

PMOC MONTHLY REPORT

Second Avenue Subway Phase 1 (MTACC-SAS) Project

Metropolitan Transportation Authority

New York, New York

Report Period May 1 to May 31, 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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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 May 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 66% 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". MTACC issued directions to the contractor to accelerate the Additional Work Order (AWO) effort associated with Milestone 5 and to turn over his area to the C6 Systems contractor for track installation.
- 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.

- 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”. Construction of the Mezzanine level neared completion. At the Platform level precast wall panels continued and are nearing completion. Work resumed at Entrance #1. A Stop-Work-Order was implemented at Ancillary #2 due to fall protection issues.
- C-26008 (C5B) “86th Street Station Cavern Mining and Lining”. All punchlist items for Milestone #1 were completed. Placement of concrete lining for the north cavern walls nears completion. Arch concrete lining placement in the north Ancillary Cavern continued.
- C-26012 (C5C) “86th Street Station Architectural and MEP”. Focus of the initial work continues in the south tunnels with invert topping and conduit/bench construction. Continued erection of formwork for mezzanine construction. The first mezzanine concrete placement is scheduled for the week of June 9, 2014. Full access to the site is still forecast for October 2014.
- C-26009 (C6) “Track, Power, Signals and Communication Systems”. Mitigation measures are being implemented to recover 40 days of impact on substantial completion. Access dates have been established and are reflected in the acceleration schedule. Equipment delivery is ongoing.

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 May 31, 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.

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

- **S1Area (Gridline 1-8)**
 - Roof Level (ongoing)
 - Cleanup and repair of roof cracks from Gridline 1-8
 - Wisko waterproofing
 - Placement of protection course started on May 2, 2014
 - Mezzanine Level (ongoing)
 - Stripping of roof placements 7 and 8 adjacent to Ancillary 1 completed

- Layout of equipment pads and ramps
- FRP equipment pads and ramps
- Platform Level (ongoing)
 - Stripping of invert level 6-9 ongoing 2 shifts and Saturday
- Low Bench (ongoing)
 - Electrical work, S1 and S2 tunnels (AWO #061)
 - FRP of low and high benches
- Platform (ongoing)
 - Electrical Work (Gridline 1-4)
 - Plumbing Work (Gridline 1-4)
 - FRP platform slabs and walls (Gridline 1-4)
 - Masonry Work (Gridline 1-4)
- **S2 Area (Gridline 8-18)**
 - Roof Work (ongoing)
 - Cleanup and repair of surface cracks
 - Waterproofing
 - Installation of protection coat
 - Mezzanine Work (ongoing)
 - Finish striping architectural and cleaning mezzanine slab
 - Layout of equipment pads and ramps
 - FRP equipment pads and ramps
 - Shotcrete smoothing layer (Gridline 10-12)
 - Masonry work (Gridline 8-13)
 - Platform Slab (ongoing)
 - Stripping of mezzanine shoring
 - Removal of tier 3 struts at Entrance 1 and 2
 - Cleanup and prepare for platform work
 - Spray acoustical work
 - Ductwork
 - Installation of embedded conduit
- **S3 Area (Gridline 18-36)**
 - Roof Work (ongoing)
 - Wall 4 (waterproofing and installation of protection course)
 - Concrete placement (Gridline 20.5 -22)
 - Concrete placement (Gridline 22-23.5)
 - Pre and cleanup and repair cracks (Gridline 18-25)

- Pre and install waterproofing (Gridline 18-25)
- Place protection course (Gridline 18-25)
- Mezzanine Work (ongoing)
 - Strip remaining shoring
 - FRP equipment pads
 - Masonry work
 - MEP work
- Platform Work (ongoing)
 - Strip invert (Gridline 18-36)
 - Removal of struts and wales at tier 3
 - FRP high and low benches, and platform walls (Gridline 30-36)
 - FRP platform slabs
 - FRP high and low benches (Gridline 26-30)
 - Installation of rebar roof slab 101
 - FRP upper mezzanine shoring
- **Ancillary 1 (Gridline 8-9.5)**
 - Below Roof Level (ongoing)
 - FRP roof slab 7A (West Side)
 - FRP roof slab 7B (East Side)
 - Strip shoring mezzanine and platform level
 - FRP upper platform slab
- **Ancillary 2 (Gridline 28-29.5)**
 - Below Roof Level (ongoing)
 - FRP walls (65-1, 69-1, 62, 63, 66, 67, and 68)
 - FRP mezzanine to roof columns
 - Erect low roof shoring
 - Installation of low roof under ECS duct
- **Entrance 1 (Gridline 13-14)**
 - Removal of stair tower (ongoing)
 - Demolition of knockout panel (ongoing)
 - Installation of mudmat (ongoing)
 - Waterproofing of invert (ongoing)
- **Entrance 2 (Gridline 13-14)**
 - Excavation started on May 29, 2014
 - Supporting of utilities started on May 29, 2014

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.
- 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 installation of brackets in elevator shafts (4) and continued installation of the rails. Began work in the Elevator Machine Room.
 - Continued installation of power & communication conduits throughout.
 - Continued installation of water mist & sprinklers throughout.
 - Began installing tiles at the 3rd Mezzanine.
 - Began finishes in Area 5 Lobbies.
- **Entrance #1**
 - Completed temporary sewer bypass.
 - Began preparations for installation of piles.
- **Platforms**
 - Continuing with room wall tile framing at the G4 (lower) platform.
 - Continuing wall tile framing at the G3 & G4 platforms.
 - Continuing with carriers, duct work, conduits to light fixtures, and ceiling panel framing at the G3 (upper platform).
 - Began delivery of platform pavers.
- **Fan Plants**
 - Continuing installation of chiller piping, communication & power conduits in the West Fan Room.
 - Continuing with installation of Building Management System (BMS) in both East & West Fan Rooms.
- **C6 Coordination**
 - The 3 Signal Rooms were turned over to the C6 contractor during May 2014.
 - Project wide Interface Meetings began May 30, 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
 - Closeout of punchlist items identified during inspection by Maintenance of Way inspection
 - Third Part acceptance by Con-Ed, ECS and DEP-Sewer (completed)

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

- **Ancillary #2/ Entrance #2:**
 - A Stop-Work Order was placed on May 27, 2014 and continues at Ancillary #2 over fall protection issues. Fall protection has become an overall program-wide concern.
- **Main Cavern**
 - At the North Mezzanine painting of CMU walls is ongoing.
 - At the South Mezzanine special inspections continued for concrete placements.

