

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, 2013



PMOC Contract No. DTFT60-09-D-00007

Task Order No. 4, Project No. DC-76-5020, Work Order No. 01

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Length of time on project: Two 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, Task Order No. 002. Its purpose is to provide information and data to assist the FTA as it continually monitors the grantee's technical capability and capacity to execute a project efficiently and effectively, and hence, whether the grantee continues to be ready to receive federal funds for further project development.

This report covers the project management activities on the 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 2013, 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). Contract close-out is ongoing for construction contracts C-26002 (C1) "TBM Tunneling Boring" and C-26013 (C5A) "86th Street Excavation, Utility Relocation and Road Decking" and is anticipated to be completed during the 3rd Quarter 2013. The overall project is approximately 53.6% complete. Progress continued on the seven (7) active construction contracts and featured the following accomplishments:

- C-26005 (C2A) "96th Street Site Work and Heavy Civil" Overall contract is approximately 94.9% complete. Installation of invert slab continues in the main station area, south of 95th Street and north of 97th Street. Mass excavation and related work continues at all entrances and ancillaries with cast in place (CIP) wall panels being installed at various locations.
- C-26010 (C2B) "96th Street Station Civil, Architectural, and MEP" Overall contract is approximately 13.8% complete. Rock excavation at the ancillaries and entrances are

ongoing. Invert operation of forming, rebar installation, and placement of concrete is ongoing in the launch box.

- C-26006 (C3) “63rd Street Station Rehabilitation” Overall contract is approximately 50.3% complete. Area 5 structural steel is substantially complete and the focus has switched to completing mezzanine concrete slab work. Work at Entrance #1 and Ancillary #1 is ongoing. Work at the fan rooms and track areas continue.
- C-26007 (C4B) “72nd Street Station Cavern Mining and Lining” Overall contract is approximately 80% complete. Ongoing work includes installation of cast in place (CIP) walls, concrete placement of arches and inverts.
- C-26011 (C4C) “72nd Street Station Architectural and MEP Systems” Mobilization and pre-construction activities are underway.
- C-26008 (C5B) “86th Street Station Cavern Mining and Lining” Overall contract is approximately 55% complete. Excavation via both mechanical means and blasting continues at all locations on the project. Total rock excavation is approximately 82.8% complete. This is the primary work activity in progress for this contract. Option #1 work began in the south tunnels.
- C-26009 (C6) “Track, Power, Signals and Communication Systems” Overall contract is approximately 8.0% complete. Preparation of submittals, clipboard surveys, review of station drawings, and procurement of material is in process.

a. Procurement

Bids were received for construction package C-26012: 86th Street Station Finishes & MEP Package (C5C) – on April 10, 2013. MTACC anticipates awarding this contract to the low bidder, 86th Street Constructors, JV in accordance with the current schedule on June 5, 2013.

C5C is the final construction package to be procured under the Second Avenue Subway – Phase 1 Project.

b. Construction

As of May 30, 2013, there are seven (7) active construction contracts on the SAS Phase 1 Project. Contracts C1 and C5A are still in the close out process. Construction progress on the active contracts during this period includes:

- **Contract C-26005 (C2A) 96th Street Site Work and Heavy Civil**
 - **Launch Box**
 - Concrete invert slab placement continued in the launch box: 16 of 37 completed (43.2%)
 - PVC waterproofing ongoing
 - **Mass Excavation ongoing**
 - Total mass excavation completed: 125,377 out of 131,223 BCY (97.0%)
 - **Ancillary #1 ongoing work**
 - Rock excavation to subgrade

- Stub welding, shotcrete installation and mudmat
- Waterproofing and protection course installation
- Invert operation of forming, rebar installation, plumbing and concrete placement for inverts 2, 3, 4 and 5
- Breakout of secant piles
- **Ancillary #2 ongoing work**
 - Excavation to of the plenum
 - Installation of mudmat
 - Shotcreting, waterproofing and protection course installation
 - Invert operation of forming, rebar installation, and concrete placement invert, middle wall and outside wall
- **Entrance #1 ongoing work**
 - Excavation to tier 3A/3B
 - Installation at tier 3A/3B
 - Excavation to final subgrade
 - Installation of geofabric, stone, and placement of mudmat concrete
- **Entrance #2 ongoing work**
 - Excavation to tier 3A/3B
 - Installation at tier 3A/3B
 - Excavation to final subgrade
 - Installation of geofabric, stone, and placement of mudmat concrete
- **Entrance #3 ongoing work**
 - Cast in place wall operation of forming; rebar installation and placement of concrete
- **Contract C-26010 (C2B) 96th Street Station Civil, Architectural, and MEP**
 - **Tracking of Long Lead Items**
 - CTJV final long lead item list provided to MTACC on May 29, 2013.
 - **Street Level**
 - Electrical manhole excavation at 105th Street and 2nd Ave ongoing.
 - C2A to C2B fence panel swap at 99th Street and 2nd Ave completed.
 - **Existing Tunnel (99th – 105th Streets)**
 - Asbestos Abatement 99th Street and 2nd Ave (AWO -026) work is ongoing.
 - Concrete placement for high and low benches ongoing.
 - Structural steel repairs ongoing.
 - West tube invert pours 1 thru 9 completed.
 - **Launch Box**

- Rebar installation for the cast in place (CIP) wall panels (West Wall) is ongoing
 - Placement of concrete for CIP wall panel WI-12 and WI-11 to be completed by June 7 and 13, 2013 respectively.
 - Mezzanine work ongoing with removal of tier 2 shoring, demolition of CIP diaphragm north of grid line 16, drilling of DBS couplers, boxing out beams, installation of conduits and sleeves, and placement of slab.
- **Contract C-26006 (C3) 63rd Street Station Rehabilitation**
- Work proceeds with 2 shifts.
 - Surveying of the Deformation Monitoring Points (DMPs) is ongoing and will continue throughout the project.
 - **Schedule**
 - The Project Office continues to report to the PMOC that the Communication Rooms will be sufficiently complete by July 15, 2013, allowing access to the C6 contractor while other Milestone #3 components are being completed. The original date for completion of Milestone #3 was April 2013.
 - **Area 5 (Reconstruction consists of 6 mezzanines and the deck plaza roof)**
 - Continued with concrete floor slab placements at the 4th & 6th Mezzanines.
 - Completed residual steel at Mezzanines.
 - Continued with preparation of Communication Rooms for turnover to C6 contractor.
 - Continued abatement and intumescent painting to Mezzanine levels steel.
 - Continued with CMU walls on 1st Mezzanine and G4 Lobby.
 - **Entrance #1**
 - Completed construction of exterior & interior piers
 - Began construction of meter room walls in the building basement.
 - **Ancillary #1**
 - At Ancillary #1 the focus of work continues to be in the basement for the plenum formwork erection for air and piping transfer to/from the station from the cooling tower.
 - The fluids in the gas tanks (2) and oil/water separator were tested and determined to be contaminated and abatement measures began as required prior to their removal.
 - **Platforms**
 - Continued acoustical spray on G4 in Areas 2 & 5.
 - Water leaks along the Upper (G3) Platform continued to prevent continuation of intumescent painting.
 - Continued with installation of water mist on G3 & G4.
 - Continued installation of column cladding clips on G4 (lower) Platform.

