecast transfer of \$42,078,225 from “Reserved Contingency”. Increase in contingency usage based upon forecast increases to OCIP and CM expenses. Both are the result of delay from the forecast completion date of December 2014.

Conclusions based upon this analysis include:

- The project can be completed within the current MTACC CWB of \$4.451B.
- Current forecast indicates it will be necessary to transfer funds from the “Executive” or “Reserved” Contingency in order to cover forecast project costs.

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 cost 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

There was no Risk Mitigation Meeting November 2014. The top risks identified during October 2014 include the following:

<u>Risk Description</u>	<u>Mitigation Summary</u>	
Risk CNS 4 (C6): Delay resulting from management of contractual interfaces during construction.	Risk Type	
	Cost	Schedule
Mitigation Strategy: 1. The mitigation strategy has been implemented and is being continuously monitored and enhanced as needed.	Current Status: 1. Recent MTACC initiative to expedite turnover of equipment rooms to Systems Contractor has not been completely successful. 2. Interface management process has encountered problems with major issues involving MTACC staffing and contractor cooperation. 3. The basic mitigation strategy appears to remain valid. Senior management intervention appears needed to resolve overarching performance and staffing problems.	
Risk C3, C2B, C4C, C5C and C6 Schedules: Construction contract delays that will extend Project Completion beyond the current RSD.	Risk Type	
	Cost	Schedule
Mitigation Strategy: 1. Ongoing schedule improvement and delay mitigation will focus on “targets of opportunity” where specific action directed to critical or near-critical work tasks will result in measurable schedule improvement.	Current Status: 1. Acceleration of specific “targets of opportunity” will continue to be identified and addressed. 2. Recommend MTACC document specific schedule improvements associated with each accelerated task.	
Risk C4C Entrance 1 (301 E 69th Street): Work on Entrance 1 will be delayed due to delays in obtaining design approval from Owner for utility relocation in the building.	Risk Type	
	Cost	Schedule

<u>Risk Description</u>	<u>Mitigation Summary</u>	
Mitigation Strategy: 1. The mitigation strategy has been implemented.	Current Status: 1. For IPS Update #100, Entrance #1 remains on the overall project critical path. 2. Frequent monitoring and active management of this work by senior management appears necessary to identify and mitigate delays.	
Risk COM 2 (C6): Frequent late changes to the design of station and rail systems could delay C6 and the RSD.	Risk Type	
	Cost	Schedule
Mitigation Strategy: 1. The current CCG/ CCB approval process has been helpful in limiting discretionary design changes. 2. MTACC has indicated significant concern regarding this issue over the remaining duration of the project.	Current Status: 1. Monitoring of the effectiveness of the risk mitigation strategy is ongoing. 2. This risk is applicable to all major operating systems.	

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. At this stage in the project lifecycle, it is necessary to refine the risk management process to include specific issues that may threaten project objectives, rather than exclusively the focus on general, high-level risks.

5.0 ELPEP

The most recent ELPEP Quarterly Review Meeting was held on October 2, 2014. The next ELPEP Quarterly Review Meeting with MTACC, FTA-RII, SAS and ESA projects and the PMOC is scheduled for December 11, 2014. With respect to SAS, the current status of each of the main ELPEP components is summarized as follows:

- **Technical Capacity and Capability (TCC):** FTA has requested MTACC to update the Technical Capacity and Capability Plan. The update of the TCC Plan is still pending awaiting MTACC to finalize the ESA's Cost Control Committees procedure. As of November 30, 2014, the revised TCC Plan was not submitted.
- **Schedule Management Plan (SMP):** There is no 3rd Quarter 2014 ELPEP-SMP Compliance Checklist. FTA and its PMOC will schedule a follow-up meeting to discuss checklist and ELPEP compliance.
- **Cost Management Plan (CMP):** There is no 3rd Quarter 2014 ELPEP-CMP Compliance Checklist. MTACC is updating the CMP and a draft submittal to FTA is expected in December 2014.
- **Risk Mitigation Capacity Plan (RMCP) and Risk Management Plan (RMP):** There is no 3rd Quarter 2014 ELPEP-CMP Compliance Checklist.

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.