- At the South Mezzanine concrete placement was nearing completion.
- At the Platform level precast panel installation is ongoing and nearing completion.
- **G3/G4 Tunnels:**
 - Continued with conduit, wiring receptacles and sound powered phones.
 - Preparing for the mock-up installation of the MC Cable.
- **Ancillary #1:**
 - Work continued with the forming and placements of Lower Mezzanine walls.
- **Entrance #1:**
 - At Entrance #1 the rock assessment was completed and demolition of the party wall and slab at the basement was completed.
- **Schedule**
 - Milestone #2 (limited access between Stations 1172+40 & 1163+00, and #6 (shared access between Stations 1163+00 & 148+00/69th St. Shaft is June 14, 2014. Milestone #8 (complete work in Signal Rooms in the south side of the station) is July 14, 2014.
 - The long lead for delivery of the MC Cable continues to be a schedule concern.

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

- The contractor is back to a 2 shift 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. As of the date of this report that move has not taken place.
- Through May 30, 2014 permanent concrete lining placement was approximately 85.4% complete with completion still forecast for August 2014. Entrance #2 permanent concrete remains forecast for completion in November 2014. Percentages do not include mud slabs.
- The remaining concrete lining in the West Tunnel, north of E. 87th St., reached approximately 50% completion.
- Milestone #1, limited access to the C5C contractor, was achieved April 15, 2014 and the C5B contractor has completed all punch list items through May 2014.
- **Main Cavern (North and South)**
 - Placement of the overall Cavern arch concrete reached approximately 79% complete. Concrete Low Benches were completed in the Milestone #1 area and continued in the north section of the Cavern.
- **Ancillary #2**
 - North Ancillary Cavern arch concrete placement is near completion.
 - Concrete placement at the Adits reached approximately 57% completion.
 - Continued installation of waterproofing of the walls in Ancillary #2 and continued form, rebar and concrete placement of the invert and walls.

- **Entrance #1**
 - All concrete lining is complete.
 - Masonry work is ongoing along with installation of electrical conduit.
- **Entrance #2**
 - Continued waterproofing and concrete placement along the incline walls and intermediate mezzanine.
 - Overall concrete arch and incline placement was approximately 47% complete.

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. As of the date of this report that move has not taken place.
- Temporary power provisions for this contract are complete. Submittals and review of drawings for permanent power are ongoing by NYCT and the design consultant. Completion of their review is scheduled for the end of July 2014.
- In the West Tunnel continued placing the invert topping.
- Began forms, ducts and rebar for placing the high bench in the south tunnels.
- Continued forming and placing concrete in the Cross Passageways.
- Preparations for the invert placement in Ancillary #1 are underway along with planning to remove the south access stair. The new south access will be through Entrance #1.
- Key material deliveries include the large rebar and the formwork for the mezzanine. The first mezzanine slab placement is scheduled for early June 13, 2014.

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

- 63rd Street Rooms: Contractor has remobilized 63rd Street to begin pulling the fiber optic (F/O) cables on the G3 and G4 tracks and is on schedule to finish the pulling of the wide area network F/O cables between the communication rooms by June 21, 2014.
- Electrical (96th Street South Tubes E/W 1209-1223): Contractor has completed the cable pulling out of sequence. MTACC provided direction as it relates to acceptance of all manholes/duct benches in this area.
- 96th Street Tunnel Work (1238 +50 North): Contractor completed the pulling of all fiber optic, communication, power and signal cable.
- Signal Rooms: The 147 CIR Steel is installed in the room as per the MTA's request. Per MTA access is scheduled for May 31, 2014.
- 86th Street North (1209+00 to 1223 +17): Contractor completed pulling fiber optic, communication, power and signal cable in S1 and S2 tunnels and subsequently moved the cable pulling operation south to 72nd Street (1149+50-1163). The goal is to stay ahead of the track construction in accordance with the most recent recovery plan submitted to the MTACC (Additional Work Order (AWO) #048).

- Civil (North of 63rd Street Station Area): No available track/room/civil work as of yet however, the MTACC has advised the contractor that access will be available on June 18, 2014. The contractor is planning to deliver the 115# CWR through 63rd Street starting the week of June 2, 2014 and continue for 6 consecutive weeks (day work). Additionally the contractor needs to remove 200LF of existing track bed on the G3 and G4 tracks. The work will be performed under limited access provided by MTACC.
- Civil (Rail Welding): Tie in welding of the welded stringers will commence during July/August 2014 at 63rd Street once all the rail is delivered.
- Civil (96th Street South Tubes E/W 1209-1223 Zone 2): Contractor has now provided all survey data for design, clearance and profile information and awaits comments and direction from MTACC. Currently shared access can't be achieved due to the 96th Street Station contractors scaffolding. Contractor was asked to provide a recovery plan. MTACC subsequently directed the contractor to proceed with the delivery of track materials starting May 2, 2014. Ten shifts of over time are required to complete this task and are associated with AWO #48.
- Civil (1238+50-1254 +50 Zone 1): The last concrete placement in this area is scheduled for 5/21/14. Both S1 & S2 will be complete and CSJV will then relocate the track building work forces/operations to Zone 2 (1209-1223).
- Procurement
 - Antenna cable (delivered).
 - Signal cable (delivered).
 - Communication cable (delivered).
 - Power cable 2000MCM & 500MCM (delivered).
 - Fiber optic cable (delivered).
 - Wayside Tray 63rd (delivered).
 - Stops & Layouts (delivered).
 - Wayside Signal Equipment (released; various stages in manufacturing).
 - Running rail (delivered).
 - LVT Blocks (delivered).
 - 3rd Rail balance by end of May 2014.
 - SWP's (delivered).
 - Guard Rail is due end of June 2014.
 - ALU: 63rd Street CCTV pending AWO 32. FAT is pending until the RFI is answered and finalized. FAT is a 2 day operation and is currently pre-scheduled for July 2014. Also, AWO #32 needs to be negotiated prior to FAT.
 - Simplex (All Fire Alarm equipment for 63rd Street is (delivered).
 - MKJ: FAT Testing for PACIS Cabinets is now rescheduled for June 2014.
 - Pinnacle: 63rd Street equipment for wireless radio is (delivered).
 - PRI (HVAC SCADA) awaiting design information from 63rd Streets contractor.
 - Balfour Circuit Breakers & Rectifiers (delivered).
 - Balfore Transformers (in storage in VA, FAT accepted by MTACC).
 - Meridian: EA Alarm Boxes: (delivered).

- Transdyne (Power SCADA): (delivered).
- Submittal Progress
 - Total projected submittals: 5,406
 - Total submitted to date: 3,525
 - Total projected to complete: 1,893
 - Percent completed: 65%
 - Pending MTA response: 471

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

During May 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 March 2014 include:

- Contractors’ lack of attention to closing Nonconformance Reports (NCRs)

The PMOC is concerned that the SAS contractors and Consultant Construction Managers are not closing out NCRs in a timely manner. Although the number of new NCRs is increasing, as to be expected, very few have been closed the last two months as shown in the following table.

Month	Total Number* of New NCRs Written in Current Month	Total Number* of NCRs Closed in Current Month	Total Number* of NCRs Still Open
April	11	5	87
May	28	6	109

* The numbers are the totals for all SAS contracts.

