

PMOC MONTHLY REPORT

Second Avenue Subway Phase 1 (MTACC-SAS) Project

Metropolitan Transportation Authority

New York, New York

Report Period February 1 to February 28, 2013



PMOC Contract No. DTFT60-09-D-00007

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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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For projects funded through an FTA Full Funding Grant Agreements (FFGA) program, FTA and its Project Management Oversight Contractor (PMOC) use a risk-based assessment process to review and validate a project sponsor's budget and schedule. This risk-based assessment process is a tool for analyzing project development and management. Moreover, the assessment process is iterative in nature; any results of an FTA or PMOC risk-based assessment represent a "snapshot in time" for a particular project under the conditions known at that same point in time. The status of any assessment may be altered at any time by new information, changes in circumstances, or further developments in the project, including any specific measures a sponsor may take to mitigate the risks to project costs, budget, and schedule, or the strategy a sponsor may develop for project execution.

Therefore, the information in the monthly reports may change from month to month, based on relevant factors for the current month and/or previous months.

REPORT FORMAT AND FOCUS

This monthly report is submitted in compliance with the terms of the Federal Transit Administration (FTA) Contract No. DTFT60-09-D-00007, 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 February 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 2nd Quarter 2013. Progress continued on the six (6) active construction contracts and featured the following accomplishments:

- *C-26005 (C2A) "96th Street Site Work and Heavy Civil" Overall contract is approximately 89% complete. Installation of invert slab continues south of 95th Street. Mass excavation and related work continues at all entrances and ancillaries.*
- *C-26010 (C2B) "96th Street Station Civil, Architectural, and MEP" Overall contract is approximately 5% complete. Lead abatement in the existing tunnel (99th -> 105th Street) is substantially complete. Demolition work in the existing tunnel continues.*

- C-26006 (C3) “63rd Street Station Rehabilitation” Overall contract is approximately 36% complete. Area 5 structural steel erection did not complete in February as previously forecast. After significant delays, work at Entrance #1 and Ancillary #1 has commenced. Work at the fan rooms and track areas continue.
- C-26007 (C4B) “72nd Street Station Cavern Mining and Lining” Overall contract is approximately 68% complete. Blasting operations have been completed. Structural concrete installation is approximately 36% complete.
- C-26008 (C5B) “86th Street Station Cavern Mining and Lining” Overall contract is approximately 42% complete. Excavation via both mechanical means and blasting continues at all locations on the project. Total rock excavation is approximately 40% complete. This is the primary work activity in progress for this contract.
- C-26009 (C6) “Track, Power, Signals and Communication Systems” Overall contract is approximately 4% complete. Mobilization and submittal activities comprise the primary activities underway at this time.

The overall project is approximately 49.3% complete. The remaining construction contract will be awarded during 2013.

a. Procurement

Construction contract award for the C-26011 (C4C) “72nd Street Station Architectural, MEP and Finishes Package” was awarded on February 14, 2013.

Construction documents were made available to interested contractors for the 86th Street Station Architectural, MEP and Finishes Package, C-26012 (C5C), on December 24, 2012. Receipt of bids is currently scheduled for March 13, 2013.

b. Construction

As of February 28, 2013, there are six (6) 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: 9 of 37 completed (24.3%)
 - PVC waterproofing ongoing
 - **Mass Excavation ongoing**
 - Total mass excavation completed: 102,369 out of 131,223 BCY (78.0%)
 - Main Station: 80,262 out of 95,361 BCY (84.0% complete)
 - Ancillary #1: 5,553 out of 13,520 BCY (41.0% complete)
 - Ancillary #2: 8,953 out of 11,633 BCY (77.0% complete)
 - Entrance #1: 580 out of 2,208 BCY (26.0% complete)
 - Entrance #2: 1,481 out of 2,961 BCY (50.0% complete)
 - Entrance #3: 5,540 out of 5,540 BCY (100.0% complete)

- *MGP excavation: 6,500 out of 6,500 tons (100.0%)*
- **Ancillary #1 ongoing work**
 - *Concrete inverts and breakout of secant piles remaining*
- **Ancillary #2 ongoing work**
 - *Concrete invert remaining*
- **Entrance #1 ongoing work**
 - *Structural / architectural demolition 41.0% complete*
 - *Geotechnical 83.0% complete*
 - *Structural construction 39.0% complete*
- **Contract C-26010 (C2B) 96th Street Station Civil, Architectural, and MEP**
 - **Tracking of Long Lead Items**
 - *Contractor provided preliminary list on 2/12/13. MTACC/CCM needs an updated list by 3/4/13.*
 - **Entrance 2 ongoing work**
 - *Secant pile installation (8 out of 8 completed)*
 - *Concrete Piers (10 out of 10 completed)*
 - *Relocation of utilities in preparation for sheet piling*
 - **Launch Box ongoing work**
 - *Invert installation 4 of 6 completed*
 - *Shotcrete of South wall*
 - *Installation of temporary lighting*
 - *Removal of struts and wales*
 - *Waterproofing*
 - **North Tunnel ongoing work**
 - *Additional lead abatement required*
 - *Repair of structural steel*
 - *Chemical grouting*
 - *East wall high bench demolition approximately 58.0% complete*
 - *West wall high bench demolition approximately 53.0% complete*
 - *Low bench demolition approximately 54.0% complete*
- **Contract C-26006 (C3) 63rd Street Station Rehabilitation**
 - *Surveying of the Deformation Monitoring Points (DMPs) is ongoing and will continue throughout the project.*