- **Fan Plants**
 - Continued with communication & power conduits in the West Fan Room.
 - Continued installation of isolation dampers & silencers in the East Fan Room.
 - Continued building platforms in the shaft in the East Fan Room.
- **Contract C-26007 (C4B) 72nd Street Station Cavern Mining and Lining**
 - **Rock Excavation**
 - Rock excavation completed. Muck houses will be demobilized during the remainder of 2013.
 - **Concrete Phase**
 - Main Cavern
 - Sixty-seven (67) of the 69 cast in place (CIP) wall panels have been placed. The remaining 2 for the east side of the cavern will be completed after the 69th Street Shaft is backfilled.
 - Six (6) of the 33 arch pours have been completed. The contractor is averaging one pour per every five working days. Anticipated completion December 27, 2013.
 - South Crossover
 - Installation of the CIP panels is scheduled to begin in June 2013.
 - North Crossover
 - Remaining work benches currently planned for late June 2013.
 - G4 TBM Tunnel
 - Wall and arch pours have been completed. Minor touch-up work is in process.
 - G3S1 Cavern
 - Arch rebar installed and form readied for first pour. Rebar is being readied for S2. Plan is to work from both ends to the middle for expediency.
 - G4S2 Cavern
 - Three (3) of the 7 inverts have been poured. Cross passageway CIP wall panels have been completed.
 - Ancillary #1
 - Invert placement is ongoing. Walls and
 - Ancillary #2 and Entrance #2
 - Invert, wall, and arch placement is ongoing. Planned completion is June 2013.
 - Entrance #3
 - Invert placement is ongoing.

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

- Progress Meetings were held this period on May 2, 2013 and May 30, 2013. Procedural issues and potential contract modifications were the primary topics discussed as no actual construction in the field has commenced. Potential AWOs discussed include the following:
 - Track Wall Panel Vertical Gap Reduction – subject to negotiation
 - Revise Elevator Car Operator Panel (COP): Make Consistent With Latest NYCT Standard
 - Replace Granite Treads in All Station Stairs with Metal Treads And Perforated Metal Risers: Change At All Public Stairs from Street To Mezzanine and From Mezzanine to Platform
 - Change Glazing Specs for Station Service Center (SSC) Glass from UL 752 Level 3 to NIJS Level 3
 - Station Bench Change from Granite to Steel: Wire Mesh on Granite Base. Station Bench Is To Be Revised To NYCT Standard Bench
 - Change from Cast Coil to VPI Transformer
 - Change Battery Design from Radial to Parallel
 - Change Battery Type: From Flooded Type Battery to A Sealed Battery
 - Replace Internal TVSS with External TVSS: Applicable to All Communication Room Power supply Panels.
 - Door Intrusion Details – Lock Changes
 - Delete SSC from Secondary Entrances
 - Replace All Atlas Speaker with JBL Backboxes
 - Delete Traffic Monitoring System Requirement

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

- Work continues with 2 shifts. All surface operations end at 10:00PM daily.
- North Shaft Area/South Open Cut Area
 - Completed lowering the “bench” to the final invert at the North Shaft Area. The Alamac was reinstalled.
 - Muck removal continues as a major effort to clear the cavern to continue trenching and placement of underdrain piping before the commencement of concrete mud slab placement. Trenching and drain pipe placement will proceed from the south to the north.

○ **Ancillary #1/Ancillary #2**

- The current bench level at Ancillary #1 is being used for storage and the invert for the temporary south construction stair.
- Continued rock excavation and muck removal at the cavern access to Ancillary #2.
- **Entrance #1**
 - During May 2013 began waterproofing in the Access Tunnel and began forming/placement of permanent columns for the load transfer from the temporary piles.
- **Entrance #2**
 - Following approval by the NYDOB the contractor completed the test pits excavation and began work in the Yorkshire Building driveways. This work is proceeding precariously with point to point approvals required from NYDOB until an overall agreement is reached with the building owners and MTA.
- **Option #1 (Lining the south, east tunnel and mining the Cross Passageways)**
 - During May 2013 the Cross Passageways were blasted and mined. The tunnel sump pump excavation began.
 - Preparations began for the upcoming shotcreting in the mined areas.
- **Rock Excavation Summary (as of the week ending May 17, 2013)**

*As reported to the PMOC by the MTACC C-26008 Project Office

 - Total rock (estimated) for complete project – 154,623 BCY
 - Total rock excavated to date – 133,602 BCY (86.4%)
- **Contract C-26009 (C6) Track, Power, Signals and Communication Systems**
 - **Signal Work**
 - Equipment order was released to Alstom. First set of track cases have been inspected.
 - **Track Work**
 - All major procurements except the 3rd Rail and U69 Guard Rail have been procured.
 - Insulated joint work is currently in progress at the 63rd Street Station. The work is ahead of schedule and is expected to be completed by the end of June 2013.
 - **Track Power**
 - The contractor has received the first delivery of the 2000/500 MCM cable. The balance is scheduled for mid-June 2013.
 - The control and battery cable has been order and is expected early June 2013.
 - **Submittal Progress**
 - Total projected submittals 4,235
 - Total submitted to date 2,063
 - Total projected to complete 2,172

- Percent complete 49.0%
- Pending MTACC response 702

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 (CQP). 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. The major issues noted by the PMOC during the second quarter of 2013 were delinquent submittals of Inspection Daily Reports on the C2A and C2B contracts and out of specification conditions for concrete on all contracts, especially on C4B. Inspection Daily Reports on C2A and C2B were being submitted in a timely manner but lapsed again. The new C2A/C2B Contractor's Manager is providing additional support so that this condition is rectified and does not recur. The SAS Deputy Project Executive directed that for every SAS contract, each week one NCR be generated for all instances where air entrainment, slump, and/or time to place concrete were out of specification during that week. As a result, each contractor, as shown below, is complying with this directive.

Contract Package C1	
Status:	<p>There were 40 NCRs written on the C1 contract. 16 of them involved concrete installation involving the following structural elements:</p> <ul style="list-style-type: none"> • Invert Slab – seven NCRs • Slurry wall – five NCRs • Concrete Tunnel Liner Arch – four NCRs
Observation:	<p>Of the 40 NCRs written on the C1 contract, two related to the slurry wall are still open. A survey was performed, by the C2B contractor in March 2013 and the results were forwarded to AAJV for review and action. The two NCRs are expected to be transferred to the C2B contract for resolution.</p> <p>The status of the 16 NCRs involving concrete installation is as follows:</p> <ul style="list-style-type: none"> • Invert Slab – None of the seven NCRs are still open • Slurry wall – Two of the five NCRs are open and are expected to be transferred to the C2B contract in June 2013. • Concrete Tunnel Liner Arch – None of the four NCRs are still open
Concerns and Recommendations:	<p>Contract C1 has been Substantially Complete since March 2012. The Contractor has demobilized and has a limited presence on site. The SAS Project Team continues to emphasize the closure of the remaining NCRs and has reduced the number of open NCRs to two. The PMOC recommends that the SAS Project Team transfer these two NCRs to the</p>

