

PMOC MONTHLY REPORT

Second Avenue Subway Phase 1 (MTACC-SAS) Project

Metropolitan Transportation Authority

New York, New York

Report Period February 1 to February 28, 2014



PMOC Contract No. DTFT60-09-D-00007

Task Order No. 7, Project No. DC-27-5235, Work Order No. 1

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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 February 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 XXX% 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. Punch list and submittal of contract closeout documentation is ongoing.
- C-26010 (C2B) "96th Street Station Civil, Architectural, and MEP". Completion of Milestone #5, work in the east and west tunnels south of the 96th Street Station, is still being forecasted for June 25, 2014. Delays in completion of the milestone are due to late turnover of the area by the C2A contractor, additional work order (AWO) activity, and C2B contractor delays.

- C-26006 (C3) “63rd Street Station Rehabilitation”. The contract focus in the existing station continues to be the installation of permanent architectural finishes and completing communication & signal rooms for systems integration.
- C-26007 (C4B) “72nd Street Station Cavern Mining and Lining” Substantial Completion was achieved on January 14, 2014. Punch list and submittal of contract closeout documentation is ongoing.
- C-26011 (C4C) “72nd Street Station Architectural and MEP Systems”. Concrete work at multiple locations made available through Milestone #1 including Ancillary 2 and Entrances 2 and 3. Mobilization and preliminary work at Ancillary #1 and Entrance #1 have also started.
- C-26008 (C5B) “86th Street Station Cavern Mining and Lining”. Placement of concrete lining in the cavern walls nears completion. Placement of the arch lining in the Public Cavern continues. Arch concrete lining placement in the south Ancillary Cavern began.
- C-26012 (C5C) “86th Street Station Architectural and MEP”. Pre-mobilization, engineering and planning continues and the contractor is continuing with submittals and purchasing. Site access for construction activity remains April 2014 with full access still forecast for October 2014.
- C-26009 (C6) “Track, Power, Signals and Communication Systems”. Coordination meetings with Station Contractors (C2B, C3, C4C and C5C) are ongoing with access dates being solidified. Equipment delivery is ongoing with the majority of the equipment delivered. Buy America issues associated with the pad and rubber boot of the LVT tie block is still outstanding.

a. Procurement

Procurement of construction contractors for SAS – Phase 1 is complete. Contract C-26005 (96th Street Site Work and Heavy Civil) and Contract C-26007 (72nd Street Station Cavern Mining and Lining) achieved Substantial Completion on November 5, 2013 and January 14, 2014 respectively and are both currently in closeout.

b. Construction

As of February 28, 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.
- Punch list and submittal of contract closeout documentation is ongoing. Punch list activity is scheduled to be completed by March 3, 2014.

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

- Contractor’s latest schedule update (#13) still forecasts a Milestone 5 completion date of June 25, 2014. Milestone 5 calls for the completion of all work in the east and west tunnels south of 96th Street Station (between STA. 1225+25 and STA. 1209+00) so “Shared Access” can be provided to the C-26009 (C6) Track, Power, Signals and Communication Systems contractor .

- S1 Area
 - Mezzanine walls and roof concrete placement is ongoing
 - Waterproofing of walls (Gridline 7-9) in progress
- S2 Area
 - Rebar installation for wall concrete placement ongoing for the next 6 weeks
- S3 Area
 - Roof concrete placement from North to South is ongoing
 - Shoring erections for pours 28, 27, 26, 25, 24, 23, and 22 scheduled for the next 6 weeks
 - Roof concrete placement from South to North is ongoing
 - Shoring erection for pours 18, 19, 20, and 21
- Ancillary #1
 - Concrete placement for walls is ongoing
 - Waterproofing of walls ongoing
 - Sewer installation in progress
- Ancillary #2
 - Demolition of diaphragm slab is ongoing
 - Shotcreting of walls was completed, subsequent waterproofing started on 2/24/2014
- Entrance #1
 - Waterproofing of roof slab is ongoing
- Entrance #2
 - Waterproofing of roof slab is ongoing
- Entrance #3
 - Rebar installation for invert is ongoing

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

- Surveying of the Deformation Monitoring Points (DMPs) is ongoing and will continue throughout the project. One DMP was reset at Entrance #1.
- **Area 5 (Reconstruction consists of 6 mezzanines and the deck plaza roof)**
 - Continued installation of brackets in elevator shafts (4) and began preparation for installation of the rails.
 - Continued installation of conduits throughout and was at approximately 60% complete.
 - Continued installation of mechanical ductwork at Upper 4th Mezzanine, 3rd & 6th Mezzanines.
 - Continued installation of sprinkler, water mist and permanent fire standpipe.
 - Completed approximately 90% of Concrete Masonry Unit (CMU) wall erection.

- **Entrance #1**
 - The contractor began and continues to install temporary steel shoring in Zones #1 - #3, resumed selective demolition, and completed excavation/installation of new sewer.
 - Began storefront demolition.
- **Ancillary #2**
 - Above grade work is intermittent due to the varying weather conditions.
- **Platforms**
 - Continued new ceiling panels, and light fixtures at the G4 (lower) platform.
 - Continued with USPC Carriers and conduits at the G3 (upper) platform.
- **Fan Plants**
 - Continued with chiller piping, conduits, & lighting in the West Fan Room.
 - Continuing with installation of Building Management System (BMS) in both East & West Fan Rooms.
- **C6 Coordination**
 - The contractor continued to work in Signal Room 2189 installing support rods for the 10 added lights requested by the user group. Installation of the plaster ceiling will follow. Turnover of the signal room back to the C6 contractor is scheduled for the end of March 2014.

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

- Substantial Completion was achieved on January 14, 2014
- Ongoing contract efforts
 - Submission of As-Built documentation and Quality Control Records
 - Completed end wall construction in G4 S2 Cavern II
 - Commenced final project punchlist
 - Completed demolishing of 69th Street Shaft Enclosure
 - Completed backfilling of 69th Street Shaft

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

- Ancillary #2/ Entrance #2: The pouring of the balance of the invert slab occurred the last week of February 2014. This will be followed by the forming and pouring of the Lower Mezzanine interior and exterior walls. Toward the end of March 2014 the forming and pouring of the mezzanine interior and exterior walls will occur.
- Station North of 71st Street: The mock-up of CMU is being constructed. Upon approval of the mock-up; survey, layout and installation will occur. Knee wall conduits are being installed. Dowels installation for walls, topping and as walls go up other trades will follow. The surveying, layout & installation of the precast wall panels is in progress.

- Station South of 71st Street: Pour 7A occurred the last week of February. Pour 7B is scheduled for the first week on March. Installation of forms and rebar for Pour X (CI 7.3-8.3) is in progress.
- G3/G4 Tunnels: Pending approval, the installation of conduits & wiring will begin the first week of March.
- Entrance 3: Forming and placing of rebar for pour 7 to begin the first week of March.
- Ancillary #1: Waterproofing is ongoing. This will be followed by the forming, rebar and pouring of ledge at the Mezzanine level north.
- Entrance #1: The remaining footings for 1322 2nd Ave. basement occurred. Structural girders are being placed and will be inspected shortly; this will be followed by the installation of additional needle beams/inspection and then transferring of the underpinning load. Drainage piping is being installed. Topping and rock reinforcing will occur the first week of March. The asbestos abatement permit is expected by the middle of March.
- Garage: The contractor is waiting for the NTP for chilled water piping relocation (AWO) for the Garage. Plans and calculations have been prepared and excavation is in progress in the garage. Piles for hold down are being fabricated and load testing will be required.