- **Schedule**
 - *Steel erection at Ancillary #1 requires the shutdown of adjacent streets and can only be performed during the weekend. This work has been delayed by inclement weather every weekend during February 2013. This work is re-scheduled to begin Saturday, March 2, 2013*
 - *During this period the Project Office reported that the C3 schedule has suffered additional delay and Substantial Completion is now approximately 138 days behind the approved schedule. Causes include utility relocation redesign and permits from NYCDOT/NYCDEP for the SOE wall at Entrance #1; delays in completion of Area 5 steel erection to mid-March 2013,*
- **Structural Steel (Area 5)**
 - *The contractor's upper management and MTACC upper management continue to meet on the schedule and increasing production, particularly steel fabrication.*
 - *In November 30, 2012, the Area 5 steel erection schedule was re-baselined from a December 15, 2012 completion date to February 16, 2013. As of February 28, 2013, the steel erection "Tracking Log" prepared by the contractor indicates that 691 pieces had been installed which is 85.8% of the total steel pieces to be installed (805).*
- **Area 5 (Reconstruction consists of 6 mezzanines and the deck plaza roof)**
 - *Continued with temporary and permanent structural steel fabrication and erection at the 6th Mezzanine and Roof.*
 - *Began placement of 2nd Mezzanine floor slab and began preparations for 4th Mezzanine floor slab.*
- **Entrance #1**
 - *Access problems to the building have been resolved.*
 - *The contractor began setup of MPT at the corner of 63rd & 3rd Ave.*
- **Ancillary #1**
 - *The 3 weekend street closures on 63rd St. between Lexington and Park Avenues were re-scheduled for February 9, 2013, from the previously scheduled January 2013 date, due to Hurricane Sandy. However, as noted above, this date has now moved to March 1, 2013 due to ongoing inclement weather.*
 - *Continued with basement excavation for new supply/return pipe feeds from the new Cooling Towers to the station.*
- **Platforms**
 - *Completed platform concrete placement.*
 - *Continued with service carrier and conduit installation at the G3 and G4 level.*
 - *Continued with application of intumescent paint to columns, girders & walers.*
 - *Began installation of track drainage piping at Lower Platform.*
- **Fan Plants**

- *Continued with installation of ductwork and fans in the West Fan Room.*
- *Continued with communications and power conduit in West Fan Room.*
- *Continued installation of conduit for power to equipment in the East Fan Room.*
- *Continued duct and pipe work in the East Fan Room.*
- **Contract C-26007 (C4B) 72nd Street Station Cavern Mining and Lining**
 - **Rock Excavation**
 - *G3/S1 Cavern I/II, G4/S2 Cavern I & II; and Horseshoe Tunnel; North Crossover; 63rd St. Stub Cavern; South Crossover (East / West /Bench); Main Station Cavern - all 100% complete*
 - *Ancillary #2 and Entrance #2; Completed*
 - *Ancillary #1; Completed*
 - *Entrance #3; Completed*
 - *Total Rock excavated 183,591 BCY*
 - **Concrete Phase**
 - *Main Cavern*
 - *Remaining 1 invert in progress (rebar & pour)*
 - *16 wall panels (each 30 feet long) complete; 48 +/- remaining*
 - *Waterproofing of arch and south end wall has commenced*
 - *South Crossover*
 - *Remaining 3 (half-size) inverts in progress (waterproof, rebar placement, pour)*
 - *North Crossover*
 - *Rebar installation and concrete placement for the arch was completed*
 - *63rd Street Stub Cavern*
 - *Permanent concrete installation of arch is ongoing (1 complete, 1 in progress, 3 remaining)*
 - *G4 TBM Tunnel*
 - *Waterproofing of arch completed*
 - *Assembly of the arch form commenced*
 - *Arch pours (40) in scheduled to begin the week of March 11, 2013*
- **Contract C-26008 (C5B) 86th Street Station Cavern Mining and Lining**
 - *Work continued with 3 shifts. All surface operations end at 10:00PM daily.*
 - **North Shaft Area/South Open Cut Area**