	C2B contract as soon as possible.
Contract Packages C2A and C2B	
Status:	<p>On C2A, through May 31, 2013, a total of 24 NCRs have been issued. 11 have been closed by both the contractor and MTACC. 13 NCRs are still open. One new NCR was written in May on concrete placement.</p> <p>On C2B, through May 31, 2013, a total of 8 NCRs have been issued. One has been closed and 7 NCRs are still open. One NCR was written in May on an invert pour where the truck exceeded the 120 minute maximum pour time.</p> <p>The contractor again fell one month behind in submitting their Daily Inspection Reports on both contracts. Based on a concern raised by the PMOC, the SAS Quality Manager stressed that the C2A/C2B contractor must submit Inspection Daily Reports within a week of being written. The new C2a/C2B Contractor's Manager provided additional resources to both contracts and Inspection Daily Reports will be submitted within one week by the middle of June 2013.</p>
Observation:	The contractor has accumulated a four week backlog of Inspection Daily Reports on each contract.
Concerns and Recommendations:	The PMOC is concerned that the Inspection Daily Report backlog has recurred and recommends that the promise of additional help become permanent and not a one-time occurrence.
Contract Package C3	
Status:	Through May 31, 2013 a total of 37 NCRs have been issued. There were no new NCRs written in May 2013. Last month it was reported that 35 were closed by both the contractor and MTACC. However, five of those were erroneously closed since the engineer of record had not approved the Use-As-Is disposition. All five pertained to concrete placement and will not be closed until the concrete break results are satisfactory. There are now seven open NCRs including two that are not related to concrete.
Observation:	<p>The five open concrete NCRs that were out of specification included two involving entrained air entrainment, two pertaining to slump, and one referring to time exceeding the two-hour requirement for placing the concrete.</p> <p>The SAS Quality Manager noted that the five concrete NCRs were erroneously closed and instructed the SAS C3 Quality Manager that NCRs with a Use As Is disposition must have the concurrence of the engineer of record before they can be closed.</p>
Concerns and Recommendations:	The SAS Quality Manager has taken the proper action and the PMOC has no concerns.

Contract Package C4B	
Status:	Through May 31, 2013, a total of 61 NCRs have been issued. 22 of these were issued in May. Of the 22 new NCRs, 16 pertained to concrete and 15 of these exceeded the 120 minute maximum pour time. 27 NCRs have been closed by both the contractor and MTACC, including one in May. 34 NCRs are still open.
Observation:	The C4B contractor has submitted a waiver to the specification requesting a maximum pour time of 180 minutes.
Concerns and Recommendations:	The PMOC is concerned that this waiver may not be approved since if it is approved, it could set a precedent for other SAS, MTACC, and/or NYCT contracts. If the waiver is not approved, the PMOC recommends that the contractor devise a method that places the concrete within 120 minutes.
Contract Package C5B	
Status:	Through May 31, 2013 a total of 18 NCRs have been issued. 14 have been closed by both the contractor and MTACC. 3 NCRs were generated in May, all pertaining to concrete: one for slump, one for air, and one for placement time. 4 NCRs are still open including the 3 that were generated in May.
Observation:	It is the PMOC's opinion that the Quality System is functioning properly on this contract at this time. As nonconformances are identified and documented, both the contractor and MTACC address them in an expeditious manner.
Concerns and Recommendations:	None at this time.

Revision 3 of the SAS Project Quality Manual (PQM), issued in April 2009, is being revised. The SAS Quality Manager has indicated that Revision 4 should be issued in July 2013.

2.0 SCHEDULE DATA

Integrated Project Schedule (IPS) Update #82 was received on June 3, 2013 and is based on a Data Date of May 1, 2013. This update contained a “.PDF” schedule report for all remaining work, the “.XER” schedule files for the IPS and individual contracts as well as a narrative report. The IPS still reflects the forecasted completion of all construction and NYCT Pre-Revenue Training & Testing activities by October 4, 2016, with 90 calendar days (CD) or 64 work days (WD) of contingency when measured against MTACC’s target Revenue Service Date (RSD) of December 30, 2016.

Issues that affect or may affect the IPS that occurred during May 2013 include the following:

- Weekly work sessions involving MTACC and the C4C Contractor continue in an effort to develop an acceptable baseline schedule for Contract C-26011, 72nd St Station MEP & Finishes.
- MTACC continued with development of the schedule acceleration efforts involving systems installation and testing activities. This effort has been developed to the level at which a formal cost proposal was requested from the C6 Contractor. Upon receipt, this proposal will be evaluated by MTACC. Options generally include a full or partial implementation and the decision to implement may be deferred to evaluate the schedule performance of the stations finish contractors.
- MTACC is also evaluating a separate schedule initiative involving the accelerated completion of Signals Testing at the 72nd Street Station from May 2016 to July 2016. Both schedule acceleration initiatives will be evaluated over the next several reporting periods.
- Final development of the C-26010 “96th St... Station MEP / Finishes; Final Utilities & Site Restoration (C2B) schedule continues. Incorporation of this schedule in Update #83 of the IPS is currently forecast.

Project Critical Path: The most “critical” or longest schedule path that spans between the current data date of May 1, 2013 and the project completion date (RSD) has changed this update, and consists of the following three elements:

1. The initial portion of this path involves procurement activities for the C5C construction package, which is currently in progress. This portion of the critical path has a float of 18 WD and concludes with the contract award on June 5, 2013.
2. A schedule “lag” of 447 WD connects the C5C contract award to C5C MS#9, Complete Work in all Traction Power Rooms (North). C5C MS#9 initiates Activity #C6AR86-06, which is the C6 contractual “full access” date to traction power rooms at the north end of the 86th Street Station. This C6 milestone constrains subsequent C6 work activities so they cannot start before March 18, 2015. The first two elements of this “most critical path” have 18 WD of schedule float, which is the lowest float value of any path leading to the third element of this path.
3. The final portion of this path involves traction power installation and testing at the 86th Street Station, which is scheduled for completion on August 17, 2016. NYCT “Proof of Operation” testing is concurrent with Traction Power System Testing and also is scheduled for completion on August 17, 2016. All third party construction will be

completed as of August 18, 2016, when the C6 Package is scheduled for completion. NYCT operational testing, including dispatch tower testing, proof of route familiarity and new systems and equipment familiarization are the final activities for SAS, Phase 1, with scheduled completion on October 3, 2016. Adding the current schedule contingency of 64 WD results in the target RSD of December 30, 2016.

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

+3 WD: This path involves the shop drawing development, manufacture, and installation and testing of signal equipment at the 96th Street Station. This work was scheduled to start on April 1, 2013 (IPS Update #81). The current IPS update has revised the start date to May 1, 2013. Combined with changes to the duration of several activities, the net loss of schedule float is 22 WD.

As previously noted, this path contains a schedule lag of excessive duration between the manufacture of room equipment and the manufacture of wayside equipment. Field installation activity at 96th Street is scheduled to begin on April 16, 2015; testing is scheduled to complete in mid-June 2016, followed by integrated testing and system operation.