The contracts with the greatest number of NCRs that have been open the longest are: C2B, C3, C4C, and C5B. The PMOC recommends that the SAS Quality Manager establish a team that concentrates on closing open NCRs.

NOTE: Past Monthly Reports identified a major issue that it took excessive time on several SAS contracts to enter Daily Inspection Reports into the Contractor Management System (CMS). During Monthly Quality Management Meetings, the PMOC stressed the importance to enter Daily Inspection Reports promptly. At the end of May 2014, all contractors are current with their entries.

▪ **Quarterly Quality Oversight (QO) s**

MTACC revised the checklist that SAS uses to do quarterly quality oversight of its contractors. The number of elements was increased from 15 to 19, the numerical rating was simplified, and at the suggestion of the PMOC, the generic checklist was updated to reflect unique contractor requirements. The new checklist was used for the first time on the C4C contract when the QO was conducted in early May. Several problems were noted:

- Many questions were redundant. The QO took 1 ½ days. With the old checklist, it took less than one day to conduct a QO. The PMOC discussed this with the MTACC Chief of Quality who will convene a team to eliminate the redundancy.
- Although the numerical rating for each question has been simplified at the suggestion of the PMOC, the overall rating is automatically calculated to two decimal places, e.g., 89.46%. The MTACC Chief of Quality will make a change so that the rating is rounded to the nearest percent.
- The PMOC is still concerned that the QO has a numerical rating. This is unusual. Most oversights and audits conducted by other grantees do not have a numerical rating. The SAS C3 Contractor's Quality Manager is only concerned about what his number is since that is what his management measures him on. The actual findings are secondary. Other SAS contractors also focus on the rating rather than the findings.
- The SAS C3 Quality Manager was not prepared for this QO. The QO was conducted on a different floor from the contractor's Quality Manager's desk and he had to keep going back and forth to retrieve information. This was another reason that the QO lasted for 1 ½ days.

▪ **Project Quality Manual**

Revision 3 of the SAS Project Quality Manual (PQM) was issued in April 2009. The SAS Quality Manager will prepare 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 expects to receive a draft of Revision 4 to review in June 2014.

Revision 3 of the SAS Project Quality Manual (PQM) was issued in April 2009. The SAS Quality Manager will prepare 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 expects to receive a draft of Revision 4 to review in May or June 2014.

Contract Packages C2A and C2B

<p>Status:</p>	<p>On C2A, through May 31, 2014, a total of 36 NCRs have been issued. 31 have been closed by both the contractor and SAS, 2 NCRs were voided, and 3 NCRs are still open. In May 2014, no new NCRs were written and none were closed.</p> <p>On C2B, through May 31, 2014, a total of 43 NCRs have been issued. Eleven have been closed and 32 NCRs are still open. In May 2014, eight new NCRs were written and three were closed. 31 of the open NCRs are for concrete that was out of specification. Most of these are awaiting action by the SAS C2B Consultant Construction Manager.</p>
<p>Observation:</p>	<p>On the C2A contract, of the three open NCRs, two are for concrete that was out of specification. The contractor has prepared the necessary paperwork for closure and is awaiting final approval by AAJV (the designer of record) and the CCM. The third NCR repair disposition has been approved and the repair is in progress. Two of the open NCRs are expected to be closed in early June 2014.</p> <p>On the C2B contract, of the 34 open NCRs, 31 are for concrete that was out of specification. The C2B contractor's Quality Manager prepared a statistical concrete analysis for the 15 NCRs that were documented on January 16, 2014. AAJV approved the analysis on March 31, 2014 but the NCRs remain open. Two of the three open non-concrete NCRs have been open between six months and one year.</p>
<p>Concerns and Recommendations:</p>	<p>The PMOC is concerned that the older concrete NCRs have not been closed. The responsibility has shifted from the contractor to the SAS C2B CCM.</p>
<p>Contract Package C3</p>	
<p>Status:</p>	<p>Through May 31, 2014, a total of 80 NCRs have been issued. 66 have been closed and 14 NCRs are still open. In May 2014, two new NCRs were written and none were closed.</p>
<p>Observation:</p>	<p>Of the 14 open NCR's, 7 were written by the contractor on one of their subcontractors.</p>
<p>Concerns and Recommendations:</p>	<p>No C3 NCRs have been closed for 2 ½ months. The PMOC is concerned that six of the seven open subcontractor NCRs have been open for 2 to 9 months. Based on the PMOC's concern, the SAS C3 Quality Manager and the Contractor's Quality Manager have generated a plan to investigate/close each NCR and it was expected that many of the NCRs would be closed in May 2014. As of May 31, 2014, none of these were closed.</p>
<p>Contract Package C4B</p>	
<p>Status:</p>	<p>Through May 31, 2014, a total of 122 NCRs have been issued. 121 have</p>

	been closed and 1 NCR is still open. In May 2014, no new NCRs were written and two were closed.
Observation:	The contractor has done an effective job of documenting NCRs as the nonconforming condition occurs and closing them in a timely manner.
Concerns and Recommendations:	None.
Contract Package C4C	
Status:	Through May 31, 2014, a total of 33 NCRs have been issued. One has been closed and 32 NCRs are still open. In May 2014, 17 new NCRs were written and none were closed. Three of the new NCRs were for concrete that was out of specification. These conditions occurred in March 2014 but were not documented by the contractor until May.
Observation:	16 of the open NCRs are for concrete that was out of specification. The contractor is waiting for additional NCRs to be written before performing a concrete analysis that is expected to be prepared in June 2014. 13 of the NCRs generated in May 2014 were written by the SAS C4C Quality Manager for the contractor failing to generate an NCR within one working day of the concrete that was out of specification. The incidents occurred between March 5 and March 31, 2014.
Concerns and Recommendations:	The PMOC is concerned that the C4C contractor has been generating NCRs for concrete that was out of specification two months after the occurrence. One NCR was generated for the entire month rather than one for each week as directed by the SAS Program Executive. The PMOC commends the C4C Quality Manager for documenting his “customer complaint” NCRs.
Contract Package C5B	
Status:	Through May 31, 2014, a total of 73 NCRs have been issued. 49 have been closed and 24 NCRs are still open. In May 2014, no new NCRs were written and none were closed.
Observation:	Of the 24 open NCRs, 14 are for concrete that was out of specification. The SAS C5B Contractor’s Quality Manager prepared a second statistical analysis that was approved by AAJV. The concrete NCRs that are open were expected to be closed in May 2014. As of May 31, 2014, none of these were closed; however, six are awaiting final signature and will be closed in early June.
Concerns and Recommendations:	None.
Contract Package C5C	
Status:	Through May 31, 2014 no NCRs have been issued.