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

- The contractor has added a 3rd shift to the work schedule. All surface operations end at 10:00PM daily.
- The C5B/C5C Project Office is relocating to 327 E. 94th St., between 1st & 2nd Aves.
- Permanent concrete placement was approximately 60.2% complete with completion still forecast for August 2014. Entrance #2 permanent concrete remains forecast for completion in November 2014.
- Main Cavern (North and South)
 - Placement of the Public Cavern arch concrete continued and was approximately 26% complete. The concrete wall placement continued in the Cavern moving south to north and was approximately 92% complete.
- Ancillary #1/Ancillary #2
 - Continued clearing out of the Ancillary #1 area.
 - Concrete arch placement finally began in the South Ancillary Cavern and 2 of 6 sections were completed.
 - Continued installation of waterproofing of the walls in Ancillary #2.
 - Completed arch placements in the Central Instrument Room (CIR).
- Entrance #1
 - Continued with concrete placement of the incline walls, stairs and slabs.
 - Continued removing the falsework and scheduling to bring in the masons for walls erection.

- Entrance #2
 - Continued waterproofing along the incline walls and rebar cages for invert slabs.
 - Completed placement of the slab in the Communications Room.
 - Option #1 (Lining the south, east tunnel and mining the Cross Passageways)
 - In the Pump Room the invert is complete and placement of the concrete arch was 22% complete.
 - In the East Tunnel concrete lining was completed. Concrete topping on the invert slab was completed.

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

- The C5B/C5C Project Office is relocating to 327 E. 94th St., between 1st & 2nd Aves.
- The contractor's Baseline Schedule was returned by MTACC, Revise and Resubmit on February 6, 2014. MTACC and the contractor continue to meet to complete an approved baseline schedule.
- During February 2014 the contractor continued to focus on submittals and pre-mobilization engineering and planning. Meetings continue to resolve clearance issues with slabs and future escalators that have been discovered from the contractor's field conditions engineering.
- A meeting with ConEd to discuss site temporary and permanent power was held on February 11, 2014. Attendees included MTACC, ConEd, 5 Star Electric, & the A/E, AAJV. Temporary power to the site for this contract is expected to be complete June 2014. In the interim, discussions are underway with the C5B contractor to share their temporary power source.
- Limited access to the site remains April 2014 and full access to the site remains October 2014.

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

- Electrical (63rd Street): All available work in the four communication rooms at the 63rd Street Station has been completed. C6 Contractor will remobilize when sufficient work is completed by the 63rd Street Station Contractor (C3) and full access is provided.
- Installation of power, signal, communication and fiber optic cables from 96th Street to 105th Street was completed.
- Civil (Rail Welding): Running rail welding has been completed for the entire project. Tie in welding, of the welded stringers, will commence upon the assembly of track construction and just prior to pouring the track invert.
- Civil (63rd Street Area): All available work in have been completed
- Civil (96th Street Area): Currently no craft workers are at 96th Street
- Procurement
 - Antenna cable (delivered)

- Signal cable (majority delivered)
- Communication cable (delivered)
- Power cable -2000MCM and 500MCM (delivered)
- Fiber optic cable (delivered)
- Wayside tray 63rd Street (delivered)
- Wayside Signal Equipment 96th Street (released and in various stages of manufacturing)
- Stops and layouts (delivered)
- Simplex Fire Alarm equipment (63rd St delivered)
- Running rail (delivered)
- LVT Blocks (21,866 delivered including 1,709 spare as of February 12, 2014)
- 3rd rail (delivered)
- Guard Rail (scheduled delivery May 2014)
- Special Work Portions (SWP) #1 and #2 (delivery)
- SWP #3 (delivery rescheduled to March 2014)
- Closed Circuit Television (CCTV) equipment (on hold pending design changes)
- Public Address Customer Information Screen (PACIS) equipment (on hold)
- Meridian Emergency Alarm Boxes (delivered)
- Balfour Circuit Breakers and Rectifiers (delivered)
- Transdyne Power Supervisory Control and Data Acquisition System (SCADA) equipment (delivered)
- Submittal Progress
 - Total projected submittals: 4,790
 - Total submitted to date: 2,969
 - Total projected to complete: 1,821
 - Percent Completed: 62%
 - Pending MTA response: 210

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

Implementation of the Quality Management System as defined in the contract specification is ongoing. Quality control activities are being performed by the contractors per their Contractor's Quality Plans (CQPs). The MTACC's SAS Quality Managers and Project Quality Managers are performing quality assurance activities. The PMOC attends Monthly Quality Management Meetings and Quarterly Quality Oversight on each SAS contract.

Major Issues

- The major issues noted by the PMOC during February 2014 were:
 - The excessive time that it still takes to enter Daily Inspection Reports into the Contractor Management System (CMS) on the C2B and C5 contracts.
 - The contractors' Quality Managers on both the C2B and C5B contracts will be leaving in March 2014. There will be limited overlap between the present Quality Managers and their replacements.

Project Quality Manual

- Revision 3 of the SAS Project Quality Manual (PQM), issued in April 2009, has been revised by the SAS Quality Manager. However, MTACC is revising their quality system to utilize 19 quality elements instead of the present 15. Until this is official and the MTACC Quarterly Quality Oversight (QQO) checklists are revised, Revision 4 cannot be issued. This may take several months since the MTACC QQO rating system is also being modified.

Analysis of Concrete Strength

- C2A/C2B Contracts: The C2A contractor prepared its analysis and the Engineer of Record requested additional information. The C2A contractor resubmitted the requested information on February 26, 2014. Once its analysis is approved, C2B will submit their analysis to the Engineer of Record.
- C3 Contract: The C3 contractor expects to submit its statistical evaluation of concrete strength test results in early March 2014. Once approved, the C3 contractor will be able to close out concrete nonconformance reports (NCRs).
- C4B Contract: An analysis of concrete strength results was performed on the C4B project. This document contains a statistical evaluation of concrete strength test results to demonstrate compliance with the contractual acceptance criteria for all cast-in-place concrete placed under Contract C4B. Based on this analysis, the Engineer of Record agreed that the concrete NCRs that are open can be closed.
- C4C Contract: This contract is still in its early stages. The C4C contractor is gathering data before the statistical analysis can be submitted.
- C5B Contract: The C5B contractor prepared its analysis and the Engineer of Record requested additional information. The C5B contractor supplied the requested information and the Engineer of Record approved their analysis in February 2014.
- C6 Contract: This contract is still in its early stages. The C4C contractor is gathering data before the statistical analysis can be submitted.