+16 WD: This path involves the shop drawing development, manufacture, and installation and testing of signal equipment at the 86th Street Station. This work was scheduled to start on April 1, 2013 (IPS Update #81). The current IPS update has revised the start date to May 1, 2013. Combined with changes to the duration of several activities, the net loss of schedule float is 9 WD.

As previously noted, this path contains a schedule lag of excessive duration between the manufacture of room equipment and the manufacture of wayside equipment. Field installation activity at 96th Street is scheduled to begin on April 16, 2015; testing is scheduled to complete in mid-June 2016, followed by integrated testing and system operation.

+17 WD: This path is initiated by the “design” of the communications system at the 96th Street Station, which is reportedly underway. The original duration of the “design” activity exceeds two years and the successor “installation” activity has a duration of 235 WD. MTACC has committed to providing a better breakdown of communication activities. Following design and installation of hardware and software, local and integrated testing is scheduled to start on January 12, 2015 and is forecast to complete in approximately 18 months, completing on July 13, 2016, followed by integrated system and proof of operation testing.

There was no change to this path during this update period. It is not possible to verify the status of an activity when its scope is indeterminate and its duration excessive. This lack of definition can be found with numerous activities throughout the systems portion of the IPS.

+18 WD: This path involves procurement activities for the C5C construction package and a “placeholder” lag which represents the duration available for the C5C Contractor to construct and turnover work areas to the C6 Contractor. Refer to Project Critical Path (Elements #1 and #2) for a further discussion.

- +20 WD:** This path is initiated by signal system circuit design at the 72nd Street Station, which is currently underway. This path then follows the manufacture, installation and testing of this system which is forecast for completion on June 23, 2016.
- +23 WD:** NYCT Pre-Revenue Operation Activities scheduled to start on August 18, 2014 and is unchanged this period.
- +37/39 WD:** These two independent float paths represent excavation and structural concrete installation at the north and south caverns of the 86th Street Station (C5B). At each location, the work follows the same general progression; completion of excavation of the intermediate and public caverns, invert drainage and waterproofing, followed by invert, wall and arch concrete installation. Completion of the south cavern is forecast for March 19, 2014, (Milestone #1) and completion of the north cavern is forecast for September 22, 2014 (Contract Substantial Completion). Each of these milestones denotes handoffs of specific locations within the station to the C5C Contractor.
- +36/37 WD:** This path is initiated by concrete installation of the main cavern arch at the 72nd Street Station, which is currently underway. This work is followed by the main cavern arch at the south cavern, construction of the main cavern electrical bench, and Contract C4B Substantial Completion, currently forecast for January 14, 2014. This path gained approximately 24 WD of schedule float over the most recent update period.
- +44 WD:** This path is initiated by signal circuit design and equipment manufacture for installation throughout the 63rd Street area. Field installation is schedule to start on August 27, 2014 and proceed continuously through pre-operational testing in May 2016. The start of field installation is also controlled by the Substantial Completion of Contract C3, currently forecast for January 5, 2015. As previously reported, a negative schedule lag of 155 WD duration allows the start of system installation work to supersede the schedule logic and start before the substantial completion of the C3 contract.

The PMOC recognizes that the “access restraint” between C3 and the start of signal system installation may not be a “true” physical constraint and similarly understands MTACC disagreement with the C3 Contractor’s forecast of substantial completion. However, the “negative lag” approach for adjusting the schedule model to conform to MTACC’s undocumented vision of what the schedule should look like merely adds another layer of confusion and potential distortion to the matter.

The PMOC continues to recommend the MTACC clarify the relationship involving Entrance #1/C3 Substantial Completion and the start of signal installation with the affected contractors and utilize more conventional schedule logic to model the activities and relationships in that area at that time.

Other Float Paths: The following list summarizes the schedule float currently available for project elements where time-of-performance has been a concern.

Schedule Float		Description
Upd. #82	Upd. #81	

+108	+77	Rainbow Hardware, Excavation Stage 7A, MS#2 handoffs to C2B
+96	+97	Procure/Deliver/Install Concrete Ties (including LVT) and Track
+108	+128	Handoff C5B→C5C @ Entrance #2
+200	+200	C4C – Entrance #1 Design & Construction
+252	+234	Permanent Power Available

Milestone Summary: For contract actively under construction, a tabulation of current schedule performance against contractual milestones is presented in Table 3. Based on these milestones, the PMOC notes the following:

- Contract Milestones #2 and Substantial Completion for Contract Package C2A have slipped an additional 22 CD this period and are now forecast for completion on September 13, 2013, 60 CD later than the adjusted contract dates. Milestone #2 delays are attributed to additional work associated with underpinning and protection of Rainbow Hardware. Based on the IPS, these milestones possess 182 WD and 123 WD of schedule float respectively. As such, no impact to the overall project completion is anticipated as a result of these delays; however delays in handoffs to C2B may result in additional cost.
- As previously noted, work at Entrance #2 at the 86th Street Station has been delayed through interference/conflict with the adjacent building owner (Yorkshire Towers). The completion of this work has been resequenced with respect to the follow-on C5C construction package to address the unanticipated delay and allow adequate time to complete the work. This resequencing will not impact the progress of the C5C package.
- Regarding all other elements of the 86th Street Station, float for the heavy civil excavation and concrete (Contract C5B) at both caverns remains at 37/39 WD.
- Contract C4B, recovered 11 WD against Milestone #1 and 28 WD against Milestone #2 this period. The current variance between forecast completion and contractual dates is approximately two months for each milestone.
- Milestone #5 (A, B & C) for Contract C6 is currently forecast to be achieved 189 days later than the current contractual date of April 18, 2014. These milestones lost 33 WD of float this update period. These variances are the result of delays experienced by the C3 construction contract that are being “rippled” through the C6 Contract. According to the IPS, 63 WD of schedule float remains for these milestones.

ELPEP/SMP Compliance: In the opinion of the PMOC, SAS Phase 1 remains in substantial 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). Specifically:

1. Forecast Revenue Service Date
 - ELPEP Requirement: February 28, 2018
 - Current Forecast: December 30, 2016
2. Minimum schedule contingency (measured against February 28, 2018 RSD)
 - ELPEP Requirement: 240 CD
 - Current Forecast: 513 CD

3. Minimum Allowable Float; Real Estate Acquisition

○ ELPEP Requirement: 60 CD

- Current Forecast: All Real Estate Takings are complete as of November 1, 2011.
- Cost to Cure Activities - Current Forecast:
 - 63rd Street Station – Entrance #1; TF = +77 WD.
 - 72nd Street Station – Entrance #1; TF = +200 WD.

4. Minimum Allowable Secondary Float Path

○ ELPEP Requirement: 25 Calendar Days (approximately 18 WD).

- Current Forecast: Independent float paths with float less than 25 CD (18 WD) include:
 - Signal system design/manufacture/installation @ 96th Street Station.
 - Signal system design/manufacture/installation @ 86th Street Station.
 - Communication system design, manufacture and installation at 96th Street Station.
 - C5C contractor procurement and station finish construction.

It is not economically feasible to accelerate these multiple independent schedule paths in order to conform to this section of ELPEP.