Observation:	None.
Concerns and Recommendations:	None.
Contract Package C6	
Status:	Through May 31, 2014 a total of seven NCRs have been issued. Four have been closed and three NCRs are still open. In May 2014, one new NCR was written and one was closed. None of the seven total NCRs were for concrete placement.
Observation:	The contractor has done an effective job of documenting NCRs as the nonconforming condition occurs and closing them in a timely manner.
Concerns and Recommendations:	None.

Concerns and Recommendations:

Refer to previous section.

2.0 SCHEDULE DATA

Integrated Project Schedule (IPS) Update #94 was received on June 11, 2014 and is based on a data date of May 1, 2014. The narrative report was received on June 12, 2014; contractor “.XER” files were received on June 17, 2014. As expected, the IPS continues to forecast 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:

There are two independent critical paths indicated in Update #94 of the SAS IPS.

Critical Path #1 is initiated by Activity C6TW-018 “Zone 1 Track S2 @ 96th – Install Drainage, Bulkheads, Exp. Jts., Pour Concrete, 3rd Rail Pads, Strip & Clean” and continues through the installation of the Trackwork in Zone 2, 6, 3, 4,5, 7, 8 and 10 which is forecast to complete on September 3, 2015. This path then shifts to the installation of the wayside equipment at 86th Street which starts with Activity #C6C2-435 “Wayside @86th – Install Riser Boxes” and completes with Activity #C6C2-455 “Wayside @86th – MTA inspect and provide punch list, perform punchlist work” on July 28, 2016. The completion of the wayside equipment punchlist at 86th 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 20, 2016.

Critical Path #2 is initiated with ongoing platform construction at the 72nd Street Station. The critical elements of this work involve construction and turnover of the Signal Cable Termination Room and support infrastructure. This work is forecast for completion on October 24, 2014

(C4C, MS #9) with turnover to the systems contractor scheduled for December 9, 2014. The resulting 46 CD of embedded float is generally representative of the time required for punchlist and turnover activities, which the MTACC and its contractors have not explicitly included in their schedules. Signal equipment installation and testing work extends through July 28, 2016, whereupon this path merges with **Critical Path #1** at Activity C6TC 30A C6 Substantial Completion for Revenue Service Testing.

Secondary Paths: Major secondary float paths of significance to the overall status of the project. It is noteworthy that there are now two independent +3 WD float paths, demonstrating the increasing schedule criticality of rail systems installation and testing to the overall project schedule:

+1 WD: There are several independent paths in the IPS with this float value. Of greatest significance is the path initiated by Activity # C2B S2_93to95-3; Strip Mezz Slab Form – SA2 (93-95 St), which is currently underway. This work is followed by Activity # C2B S2_93to95-343; Install Conduit Grid 9-18 & Build Low Bench - SA 2 (93-95St) which is ultimately followed by C2B M-005A; C2B – MILESTONE 5A. This Milestone is significant in that it controls the start of trackwork in Zone 6 (Activity C6TW-060) which is currently on the critical path.

The IPS logic in this portion of the schedule is incomplete. C2B (Finish) Milestone #5 is effectively defined in time by a 63 day lag from the start of Activity # C2B S2_93to95-343. There is virtually no description of the physical work required by the C2B Contractor to achieved Milestone #5A, which has the potential to delay work on the critical path.

+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 25, 2016.

The manufacture and testing of switchgear for the traction power substation @ 86th Street is reportedly underway and is on a parallel +8WD float path suggesting t it will be available “just-in-time” for the forecast start of installation on March 20, 2015.

+4 WD: This path branches off of the critical path with the completion of Act. # C6TW-075 – Zone 7 S2 @ 72nd – Set ties, surface & align, thread & clip rails, install riser boxes, CDTs and rebar” which is forecast to complete on March 4, 2015. This initiates the start of wayside equipment installation at 72nd Street which starts with Activity #C6C4-495 “Wayside @72nd – Install Riser Boxes and completes with Activity #C6C4-299 “Wayside @72nd – Perform Punchlist Work” on July 11, 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.

+14 WD: NYCT Pre-Revenue Operation Activities scheduled to start on August 18, 2014 is unchanged this period.

+21 WD: This path follows structural and architectural construction of Ancillary #1 in the 86th Street Station (C5C). This work is forecast to start on May 8, 2014 and extends through the completion of Activity # C5C-AA2301-1950; Install Block Walls Mezzanine level Rooms 3011-3045 which is forecast to complete on March 19, 2015. The IPS indicates that completion of this work represents achievement of C5C Milestones 6, 7, 8, 9 and 11, which allow follow-up work in communications, traction power and signal rooms to commence.

The PMOC notes that the IPS does not include any MEP work as precedents for achievement of Milestones 6, 7, 8, 9 and 11. Previous experience suggests this may be a significant omission which should be evaluated using the C5c construction schedule.

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

- Milestones completed this period:

Pkg.	MS#	Description	Date
C4C	5	Limited access south of 72nd Street Station 1163+00 -> 149+50	4/14/14
C5B	1	Compl All work South of Grid Line 15	4/14/14

- Milestones forecast for completion over the next 90 days:

Pkg	MS	Description	Forecast	Float
C2B	MS #5	Shared access @ E & W Tunnels South of 96th St Stn. (1225+25 and 1209+00)	7/7/14	8
C2B	MS#5A	Shared Access E & W Track to grid 11	7/30/14	1
C3	#3c	Mezz. Level Comm Rms/Sta Serv Ctr	5/30/14	337
C3	#4	Lwr/Uppr Platforms & Signal Rms	5/30/14	196
C4C	MS #2	Limited access thru 72nd Street Station 1172+40 ->1163+00	6/13/14	48
C4C	MS #6	Shared access south of 72nd Street Station 1163+00 -> 149+50	06/13/14	48

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

Pkg	MS	Description	Adjusted	Ud #93	Ud #94	Variance
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Pkg	MS	Description	Adjusted	Ud #93	Ud #94	Variance
C2B	MS #2	Shared site access @ 93rd Street shaft	03/22/14	11/4/14	11/26/14	-22
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	2/10/15	1/16/15	25
C2B	MS #6	Full access to Comms Rooms & Closets	08/21/14	12/31/14	12/10/14	21
C2B	MS #7	Full access to Signals Rooms	08/21/14	12/31/14	12/10/14	21
C2B	MS #8	Full access to Traction Power Rooms:	08/21/14	12/31/14	12/10/14	21
C2B	MS #9	Full access to Station Service Centers	11/21/14	7/23/15	6/26/15	27
C2B	MS #10	Complete all remaining Comms, Signal , & Traction Power work	09/21/14	5/28/15	4/6/15	52
C3	#4	Compl Lwr/Uppr Platforms & Signal Rms	10/14/13	04/17/14	05/30/14	-43
C4C	MS #7	Turnover of Communications Rooms to Systems Contractor	8/28/14	11/07/14	12/02/14	-25
C4C	MS #8	Turnover of Signal Rooms South of station to C6	7/15/14	07/11/14	09/16/14	-67
C4C	MS #9	Complete all Signal Roms except M8	9/29/14	10/06/14	12/09/14	-64
C4C	MS #10	Complete north power rooms	2/25/15	10/29/14	12/30/14	-62
C4C	MS #12	Full access @ Station Service Center(s)	08/28/14	08/27/14	08/13/15	-351
C4C	MS #13	Full access @ Lubrication Room(s)	08/28/14	08/29/14	10/09/14	-41
C4C	MS #14	Complete all remaining Comm, Signal & Traction Power Rooms	08/28/14	08/29/14	06/16/15	-291
C6	#4A	Complete LAN - 72nd St. Station	02/18/15	04/10/15	08/27/15	-139
C6	#4B	Complete WAN - 72nd St. Station	02/18/15	04/10/15	08/27/15	-139

- Milestones with unusual float variance, generally defined as a schedule float change exceeding the duration of the reporting period are listed in the following table.