Contract Packages C2A and C2B

Status:	<p>On C2A, through February 28, 2014, a total of 36 NCRs have been issued. 30 have been closed by both the contractor and MTACC, 2 NCRs were voided, and 4 NCRs are still open. In February 2014, no new NCRs were written and none were closed.</p> <p>On C2B, through February 28, 2014, a total of 34 NCRs have been issued. Eight have been closed and 21 NCRs are still open. Five NCRs were written in February 2014, all for concrete nonconformances that occurred from December 16, 2013 through February 8, 2014.</p> <p>Inspection Daily Reports are current on the C2A contract and on the C2B contract; they are still 2 weeks behind in entering them into the CMS System.</p>
Observation:	<p>On the C2A contract, of the four open NCRs, two are for concrete that was out of specification as reported by the contractor's test lab. These will be closed once the Engineer of Record approves C2A's concrete analysis which was resubmitted on February 26, 2014.</p> <p>On the C2B contract, the contractor had been delinquent in not writing NCRs at the time of the nonconformance and was directed to write them at the December 4, 2013 Monthly Quality Management Meeting. It took them 1 ½ months to issue 15 NCRs, all of which were opened on January 16, 2014. These NCRs only covered out of tolerance concrete results through December 15, 2013. The five NCRs opened in February, covered out of tolerance concrete results through February 8, 2014. The C2B concrete analysis will be prepared and submitted once C2A's concrete analysis is approved.</p>
Concerns and Recommendations:	<p>The PMOC is concerned that entry of Inspection Daily Reports on the C2B contract is still 2 weeks behind and that the contractor is still 2 weeks behind in preparing and entering NCRs</p>
Contract Package C3	
Status:	<p>Through February 28, 2014, a total of 76 NCRs have been issued. 44 have been closed and 32 NCRs are still open. In February 2014, two new NCRs were written and none were closed. None of the new NCRs were for concrete placement.</p> <p>Entering of Inspection Daily Reports is current.</p>
Observation:	<p>Of the 32 open NCRs, 19 are for concrete that was out of specification.</p>
Concerns and Recommendations:	<p>The PMOC is concerned that only one NCR has been closed since October 18, 2013. The PMOC recommends that effort be expended to close the thirteen NCRs that are not concrete related.</p>
Contract Package C4B	
Status:	<p>Through February 28, 2014, a total of 122 NCRs have been issued. 92 have been closed and 30 NCRs are still open. In February 2014, one new NCR was written and none were closed. The NCR written in</p>

	<p>February was not for concrete placement.</p> <p>Entering of Inspection Daily Reports is current.</p>
Observation:	<p>Of the 30 open NCRs, 27 are for concrete that was out of specification. The contractor is waiting for the cylinder break results before these NCRs can be closed.</p>
Concerns and Recommendations:	<p>None at this time.</p>
Contract Package C4C	
Status:	<p>Through February 28, 2014, a total of eleven NCRs have been issued. One has been closed and ten NCRs are still open. In February 2014, no new NCRs were written and none were closed.</p> <p>Entering of Inspection Daily Reports is current.</p>
Observation:	<p>All ten of the open NCRs are for concrete that was out of specification. The contractor is awaiting the results of the 56-day cylinder breaks before they can prepare the required statistical analysis. The analysis should be prepared in March 2014.</p>
Concerns and Recommendations:	<p>None at this time.</p>
Contract Package C5B	
Status:	<p>Through February 28, 2014, a total of 62 NCRs have been issued. 42 have been closed and 20 NCRs are still open. In February 2014, one new NCR was written and 19 were closed. Entering of Inspection Daily Reports is 2 weeks behind in entering them into the CMS System.</p>
Observation:	<p>The NCR written in February 2014 was not for concrete placement. The statistical analysis for concrete placement was approved by the Engineer of Record. As a result, 18 concrete NCRs were closed in February.</p>
Concerns and Recommendations:	<p>The PMOC remains concerned that entry of Inspection Daily Reports is still 2 weeks behind.</p>

Contract Package C6	
Status:	Through February 28, 2014, a total of five NCRs have been issued. Four have been closed and one NCR is still open. In February 2014, no new NCR's were written and none were closed. None of the five total NCRs were for concrete placement. Entering of Inspection Daily Reports is current.
Observation:	None.
Concerns and Recommendations:	None at this time.

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 #91 was received on March 11, 2014 and is based on a Data Date of February 1, 2014. This submission contained the ".XER" schedule files for the IPS and the latest contractor schedule updates of the active construction contracts. The narrative report for IPS Update #91 was not received. The IPS forecasts the completion of all construction and NYCT Pre-Revenue Training & Testing activities by September 21, 2016, with approximately 102 calendar days (CD) or 73 work days (WD) of contingency when measured against MTACC's target Revenue Service Date (RSD) of December 30, 2016.

Project Critical Path: The most "critical" or longest schedule path that controls the completion of SAS Phase 1 is unchanged this period and is initiated by Activity C6P6-435, "Survey of Tunnel Alignment – North of 96th Street" which is forecast to be complete on February 25, 2014. Completion of this work allows the start of Activity C6TW-011 "Zone 1 Track S1 @ 96th – Set Ties, Thread & Clip Rails, Surface & Align, Install Riser Boxes Rebar and Conduit" and continues through the installation of the Trackwork in Zone 1 through Zone 7 which is complete by May 8, 2015. This path then shifts to the installation of the wayside equipment at 72nd Street which starts with Activity #C6C4-290 "Wayside @72nd – Install Riser Boxes, Conduits, Tray" and completes with Activity #C6C4-299 "Wayside @72nd – Perform Punchlist Work" on August 18, 2016. The completion of the wayside equipment punchlist at 72nd Street then ties to Substantial Completion of Contract 6 which finishes on August 18, 2016 and then ties into the "Proof of Operations Tests", then completion of "Dispatch Tower Tests at 96th St. Station", "Traction Power Operational Test", "Route Familiarization and Equipment Training", tying to an Operational Revenue Service Date (ORD) of September 20th, 2016.

The PMOC has several concerns with respect to the depiction of this work in the IPS:

1. As noted earlier in this report, the C2B Contractor's schedule Update #13, upon which IPS Update #91 is based, forecasts a Milestone 5 completion date of June 25, 2014, as contrasted to the February 25, 2014 date shown in the IPS. At this time, MTACC does not agree with and has not incorporated delays modeled in the C6 schedule in the IPS. The PMOC notes the

inconsistency of the MTACC's approach; all other C2B milestones within the IPS are consistent with those in the C2B Contractor's Update #13.

While it is common for contractors to inflate schedule impacts, project history as well as general experience suggests that some form of compromise will eventually be achieved. The PMOC acknowledges that modeling "reality" in these situations is a major challenge. Considering the contractor's forecast to be the most pessimistic assessment, this delay would add approximately 120 CD to the current critical path and result in a completion of all work on January 19, 2017.

2. As previously noted, summary activities within the IPS and their logical relationships deviate substantially from the same work depicted in the C6 construction schedule for a portion of the IPS critical path. MTACC has emphasized the importance of replicating each contractor's schedules within the IPS.
3. In reviewing IPS Update #90, the PMOC noted, that critical track installation occurs within the limits of the 86th Street Station between June 25, 2014 and August 11, 2014. The relationship between milestone Activity # C5C S590, Station Ready for Track Installation, and track installation activities within the station area has not been made. Based on this activity, the C5C station area will not be ready for trackwork installation until March 31, 2015. IPS Update #91 does not appear to address this issue.

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

+3 WD: This path is initiated by C5C, Milestone #9 which provides access for the C6 Contractor to all traction power rooms at the north end of the 86th Street Station on March 18, 2015. Installation of equipment and cable is forecast to continue through June 10, 2016, at which time field testing, facility in-service testing and in-service testing starts and continues through July 29, 2016.

The PMOC notes that the IPS forecasts energizing the tracks in the 86th Street Station Area on July 15, 2016 (Act # 86ENTS1200). There is no logical relationship between the traction power work on the +3 WD float path and energizing the track. Logic between traction power and signal systems appear to have been comingled. This work was on the +37 WD float path last period.

+ 8/14 WD: This path consists of the remaining track work not on the TF=0 float path. This path starts on May 12, 2015 and is completed on July 15, 2016 with the energizing of the 3rd Rail at 63rd and 96th Street Station areas on July 15, 2016.

+15 WD: This path is initiated by C5B construction of the south cavern arch, which is scheduled to be complete on April 24, 2014. Completion of this work leads to C5B demobilization and handoff of the south station and tunnels to the C5C Contractor on May 16, 2014. The path then follows construction of Ancillary 1 by the C5C Contractor through February 27, 2015, at which time portions of Ancillary #1 are turned over to the C6 Contractor via C5C.