ELPEP AUDIT CLOSEOUT

MTACC performed an internal quality audit of the Second Avenue Subway Project to assure compliance with Enterprise Level Program Execution Plan (ELPEP) related MTACC Project Procedures and Management Plans. The audit reviewed 19 MTACC procedures, 2 NYCT procedures, and 4 programmatic plans. The audit consisted of 305 questions with 19 deemed non-compliant. The SAS project provided documentation that verified all corrective actions had been implemented and MTACC closed the audit. The PMOC requested and has received a copy of the audit, proposed corrective action plan, and documentation that verified all corrective actions have been implemented.

MTACC CONSTRUCTION PROCEDURES AUDITS

Representatives from MTACC Quality, SAS Quality, and SAS Construction Management audited eight MTACC Construction Procedures – CO.03, CO.04, CO.05, CO.06, CO.07, CO.08, CO.11, and CO.13 – on the following five contracts: C2B, C3, C4C, C5C, and C6. Final Reports with findings were issued. The auditors found similar discrepancies on many of the contracts. The most prevalent findings were:

- Quality Work Plans (QWPs) were not always approved
- QWPs were approved after work started
- Inadequate quality data included in Daily Construction Reports (DCRs)
- Photos not attached or referenced on DCRs
- DCRs do not record all Nonconformance Report (NCR) issues
- Request for Information (RFI) Log does not have a column for associated changes/waivers
- No section on DCR Log to track days when no DCRs are prepared

The PMOC has requested to be notified as findings are resolved.

6.0 SAFETY AND SECURITY

Implementation of the Safety Requirements as specified in Section 01 11 50 of the General Requirements for each construction contract is ongoing. The contractors' safety management held tool box meetings, trained new employees, monitored the work areas individually and with the CCM Safety and OCIP representatives, and 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, MTA's IEC and FTA's PMOC is ongoing.

As of October 31, 2014, a total of 9,556,820 construction hours have been logged on the project with 87 lost time and 244 recordable incidents documented. The total hours and incidents equates to a Lost Time Rate (LTR) of 1.82 and a Recordable Rate (REC) of 5.11. The US Bureau of Labor Statistics (BLS) national rate (Heavy & Civil construction) for Lost Time and Recordable incidents are 1.7 and 3.2 respectively.

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. During this reporting period the Technical Working Group finalized the checklists of the certifiable items associated with each certifiable element. The checklists represent the project baseline for the completion of the construction/installation phase of the project. Meetings were held with the Station contractors and the Systems contractor to review the test and verification methods required ensuring that the as-built facility and system configurations contain the integration of assigned safety and security related requirements outlined in the certifiable items list. An electronic data management system will be utilized as a depository for the objective evidence documenting the inspection/testing of a certifiable item. MTACC's Chief of Quality and System Certification Manager, SAS Systems Integration Manager (SIM), System Integrator (SI) for each contract, System Engineering Specialists (SES), SAS Quality Management, MTA's Independent Engineering Consultant (IEC) and the FTA's PMOC continues to meet to address issues associated with the Safety and Security Certification process.

7.0 ISSUES AND RECOMMENDATIONS

Schedule Erosion: As noted in Section 2 of this report, milestones experiencing delay over recent periods significantly outnumber milestones where schedule forecasts are holding constant or improving. MTACC has managed to maintain its schedule to date by selective acceleration of delayed work and creative resequencing of downstream work activities. This approach will become increasingly difficult to implement. Without improvements in actual construction schedule execution to offset some of the delay, there is a significant risk of delay to the project RSD.

C4C – Revisions to Entrance #1: This effort represented a major redesign and contract repackaging effort that was the result of stakeholder issues beyond the control of the MTACC. At this time, a schedule has been cooperatively developed with the C4C contractor that forecast completion this work in time for the current September 20, 2016 RSD. Some delays have already been encountered. The risk of delay to this work is substantial and considerable effort remains necessary to ensure this element of the project is completed without delaying the RSD for the entire project.