Pkg	MS	Description	Ud #93 Forecast	Ud #94 Forecast	Ud #93 Float	Ud #94 Float	Δ
C2B	MS #2	Shared site access @ 93rd Street shaft	11/4/14	11/26/14	563	135	-428
C2B	MS #9	Full access to Station Service Centers	7/23/15	6/26/15	209	109	-100

Pkg	MS	Description	Ud #93 Forecast	Ud #94 Forecast	Ud #93 Float	Ud #94 Float	Δ
C2B	MS #10	Complete all remaining Comms, Signal , & Traction Power work	5/28/15	4/6/15	416	382	-34
C2B	SS	Substantial Completion	7/6/16	7/26/16	127	40	-87
C3	#4	Compl Lwr/Uppr Platforms & Signal Rms	04/17/14	05/30/14	227	196	-31
C4C	MS #7	Turnover of Communications Rooms to Systems Contractor	11/07/14	12/02/14	271	231	-40
C4C	MS #8	Turnover of Signal Rooms South of station to C6	07/11/14	09/16/14	353	56	-297
C4C	MS #9	Complete all Signal Roms except M8	10/06/14	12/09/14	40	0	-40
C4C	MS #10	Complete north power rooms	10/29/14	12/30/14	188	149	-39
C4C	MS #12	Full access @ Station Service Center(s)	08/27/14	08/13/15	320	71	-249
C4C	MS #13	Full access @ Lubrication Room(s)	08/29/14	10/09/14	318	259	-59
C4C	MS #14	Complete all remaining Comm, Signal & Traction Power Rooms	08/29/14	06/16/15	318	253	-65
C5B	SS	Substantial Compl/All Work w/o Ent. #2	09/24/14	09/23/14	36	128	92
C5B	SS	Substantial Compl/All Work incl. Ent. #2	12/16/14	12/16/14	225	98	-127
C6	#3A	Complete LAN - 86th St. Station	07/17/15	07/28/15	148	300	152
C6	#3B	Complete WAN - 86th St. Station	07/17/15	07/28/15	148	300	152
C6	#4A	Complete LAN - 72nd St. Station	04/10/15	08/27/15	286	159	-127
C6	#4B	Complete WAN - 72nd St. Station	04/10/15	08/27/15	286	159	-127

- The PMOC is concerned by the quantity of large schedule and float variances within the IPS. These variances suggest significant changes to the schedule have been made this period, the effect of which may not be immediately clear. The PMOC recommends the MTACC identify and describe these variances in its narrative report accompanying each schedule update.
- Milestone tracking for Contract C5C was initiated this reporting period. As such, no comparisons with prior reporting periods will be available until the next PMOC Monthly Report.

Schedule Contingency: Via IPS Update #94, MTACC continues to forecast all Phase 1 construction and pre-revenue testing to be complete on September 20, 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 does not completely agree with the MTACC's interpretation and modeling of the current situation in the IPS. The C6 construction schedule does not appear to support Update #94 of the IPS. The variance between the schedules can be measured by a comparison of the C6 Substantial Completion Date:

IPS Update #94	July 28, 2016
C6 Update #21	October 17, 2016
Δ (Calendar Days)	81

Applying this change to the IPS as the effect of realizing the current risks associated with track installation results in the following:

IPS #94	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	Dec. 10, 2016	21 CD	445 CD

Schedule Comments:

The IPS critical path is composed entirely of C6 activities however; the PMOC notes that the IPS Critical Path differs significantly from the source date (specifically C6 Update #21) upon which it is supposedly based. The C6 critical path is composed on track and traction power wayside equipment installation activities extending from the May 1, 2014 data date through the C6 forecast Substantial Completion date of October 17, 2016. It is noted that the C6 schedule sequential installation of track and third rail wayside equipment within an area may be excessively conservative. Out-of-sequence progress for in-progress work activities suggests this work will be performed in parallel rather than sequentially.

The PMOC is concerned that MTACC is prematurely superimposing its assumptions, goals or directives prior to achieving full buy-in and commitment from key participants like the construction contractor.

Last period, MTACC updated and enhanced portions of the IPS involving the delivery of permanent power to the three new stations. The information provided establishes delivery dates and need dates for each station that can be tracked and managed through completion. A comparison of forecast dates from last period and this period includes:

Activity ID	Activity	Update #93 Date/CD	Update #94 Date/CD
72LTCS1010MEP	72 nd Street Station: System Commissioning (Start)	3/28/2016	6/2/2016
72LPP1000	72 nd Street Station: Permanent Power Available	10/22/2015	8/21/2015
	Δ (Calendar Days)	158	286

Activity ID	Activity	Update #93 Date/CD	Update #94 Date/CD
86LTCS1010MEP	86 th Street Station: System Commissioning (Start)	10/2/2015	9/24/2015
86LPP1000	86 th Street Station: Permanent Power Available	9/23/2015	6/25/2015
	Δ (Calendar Days)	9	91
96LTCS1010MEP	96 th Street Station: System Commissioning (Start)	12/14/2015	8/10/2015
96LPP1000	96 th Street Station: Permanent Power Available	12/8/2015	1/7/2016
	Δ (Calendar Days)	6	-150

The PMOC is concerned about the volatility of the forecast start of commissioning activities, at the 72nd and 96th Street Stations. Either criteria for start of this work are not well defined or substantial changes to the work have occurred. Schedule logic at the 96th Street Station is apparently in error, where commissioning activities are allowed to start approximately 150 CD in advance of the availability of permanent power.

ELPEP/SMP Compliance: Based on the current status of the IPS, SAS Phase 1, it is the PMOC's opinion that MTACC is not in full compliance 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).