- *Continuing with excavation and lowering the “bench” in the Public Cavern. The north shaft invert elevation remains temporarily at approximate Elevation 90, the base of the Alamac personnel carrier.*
- *Muck removal and shotcreting is ongoing.*
- **Ancillary #1**
 - *Rock excavation at the Ancillary #1 portion of the South Open Cut resumed, lowering the invert to approximate Elevation 80 from the previous Elevation 90.*
- **Ancillary #2**
 - *Continued with blasting in the open cut at Ancillary #2 and completed all rock excavation required from that top-down activity. Continued blasting and mining in the cavern to complete the opening between the cavern access and vertical open cut excavation.*
- **Entrance #1**
 - *Continued the cut & cover mechanical rock breakup, excavation and rock bolting at Entrance #1. From the cavern the contractor continued blasting and achieved a “breakthrough” from the cavern to the cut & cover excavation and mining out of the area continued.*
- **Entrance #2**
 - *Work at Entrance #2 from the cut & cover work area continued to be delayed due to the impasse with the building owner (Yorkshire Towers) over access due to interference with the building construction street scaffolding. However, Entrance #2 rock excavation from the cavern was completed.*
 - *Completed top-down blasting/excavation at the Elevator Shaft. Mining to complete the connection is being done from the cavern and the elevator shaft opening is being decked over at the street (86th St.) and the MPT is being maintained.*
- **Rock Excavation Summary (as of the week ending January 18, 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 – 104,495 BCY (67.6%)*
 - *Summary by Area:*
 - *North Cavern – 55,686 BCY (total); 33,228 BCY (to date); 68.6%*
 - *South Cavern – 54,302 BCY (total); 41,427 BCY (to date); 76.3%*
 - *Ancillary #1 – 11,725 BCY (total); 9,205 BCY (to date); 78.5%*
 - *Ancillary #2 – 4,830 BCY (total cut & cover); 4,830 BCY (to date); 100%*
 - *Ancillary #2 – 7,480 BCY (total from cavern); 2,657 BCY to date); 35.5%*
 - *Entrance #1 – 1,990 BCY (total from cut & cover); 1,402 BCY to date; 70.4%*
 - *Entrance #1 – 1,800 BCY (total from cavern); 1,800 to date; 100%*
 - *Entrance #2 – 14,237 BCY (total from cut & cover); 2,373 BCY to date; 16.7%*

- Entrance #2 – 2,573 BCY (from cavern); 2,573 BCY; 100%%
 - *The tracking of total rock excavation (actual) from April 6, 2012 through February 22, 2013 vs. planned excavation shows the cumulative rock excavation production to date is progressing concurrent with the baseline schedule. This actual reduction in progress from previous reports can be attributed to the delays in rock excavation production at the cut & cover for Entrance #2.*
- **Contract C-26009 (C6) Track, Power, Signals and Communication Systems**
- *Field Surveys for Signals, Track and Traction Power continue in the existing 63rd St., 72nd St. and 96th St. Station areas.*
 - *Systems Integration Meeting with Station Contractors is ongoing.*
 - *Delivery of rail and rail fasteners for LVT has commenced.*
 - *Submittal Progress:*
 - *Communication (818 total): 462 submitted, 360 approved*
 - *Track (83 total): 72 submitted, 46 approved*
 - *Traction Power (103 total): 77 submitted, 59 approved*
 - *Signals (267 total): 214 submitted, 174 approved*
 - *MTACC approval of subcontractors for CSJV:*
 - *Master Consulting – Surveying*

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.

Revision 2 of the SAS Project Quality Manual (PQM) was issued in November 2006. The PMOC recommended that the PQM be updated and the SAS Quality Manager agreed to have a draft for review by the end of April 2013.

Quality issues during February 2013 include:

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

Contract Package C1	
	<ul style="list-style-type: none"> • Slurry wall – five NCRs • Concrete Tunnel Liner Arch – four NCRs
Observation:	<p><i>Of the 40 NCRs written on the C1 contract, two related to the slurry wall are still open. They are expected to be closed in March 2013 pending as-built survey data from the C2B contractor.</i></p> <p>The status of the 16 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 still open • 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. <i>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 continue their efforts to close these remaining two NCRs.</i></p>
Contract Packages C2A and C2B	
Status:	The contractor was behind in submitting their Daily Inspection Reports.
Observation:	The SAS Quality Manager stressed that the C2A/C2B contractor must submit Inspection Daily Reports within a week of being written.
Concerns and Recommendations:	The PMOC is concerned that the contractor is delinquent in submitting daily reports on both the C2A and C2B contracts. This situation occurred earlier on the C2A contract and the C2A contractor management added additional administrative support to alleviate this problem. The PMOC recommends that they do so again and continue to provide additional support as needed so that this problem does not recur.

2.0 SCHEDULE DATA

Integrated Project Schedule (IPS) Update #79 was received on March 4, 2013 and is based on a Data Date of February 1, 2013. This “preliminary update” was conditional upon the review of one of the MTACC scheduler, who was unavailable for medical reasons. This update contained a “.PDF” schedule reports 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 February 2013 include the following:

- *MTACC and the C2A Contractor have agreed to time entitlement for project delays through 12/1/12. This agreement will result in a contract modification formally extending project completion to 7/15/13. Forecast Substantial Completion date of 7/15/13 was unchanged this period.*
- *Early-access work, primarily in the existing tunnels between 99th and 105th Streets, should result in the earlier-than-planned achievement of Milestone #1.*
- *Additional delay from 11/27/13 to 12/23/13 was reported this period for C3 Interim Milestones #3. Substantial Completion was revised from 10/22/14 to 10/30/14; however schedule float changed from +344 CD to +42, indicating major changes in downstream activities were made this period.*
- *MTACC formalized decision to delete Entrance #1 from Contract C4B. Approximately 10 WD of schedule recovery was achieved for Milestone #1 and Substantial Completion this period.*
- *C5B cavern mining is essentially on schedule, with South Cavern delays offset by North Cavern better-than-forecast progress. Delays affecting the contract and project critical path may be realized due to construction delays at Entrance #2.*
- *C6 Milestone dates were unchanged this period. MTACC is considering a proposal to accelerate the system testing and commissioning activities that may add 10 – 20 WD of schedule contingency to the IPS.*