5. Secondary Schedule Mitigation (critical path compression)

○ ELPEP Requirement: 125 CD

- Current Forecast: Schedule mitigation efforts are in progress.

Schedule Contingency: IPS Update #82 continues to forecast all Phase 1 construction and pre-revenue testing to be complete on October 3, 2016. This results in an 90 CD (64 WD) contingency when measured against the MTACC's target RSD of December 30, 2016 and a 513 CD contingency when measured against the FTA Risk-Informed RSD of February 28, 2018.

Schedule Comments:

MTACC continues to demonstrate that it is using the IPS to actively plan, organize, direct and control individual packages and the overall project. Recent examples include:

- At the 86th Street Station, MTACC has advised that work at Entrance #2 is experiencing an approximate 100 day delay due to the ongoing with Yorkshire Towers. Resequencing of this work with respect to the follow-on C5C construction package has provided approximately 108 days of schedule float, however it must be noted that work in this area lost 20 WD of schedule float during this update period. Despite mitigation efforts, the risk of delay to this work remains high.
- At the 63rd Street Station, the Contractor's schedule for Entrance #1 work forecast its completion in September 2015, representing a delay of approximately 16 months. MTACC has been exploring mitigation strategies and is currently estimating a completion date of April 2014.

Design, manufacture and installation of the signal system represents several “near critical” schedule float paths. The IPS update does not identify or discuss the issues relevant to the time-of-performance for this element of the project. The PMOC recommends the IPS updates include a brief analysis of “near-critical” float paths including the risk of future delay and mitigation efforts by MTACC to expedite the work.

3.0 COST DATA

Based upon financial expenditures reported by the MTACC through May 31, 2013, SAS Phase 1 is approximately 53.6 % complete. The completion status of the active construction contracts through May 31, 2013, also based upon reported expenditures through that date, is as follows:

- C26002 (Tunnel Boring) – 97.0%
- C26005 (96th Street Station) – 95.4%
- C26010 (96th Street Station) – 13.8%
- C26013 (86th Street Station) – 100%
- C26008 (86th Street Station) – 54.9%
- C26006 (63rd Street Station) – 50.3%
- C26007 (72nd Street Station) – 80.1%
- C26009 (Systems) – 8.1%

Aggregate Construction % Completion:

- 100% of all construction has been bid.
- 91% of all construction is under contract
- 58.7% of construction under contract is complete
- 52.1% of all construction is complete

Based upon cost data received from MTACC for the period through May 31, 2013:

- Value of construction in place this period = \$76,048,530
- Estimated value of construction remaining = \$1,226,860,807
- Target construction completion = August 18, 2016
- Number of months remaining = 38.7

The estimated average rate of construction required to achieve target completion date = \$31,741,760/MO. The average progress (payments) achieved over the most recent six month period is \$52,683,147/MO. Based on a review of cost data for May 2013, 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 \$4.91M. Based upon the available reporting, if soft cost expenditures continue at their current rates, there will be insufficient funds within the respective soft cost categories to fund the estimated 38.7 month remaining duration of the project. Revision 10 to the project cost estimate should address this forecast shortfall and will be incorporated in this report when finalized.

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 6 contains a summary of the updated EAC, which is currently \$4,224,729,207. This update includes the updated construction EAC and some input from draft Revision 10 of the Project Cost Estimate, but is not necessarily the final adjustment that will be made based upon this update.

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 May 2013 is summarized as follows:

	<u>Executed AWOs</u>	<u>AWO Exposure</u>
May 2013	\$105,231,942	\$126,701,819
April 2013	\$94,275,695	\$132,233,246
Change	\$10,956,247	\$(5,531,427)
Change	11.98%	(4.45)%

The changes in AWO Exposure are summarized as follows:

Const. Pkg.	AWO Exposure \$			Changes this Period
	April-13	May-13	Period Δ	
C1	\$53,095,231	\$41,184,443	\$(11,910,788)	Period change based upon tentative settlement of all outstanding AWOs. Contract closeout in progress.
C2A	\$48,395,294	\$49,210,165	\$814,871	Net increase based on revisions to the estimated valuation of AWO # 48, 123, 127 and 128; initial valuation of AWO # 116, 118, 125, 139, 140,145, 147, and 148. A total of five (5) AWOs were added this period, none of which have an estimated cost exposure.
C2B	\$1,975,123	\$7,412,346	\$5,437,223	Increase based on initial valuation of AWOs #6, 7, 12, 18, 21, 23, 24, 27 and 28. Eleven (11) AWOs were added this period, seven (7) of which do not have an estimated cost exposure.
C3	\$7,016,210	\$7,325,456	\$309,246	Net increase based on revisions to the valuation of AWO # 38, 41 and 55 and the initial valuation of AWO # 56 thru 59. Four (4) new AWOs were added this period, all of which have an estimated cost exposure.
C4B	\$5,069,738	\$4,887,759	\$(181,979)	Net decrease based on revisions to the valuation of AWO # 54, 63 and 69 and the initial valuation of AWO # 69. Five new AWOs were added this period, none of which have an estimated cost exposure. It is also noted that no cost exposure has been included for AWO #67, Deletion of Entrance #1.
C4C	\$0			No AWO exposure to date.
C5A	\$6,525,471	\$6,525,471	\$0	Exposure value is based upon tentative settlement of all outstanding AWOs. Contract closeout in progress.
C5B	\$8,024,584	\$8,024,584	\$0	No change this period.
C5C	\$0			No AWO exposure. Bid Phase
C6	\$2,131,595	\$2,131,595	\$0	No change this period.
	\$132,233,246	\$126,701,819	\$(5,531,427)	

The changes in Executed AWO Value are summarized as follows:

Const.	Executed AWO \$	Changes this Period
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Pkg.	April-13	May-13	Period Δ	
C1	\$45,212,443	\$45,212,443	\$0	No change this period. Close-out negotiation of outstanding AWOs in progress.
C2A	\$35,363,514	\$36,534,759	\$1,171,245	Increase based on execution of AWO # 124, 131 and 134.
C2B	\$37,073	\$636,075	\$599,002	Increase based on execution of AWO # 1 and 14.
C3	\$3,097,230	\$3,387,230	\$290,000	Increase based on the execution of AWO #12.
C4B	\$3,920,332	\$7,616,332	\$3,696,000	Increase based on execution of AWO # 11, 50 and 63.
C4C	\$0	\$0		No AWOs executed to date.
C5A	\$4,148,055	\$4,148,055		No change this period. Close-out negotiation of outstanding AWOs in progress.
C5B	\$2,227,688	\$7,427,688	\$5,200,000	Increase based on the execution of AWO #31.
C5C	\$0	\$0		No AWOs executed to date.
C6	\$269,360	\$269,360		No change this period.
	\$94,275,695	\$105,231,942	\$10,956,247	