- 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 #93	RSD	Construction Complete	Contingency (measured against)	
			Dec. 30, 2016	Feb. 28, 2018
Risk-Mitigated	Dec. 30, 2016	Sept. 21, 2016	102 CD	525 CD
Risk-Realized	Dec. 30, 2016	Dec. 10, 2016	21 CD	445 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
 - N/A.
- Minimum Allowable Secondary Float Path
 - ELPEP Requirement: 25 Calendar Days (approximately 18 WD).
 - There are several significant secondary float paths with Total Float (TF) < 25 CD.
- Secondary Schedule Mitigation (critical path compression)

- ELPEP Requirement: 125 CD
- MTACC states it has a mitigation plan to recover delays to the start of track installation at the north end of the project.
- PMOC evaluation suggests MTACC's position remains premature. MTACC's "concept" to recover lost time does not appear to have been accepted by all involved parties.

3.0 COST DATA

Based upon financial expenditures reported by the MTACC through April 30, 2014, SAS Phase 1 is approximately 66 % complete. The completion status of the individual construction contracts through April 30, 2013, 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) – 39.9%
- C26013 (86th Street Station) – 100%
- C26008 (86th Street Station) – 91.5%
- C26012 (86th Street Station) – 3.3%
- C26006 (63rd Street Station) – 75.7%
- C26007 (72nd Street Station) – 98%
- C26011 (72nd Street Station) – 14.6%
- C26009 (Systems) – 29.7%

Aggregate Construction % Completion:

- 100% of all construction has been bid.
- 100% of all construction is under contract
- 66.9% of all construction is complete

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

- Value of construction in place this period = \$43,699,055
- Estimated value of construction remaining = \$770,009,495
- Target construction completion = September 20, 2016
- Number of months remaining = 27.8

The estimated average rate of construction required to achieve target completion date is \$28,396,070 per month. The average progress (payments) achieved over the most recent six month period is \$33,522,527 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 \$5.2M. This expenditure is consistent with the CWB. At the current rate of expenditure, the current budget will be sufficient through January 2017.

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 remains \$4,243,089,299. At this time, Engineering Services appears to be the category most likely to see further increases over the CWB.

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 April 2014 is summarized as follows:

	<u>Executed AWOs</u>	<u>AWO Exposure</u>
May 2014	\$124,459,336	\$179,275,674
April 2014	\$122,751,618	\$186,679,823
Δ	\$1,707,718	\$(7,404,149)
Δ	1.39%	-3.97%

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

Const. Pkg.	AWO Exposure \$			Changes this Period
	May-14	April-14	Period Δ	
C1	\$ 41,086,647	\$ 41,086,647	\$ 0	Final value as reported by MTACC.
C2A	\$ 54,452,053	\$ 54,806,324	\$ (354,271)	Exposure decrease based on a revised estimate for AWO # 150.
C2B	\$ 16,195,725	\$ 18,193,166	\$ (1,997,441)	Net decrease is based on revised estimates for AWO # 37, 45, 51 and 63 as well as initial estimates for AWO # 32, 72 and 77.
C3	\$ 11,874,605	\$ 11,256,410	\$ 618,195	Increase is based on revised estimates for AWO # 96, 98, 100, 105, 115, 117, 120, 124, 125, 126, 127, 130, 136, 138, 143 and initial estimates for AWO # 144, 145 and 146.
C4B	\$ 2,715,423	\$ 2,787,973	\$ (72,550)	Decrease is based on the initial estimate for AWO # 88.
C4C	\$ 18,883,581	\$ 18,555,062	\$ 328,519	Increase based on initial estimates for AWO # 37, 41, 44, 45, 46, 47 and 48.
C5A	\$ 6,525,471	\$ 6,525,471	\$ 0	Final value as reported by MTACC.

Const. Pkg.	AWO Exposure \$			Changes this Period
	May-14	April-14	Period Δ	
C5B	\$ 20,684,743	\$ 20,688,381	\$ (3,638)	Decrease is based on a revised estimate for AWO # 43.
C5C	\$ 0	\$ 0	\$ 0	No change reported this period.
C6	\$ 6,857,426	\$ 12,780,389	\$ (5,922,963)	Net decrease based on revised estimates for AWO # 22, 32, 35, 45 and 50 as well as an initial estimate for AWO # 51.
	\$ 179,275,674	\$ 186,679,823	\$ (7,404,149)	

The changes in Executed AWO Value are summarized as follows:

Const. Pkg.	Executed AWO \$			Changes this Period
	May-14	April-14	Period Δ	
C1	\$ 41,086,647	\$ 41,086,647	\$ 0	Final value as reported by MTACC.
C2A	\$ 41,420,350	\$ 41,420,350	\$ 0	No change reported this period.
C2B	\$ 7,668,200	\$ 7,508,502	\$ 159,698	Increase is based on the execution of AWO # 26.
C3	\$ 8,622,407	\$ 8,165,907	\$ 456,500	Increase based on execution of AWO # 65, 70, 113 and 122.
C4B	\$ 5,965,109	\$ 5,035,109	\$ 930,000	Increase is based on the execution of AWO # 33.
C4C	\$ 693,549	\$ 582,029	\$ 111,520	Increase based on execution of AWO # 38 and 45.
C5A	\$ 6,525,471	\$ 6,525,471	\$ 0	Final value as reported by MTACC.
C5B	\$ 9,343,272	\$ 9,293,272	\$ 50,000	Increase is based on the execution of AWO # 43.
C5C	\$ 0	\$ 0	\$ 0	No change reported this period.
C6	\$ 3,134,331	\$ 3,134,331	\$ 0	No change reported this period.
	\$ 124,459,336	\$ 122,751,618	\$ 1,707,718	

As of May 31, 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	\$54,806,324	16.86%	\$41,420,350	12.74%

Contract / (Package)	% Complete	Award	Exposure		Executed	
			\$	% of Award	\$	% of Award
C26010 (2B)	39.93%	\$324,600,000	\$18,193,166	5.60%	\$7,508,502	2.31%
C26006 (3)	75.73%	\$176,450,000	\$11,256,410	6.38%	\$8,165,907	4.63%
C26007 (4B)	98.00%	\$447,180,260	\$2,787,973	0.62%	\$5,035,109	1.13%
C26011 (4C)	14.57%	\$258,353,000	\$18,555,062	7.18%	\$582,029	0.23%
C26013 (5A)	100.00%	\$34,070,039	\$6,525,471	19.15%	\$6,525,471	19.15%
C26008 (5B)	91.47%	\$301,860,000	\$20,688,381	6.85%	\$9,293,272	3.08%
C26012 (5C)	0.00%	\$208,376,000	\$0	0.00%	\$0	0.00%
C26009(6)	29.72%	\$261,900,000	\$12,780,389	4.88%	\$3,134,331	1.20%
TOTAL TO DATE		\$2,674,814,299	\$186,679,823	6.98%	\$122,751,618	4.59%