+22 WD: This path is initiated by C5B construction of the north cavern walls and arch, which is scheduled to be complete on October 14, 2014. Completion of this work leads to C5B demobilization and handoff of the north station and tunnels to the C5C Contractor on October 14, 2014. The path then follows construction of

Ancillary 2 by the C5C Contractor through July 21, 2015, at which time portions of Ancillary #2 are turned over to the C6 Contractor via C5C, MS#9.

The PMOC notes that the specific work necessary to achieve C5C MS#9 is not detailed in the IPS. Full detailing of the work necessary to achieve C5C MS#9 is a necessary step in expediting and coordinating the turnover process.

+19/23 WD: NYCT Pre-Revenue Operation Activities scheduled to start on August 18, 2014 is unchanged this period.

+ 39/41 WD: This path involves construction of the mezzanine and Ancillary #2 at the 72nd Street Station and is initiated by Activity C4C-ANC2-LM-10001-1 “Anc. #2 Lower Mezz, WP, Rebar, Slab & Wall” which is forecast to complete on February 3, 2014. The path continues thru the Structural Build out of the 1st Upper Mezzanine, 2nd Upper Mezzanine, Sub Basement and Basement Levels as well as the MEP installation of Ancillary 2 Mezzanine Level, which allows construction of the Signal Rooms (# 5103, 5105, 5106 & 5109) located in Ancillary 2 to start in early August 2014. Completion of these rooms, which is forecast for September 26, 2014, satisfies C4C Milestone #9 and transfers the Signal Rooms to the C6 Contractor.

This path then follows signal system installation through the 72nd Street Station signal rooms which is forecast to complete on December 7, 2015, at which time, testing of the system begins and continues through May 31, 2016.

+63 WD: This path is initiated by C2B construction of the roof slab between 93rd and 95th Streets followed by architectural and MEP work resulting in completion of C2B Milestone #7 which provides for full access to signal rooms throughout the 96th Street Station on December 18, 2014. The IPS indicates the C6 Contractor to be scheduled to start work in the signal rooms on November 13, 2014. Installation work in the rooms continues through March 9, 2016, at which time testing of the equipment starts and should complete by June 23, 2016. Following testing of the room equipment, the signal system, including track circuits undergoes In Service System Integrated Testing, which is completed on August 18, 2016.

The PMOC notes that the IPS logic allows work in the signal rooms to start approximately one month in advance of the access milestone. Based on experience to date, this appears to be overly optimistic or incorrect logic that should be modified.

Milestone Summary: For contracts actively under construction, a tabulation of current schedule performance against contractual milestones is presented in Table 3. For the update period ending February 1, 2014:

- The C4C contractor is forecast to satisfy the requirements of Milestones # 1 and #4 on February 14, 2014.
- For Contract C2B, IPS milestone dates generally reflect those contained within the Contractor’s schedule, with the exception of MS #5.
- The C5B partial turnover of the 86th Street Station and adjacent tunnels is a critical milestone that experienced 13 WD of delay this period, and is currently forecast to

complete on May 15, 2014. Achieving this milestone will allow the C5C Contractor to actively begin field work.

- Delays to C6 Milestones #5A, 5B and 5C have been partially recognized by MTACC and negotiations to quantify the actual delay periods are underway.

Schedule Contingency: Via IPS Update #91, MTACC continues to forecast all Phase 1 construction and pre-revenue testing to be complete on September 21, 2016. This results in 102 CD (73 WD) of contingency when measured against the MTACC’s target RSD of December 30, 2016 and a 526 CD contingency when measured against the FTA Risk-Informed RSD of February 28, 2018. As previously noted, the PMOC considers this to be an extremely optimistic assessment of the schedule status, representing 100% mitigation of several major issues which are acknowledged to have potential to significantly impact the project schedule.

The PMOC understands MTACC’s decision to discount certain contractor schedule analyses from the IPS, realizing that contractor’s positions may be overstated for a variety of reasons. However the PMOC also notes the MTACC’s tendency to understate the potential cost and schedule significance of certain issues as well as the extended period of time required to resolve such differences between MTACC and the contractors.

It is the opinion of the PMOC that the RSD should be expressed as a range of dates representing a risk-mitigated forecast and a risk-realized forecast based upon currently recognized, major schedule risks. Using this approach the RSD calculated by IPS #90 would be expressed as follows:

IPS #91	RSD	Construction Complete	Contingency (measured against)	
			Dec. 30, 2016	Feb. 28, 2018
Risk-Mitigated	Dec. 30, 2016	Sept. 21, 2016	102 CD	526 CD
Risk-Realized	Dec. 30, 2016	Jan. 19, 2017	-20 CD	405 CD

Schedule Comments:

The PMOC notes that within the IPS the transition between rail system installation → component testing → system testing in several instances appears to be unclear or incomplete. Additional refinement in this area appears to be needed.

Potential delay to the availability of permanent power in the stations has been under discussion since August 2013. As noted in the IPS Update #90 narrative, the IPS contains milestones representing the availability of permanent power at the 96th, 86th and 72nd Street Stations (Activities 96LPP1000, 86LPP1000 and 72LPP1000 respectively). With respect to these milestones, the PMOC observes the following:

- Follow-on testing and commissioning activities are included only at the 72nd Street Station. Successors at 96th and 86th Street Stations are limited to C6 Substantial Completion.
- Predecessor activities at 96th Street are limited to “infrastructure” installation activities, and do not include any submittal/review/fabrication type activities.

- Milestone 72LPP1000 is logically related to the C4C schedule for supply of permanent power through Ancillary #2.
- Predecessor activities 86th Street Stations are minimal and do not include any submittal/review/fabrication type activities.

The IPS Update #90 narrative is accurate in that milestones for establishment of permanent power at the stations are included in the IPS; however these milestones are of limited value. The IPS provides insufficient information as to the status of permanent power availability in the stations and the potential impact of delays that may occur.

The PMOC estimate of a risk-realized RSD discussed above does not consider potential delays associated with availability of permanent power.

ELPEP/SMP Compliance: Based on the current status of the IPS, SAS Phase 1 can be considered conditionally compliant with the metrics, deliverables and intangible goals enumerated in the Enterprise Level Project Execution Plan (ELPEP), dated January 15, 2010 (Section IV. b, page 8) and as further described by the Schedule Management Plan (SMP). The PMOC recognizes the complexity of the recent updating process, but considers full compliance to be conditional upon completion and validation of this effort.

- Forecast Revenue Service Date (RSD) and minimum schedule contingency:
 - ELPEP Requirement: February 28, 2018 (RSD)
 - ELPEP Requirement: 240 CD (measured against February 28, 2018)

IPS #91	RSD	Construction Complete	Contingency (measured against)	
			Dec. 30, 2016	Feb. 28, 2018
Risk-Mitigated	Dec. 30, 2016	Sept. 21, 2016	102 CD	526 CD
Risk-Realized	Dec. 30, 2016	Jan. 19, 2017	-20 CD	405 CD

- The risk-informed RSD and ELPEP required contingency have been maintained through this update using an estimated RSD based on a fully risk-realized schedule.
- Minimum Allowable Float; Real Estate Acquisition
 - ELPEP Requirement: 60 CD
 - Current Forecast: Indeterminate.
 - N/A.
- Minimum Allowable Secondary Float Path
 - ELPEP Requirement: 25 Calendar Days (approximately 18 WD).
 - Secondary float paths with Total Float (TF) =3 CD (approximately 4 WD) and 15 WD (approximately 21 WD). PMOC notes that satisfaction of this requirement may not be 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.
- Evaluation of the C6 Contractor's comprehensive schedule acceleration/proposal is currently on hold.