As of May 31, 2013, the status of Additional Work Orders (AWOs) 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)	97.00%	\$337,025,000	\$41,184,443	12.22%	\$41,184,443	12.22%
C26005 (2A)	95.40%	\$325,000,000	\$49,210,165	15.14%	\$57,671,059	17.74%
C26010 (2B)	13.80%	\$324,600,000	\$7,412,346	2.28%	\$636,075	0.20%
C26006 (3)	50.30%	\$176,450,000	\$7,325,456	4.15%	\$3,387,230	1.92%
C26007 (4B)	80.10%	\$447,180,260	\$4,887,759	1.09%	\$4,887,759	1.09%
C26011 (4C)	1.02%	\$258,353,000	\$0	0.00%	\$0	0.00%
C26013 (5A)	100.00%	\$34,070,039	\$6,525,471	19.15%	\$6,525,471	19.15%
C26008 (5B)	54.94%	\$301,860,000	\$8,024,584	2.66%	\$7,427,688	2.46%
C26009(6)	8.10%	\$261,900,000	\$2,131,595	0.81%	\$269,360	0.10%
TOTAL		\$2,466,438,299	\$126,701,819	5.14%	\$121,989,085	4.95%

To date, approximately \$1,447,953,492 (58.71%) worth of awarded construction work has been completed. As a % of work completed, the AWO exposure for these contracts = 8.75% and the executed AWO % = 8.42%. Based on performance to date, a forecast of total AWO expenditure of approximately \$225M appears reasonable. This compares favorably with the \$229M AWO contingency contained in the MTACC CWB. The PMOC notes that the forecast “closeout AWOs” for contract packages C1 and C5A may reduce this forecast. 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 is currently out for comment. Soft costs will become a part of a total project EAC upon formal acceptance of Revision #10. 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: During May 2013, contingency changes were limited to routine incorporation of AWOs into the individual project and overall program reporting systems. No other significant changes in the SAS construction program have been reported that materially affected the forecast cost contingency baseline against which the current contingency balance is measured.

Contingency changes associated with the award of the C5C construction contract and Revision 10 (Soft Costs) of the Project Cost estimate will be incorporated upon their respective formal approval.

The PMOC has updated and adjusted its contingency drawdown and utilization model to reflect changes made this period. Models maintained 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. The MTACC and FTA agreed the ELPEP “50% Constructed/90% Bid” milestone was effectively achieved in March 2013. Consequently the required contingency balance will be reduced each month, based on achieving the “85% Constructed/100% Bid” milestone in approximately 18 months.

	<u>April 2013</u>	<u>May 2013</u>
Required Balance (ELPEP):	\$210,278,000	\$200,556,000
Planned Contingency Balance:	\$279,712,095	\$247,712,260
Actual Contingency Balance (PMOC):	\$400,157,649	\$405,689,076
Actual Contingency Balance (MTACC):	\$356,746,000	TBD

The variance between the MTACC and PMOC actual contingency balance is based on inclusion of C5C bid results and Rev. 10 Estimate updates by MTACC that have not been incorporated by the PMOC. This variance will be reconciled during the next reporting period.

4.0 RISK MANAGEMENT

Risk Mitigation Meeting No. 25 was held on May 24, 2013. Recent risk management activities included:

- 1) Conducted Risk Mitigation Meeting No. 24 on April 29, 2013.
- 2) Produced and published SAS Monthly Risk Report No. 14 (April 2013) on May 22, 2013.
- 3) Updated cost and schedule drawdown curves based on February 2013 Risk Register update.
- 4) Developed a draft Interface Management Plan aimed at establishing process and status of results.

Risks reviewed and updated during Meeting No. 25 include:

- 1) **Interface Management (Risk CNS 4 (C6))**: The strategy going forward is to develop a more detailed procedure for interface management which includes increased ability to identify and resolve interface issues in order to support the overall schedule. This will be accomplished through organizational and procedural changes.
- 2) **Communication System Changes (Risk COM 2 (C6))**: This risk “continues to be a problem” because limiting changes “is not something with which the department is accustomed”. Managing this risk will include:
 - a) Complete the validation that all previously agreed to Communications changes have been incorporated into the design.
 - b) Future change requests must go through the CCG/CCB process and include a previous approval by the User Department.
 - c) Changes with any schedule impact and/or cost impact over \$50K will require substantiation presented to the CCB by the User Department.
- 3) **Schedule risk C5B, C2B, C4C, C5C and C6**: Most of the opportunities for schedule recovery previously presented via TAC Paper have not been realized. Future opportunities involve acceleration scenarios under discussion with the C6 Contractor.
- 4) **System Safety Certification (Risk CNS 8 (C6))**: The PMOC noted that little in the way of tangible progress has been offered recently. Reports from progress meetings suggest confusion in responsibility and participation in plant inspection of manufactured items. The PMOC requested a meeting of the SSCB to review status and procedures.
- 5) **Risk C4C Entrance #1 (301 East 69th Street)**: Mitigation plan involving transfer of scope from C4B to C4C and redesign of the entrance is underway. Some concern was expressed at the slow turnaround to the TAC Paper submitted to the FTA on/about April 1, 2013 demonstrating MTACC’s compliance with environmental documentation in this effort and the lack of participation at the May 23, 2013 Community Board #8 Meeting, at which time community feedback to this proposed design change was received.
- 6) **C3 Entrance #1 (200 East 63rd Street)**: The issues which generated this risk have been overcome. Building permits have been obtained and construction started. This risk will be monitored, but otherwise removed from the active list of risks under review at this meeting.

Risks Realized: With the receipt of construction bids and anticipated award of the C5C construction package market/project delivery method risks have largely been realized and do not represent significant potential future cost or schedule risks. Upon contract execution, most of these risks are effectively transferred to the construction contractor. While not specifically evaluated as part of the FTA’s PG47 Risk Assessment, these risks were significant elements of ELPEP and MTACC Project-Wide Recovery Plan.

A tabulation of actual construction contract awards compared to the CWB cost estimate for each package at the time of bid indicates the net risk value realized for delivery method and market risk to be approximately \$(130,231,854)

<u>CWB Est. \$</u> <u>(YOE)</u>	<u>Award \$</u>	<u>Delivery Method/</u> <u>Market Risk</u>
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				<u>Realized</u>
C1	Tunnel Boring & Lining	\$ 350,000,000	\$ 337,025,000	\$ (12,975,000)
C5A	86th St. Stn. Sitework	\$ 41,000,000	\$ 34,070,039	\$ (6,929,961)
C2A	96th St. Stn. Heavy Civil	\$ 261,000,000	\$ 325,000,000	\$ 64,000,000
C4B	72nd St. Stn. Cavern	\$ 448,000,000	\$ 447,180,260	\$ (819,740)
C5B	86th St. Stn. Cavern	\$ 394,260,000	\$ 301,860,000	\$ (92,400,000)
C3	63rd St. Station	\$ 148,771,000	\$ 176,450,000	\$ 27,679,000
C4C	72nd St. Stn. Finishes	\$ 250,756,000	\$ 258,353,000	\$ 7,597,000
C2B	96th St. Stn. Finishes	\$ 397,831,000	\$ 324,600,000	\$ (73,231,000)
C5C	86th St. Stn. Finishes	\$ 243,916,000	\$ 208,376,000	\$ (35,540,000)
C6	Track and Systems	<u>\$ 269,512,153</u>	<u>\$ 261,900,000</u>	<u>\$ (7,612,153)</u>
	TOTAL	\$2,805,046,153	\$ 2,674,814,299	\$(130,231,854)

The value of the risk realized may be revised. Adjustments to account for two significant scope transfers between packages during the bid phase are incomplete. Scope transfers include Entrance #1 at 72nd Street Station (C4B → C4C) and Tunnel lining between 73rd Street and 82nd Streets (C1 → C5B). The net value of these adjustments is not forecast to exceed \$10M.