Project Critical Path: The most “critical” or longest schedule path that spans between the current data date of February 1, 2013 and the project completion date (RSD) consists of three distinct 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 19 WD and concludes with the contract award on May 24, 2013. It is noted that the C5C procurement schedule concluding with the award of C5C on May 24, 2013 includes approximately 6 weeks of float, resulting in a reasonably high level of confidence that this date will be achieved.*
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.

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.

There was no change to the critical path during this update period. C5C procurement was the only ongoing work activity on the critical path and it maintained schedule during this period.

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

+7 WD: *This path is initiated by the design, manufacture and delivery of the traction power substation and associated control equipment at the 96th Street Station. It then follows the installation of the traction power system at the 96th Street Station through its local and integrated test activities. This path joins the critical path on May 18, 2016 with the start of Proof of Operation testing.*

The PMOC is concerned about the schedule “lags” between completion of traction power design and the start of equipment manufacture. It is unclear why manufacture of DC breakers at the 86th Street CBH controls the start of manufacture of traction power equipment at the 96th Street Station.

It is understood that the IPS is not a “production” schedule, and the usual concerns regarding the use of schedule lags are not completely applicable. However, for “near critical” paths, excessive periods of no activity created by lags should be replaced with documentable work activities and defensible schedule logic. *This comment was made in the December 2012 PMOC Monthly Report and has not been acted upon to date.*

+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 this activity exceeds two years. Given the fact that MTACC provided a complete design for the SAS project, it is unclear what design activities remain that require this extraordinary time period. Following design, installation of hardware and software is forecast to require approximately 18 months, completing on May 16, 2016 and followed by integrated system and proof of operation testing.

There was no change to this path this update period. It is not possible to verify the status of an activity when its scope is indeterminate and its duration excessive. The PMOC is extremely concerned that this lack of definition and excessive duration of certain IPS activities near the critical path such as described here compromises the value and usefulness of the IPS. The PMOC recommends the IPS be reviewed for

- similar activities and that they are replaced with defined, meaningful activities and logic that are useful in the management of the project. This comment was made in the PMOC's January 2013 Monthly Report and has not been acted upon to date.*
- +23 WD:** NYCT Pre-Revenue Operation Activities scheduled to start on August 18, 2014 and is unchanged this period.
- +20 WD:** *There are multiple independent +20 CD float paths. The first path originates with C4B concrete construction in the northern portion of the 72nd Street Station Main Cavern followed by similar work in the southern part of the Main Cavern. C4B Substantial Completion is forecast for 1/24/14 and C4C work in Ancillary #1 should start immediately thereafter. C4C will perform interior and MEP construction in this area until 11/1/14, at which time Ancillary 1 will be turned over to the C6 Contractor for systems installation. From Ancillary #1, the C6 Contractor will install signal equipment throughout the 72nd Street Station area until completion of Operational Testing on 7/20/16.*
- +31 WD:** *The detail design and development of signal system shop drawings controls the start of several paths. After completion of signal system detailing and approval on August 2, 2013 the manufacture of signal equipment for the 72nd Street Station starts immediately. This path follows the installation of signal equipment in the 72nd Street Station Relay Room until this room is ready for testing on 1/15/16. Local Communications testing at both 72nd Street and 86th Street Stations proceeds along concurrent paths (+32 and +35 WD float) through system and integrated testing and ultimately the handoff to NYCT for Pre-Revenue & Operations Testing on 8/17/16.*
- +38 WD:** *After completion of signal system detailing and approval on August 2, 2013 (see +31 WD Path), the start of equipment manufacture is staggered in the following order; 63rd St. → 72nd St. → 96th St. → 86th St. Development and review of system shop drawings is currently in progress, with equipment delivery for 86th St. currently scheduled for October 5, 2013. This path follows the signal system installation at 86th Street through testing and the substantial completion of the C6 Contract. This path joins the critical path on June 24, 2016 with the handoff to NYCT for operational testing, including dispatch tower testing, proof of route familiarity and new systems and equipment familiarization.*
- +40 WD:** *86th Street Station, south cavern excavation. This path follows rock excavation in the south cavern, followed by concrete liner installation and waterproofing in the north cavern. C5B Substantial Completion and handoff of all remaining work areas to C5C will occur on September 17, 2014. C5C will prepare and handoff traction power work areas to C6 on February 18, 2015, at which time this path merges with the project critical path.*
- +41 WD:** *This path follows the phased construction of Entrance #2 for the 86th Street Station, located on the northeast corner of Second Avenue at 86th Street. Heavy civil construction is currently being performed via the C5B contract. This area will be turned over to the C5C contractor for architectural and MEP construction on October 15, 2014. C5C will complete its work and make the area available to C6 for traction power work on February 18, 2015. At this time, this path joins the critical path of the project, described above.*

Work currently being performed by the building owner at Second Avenue and 86th Street (Yorkshire Tower) is a potential source of delay. To date, the C5B contractor has worked around the obstruction as best as possible. The work lost over 58 CD of schedule float as a result of delay and schedule resequencing to address the current obstruction.