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

Table 1 - Summary of Schedule Dates

	FFGA	Forecast Completion	
		Grantee	PMOC
Begin Construction	January 1, 2007	03/20/2007A	03/20/2007A
Construction Complete	December 31, 2013	September 21, 2016	October 2017
Revenue Service	June 30, 2014	December 30, 2016	February 2018

A = Actual

Table 2 - Schedule Contingency

IPS Update #	90	92	95	97	98	99	100
Data Date	01/1/14	03/1/14	6/1/14	8/1/14	9/1/14	10/1/14	11/1/14
	Contingency (CD)						
RSD=12/31/2016							
Risk Mitigated	102	102	102	102	85	81	84
Risk Realized	20	44	52	102	85	81	84
RSD=02/28/2018							
Risk Mitigated	526	526	526	526	509	505	508
Risk Realized	446	446	478	526	509	505	508

Table 3 – Schedule Milestone Comparison

Pkg	MS	Description	Dates			Variance		Sch. Float
			Adjusted	UD #99	UD #100	Contract	Month	
C2B	MS #2	Shared site access @ 93rd Street shaft	03/22/14	12/30/14	11/01/14	-224	-59	54
C2B	MS #4	Shared access in East & West track-ways thru Sta (1238+50 - >1225+25); 97th -> 99th St Tunnel in 99th to 105th St Tunnels	09/21/14	01/19/15	01/23/15	-124	4	32
C2B	MS #6A	Full access to Comms Rooms & Closets	08/21/14	01/20/15	01/20/15	-152	0	30
C2B	MS #6B	Full access to Comms Rooms & Closets	08/21/14	01/20/15	03/16/15	-207	55	0
C2B	MS #6C	Full access to Comms Rooms & Closets	08/21/14	01/20/15	03/16/15	-207	55	0
C2B	MS #7A	Full access to Signals Rooms	08/21/14	01/15/15	01/29/15	-161	14	24
C2B	MS #7B	Full access to Signals Rooms	08/21/14	01/15/15	12/15/14	-116	-31	475
C2B	MS #7C	Full access to Signals Rooms	08/21/14	01/15/15	12/15/14	-116	-31	475
C2B	MS #8A	Full access to Traction Power Rooms:	08/21/14	01/12/15	02/04/15	-167	23	20
C2B	MS #8B	Full access to Traction Power Rooms:	08/21/14	01/12/15	12/15/14	-116	-28	475
C2B	MS #8C	Full access to Traction Power Rooms:	08/21/14	01/12/15	12/15/14	-116	-28	475
C2B	MS #9	Full access to Station Service Centers	11/21/14	09/11/15	08/06/15	-258	-36	91
C2B	MS #10	Complete all remaining Comms, Signal , & Traction Power work	09/21/14	03/17/15	04/17/15	-208	31	211
C2B	SS	Substantial Completion	12/21/15	10/07/16	10/04/16	-288	-3	-4
C3	#3d	Mezz 6 & Platform Level Conduit & Station Fare Array	04/15/13	01/21/15	02/20/15	-676	30	246
C3	#4b	Compl Lwr/Uppr Platforms & Signal Rms	10/14/13	02/03/15	6/16/2014A	-245	-232	-
C3	#4c	Compl Lwr/Uppr Platforms & Signal Rms	10/14/13	02/03/15	05/14/15	-577	100	249
C3	SS	Substantial Completion	05/13/14	11/03/15	12/04/15	-570	31	221
C4C	MS #3	Shared access thru 72nd Street Station 1172+40 ->1163+00	11/27/14	11/26/14	12/22/14	-25	26	105
C4C	MS #7	Turnover of Communications Rooms to Systems Contractor	8/28/14	03/06/15	12/05/14	-99	-91	254
C4C	MS#7A	Complete Work in all Comm Rooms		04/01/16	04/01/16		0	132