3.0 COST DATA

Based upon financial expenditures reported by the MTACC through February 28, 2014, SAS Phase 1 is approximately 63 % complete. The completion status of the individual construction contracts through February 28, 2013, also based upon reported expenditures through that date, is as follows:

- C26002 (Tunnel Boring) – 100.0%
- C26005 (96th Street Station) – 99.7%
- C26010 (96th Street Station) – 32.9%
- C26013 (86th Street Station) – 100%
- C26008 (86th Street Station) – 81.7%
- C26012 (86th Street Station) – 0.3%
- C26006 (63rd Street Station) – 70%
- C26007 (72nd Street Station) – 98%
- C26011 (72nd Street Station) – 6.4%
- C26009 (Systems) – 21%

Aggregate Construction % Completion:

- 100% of all construction has been bid.
- 100% of all construction is under contract
- 61.9% of all construction is complete

Based upon cost data received from MTACC for the period through February 28, 2014:

- Value of construction in place this period = \$26,105,213
- Estimated value of construction remaining = \$882,562,903
- Target construction completion = September 20, 2016
- Number of months remaining = 30.8

The estimated average rate of construction required to achieve target completion date is \$28,897,142 per month. The average progress (payments) achieved over the most recent six month period is \$35,624,396 per month. Based on a review of cost data for February 2014, it appears that adequate overall progress was made on the project to achieve the RSD of December 30, 2016.

Soft Cost expenditures (not including real estate, OCIP, etc.) reported this period by MTACC totaled \$4.02M. This expenditure is consistent with the CWB.

Estimate-At-Completion (EAC): The SAS Project Team has extended its risk-based contingency forecasting effort to the development of an EAC for all construction. The project

EAC is a combination of the risk-based approach for construction cost and traditional estimating for soft costs. Table 5 contains a summary of the updated EAC, which is currently \$4,274,843,912. This update includes the updated construction EAC and all revisions included in Revision 10 of the Project Cost Estimate.

Based on the information available, this updated EAC continues to validate the reasonableness of the MTACC's Current Working Budget of \$4.451B. Based upon current information, this effort suggests the project can be built within the limits of the Current Working Budget.

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

	<u>Executed AWOs</u>	<u>AWO Exposure</u>
February 2014	\$117,946,104	\$180,229,155
January 2014	\$116,852,952	\$171,163,562
Change	\$1,093,152	\$9,065,593
Change	0.94%	5.30%

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

Const. Pkg.	AWO Exposure \$			Changes this Period
	Feb.-14	Jan.-14	Period Δ	
C1	\$41,086,647	\$41,086,647	\$0	Final value as reported by MTACC.
C2A	\$53,928,578	\$53,985,573	(\$56,995)	Net decrease is based on a revised estimate for AWO #162 and initial estimates for AWO # 173 and 175.
C2B	\$17,707,682	\$17,776,492	(\$68,810)	Net decrease is based on revised estimates for AWO # 20, 26, 60, 62 and 69 as well as initial estimates for AWO # 64 and 67.
C3	\$10,181,987	\$9,526,295	\$655,692	Net increase is based on revised estimates for AWO #32, 65, 70, 96, 98, 109, 111, 114, 115 as well as initial estimates for AWO # 116 through 125.
C4B	\$3,658,083	\$3,670,008	(\$11,925)	Decrease is based on a revision to the estimated cost of AWO # 81.
C4C	\$16,393,040	\$14,5532,184	\$1,839,856	Net increase is based on a revised estimate for AWO # 14 and initial estimates for AWO # 15, 21, 30, 31 and 33.
C5A	\$6,525,471	\$6,525,471	\$0	Final value as reported by MTACC.
C5B	\$19,003,348	\$12,245,573	\$6,757,775	Net increase is based on revised estimates for AWO # 35, 46, 72, 73, 74, 79, 80, 83, 84, 85, 86 as well as initial estimates for AWO # 69.

Const. Pkg.	AWO Exposure \$			Changes this Period
	Feb.-14	Jan.-14	Period Δ	
C5C	\$0	\$0	\$0	No change this period.
C6	\$11,744,319	\$11,794,319	(\$50,000)	Decrease is based on a revised estimate for AWO #16.
	\$180,229,155	\$171,163,562	\$9,065,593	

The changes in Executed AWO Value are summarized as follows:

Const. Pkg.	Executed AWO \$			Changes this Period
	Feb.-14	Jan.-14	Period Δ	
C1	\$41,086,647	\$41,086,647	\$0	Final value as reported by MTACC.
C2A	\$41,123,950	\$41,121,070	\$2,880	Net increase is based on resolution of AWO # 173 and 175.
C2B	\$5,030,502	\$4,957,630	\$72,872	Increase is based on the resolution of AWOs # 60 and 69.
C3	\$7,107,157	\$7,040,157	\$67,000	Increase is based on the execution of AWO # 95.
C4B	\$5,240,513	\$5,240,513	\$0	No change this period.
C4C	\$364,661	\$147,661	\$217,000	Increase is based on execution of AWO # 14, 21, 30 and 31.
C5A	\$6,525,471	\$6,525,471	\$0	Final value as reported by MTACC.
C5B	\$9,235,672	\$9,235,672	\$0	No change this period.
C5C	\$0	\$0	\$0	No change this period.
C6	\$2,231,531	\$1,498,131	\$733,400	Increase is based on execution of AWO # 2 and 12.
	\$117,946,104	\$116,852,952	\$1,093,153	

As of February 28, 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)	99.66%	\$325,000,000	\$53,928,578	16.59%	\$41,123,950	12.65%
C26010 (2B)	32.89%	\$324,600,000	\$17,707,682	5.46%	\$5,030,502	1.55%
C26006 (3)	69.97%	\$176,450,000	\$10,181,987	5.77%	\$7,107,157	4.03%

C26007 (4B)	98.00%	\$447,180,260	\$3,658,083	0.82%	\$5,240,513	1.17%
C26011 (4C)	6.38%	\$258,353,000	\$16,393,040	6.35%	\$364,661	0.14%
C26013 (5A)	100.00%	\$34,070,039	\$6,525,471	19.15%	\$6,525,471	19.15%
C26008 (5B)	81.69%	\$301,860,000	\$19,003,348	6.30%	\$9,235,672	3.06%
C26012 (5C)	0.00%	\$208,376,000	\$0	0.00%	\$0	0.00%
C26009(6)	21.01%	\$261,900,000	\$11,744,319	4.48%	\$1,498,131	0.57%
TOTAL TO DATE		\$2,674,814,299	\$180,229,155	6.74%	\$117,212,704	4.38%

To date, approximately \$1,681,156,985 (62.9%) worth of all base contract construction work has been completed. As a % of work completed, the AWO exposure for these contracts = 10.72% and the executed AWO % = 6.97%. Based on performance to date, a forecast of total AWO expenditure of approximately \$200M appears reasonable. This compares favorably with the \$229M AWO contingency contained in the MTACC CWB. The PMOC continues to recommend that all AWOs be critically reviewed, evaluated and documented on a contemporaneous basis to determine if compensable responsibility exists for some of these expenditures.

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).

Cost Contingency: Based upon the MTACC Current Working Budget, expenditures to date reported by MTACC and the current AWO Exposure Estimate, the PMOC estimates the current available contingency as follows:

Phase 1 Budget	\$	4,451,000,000
Construction Awards	\$	2,674,814,299
Soft Cost Expended	\$	1,009,661,498
Soft Cost Forecast to Complete	\$	298,446,587
AWO Exposure	\$	180,229,155
Available Contingency	\$	287,848,461
ELPEP Requirement	\$	13,055,556

Cost models calculated by both the PMOC and the SAS Project Team verify that the current contingency balance is greater than the Planned Balance and exceeds the ELPEP Required Balance.