+42 WD: *This path is initiated by the “cost-to-cure” work at 63rd Street Station. Completion of all “cost-to-cure” work is currently scheduled for August 9, 2013, followed by completion of Entrance #1 construction, Entrance #3 construction and completion of construction package C3 on October 30, 2014.*

Subsequent to C3 Substantial Completion, this path transitions to systems installation via Activity C6AR63-4: G3/G4 Track through 63rd Street “Shared Access”. This C6 milestone controls the start of signal system installation and testing throughout the 63rd Street Station area and is preceded by the substantial completion of C3. This path currently has +44 CD of schedule float and extends continuously from its start through pre-operational testing in May 2016. A schedule lag of -88 WD (134 WD) now allows this systems installation to start in advance of the C3 Substantial Completion date.

The schedule currently indicates that that C3 delays at Entrance #1 will not impact the start of systems installation at 63rd Street Station via C6. If this is the case, the existing schedule relationships should be modified to reflect the revised sequence of activities. The PMOC believes the use of negative lags in a situation such as this is inappropriate.

+44 WD *In addition to signal system installation at 63rd Street Station (discussed above as part of the +42 WD path), the supply and installation of traction power equipment at 72nd Street Station occupies a +44 WD float path. Based on the updated IPS, all traction power equipment at the 72nd Street Station will be available for installation on 2/26/15. Traction power equipment installation continues at this location through 11/13/15, at which time, local testing of this system starts, followed by the integrated testing of traction power systems.*

+53 WD *Fabrication and erection of structural steel within Area 5 of the 63rd Street Station initiates this path, followed by architectural and MEP construction throughout this area, as well as Entrance #2. This +53 WD path leads to contract Substantial Completion on 10/30/14. Subsequent to C3 Substantial Completion, this path goes through three milestones:*

The most significant of these milestones; G3/G4 Track through 63rd Street “Shared Access” (C6AR63-4) is a C6 milestone which controls the start of signal system installation and testing throughout the 63rd Street Station area and is preceded by the substantial completion of C3. It is through this milestone that the +53 WD path merges with the previously discussed +44 WD path. A schedule lag of -88 CD now allows this activity to start in advance of the C3 Substantial Completion date.

The schedule currently suggests that C3 steel erection delays will not impact C6. If this is the case, the existing schedule relationships should be modified to reflect the revised scope and sequence of activities. If the MTACC believes it can recover these

delays and the affected C6 work will be able to proceed unimpacted, a recovery scenario should be discussed in the narrative report accompanying the schedule update.

The PMOC believes the use of scheduling techniques (negative lags) that mask the potential impact of a schedule change or delay distorts the IPS and compromises its value. The resultant lack of “transparency” is contrary to the conditions and intent of the ELPEP and Schedule Management Plan.

The number of near-critical paths and their significance suggests an increasing risk that the project may experience schedule delay and potentially impact the scheduled RSD.

Milestone Summary: A tabulation of current schedule performance against contractual milestones is presented in the following table.

Pkg	MS	Description	Dates		Affected	Var	Sch Float	Notes
			Adjusted (2)	Forecast (4)	Pkg.	(CD) (5) = (2) - (4)		
C1	#1	Complete TBM Run #1	09/28/10	N/A		N/A		Work complete. Follow-on contracts proceeding w/o impact.
C1	SS	Substantial Completion; complete TBM Run #2 and all concrete work	07/20/11	N/A		N/A		
C2A	#1	99th to 97th Street; surface and underground work complete including Ancillary #2	03/09/13	07/18/13	C2B	-131	85	MTACC and Contractor have reached tentative agreement on delays to Substantial Completion through 7/15/13. Cost of delay is TBD.
C2A	#2	92nd to 95th Street; surface and underground work complete including Ancillary #1, Entrances 1 & 2	08/07/12	06/27/13	C2B	-324	107->149	
C2A	SS	Completion of all remaining work - 95th to 97th Streets including Entrance #3.	04/22/13	07/15/13	C2B	-84	141	
C3	#1	Completion of all work on the G3 trackway area and existing vent shaft connection to street level	N/A	N/A	C4B	N/A	N/A	Contract Milestones have been superseded. C3/C4B MOU provided C4B access to these areas in June 2012.
C3	#2	Completion of all work on the G4 trackway area limits	N/A	N/A	C4B	N/A	N/A	