Pkg	MS	Description	Dates			Variance		Sch. Float
			Adjusted	UD #99	UD #100	Contract	Month	
C4C	MS #8	Turnover of Signal Rooms South of station to C6	7/15/14	12/01/14	11/26/14	-134	-5	52
C4C	MS #9	Complete all Signal Roms except M8	9/29/14	01/05/15	12/12/14	-74	-24	77
C4C	MS #10	Complete north power rooms	2/25/15	12/15/14	12/12/14	75	-3	156
C4C	MS #11	Complete south power rooms	03/24/15	11/26/14	11/26/14	118	0	166
C4C	MS #12	Full access @ Station Service Center(s)	08/28/14	01/09/15	01/08/15	-133	-1	232
C4C	MS #13	Full access @ Lubrication Room(s)	08/28/14	08/29/14	11/21/14	-85	84	250
C4C	MS #14	Complete all remaining Comm, Signal & Traction Power Rooms	08/28/14	01/05/15	12/12/14	-106	-24	77
C4C	SS	<i>Substantial Completion w/o Ent. #1</i>	11/13/15	08/15/16	09/08/16	-300	24	30
C4C	SS	<i>Substantial Completion - Ent. #1</i>	10/07/16	10/07/16	10/07/16	0	0	0
C5B	SS	<i>Substantial Compl/All Work w/o Ent. #2</i>	09/04/14	9/12/14A		41886	#VALUE!	
C5B	SS	<i>Substantial Compl/All Work incl. Ent. #2</i>	12/26/14	12/26/14	12/22/14	4	-4	114
C5C	MS #1	Vehicle access thru 86th Street Station 1209+00 -> 1198+00	10/23/14	10/24/14	10/31/2014A	-8	7	-
C5C	MS #2	Limited Access; Sta. 1209+00->1198+00	01/22/15	01/09/15	01/22/15	0	13	194
C5C	MS #3	Shared Access; Sta. 1209+00->1198+00	05/22/15	03/27/15	04/29/15	23	33	125
C5C	MS #4	Shared Access; Sta. 1198+00->1172+00	10/23/14	01/05/15	01/16/15	-85	11	49
C5C	MS #5	Turnover of Comm. Rooms	09/23/14	12/02/14	12/22/14	-90	20	68
C5C	MS #6	Turnover of Comm. Rooms	03/24/15	04/30/15	05/26/15	-63	26	106
C5C	MS #6A	Turnover of Comm. Rooms	03/24/15	04/30/15	06/29/15	-97	60	334
C5C	MS #7	Turnover of Signal Rooms	02/25/15	02/24/15	03/27/15	-30	31	2
C5C	MS #8	Turnover of Signal Rooms	02/25/15	02/24/15	03/27/15	-30	31	2
C5C	MS #8A	Turnover of Signal Rooms	02/25/15	02/24/15	04/27/15	-61	62	379
C5C	MS #9	Turnover Traction Power Rooms	02/26/15	02/25/15	03/03/15	-5	6	50
C5C	MS #9A	Turnover Traction Power Rooms	02/26/15	02/25/15	04/02/15	-35	36	396
C5C	MS #10	Turnover Traction Power Rooms	02/25/15	04/16/15	04/23/15	-57	7	195
C5C	MS #10A	Turnover Traction Power Rooms	02/25/15	04/16/15	05/22/15	-86	36	360

Pkg	MS	Description	Dates			Variance		Sch. Float
			Adjusted	UD #99	UD #100	Contract	Month	
C5C	MS #11	Full access @ Station Service Center(s)	03/24/15	03/27/15	03/16/15	8	-11	388
C5C	MS#14b	Limited Access all locations	09/23/14	04/02/15	05/05/15	-224	33	363
C5C	MS#15	Comp. Permanent Power		12/17/15	12/18/15	-42356	1	134
C5C		Substantial Completion	05/31/16	06/02/16	06/30/16	-30	28	69
C6	#2A	Complete LAN - 96th St. Station	05/18/15	12/02/15	01/11/16	-238	40	107
C6	#2B	Complete WAN - 96th St. Station	05/18/15	12/02/15	01/11/16	-238	40	107
C6	#3A	Complete LAN - 86th St. Station	07/18/15	02/19/16	02/22/16	-219	3	90
C6	#3B	Complete WAN - 86th St. Station	07/18/15	02/19/16	02/22/16	-219	3	90
C6	#4A	Complete LAN - 72nd St. Station	02/18/15	03/31/16	05/02/16	-439	32	27
C6	#4B	Complete WAN - 72nd St. Station	02/18/15	03/31/16	05/02/16	-439	32	27
C6	#5A	Complete LAN - 63rd St. Station	04/18/14	01/01/15	01/20/15	-277	19	422
C6	#5B	Complete WAN - 63rd St. Station	04/18/14	01/01/15	01/20/15	-277	19	422
C6	#5C	Complete all 63rd St. Station work	04/18/14	07/31/15	11/16/15	-577	108	234
C6	SS	Substantial Completion	08/18/16	10/10/16	10/10/16	-53	0	2