The effective realization of project delivery method and market risks is a significant “milestone” in the advancement of the project and achievement of cost (and schedule) goals. Future forecasts of cost and schedule outcomes will be significantly more reliable without these risks.

5.0 ELPEP

There were no ELPEP meetings held during May 2012. With respect to SAS, the current status of each of the main ELPEP components is summarized as follows:

- **Technical Capacity and Capability (TCC):** The PMOC completed its review of the SAS PMP. MTACC has addressed all FTA/PMOC comments and reissued the PMP as Revision 8.1. Candidate Revisions for the next PMP update are being developed with an updated PMP anticipated in late 2013.
- **Schedule Management Plan (SMP):** The PMOC continues to monitor and verify SAS substantial compliance with the SMP.
- **Cost Management Plan (CMP):** The PMOC continues to monitor and verify SAS substantial compliance with the CMP.
- **Risk Mitigation Capacity Plan (RMCP) and Risk Management Plan (RMP):** On February 2, 2012, the FTA/PMOC consolidated comments on the SAS Risk Management Plan were forwarded to the MTACC. PMOC recommendations regarding approval were forwarded to FTA.
- **Conformance and Compliance Demonstration:** A Compliance Checklist was distributed and reviewed at the ELPEP Meeting of March 13, 2013.

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.

As of April 30, 2013 a total of 5,815,158 construction hours have been logged with 69 lost time and 154 recordable incidents documented. The total hours and incidents equates to a lost time rate of 2.10 and a recordable rate of 5.47. Both rates decreased slightly from the previous month. However they are still above the US Bureau of Labor Statistics (BLS) national rate (Heavy & Civil construction) for lost time and recordable incidents of 2.0 and 3.5 respectively.

Security – No security concerns have been noted during this reporting period

7.0 ISSUES AND RECOMMENDATIONS

Design Changes Requested by NYCT Operations: 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 50% 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.

During May 2013, the SAS Senior Management has addressed this issued. All future User Department requested changes will go through the Configuration Control Group/Configuration Control Board (CCG/CCB) approval process. A User Department representative's approval signature will be required on the change request form. In addition CCG/CCB forms will reflect the cost and schedule impacts of the User Department requested change. For items exceeding \$50,000 or has a schedule impact, the User Department representative must present the requested change to the Board by with substantiation offered.

Construction Contract Management and Coordination: 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.

In recognizing this concern the SAS Project Team has enhanced its Technical Capacity and Capability by developing and Interface Management Plan. During May 2013 it was decided to revise the plan to incorporate a more detailed procedure for interface management. This will include:

- An organization that is agreed by project management to be capable of identifying interfaces issues and resolving them timely to support the schedule.
- Interface management position description and responsibilities.
- A process for implementation of the interface management and status reporting. This would include as a minimum a detailed work list of items to be completed in chronological order to meet the interface date.
- The requirement to hold interface management meeting on a bi-weekly basis.

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	August 30, 2016	October 2017
Revenue Service	June 30, 2014	December 30, 2016	February 2018

A = Actual

Table 2 - Schedule Contingency

IPS Update #	77	78	79	80	81	82
Data Date	12/1/12	1/1/13	2/1/13	3/1/13	4/1/13	5/1/13
Contingency (CD)						
RSD=12/31/2016	90	90	90	90	90	90
RSD=02/28/2018	513	513	513	513	513	513

Table 3 – 1st Quarter 2013 Schedule Milestone Comparison

Pkg	MS	Description	Dates			Affected Pkg.	Variance		Sch. Float
			Adjusted (2)	Upd #81 (3)	Upd #82 (4)		Contract = (2)-(4)	Month = (3)-(4)	
C2A	#1	99th to 97th Street; surface and underground work complete including Ancillary #2	07/15/13	07/26/13	07/15/13	C2B	0	11	102
C2A	#2	92nd to 95th Street; surface and underground work complete including Ancillary #1, Entrances 1 & 2	07/15/13	08/22/13	09/13/13	C2B	-60	-22	182
C2A	SS	Completion of all remaining work - 95th to 97th Streets including Entrance #3.	07/15/13	08/22/13	09/13/13	C2B	-60	-22	123
C3	#3	Completion of all Work on the Mezzanine levels associated with the installation of conduits, raceways, and other installations necessary to allow for cable pulling related to communications work	04/15/13	02/18/14	02/05/14	C6	-296	13	81
C3	#4	Completion of all Work on the Lower and Upper Platforms. Completion of all Signals Rooms.	10/14/13	02/20/14	02/07/14	C6	-116	13	174
C3	#5	Completion of all work within the underground parking garage at 188 East 64th Street	08/30/13	09/09/13	09/09/13		-10	0	381
C3	#6	Complete work @ Ancillary #1	07/09/12	07/10/13	08/08/13		-395	-29	401
C3	SS	Substantial Completion	05/13/14	12/04/14	01/05/15	C6	-237	-32	55
C4B	#1	Completion of Ancillary #2 shaft & adits, availability of cavern from Grid Line 17 north, west of Entrance #2 adit	06/25/13	08/19/13	08/08/13	C4C	-44	11	103
C4B	SS	Substantial Completion	12/03/13	02/11/14	01/14/14	C4C	-42	28	37
C5B	#1	Complete all Station Cavern work south of Grid Line 15 and all surface work south of 85th Street centerline.	03/04/14	03/18/14	03/19/14	C5C	-15	-1	39
C5B	SS	Substantial Completion	09/04/14	12/02/14	12/30/14	C5C	-117	-28	37
C6	#1	Completion of Signal Block Design	08/18/12	9/4/12A	9/4/12A	C6	N/A		N/A
C6	#2A	Complete LAN - 96th Street Station	05/18/15	05/18/15	05/18/15	C2B	0	0	187
C6	#2B	Complete WAN - 96th Street Station	05/18/15	05/18/15	05/18/15	C2B	0	0	187
C6	#3A	Complete LAN - 86th Street Station	07/18/15	07/17/15	07/17/15	C5C	1	0	139

Pkg	MS	Description	Dates			Affected Pkg.	Variance		Sch. Float
			Adjusted (2)	Upd #81 (3)	Upd #82 (4)		Contract = (2)-(4)	Month = (3)-(4)	
C6	#3B	Complete WAN - 86th Street Station	07/18/15	07/17/15	07/17/15	C5C	1	0	139
C6	#4A	Complete LAN - 72nd Street Station	02/18/15	02/18/15	02/18/15	C4C	0	0	249
C6	#4B	Complete WAN - 72nd Street Station	02/18/15	02/18/15	02/18/15	C4C	0	0	249
C6	#5A	Complete LAN - 63rd Street Station	04/18/14	10/24/14	11/26/14	C3	-189	-33	63
C6	#5B	Complete WAN - 63rd Street Station	04/18/14	10/24/14	11/26/14	C3	-189	-33	63
C6	#5C	Complete all 63rd Street Station work	04/18/14	10/24/14	11/26/14	C3	-189	-33	63
C6	SS	Substantial Completion	08/18/16	08/18/16	08/18/16		0	0	97

Notes:

1. All schedule dates based upon May 1, 2013 update (IPS Update #82)
2. Contract packages 1 and 5A have completed all work and follow-on activities are proceeding w/o impact.
3. Contract packages 2B, 4C and 5C; no variances with contract milestones to date.