Pkg	MS	Description	Dates		Affected	Var	Sch Float	Notes
			Adjusted (2)	Forecast (4)	Pkg.	(CD) (5) = (2) - (4)		
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	12/23/13	C6	-252	118	Driven primarily by structural steel delay. Structural steel forecast completion = mid-February 2013.
C3	#4	Completion of all Work on the Lower and Upper Platforms. Completion of all Signals Rooms.	10/14/13	01/06/14	C6	-84	182	Driven primarily by structural steel delay. Structural steel forecast completion = mid-February 2013.
C3	#5	Completion of all work within the underground parking garage at 188 East 64th Street	08/30/13	08/30/13		0	333	
	#6	Complete work @ Ancillary #1	07/09/12	06/14/13		-340	387	Delayed start of work (11/28/12) due to access agreement with parking garage owner.
C3	SS	Substantial Completion	05/13/14	10/30/14	C6	-170	42	Driven by delays to Entrance #1. Delay impacts "unimpeded access" for C6 @ track level.
C4B	#1	Completion of Ancillary #2 shaft & adits, availability of cavern from Grid Line 17 north, west of Entrance #2 adit	06/25/13	08/15/13	C4C	-51	88	Out-of-sequence work by Contractor has distorted the evaluation of schedule progress. Schedule variance currently not considered significant.
C4B	SS	Substantial Completion	12/03/13	02/10/14	C4C	-69	18	

Pkg	MS	Description	Dates		Affected	Var	Sch Float	Notes
			Adjusted (2)	Forecast (4)	Pkg.	(CD) (5) = (2) - (4)		
C5A	#1	North Shaft - complete.	N/A	N/A	C4B	N/A		Work complete. Follow-on contract proceeding w/o impact.
C5A	#2	South Shaft - complete	12/08/10	N/A	C4B	N/A		
C5A	SS	Substantial Completion	02/08/11	N/A	C4B	N/A		
C5B	#1	Complete all Station Cavern work south of Grid Line 15 and all surface work south of 85th Street centerline.	03/04/14	03/17/14	C5C	-13	41	Variances within measureable schedule accuracy. Rate of progress improving. Progress delays to be evaluated.
C5B	SS	Substantial Completion	09/04/14	09/17/14	C5C	-13	40	

Notes:

1. All schedule dates based upon February 1, 2013 update (IPS Update #79)
2. For contract packages not shown - no variance between forecast and contract dates

Quarterly Activity Tracking: The initial tabulation of select schedule activity performance for the 1st Qtr. 2013 is contained in the accompanying Table 3. Activities not completed this Quarter will be “carried over” into the 2nd Quarter 2013 tracking log. A summary of schedule performance includes the following:

Summary

# Calendar Days Elapsed	31
Average Δ from Baseline - all activities	85
Average Δ from Baseline - completed activities	8
Average Δ from Baseline - ongoing activities	95
Average Monthly Δ	20
Number Activities Sampled	36
Number Activities Completed	4

1st Qtr. Activity Summary

# Activities Forecast this Qtr.	15
# Activities forecast to complete this Qtr.	12
# Activities completed this Qtr.	1
# Activities on/ahead of baseline	5
# Activities behind baseline	10
Average Δ from Baseline (CD)	9
Average Monthly Δ (CD)	9
Average TF - Open Activities	133

Based on the sampling of activities in Table 3, the PMOC notes the following:

- *Ten of thirteen C3 activities tracked via Table 3 experienced delays approximately equal to or greater than the duration of the measurement period. This suggests potential delays throughout this contract.*
- *Both outstanding construction procurements (C4C, C5C) maintained schedule during this period.*
- *Only three of the twenty-one “carryover activities” were completed this Quarter. Baseline completion for all these activities was prior to 1st Quarter 2013. While all of these activities have sufficient schedule float to absorb the ongoing “delay”, this suggests an ongoing “stacking” of activities that generally increases the risk of schedule delay.*
- *Preconstruction engineering and procurement activities are predominant on C6 at this time. These activities are of such long duration and minimal detail that they do not add any value to this report.*

This sampling of schedule activities suggests that schedule performance for the month of December 2012 (reporting period) appears to have been adequate to achieve overall project schedule goals. This sampling is based on a limited number of activities and is one component of the overall review and evaluation of the SAS Phase 1 schedule.

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

- Forecast Revenue Service Date
 - ELPEP Requirement: February 28, 2018
 - Current Forecast: December 30, 2016
- Minimum schedule contingency (measured against February 28, 2018 RSD)
 - ELPEP Requirement: 240 CD
 - Current Forecast: 513 CD
- 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 = 42 WD*
- Minimum Allowable Secondary Float Path
 - ELPEP Requirement: 25 Calendar Days (approximately 18 WD)
 - *Current Forecast: Independent float paths for traction power system procurement and installation (+7 WD), and communication system “design” at 96th Street Station (+17 WD.)*
- Secondary Schedule Mitigation (critical path compression)

- ELPEP Requirement: 125 CD
 - Current Forecast: Schedule mitigation efforts are in progress.

The MTACC has demonstrated that it uses the IPS to actively plan, organize, direct and control individual packages and the overall project, and to provide reliable forecasts of the SAS RSD and other major project milestones.