Table 4 - Project Budget/Cost 

	FFGA			FFGA Amend	MTA Current Working Budget (CWB)		Expenditures as of November 30, 2014	
	\$ Millions	% of Total	Obligated (\$ Millions)	TBD	\$ Millions	% of Total	\$ Millions	% of Total
Grand Total Cost:	4,866.614	100	4,572.942		5,267.614	100	3,182.274	60.41
Financing Cost	816.614	16.78			816.614	15.50	3,182.274	60.41
Total Project Cost:	4,050.000	83.22	4,572.942		4,451.00	84.50	3,141.541	59.64
Total Federal:	1,350.693	27.75	1,063.942		1,350.693	24.60	925.646	17.57
Total FTA share:	1,300.000	96.25	990.049		1,300.000	23.68	851.753	16.17
5309 New Starts share	1,300.000	100	990.049		1,300.000	23.68	851.753	16.17
Total FHWA share:	50.693	3.75	73.893		50.693	0.96	73.893	1.40
CMAQ	48.233	95.15	71.433		48.233	0.88	71.433	1.35
Special Highway Appropriation	2.460	4.85	2.460		2.460	0.04	2.460	0.05
Total Local share:	2,699.307	55.47	3,509.000**		3,509.000**	63.92	2,256.968	42.84
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 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
Total Construction	\$2,674,814,299	\$ 2,957,970,140
Engineering Services Subtotal	\$622,862,000	\$ 662,862,000
Third Party Expenses	\$554,086,273	\$ 581,086,273
TA Expenses	\$131,160,085	\$ 130,775,000
Contingency	\$308,077,343	
Executive Reserve	\$160,000,000	
Subtotal	\$4,451,000,000	\$ 4,332,693,413

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

Std. Cost Category (SCC)	Description	FFGA	MTA's Current Working Budget (June 30,, 2014)
10	Guideway & Track Elements	\$612,404,000	\$642,478,000
20	Stations, Stops, Terminals, Intermodal	\$1,092,836,000	\$1,277,642,000
30	Support Facilities	0	\$0
40	Site Work & Special Conditions	\$276,229,000	\$524,561,000
50	Systems	\$322,707,000	\$250,134,000
60	ROW, Land, Existing Improvements	\$240,960,000	\$281,500,000*
70	Vehicles	\$152,999,000	0**
80	Professional Services	\$796,311,000	\$1,026,608,085
90	Unallocated Contingency	\$555,554,000	\$448,076,915
Subtotal		\$4,050,000,000	\$4,451,000,000
Financing Cost		\$816,614,000	\$816,614,000
Total Project		\$4,866,614,000	\$5,267,614,000

Table 7 -- Core Accountability Items

Project Status:		Original at FFGA	Current*	ELPEP**
Cost	Cost Estimate	\$4,050M	\$4,451M	\$4,980M
Contingency	Unallocated Contingency	\$555.554M	\$258M	\$164.6M
	Total Contingency (Allocated plus Unallocated)	\$555.554M	\$258M (November 2014)	\$161.5M
Schedule	Revenue Service Date	June 30, 2014	December 30, 2016	February 28, 2018
Total Project Percent Complete	Based on Expenditures	71.5%		
	Based on Earned Value	N/A		
Major Issue	Status	Comments		
Design Changes Requested by NYCT Operations	Open	A significant number of changes to the design have been "requested" by NYCT Operations long after the formal completion of the project design. To date, the SAS Project Team's ability to resist the incorporation of these requests appears limited. Procedures have been established requiring Operating Departments to justify design changes. This issue is currently being managed adequately but continued monitoring is required.		
Construction Contract Management and Coordination	Open	Coordination of turnovers between independent prime construction contractors has deteriorated somewhat over recent periods. Numerous turnovers remain. Successful management		

		of inter-contractual interfaces remains a critical issue for timely completion of this project.
Project Schedule Reliability	Open	The PMOC is concerned about the major changes made to select construction schedules and the overall Integrated Project Schedule (IPS). These changes cast doubt upon both previous and current accuracy and credibility of the project scheduling process.
Date of Next Quarterly Meeting:	TBD	

* MTACC's Current Working Budget

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

Schedule data based upon IPS Update #100; Data Date = 11/1/2014

Financial data based upon MTACC reporting through 11/30/2014