To date, approximately \$1,790,367,351 (66.9%) worth of all base contract construction work has been completed. As a % of work completed, the AWO exposure for these contracts = 10.43 and the executed AWO % = 6.86%. 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	\$	1,030,671,930
Soft Cost Forecast to Complete	\$	277,436,155
AWO Exposure	\$	179,275,674
Available Contingency	\$	288,801,942
ELPEP Requirement	\$	180,000,000

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 # 36 was held on May 22, 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>
<p>Risk CNS 4 (C6): Delay resulting from management of contractual interfaces during construction.</p>
<p>Mitigation Strategy:</p> <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 required. 3. The status of milestones that are one to three months in the future will be reviewed at monthly risk management meetings to identify and address problems where additional effort is required.
<p>Risk C3, C2B, C4C, C5C and C6 Schedules: Construction contract delays that will extend Project Completion beyond the current RSD.</p>
<p>Mitigation Strategy:</p> <ol style="list-style-type: none"> 1. The previously detailed strategy of achieving significant schedule improvement by accelerating systems installation has been placed “on hold” for the immediate future. 2. Ongoing schedule improvement will focus on “targets of opportunity” where specific action directed to critical path items will result in measurable schedule improvement.
<p>Permanent (Station) Power: Permanent facility power to 72nd, 86th, and 96th Street Stations may be delayed and result in subsequent delays to station completion.</p>
<p>Mitigation Strategy:</p> <ol style="list-style-type: none"> 1. Obtain services of an experienced ConEd liaison engineer to facilitate design and review process. 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
<p>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.</p>
<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

<u>Risk Description</u>
<ol style="list-style-type: none"> 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 staging plan.
<p>Risk COM 2 (C6): Frequent late changes to the communications systems could delay C6 and the RSD.</p>
<p>Mitigation Strategy:</p> <ol style="list-style-type: none"> 1. Confirm that previously agreed Communications design changes have been incorporated into the design. Re 2. Future User Department requested changes shall go through the CCG/ CCB approval process. A User Department required on the change request forms. The request will include cost and schedule impacts of the requested ch 3. Requested changes exceeding \$50,000 or having any schedule impact, must be presented to the Board by a U substantiation of need provided.
<p>Risk CNS 8 (C6) Delayed Safety Certification results in delay to the RSD</p>
<p>Mitigation Strategy:</p> <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. 3. Concern continues to be expressed regarding the role of NYSPTSB in this process, primarily due to the lack 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 pro 6. Hold Safety Certification Meeting with NYS representative in attendance.

It is 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 May 2014. The next quarterly ELPEP meeting is currently scheduled for June 9, 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. Completion of the update is pending resolution of coordination issues between the existing Change Control Committee (CCC) and the two newly established high level committees (MTA Chairman level and LIRR/Amtrak management level). The revised TCC Plan is expected to be completed by mid-June 2014.
- **Schedule Management Plan (SMP):** MTACC's 1st Quarter 2014 ELPEP Compliance Checklist indicates MTACC is "in compliance" with its SMP.
- **Cost Management Plan (CMP):** MTACC's 1st Quarter 2014 ELPEP Compliance Checklist indicates MTACC is "in compliance" with its CMP.
- **Risk Mitigation Capacity Plan (RMCP) and Risk Management Plan (RMP):** MTACC's 1st Quarter 2014 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 April 2014, a total of 8,252,762 construction hours have been logged on the project with 76 lost time and 217 recordable incidents documented. The total hours and incidents equates to a Lost Time Rate (LTR) of 1.84 and a Recordable Rate (REC) of 5.26. The LTR did not change from the previous month. The REC showed a slight reduction from the previous month of 5.29 to 5.26. 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 remains 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. Key portions of the IPS continue to have significant variances with construction schedules which are reportedly used as the source for IPS data. Basic comparisons and QC checks demonstrate significant changes between monthly IPS updates. These changes are not documented or explained by MTACC.

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 approximately \$14M worth of additional work in this area remains to be incorporated into the C4C contract. The cost and schedule consequences associated with this work are significant risks to the overall cost and schedule goals of the project and need to be resolved as soon as possible.

Safety and Security Certification: At a high level, the safety certification process involves: 1) the identification of safety certifiable items (SCIs) pertaining to station systems; 2) the documentation of those items in a certifiable items list (CIL); 3) the assessment of items in the CIL by NYCT; and 4) the final approval (certification) of safety evidence relative to the items in the CIL by NYCT. These efforts have progressed to the stage where Specification Conformance Checklists are being generated for the certifiable items. Station and System contractors are participating in this effort which is being led by the SAS System Safety Engineering Specialist, a recent hire by the SAS Project Team.

The short-term challenge is to assure that all parties fully understand the certification process, test procedures are generated to fully document the verification of the certifiable items and completion of a usable document control system that ensures inspection and test results are being retained. The PMOC is concerned that the MTACC Safety and Security Certification Manager is currently a part-time employee who is only on site a couple of days a week. At this time, it is the opinion of the PMOC that this effort requires a greater level of effort and commitment.

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	91	92	93	94
Data Date	01/1/14	02/1/14	03/1/14	4/1/14	5/1/14
	Contingency (CD)				
RSD=12/31/2016					
Risk Mitigated	102	102	102	102	102
Risk Realized	20	-20	44	44	21
RSD=02/28/2018					
Risk Mitigated	526	526	526	526	526
Risk Realized	446	425	446	446	445

Table 3 – Schedule Milestone Comparison

Pkg	MS	Description	Dates			Variance		Sch. Float
			Adjusted (2)	Ud #93 (3)	Ud #94 (4)	Contract = (2) - (4)	Month = (3) - (4)	
C2B	MS #2	Shared site access @ 93rd Street shaft	03/22/14	11/4/14	11/26/14	-249	-22	135
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	2/10/15	1/16/15	-117	25	98
C2B	MS #5	Shared access @ East & West Tunnels South of 96th St Station (1225+25 and STA. 1209+00)	02/20/14	7/7/14	7/7/14	-137	0	8
C2B	MS#5A	Shared Access E & W Track to grid 11		7/30/14	7/30/14			1
C2B	MS #6	Full access to Comms Rooms & Closets	08/21/14	12/31/14	12/10/14	-111	21	125
C2B	MS #7	Full access to Signals Rooms	08/21/14	12/31/14	12/10/14	-111	21	51
C2B	MS #8	Full access to Traction Power Rooms:	08/21/14	12/31/14	12/10/14	-111	21	125
C2B	MS #9	Full access to Station Service Centers	11/21/14	7/23/15	6/26/15	-217	27	109
C2B	MS #10	Complete all remaining Comms, Signal , & Traction Power work	09/21/14	5/28/15	4/6/15	-197	52	382
C2B	SS	Substantial Completion	12/21/15	7/6/16	7/26/16	-218	-20	40
C3	#3c	Compl Mezz Lvl's Comm Rms/Sta Serv Ctr	04/15/13	05/27/14	05/30/14	-410	-3	337
C3	#4	Compl Lwr/Uppr Platforms & Signal Rms	10/14/13	04/17/14	05/30/14	-228	-43	196
C3	#4b	Compl Lwr/Uppr Platforms & Signal Rms	10/14/13	11/10/14	10/27/14	-378	14	377
C3	SS	Substantial Completion	05/13/14	08/05/15	07/31/15	-444	5	67
C4C	MS #2	Limited access thru 72nd Street Station 1172+40 ->1163+00	01/13/14	06/13/14	06/13/14	-151	0	48
C4C	MS #3	Shared access thru 72nd Street Station 1172+40 ->1163+00	11/27/14	11/26/14	11/26/14	1	0	40
C4C	MS #5	Limited access south of 72nd Street Station 1163+00 -> 149+50	4/14/14	04/14/14	04/14/14A	0	0	
C4C	MS #6	Shared access south of 72nd Street Station 1163+00 -> 149+50	6/13/14	06/13/14	06/13/14	0	0	48