4.0 RISK MANAGEMENT

Risk Mitigation Meeting # 34 was held on February 27, 2014 at MTACC headquarters at 2 Broadway. The following table identifies and discusses the status of the most significant risks presently identified on the project.

<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: <ol style="list-style-type: none"> 1. The previously detailed mitigation strategy has not resulted in effective management of contractual interfaces. 2. It has been determine that the overall strategy remains sound; however significant improvements in implementation are necessary. 3. The status of milestones that are one to three months in the future will be reviewed at monthly risk management meetings to verify satisfactory progress or problems where additional effort is required. 	Current Status: <ol style="list-style-type: none"> 1. Interface management responsibilities have been temporarily redistributed pending the hire of a new Interface Manager. 2. The existing interface management process has been modified. 3. Going forward, the emphasis will be on achievements and results. 	
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: <ol style="list-style-type: none"> 1. The previously detailed strategy of achieving significant schedule improvement by accelerating systems installation and testing remains a valid, but will be placed “on hold” for the immediate future. 2. Ongoing schedule improvement 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&2. Acceleration of specific “targets of opportunity” will be detailed as they are identified.	
Permanent (Station) Power: Permanent facility power to 72 nd , 86 th , and 96 th Street Stations may be delayed and result in subsequent delays to equipment testing and commissioning.	Risk Type	
	Cost	Schedule
Mitigation Strategy: <ol style="list-style-type: none"> 1. Obtain services of an experienced ConEd liaison engineer to facilitate design and review process. 	Current Status: <ol style="list-style-type: none"> 1. Mitigation Strategy Items #1 and #2 continue. Cooperation and progress among all parties appears to be good. 	

<u>Risk Description</u>	<u>Mitigation Summary</u>			
<ol style="list-style-type: none"> 2. Expedite contractor design and ConEd review processes where possible. 3. Development of detail schedule “fragnet” to identify schedule problems and monitor progress. 4. Expedite construction of supporting infrastructure at each station to minimize potential delay. 5. Advance scheduling and coordination of feeder “cut-in” to minimize delays 	<ol style="list-style-type: none"> 2. Development of a detail schedule which models this issue is still incomplete. This risk was identified in August 2013. MTACC’s inability to develop a schedule and quantify the potential impacts suggests a significant deficiency in its management of this risk. <p>4&5 Completion is dependent upon Con Ed approval of the design. Approval of the design is being expedited.</p>			
<p>Buy America</p> <p>Delay resulting from resolution of MTA’s request for a non-availability waiver for the LVT Pad and Boot.</p>	<p style="text-align: center;">Risk Type</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%; text-align: center;">Cost</td> <td style="width: 50%; text-align: center;">Schedule</td> </tr> </table>		Cost	Schedule
Cost	Schedule			
<p>Mitigation Strategy:</p> <ol style="list-style-type: none"> 1. Request waiver of Buy America requirement for this item based upon “non-availability”. 2. Options include: <ol style="list-style-type: none"> a. MTACC’s position accepted – no changes required. b. Request rejected – exclude FTA funding & use local funding only. c. Request rejected – develop alternative with compliant materials. 	<p>Current Status:</p> <ol style="list-style-type: none"> 1. On September 11, 2013, MTACC transmitted its request for a “non-availability” waiver for the LVT Pad and Boot. 2. MTACC’s waiver request was posted in the Federal Register for a 30-day comment period on December 17, 2013. This period expired on January 17, 2014 with no known comments having been received. 3. No formal response has been received as of the writing of this report. 4. Informal discussions continue. 			
<p>Risk C4C Entrance 1 (301 E 69th Street):</p> <p>Work on Entrance 1 will be delayed due to delays in obtaining design approval from Owner for utility relocation in the building.</p>	<p style="text-align: center;">Risk Type</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%; text-align: center;">Cost</td> <td style="width: 50%; text-align: center;">Schedule</td> </tr> </table>		Cost	Schedule
Cost	Schedule			
<p>Mitigation Strategy:</p> <ol style="list-style-type: none"> 1. Develop an alternate design (relocation from inside building to sidewalk) to reduce impacts to building utilities. 2. Prepare a Tech memo and submit to FTA for approval. 3. Develop and negotiate access agreements with affected property owners 4. Excavate/concrete and underpin the common wall via C4C. 5. Exercise C4C options for Entrance # 1 in order to engage contractor’s engineering and to provide time to develop an 	<p>Current Status:</p> <ol style="list-style-type: none"> 1. In progress. 2. Complete. 3. Access agreements with affected adjacent property owners have been obtained and work is progressing. 4. Concern was expressed about the numerous AWOs required to implement this work and the lack of IPS detail pertaining to this work. At this time, the impact of this work on the overall project schedule has not been determined. 			

<u>Risk Description</u>	<u>Mitigation Summary</u>			
underpinning design and construction staging plan.				
Risk COM 2 (C6): Frequent late changes to the communications systems could delay C6 and the RSD.	Risk Type <table border="1" data-bbox="1122 432 1443 512"> <tr> <td data-bbox="1122 432 1284 512">Cost</td> <td data-bbox="1284 432 1443 512">Schedule</td> </tr> </table>		Cost	Schedule
Cost	Schedule			
Mitigation Strategy: <ol style="list-style-type: none"> 1. Confirm that previously agreed Communications design changes have been incorporated into the design. Resolve any outstanding issues. 2. Future User Department requested changes shall go through the CCG/ CCB approval process. A User Department representative's approval signature is required on the change request forms. The request will include cost and schedule impacts of the requested change. 3. Requested changes exceeding \$50,000 or having any schedule impact, must be presented to the Board by a User Department representative with substantiation of need provided. 	Current Status: <ol style="list-style-type: none"> 1. MTACC has reported that this item has been completed. 2. CCG/CCB review and approval process appears to be having a positive effect on limiting the number of User Department requests for design changes. 3. Monitoring of the effectiveness of the risk mitigation strategy is ongoing. This risk was not discussed at Risk Mitigation Meeting #34. 			
Risk C3 Entrance 1 (200 E 63rd Street): Work on Entrance 1 will be delayed due to delays in design approval from Owner for utility relocation in the building at 200 E 63rd Street.	Risk Type <table border="1" data-bbox="1122 1268 1443 1352"> <tr> <td data-bbox="1122 1268 1284 1352">Cost</td> <td data-bbox="1284 1268 1443 1352">Schedule</td> </tr> </table>		Cost	Schedule
Cost	Schedule			
Mitigation Strategy: <ol style="list-style-type: none"> 1. Mitigation strategy for utility relocation has been implemented and construction is underway. 	Current Status: <ol style="list-style-type: none"> 1. Critical gas line and meter relocation was completed in December 2013. Foundation construction is underway. 2. This risk will be periodically monitored. 			
Risk CNS 8 (C6) Delayed Safety Certification results in delay to the RSD	Risk Type <table border="1" data-bbox="1122 1612 1443 1696"> <tr> <td data-bbox="1122 1612 1284 1696">Cost</td> <td data-bbox="1284 1612 1443 1696">Schedule</td> </tr> </table>		Cost	Schedule
Cost	Schedule			
Mitigation Strategy: <ol style="list-style-type: none"> 1. Develop a detailed plan for executing the work required to achieve certification of SAS Phase 1. 2. Implement that plan. 	Current Status: <ol style="list-style-type: none"> 1. MTACC has developed a detailed plan for executing the work required to achieve certification of SAS Phase 1. 2. Implementation of that plan is currently 			

<u>Risk Description</u>	<u>Mitigation Summary</u>
3. Concern continues to be expressed regarding the role of NYSPTSB in this process, primarily due to the lack of precedent and explicit definition of the roles and responsibilities of all parties 4. Internal meeting(s) to prepare the outline of the committee meeting with NYS. 5. There is concern that delays in finding a new Safety and Certification Manager will adversely impact this process. 6. Hold Safety Certification Meeting with NYS representative in attendance.	underway. 3. NYSPTSB role has been confirmed to be one of oversight and verification of the MTACC/NYCT certification process. Their role will not impact the RSD. 4. Review of MTACC's updated SSMP and further efforts to define roles and responsibilities should address this issue. 5. Canceled meeting with NYSPTSB that in February will be rescheduled.