The PMOC considers the reporting and updating procedures previously discussed to be significant issues that do not support development of the specific deliverables or the intangible goals established by the ELPEP. The PMOC recommends a review and clarification of the procedures involved and a clarification of the manner by which potential schedule impacts and delays will be reported for the remainder of the project.

Schedule Contingency: IPS Update #79 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.

3.0 COST DATA

Based upon financial expenditures reported by the MTACC through February 28, 2013, SAS Phase 1 is approximately 49.3 % complete. The completion status of the active construction contracts through February 28, 2013, also based upon reported expenditures through that date, is as follows:

- C26002 (Tunnel Boring) – 97.0%
- C26005 (96th Street Station) – 90.0%
- C26010 (96th Street Station) – 5.3%
- C26013 (86th Street Station) – 100%
- C26008 (86th Street Station) – 42.8%
- C26006 (63rd Street Station) – 38.8%
- C26007 (72nd Street Station) – 71.2%
- C26009 (Systems) – 5.9%

Aggregate Construction % Completion:

- 91% of all construction work is under contract
- 51.9% of active construction contracts are complete
- 47.3% of all construction is complete

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

- Value of construction in place this period = \$36,008,982/MO
- Estimated value of construction remaining = \$1,428,375,253
- Target construction completion = August 18, 2016

- *Number of months remaining = 41.7*

It is noted that minimal payments were made to C5B through the current reporting period, significantly reducing the estimated progress made to date.

Average rate of construction required to achieve target completion date = \$34,271,987/MO

Soft Cost expenditures (not including real estate, OCIP, etc.) reported this period by MTACC totaled \$1.39M. The PMOC notes that no expenditures were recorded for Construction Management or TA Labor. These categories are typically significant contributors to monthly soft cost expenditures. Based upon the available reporting, soft cost expenditures for February 2013 remained within existing CWB. MTACC has indicated that a reforecast of soft cost required to complete the project will be forthcoming shortly.

The average progress (payments) achieved over the most recent six month period is \$43,717,873. Based on a review of cost data for February 2013, it appears that adequate overall progress was made on the project to achieve the RSD of December 30, 2016.

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 current EAC, which is currently \$4,241,819,557.*

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

Cost Growth: *The value of AWOs reported by MTACC/NYCT in February 2013 is summarized as follows:*

	<u>Executed AWOs</u>	<u>AWO Exposure</u>
<i>February 2013</i>	<i>\$91,499,896</i>	<i>\$128,242,045</i>
<i>January 2013</i>	<i>\$91,475,896</i>	<i>\$124,334,884</i>
<i>Change</i>	<i>\$ 24,000</i>	<i>\$3,907,161</i>
<i>Change</i>	<i>.026%</i>	<i>3.14%</i>

The changes in AWO Exposure are summarized as follows:

Const. Pkg.	AWO Exposure \$			Changes this Period
	Jan-13	Feb-13	Period Δ	
C1	\$53,095,231	\$53,095,231	\$0	No change. Close-out negotiation of outstanding AWOs in progress.
C2A	\$48,280,643	\$48,513,899	\$233,256	Increase based on initial valuation of AWOs # 130, 136, 137 and 141; revised valuation of AWO #134.
C2B	\$973,972	\$1,014,962	\$40,990	Net increase based on initial valuation of AWOs #4, 5, 8 and 14 as well as decreases in estimated valuation of AWOs #1 and 9.
C3	\$5,235,547	\$5,847,505	\$611,958	Increases in the valuation of AWOs # 24, 25, 26, 31 and 34. Initial valuation of AWOs # 35, 36 and 38 as well as a decrease in valuation of AWO # 33.
C4B	\$1,458,508	\$3,209,337	\$1,750,829	Net increase based upon the initial valuation of AWO # 62 and an increase in the estimated credit associated with AWO # 60.
C4C	\$0	\$0	\$0	Coverage initiated. No AWO exposure.
C5A	\$6,717,318	\$6,717,318	\$0	No change. Close-out negotiation of outstanding AWOs in progress.
C5B	\$8,304,305	\$8,633,510	\$329,205	Net increase based upon initial valuation of AWOs # 22, 34, 44 and 53 as well as an increase in valuation of AWO # 35 and a decrease in valuation of AWO # 28.
C5C	\$0	\$0	\$0	No AWO exposure. Bid Phase
C6	\$269,360	\$1,210,283	\$940,923	Increase based on initial valuation of AWOs # 2, 8 and 10.
	\$124,344,884	\$128,242,045	\$3,907,161	

The changes in Executed AWO Value are summarized as follows:

Const. Pkg.	Executed AWO \$			Changes this Period
	Jan-13	Feb-13	Period Δ	
C1	\$45,212,443	\$45,212,443	\$0	No change. Close-out negotiation of outstanding AWOs in progress.
C2A	\$35,137,212	\$35,137,212	\$0	No change this period.
C2B	\$0	\$0	\$0	No change this period.
C3	\$1,128,890	\$912,890	\$(216,000)	Net decrease based on resolution and execution of AWOs #31, 33 and 15 (credit).
C4B	\$3,827,732	\$3,775,732	\$(52,000)	Decrease based on resolution and execution of AWO # 60.
C4C	\$0	\$0	\$0	No AWOs executed to date.
C5A	\$4,285,471	\$4,285,471	\$0	No change. Close-out negotiation of outstanding AWOs in progress.
C5B	\$1,614,788	\$1,906,788	\$292,000	Increase based on resolution and execution of AWOs #16, 17, 19, 25 and 38.
C5C	\$0	\$0	\$0	No AWOs executed to date.