Pkg	MS	Description	Dates			Variance		Sch. Float
			Adjusted (2)	Ud #93 (3)	Ud #94 (4)	Contract = (2) - (4)	Month = (3) - (4)	
C4C	MS #7	Turnover of Communications Rooms to Systems Contractor	8/28/14	11/07/14	12/02/14	-96	-25	231
C4C	MS #8	Turnover of Signal Rooms South of station to C6	7/15/14	07/11/14	09/16/14	-63	-67	56
C4C	MS #9	Complete all Signal Roms except M8	9/29/14	10/06/14	12/09/14	-71	-64	0
C4C	MS #10	Complete north power rooms	2/25/15	10/29/14	12/30/14	57	-62	149
C4C	MS #11	Complete south power rooms	03/24/15	11/26/14	11/26/14	118	0	169
C4C	MS #12	Full access @ Station Service Center(s)	08/28/14	08/27/14	08/13/15	-350	-351	71
C4C	MS #13	Full access @ Lubrication Room(s)	08/28/14	08/29/14	10/09/14	-42	-41	259
C4C	MS #14	Complete all remaining Comm, Signal & Traction Power Rooms	08/28/14	08/29/14	06/16/15	-292	-291	253
C5B	#1	Compl All work South of Grid Line 15	03/04/14	04/15/14	04/14/14A	-41	1	
C5B	SS	Substantial Compl/All Work w/o Ent. #2	09/04/14	09/24/14	09/23/14		1	128
C5B	SS	Substantial Compl/All Work incl. Ent. #2	-	12/16/14	12/16/14		0	98
C5C	MS #1	Vehicle access thru 86th Street Station 1209+00 -> 1198+00	10/23/14		10/27/14	-4		101
C5C	MS #2	Limited Access; Sta. 1209+00->1198+00	01/22/15		01/26/15	-4		204
C5C	MS #3	Shared Access; Sta. 1209+00->1198+00	05/22/15		03/25/15	58		163
C5C	MS #4	Shared Access; Sta. 1198+00->1172+00	10/23/14		10/31/14	-8		30
C5C	MS #5	Turnover of Comm. Rooms	09/23/14		09/30/14	-7		262
C5C	MS #6	Turnover of Comm. Rooms	03/24/15		02/10/15	42		193
C5C	MS #7	Turnover of Signal Rooms	02/25/15		02/20/15	5		93
C5C	MS #8	Turnover of Signal Rooms	02/25/15		02/20/15	5		93
C5C	MS #9	Turnover Traction Power Rooms	02/26/15		02/23/15	3		19
C5C	MS #10	Turnover Traction Power Rooms	02/25/15		01/28/15	28		264
C5C	MS #11	Full access @ Station Service Center(s)	03/24/15		02/17/15	35		379
C5C	MS #14a	Complete all remaining Comm, Signal & Traction Power Rooms	09/23/14		09/15/14	8		11
C5C	MS#14b	Limited Access all locations	09/23/14		06/24/15	-274		315
C5C		Substantial Completion	05/31/16		05/31/15	366		78

Pkg	MS	Description	Dates			Variance		Sch. Float
			Adjusted (2)	Ud #93 (3)	Ud #94 (4)	Contract = (2) - (4)	Month = (3) - (4)	
C6	#2A	Complete LAN - 96th St. Station	05/18/15	08/28/15	08/10/15	-84	18	146
C6	#2B	Complete WAN - 96th St. Station	05/18/15	08/28/15	08/10/15	-84	18	146
C6	#3A	Complete LAN - 86th St. Station	07/18/15	07/17/15	07/28/15	-10	-11	300
C6	#3B	Complete WAN - 86th St. Station	07/18/15	07/17/15	07/28/15	-10	-11	300
C6	#4A	Complete LAN - 72nd St. Station	02/18/15	04/10/15	08/27/15	-190	-139	159
C6	#4B	Complete WAN - 72nd St. Station	02/18/15	04/10/15	08/27/15	-190	-139	159
C6	#5A	Complete LAN - 63rd St. Station	04/18/14	03/26/15	03/31/15	-347	-5	358
C6	#5B	Complete WAN - 63rd St. Station	04/18/14	03/26/15	03/31/15	-347	-5	358
C6	#5C	Complete all 63rd St. Station work	04/18/14	05/04/15	05/07/15	-384	-3	358
C6	SS	Substantial Completion	08/18/16	07/28/16	07/28/16	21	0	0

Table 4 - Project Budget/Cost 

	FFGA			FFGA Amend	MTA Current Working Budget (CWB)		Expenditures as of May 31, 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	2,935.477	55.72
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	2,935.477	55.72
Total Federal:	1,350.693	27.75	1,063.942		1,350.693	24.60	869.843	16.51
Total FTA share:	1,300.000	96.25	990.049		1,300.000	23.68	795.953	15.11
5309 New Starts share	1,300.000	100	990.049		1,300.000	23.68	795.953	15.11
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	2,065.634	39.21
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	\$2,904,814,299
Engineering Services Subtotal	\$622,862,000	\$650,000,000
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	\$4,243,089,299

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

Project Status:		Original at FFGA	Current*	ELPEP**
Cost	Cost Estimate	\$4,050M	\$4,451M	\$4,980M
Contingency	Unallocated Contingency	\$555.554M	\$288M	\$180M
	Total Contingency (Allocated plus Unallocated)	\$555.554M	\$288M (May 2014)	\$180M
Schedule	Revenue Service Date	June 30, 2014	December 30, 2016	February 28, 2018
Total Project Percent Complete	Based on Expenditures	66%		
	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 significantly improved. 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 that information contained within the Integrated Project Schedule (IPS) does not accurately reflect project status. MTACC project staff is reluctant to document delays in the IPS and demonstrate their impact on the overall RSD.
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 = 5/01/2014

Financial data based upon MTACC reporting through 5/31/2014