At Risk Mitigation Meeting #34, the following was discussed:

- It was generally agreed that the primary risks with which the project team is currently confronted involve schedule performance and schedule delay. At this time very few of the specific issues driving known potential delay scenarios are reflected in the Risk Register or discussed at the risk mitigation meetings. At this time in the project, specific delay issues need to be included in the in the risk management process, at the appropriate level of detail, to ensure prompt and complete mitigation actions are implemented.
- Going forward, risk management meetings will focus on the status of the management of specific interface milestones one to three months in the immediate future.

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

There were no ELPEP meetings held during February 2014. The next quarterly ELPEP meeting is currently scheduled for March 31, 2014. With respect to SAS, the current status of each of the main ELPEP components is summarized as follows:

- **Technical Capacity and Capability (TCC):** MTACC's 4th Quarter 2013 ELPEP Compliance Audit indicates it is "in compliance" with its TCC Plan. FTA has recommended this plan be updated; and this effort is in progress.
- **Schedule Management Plan (SMP):** MTACC will reissue the SMP incorporating corrective actions developed during its internal audit. MTACC's 4th Quarter 2013 ELPEP Compliance Checklist indicates MTACC is "in compliance" with its SMP.
- **Cost Management Plan (CMP):** MTACC will reissue the CMP incorporating corrective actions developed during its internal audit. MTACC's 4th Quarter 2013 ELPEP Compliance Checklist indicates MTACC is "in compliance" with its CMP.

- **Risk Mitigation Capacity Plan (RMCP) and Risk Management Plan (RMP):** MTACC will reissue the RMP incorporating corrective actions developed during its internal audit. MTACC's 4th Quarter 2013 ELPEP Compliance Checklist indicates MTACC is "in compliance" with its RMP.

The SAS Project Team has implemented the principles and requirements embodied in the ELPEP. The procedural changes instigated 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

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 January 31, 2013, a total of 7,639,295 construction hours have been logged on the project with 72 lost time and 210 recordable incidents documented. The total hours and incidents equates to a lost time rate (LTR) of 1.88 and a recordable rate (REC) of 5.50. 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.

7.0 ISSUES AND RECOMMENDATIONS

Schedule Reliability

The PMOC is concerned about the reliability and usefulness of the IPS in forecasting the project RSD and as a tool in identifying schedule risk and potential mitigation strategies. Specific issues leading to this concern previously discussed in this report include:

- Inaccurate replication of contractor modeling of critical and near-critical path activities in the IPS.
- Selective incorporation of contractor schedule forecasts and milestone summary information.
- Incomplete IPS modeling of acknowledged schedule risks.

As an example, the SAS project team has stated that its primary schedule concern with respect to the availability of permanent power involves the 96th Street Station. However, the limited schedule information available suggests the 72nd Street Station to be the "more critical" area of concern. The SAS project team has been diligent in managing and expediting the engineering activities associated with supply of permanent power, however they are unable to quantify the results of their efforts or justify the need to incur additional risk in further expediting this effort.

Schedule Recovery/Acceleration

The SAS Project Team has modified its approach towards schedule improvement and/or schedule acceleration.

- The C6 systems installation and testing comprehensive acceleration initiative has been placed on hold. It will be revisited at a later time, when the status and forecast of station facility availability can be made with greater confidence.
- In the interim, MTACC will pursue individual acceleration efforts that will benefit the schedule as they become available.

The PMOC concurs with this approach, noting the numerous variables make a comprehensive systems acceleration initiative unworkable at this time. The PMOC notes that schedule improvements achieved due to selective acceleration efforts must be completely understood and documented by all parties to ensure MTACC realizes the anticipated schedule improvement.

Construction Management

The PMOC notes that several senior CM positions have become available. While the MTACC does have interim staffing in place to cover these positions, the PMOC notes the extended duration required to fill other positions recently and is concerned that these positions will go vacant for an extended period.

Permanent Power

The PMOC has previously documented SAS project team concerns regarding the time required to design, fabricate and install permanent station power facilities. One element of the mitigation strategy for this risk was to develop a detailed schedule “fragnet” representing all activities involved in delivering permanent power to the affected stations. Without this effort, MTACC has been unable to determine if its mitigation efforts to date have had a positive impact or if incurring additional risk (early release of equipment for fabrication) is necessary.

The PMOC continues to recommend the complete modeling of this issue be expedited as an aid to thoroughly understanding the magnitude of any problem and determine if any mitigating actions are possible.

Low Vibration Track (LVT) Buy America Decision

On September 11, 2013, MTACC submitted its “Request for Non-Availability Waiver for Low Vibration Track System” to the FTA in accordance with 49 C.F.R. §661.7(c). MTACC’s waiver request was posted in the Federal Register for a 30-day comment period on December 17, 2013. This period expired on January 17, 2014 with no known comments having been received. As of the writing of this report, there has been no formal decision regarding this request.

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 #	86	87	88	89	90	91
Data Date	9/1/13	10/1/13	11/1/13	12/1/13	01/1/14	02/1/14
Contingency (CD)						
RSD=12/31/2016	102	102	102	102		
Risk Mitigated					102	102
Risk Realized					20	-20
RSD=02/28/2018	537	537	537	537		
Risk Mitigated					526	526
Risk Realized					446	405

Table 3 – Schedule Milestone Comparison

Pkg	MS	Description	Dates			Variance		Sch. Float
			Adjusted (2)	Ud #90 (3)	Ud #91 (4)	Contract = (2) - (4)	Month = (3) - (4)	
C2B	MS #2	Complete work & provide shared site access @ 93rd Street shaft	03/22/14	9/11/14	9/8/14	-170	3	604
C2B	MS #4	Complete work & provide 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	1/6/15	1/20/15	-121	-14	45
C2B	MS #5	Complete work & provide shared access @ East & West Tunnels South of 96th St Station (1225+25 and STA. 1209+00)	02/20/14	2/21/14	2/21/14	-1	0	87
C2B	MS #6	Complete work & provide full access to Comm. Rooms & Closets	08/21/14	12/10/14	12/18/14	-119	-8	225
C2B	MS #7	Complete work & provide full access to Signals Rooms	08/21/14	12/10/14	12/18/14	-119	-8	63
C2B	MS #8	Complete work & provide full access to Traction Power Rooms:	08/21/14	12/10/14	12/18/14	-119	-8	167
C2B	MS #9	Complete work & provide full access to Station Service Centers	11/21/14	6/30/15	7/9/15	-230	-9	386
C2B	MS #10	Complete all Comm. Signal , & Traction Power work in remaining areas not identified in Milestones 1 through 9	09/21/14	4/23/15	4/28/15	-219	-5	438
C2B	SS	Substantial Completion	12/21/15	6/13/16	6/21/16	-183	-8	138
C3	#3c	Compl Mezz Levels Comm. Rms/Sta. Service Center	04/15/13	05/27/14	05/27/14	-407	0	115
C3	#4	Compl Lwr/Uppr Platforms & Signal Rms	10/14/13	03/31/14	04/17/14	-185	-17	227