Table 4 - Project Budget/Cost 

	FFGA			FFGA Amend	MTA Current Working Budget (CWB)		Expenditures as of May 31, 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	2,384.739	45.27
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	2,384.739	45.27
Total Federal:	1,350.693	27.75	1,063.942		1,350.693	24.60	711.019	13.50
Total FTA share:	1,300.000	96.25	990.049		1,300.000	23.68	637.126	12.10
5309 New Starts share	1,300.000	100	990.049		1,300.000	23.68	637.126	12.10
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	1,673.720	31.77
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 - Contingency Drawdown

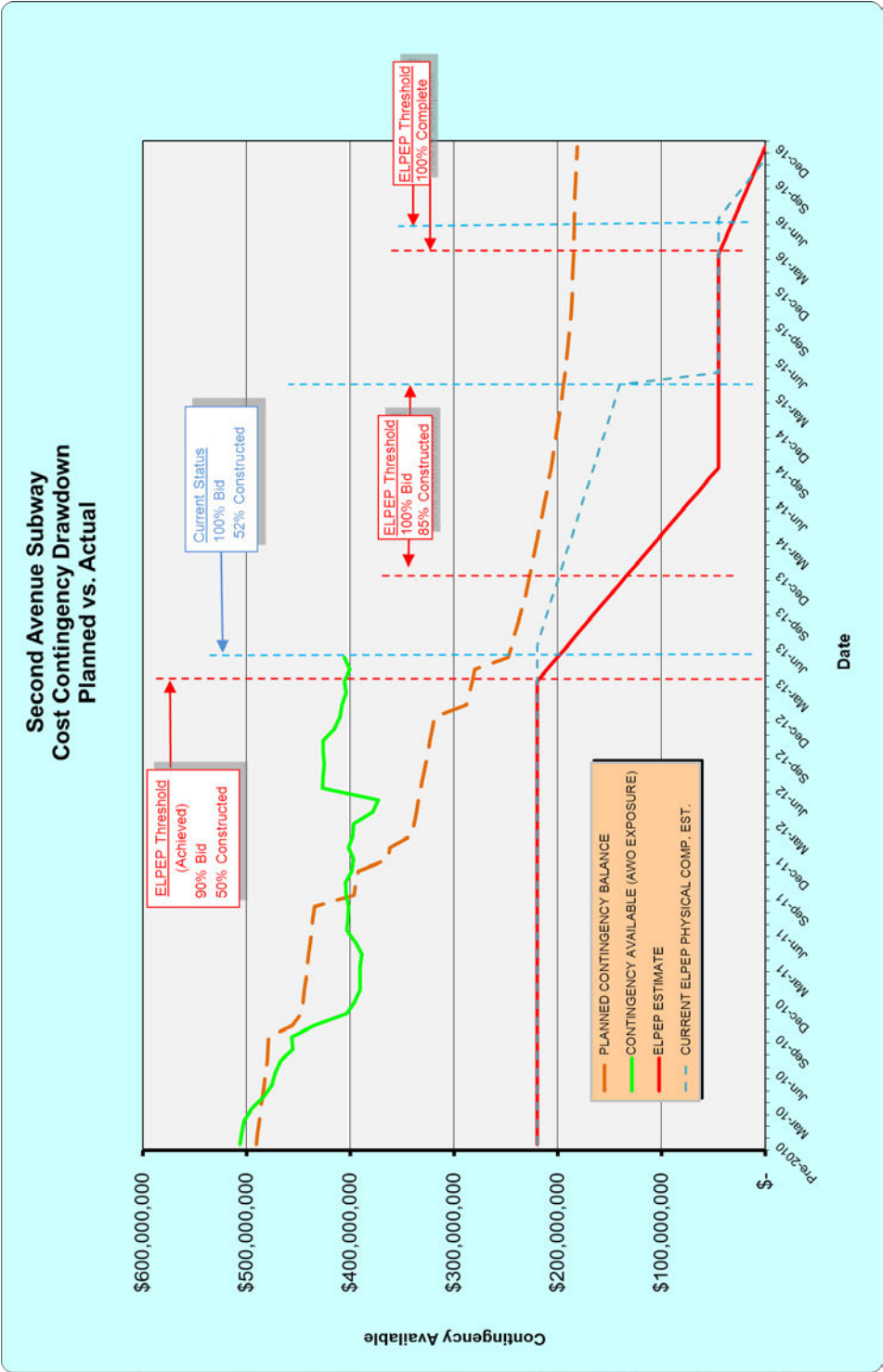


Table 6 - Estimate at Completion

Category	Current Working Budget	EAC Forecast
Total Construction	\$2,728,172,492	\$2,916,069,122
Engineering Services Subtotal	\$576,541,264	\$625,000,000
Third Party Expenses	\$534,800,000	\$552,500,000
TA Expenses	\$125,160,085	\$131,160,085
Contingency	\$321,104,648	
Executive Reserve	\$160,000,000	
Subtotal	\$4,451,000,000	\$4,224,729,207

Table 7 - Allocation of Current Working Budget to Standard Cost Categories

Std. Cost Category (SCC)	Description	FFGA	MTA's Current Working Budget
10	Guideway & Track Elements	\$612,404,000	\$728,617,000
20	Stations, Stops, Terminals, Intermodal	\$1,092,836,000	\$1,276,632,000
30	Support Facilities	0	\$562,000
40	Site Work & Special Conditions	\$276,229,000	\$537,621,000
50	Systems	\$322,708,000	\$247,627,000
60	ROW, Land, Existing Improvements	\$240,960,000	\$292,000,000*
70	Vehicles	\$152,999,000	0**
80	Professional Services	\$796,311,000	\$885,941,000
90	Unallocated Contingency	\$555,554,000	\$482,000,000
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

* Includes \$47M Cost-to-Cure.

** FTA Region II has accepted MTACC/NYCT's assertion that recent services reductions will provide ample spare vehicles for the SAS Phase I Project.

Table 8 -- Core Accountability Items -- May 2013

Table 8 -- Core Accountability Items -- May 2013				
Project Status:		Original at FFGA	Current*	ELPEP**
Cost	Cost Estimate	\$4,050M	\$4,451M	\$4,980M
Contingency	Unallocated Contingency	\$555.554M	\$388M	\$210M
	Total Contingency (Allocated plus Unallocated)	\$555.554M	\$400M (April 2013)	\$210M
Schedule	Revenue Service Date	June 30, 2014	December 30, 2016	February 28, 2018
Total Project Percent Complete	Based on Expenditures	53.6%		
	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 50% 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.
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 #82; Data Date = 5/01/2013

Financial data based upon MTACC reporting through 5/31/2013