Pkg	MS	Description	Dates			Variance		Sch. Float (87)
			Adjusted (2)	Ud #90 (3)	Ud #91 (4)	Contract = (2) - (4)	Month = (3) - (4)	
C3	#4b	Compl Lwr/Uppr Platforms & Signal Rms	10/14/13	09/12/14	09/15/14	-336	-3	250
C3	SS	Substantial Completion	05/13/14	08/18/15	08/11/15	-455	7	84
C4C	MS #1	Provide vehicle access thru 72nd Street Station 1172+40 -> 1163+00	02/13/14	02/14/14	2/14/2014A	-1	0	-
C4C	MS #2	Provide limited access thru 72nd Street Station 1172+40 ->1163+00	01/13/14	06/13/14	06/13/14	-151	0	90
C4C	MS #3	Provide shared access thru 72nd Street Station 1172+40 ->1163+00	11/27/14	11/20/14	11/20/14	7	0	92
C4C	MS #4	Provide vehicle access south of 72nd Street Station 1163+00 - >149+50	2/13/14	02/14/14	2/14/2014A	-1	0	-
C4C	MS #5	Provide limited access south of 72nd Street Station 1163+00 -> 149+50	4/14/14	04/14/14	04/14/14	0	0	133
C4C	MS #6	Provide shared access south of 72nd Street Station 1163+00 -> 149+50	6/13/14	06/12/14	06/11/14	2	1	92
C4C	MS #7	Provide full access turnover of Communications Rooms to Systems Contractor	8/28/14	09/17/14	09/14/14	-17	3	325
C4C	MS #8	Provide full access turnover of Signal Rooms South of station to Systems Contractor	7/15/14	07/11/14	07/08/14	7	3	375
C4C	MS #9	Comp. work in all Signal Rooms except M8	9/29/14	09/29/14	09/26/14	3	3	39
C4C	MS #10	Comp. work in north power rooms	2/25/15	10/29/14	10/22/14	126	7	193
C4C	MS #11	Comp. work in south power rooms	03/24/15	11/26/14	11/24/14	120	2	171
C4C	MS #12	Complete work, provide full access @ Station Service Center(s)	08/28/14	08/26/14	08/27/14	1	-1	339

Pkg	MS	Description	Dates			Variance		Sch. Float
			Adjusted (2)	Ud #90 (3)	Ud #91 (4)	Contract = (2) - (4)	Month = (3) - (4)	
C4C	MS #13	Complete work, provide full access @ Lubrication Room(s)	08/28/14	08/28/14	08/26/14	2	2	340
C4C	MS #14	Complete work in all remaining Comm. Signals & Traction Power Rooms	08/28/14	08/28/14	08/27/14	1	1	338
C5B	#1	Compl All work South of Grid Line 15	03/04/14	05/02/14	05/15/14	-72	-13	15
C5B	SS	Substantial Compl/All Work w/o Ent. #2	09/04/14	02/26/15	10/14/14		135	22
C5B	SS	Substantial Compl/All Work incl. Ent. #2	-	02/26/15	02/23/15		3	176
C6	#2A	Complete LAN - 96th St. Station	05/18/15	05/18/15	05/18/15	0	0	331
C6	#2B	Complete WAN - 96th St. Station	05/18/15	05/18/15	05/18/15	0	0	331
C6	#3A	Complete LAN - 86th St. Station	07/18/15	07/17/15	07/17/15	1	0	148
C6	#3B	Complete WAN - 86th St. Station	07/18/15	07/17/15	07/17/15	1	0	148
C6	#4A	Complete LAN - 72nd St. Station	02/18/15	02/18/15	02/18/15	0	0	414
C6	#4B	Complete WAN - 72nd St. Station	02/18/15	02/18/15	02/18/15	0	0	414
C6	#5A	Complete LAN - 63rd St. Station	04/18/14	11/03/14	04/09/15	-356	-157	119
C6	#5B	Complete WAN - 63rd St. Station	04/18/14	11/03/14	04/09/15	-356	-157	119
C6	#5C	Complete all 63rd St. Station work	04/18/14	12/15/14	05/21/15	-398	-157	119
C6	SS	Substantial Completion	08/18/16	07/15/16	08/18/16	0	-34	23

Notes:

1. All schedule dates based upon Feb 1, 2014 update (IPS Update #91)
2. Contract packages 1, 2A, 4B 5A have completed all work.
3. Contract package 5C; construction schedule has not been incorporated into IPS.
4. Milestones not shown have been completed.

Table 4 - Project Budget/Cost 

	FFGA			FFGA Amend	MTA Current Working Budget (CWB)		Expenditures as of February 28, 2013	
	\$ 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	2,801.913	53.19
Financing Cost	816.614	16.78			816.614	15.50		
Total Project Cost:	4,050.000	83.22	4,572.942		4,451.00	84.50	2,801.913	53.19
Total Federal:	1,350.693	27.75	1,063.942		1,350.693	24.60	841.274	15.97
Total FTA share:	1,300.000	96.25	990.049		1,300.000	23.68	767.381	14.57
5309 New Starts share	1,300.000	100	990.049		1,300.000	23.68	767.381	14.57
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	1,960.639	37.22
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	\$2,961,568,912
Engineering Services Subtotal	\$622,862,000	\$625,000,000
Third Party Expenses	\$554,086,273	\$557,500,000
TA Expenses	\$131,160,085	\$130,775,000
Contingency	\$308,077,343	
Executive Reserve	\$160,000,000	
Subtotal	\$4,451,000,000	\$4,274,843,912

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

Std. Cost Category (SCC)	Description	FFGA	MTA's Current Working Budget (December 31, 2013)
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 8 -- Core Accountability Items – February 2014

Project Status:		Original at FFGA	Current*	ELPEP**
Cost	Cost Estimate	\$4,050M	\$4,451M	\$4,980M
Contingency	Unallocated Contingency	\$555.554M	\$287M	\$113M
	Total Contingency (Allocated plus Unallocated)	\$555.554M	\$287M (Feb. 2014)	\$113M
Schedule	Revenue Service Date	June 30, 2014	December 30, 2016	February 28, 2018
Total Project Percent Complete	Based on Expenditures	63%		
	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 continue to be “requested” by NYCT Operations long after the formal completion of the project design. These changes have primarily affected the Systems (C6) Contract, where the approved AWOs will substantially increase project cost. The schedule impact of the changes added to date has not been determined. To date, the SAS Project Team’s ability to resist the incorporation of these requests appears limited. Total construction is approximately 55% complete and the schedule for achieving the RSD of December 30, 2016 is challenging. At some point, the MTA will have to enforce a “no		

		more design changes” if the project is to achieve its schedule (and cost) performance objectives.
Construction Contract Management and Coordination	Open	The SAS Project team has yet to demonstrate that it can closeout a contract or execute the turnover of work areas between contractors in a timely and efficient manner. Construction staff does not appear to be pro-actively planning and expediting the MTA’s responsibilities and obligations necessary to accomplish these key activities. The PMP does not adequately address this aspect of construction management. The PMOC recommends the SAS Project Team develop detailed processes and procedures to guide its construction staff through their responsibilities in the closeout and turnover phases of the project and formally incorporate these measures in Revision 9 of the PMP.
Organization	Open	The PMOC is concerned that organization changes within the SAS Project Management Team are not addressing the root cause of management problems and may actually be causing some confusion within the team regarding roles and responsibilities.
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 #91; Data Date = 2/01/2014

Financial data based upon MTACC reporting through 2/28/2014