Const. Pkg.	Executed AWO \$			Changes this Period
	Jan-13	Feb-13	Period Δ	
C6	\$269,360	\$269,360	\$0	No change this period.
	\$91,475,896	\$91,499,896	\$24,000	

As of February 28, 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	\$53,095,231	15.75%	\$45,212,443	13.42%
C26005 (2A)	90.00%	\$325,000,000	\$48,513,899	14.93%	\$35,137,212	10.81%
C26010 (2B)	5.30%	\$324,600,000	\$1,014,962	0.31%	\$0	0.00%
C26006 (3)	38.80%	\$176,450,000	\$5,847,505	3.31%	\$912,890	0.52%
C26007 (4B)	71.20%	\$447,180,260	\$3,209,337	0.72%	\$3,775,732	0.84%
C26011 (4C)	0.00%	\$258,353,000	\$0	0.00%	\$0	0.00%
C26013 (5A)	100.00%	\$34,070,039	\$6,717,318	19.72%	\$4,285,471	12.58%
C26008 (5B)	42.76%	\$301,860,000	\$8,633,510	2.86%	\$1,906,788	0.63%
C26009(6)	5.90%	\$261,900,000	\$1,210,283	0.46%	\$269,360	0.10%
TOTAL		\$2,466,438,299	\$128,242,045	5.20%	\$91,499,896	3.71%

To date, approximately \$1,281,979,046 (51.98%) worth of awarded construction work has been completed. As a % of work completed, the AWO exposure for these contracts = 10.00% and the executed AWO % = 7.14%. 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 notes that AWO expenditures for certain construction contract packages are trending above established budget values and industry "standards". 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: Section 5.4 of the Cost Management Plan (CMP) discusses Project-Level EAC Forecasting. It is noted in this section that soft costs are included in this report, which is to be produced on a monthly basis. The SAS Project Team is in the process of preparing Update #10 of the Project Cost Estimate, which will include a complete reforecast of remaining soft cost.

Cost Contingency: During February 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.

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.

	<u>January 2013</u>	<u>February 2013</u>
Required Balance (ELPEP):	\$220,000,000	\$220,000,000
Planned Contingency Balance:	\$287,949,020	\$247,712,260
Actual Contingency Balance (PMOC):	\$408,056,011	\$404,148,150
Actual Contingency Balance (MTACC):	\$401,756,000	TBD

4.0 RISK MANAGEMENT

No Risk Mitigation meetings were held during February 2013. The SAS Risk Register was updated during February. An evaluation of this update will be included in the PMOC's March 2013 Report.

5.0 ELPEP

There were no ELPEP meetings held during February 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 by early 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 September 12, 2012.

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.*

Since the start of construction 5,180,900 hours have been logged with 59 lost time and 145 recordable incidents documented. The total hours and incidents equates to a lost time rate of 2.28 and a recordable rate of 5.60. The US Bureau of Labor Statistics (BLS) national rate (Heavy & Civil construction) for lost time and recordable incidents is 2.0 and 3.5 respectively. The total lost time injuries since the start of construction is 59 and the total recordable injuries is 145.

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

7.0 ISSUES AND RECOMMENDATIONS

Multi-Contract Coordination: The draft results of the C4C Risk Analysis reinforce the opinion that management of the contract interfaces is one of the keys to achieving the project cost and schedule goals. The SAS Project Team has identified contract interfaces and developed tools that should assist in managing these interfaces. However, problems encountered to date at the C1/C2A primary interface involve scope of work and quality of work issues. The PMOC recommends that project procedures involving correction of defective work, punch list development and construction scope control be reviewed and enhanced as required to support this critical element of the project. *In response to the PMOC's recommendations, the SAS Project Team and C1 contractor have addressed all non-conforming and punch list items. The follow-on contract (C2A) is proceeding without impact. Construction milestones which impact follow-on contracts are now being tracked and reported on during the weekly Critical Issue Meeting.*

Safety Certification: The safety certification process has been identified as a risk to project completion (*Reference Risk ID CNS 8 (C6)*). The PMOC has previously expressed concern that consistent progress would not be achieved until adequate, dedicated resources were available to coordinate the efforts.

To mitigate this concern, the following actions have been taken: (1) A plan has been developed to show how safety certification will be organized and implemented. (2) A Safety Certification Manager has been added to the SAS staff. (3) A preliminary training program for respective contract CM's, office engineers, etc. have been developed that will assure that all parties involved in the safety certification process are aware of their responsibilities. (4) A meeting with the CM's and Quality was held in order to develop an EDMS workflow to manage approvals and to store electronic documents. (5) Work is ongoing with A/A JV IT to set up an EDMS file for the safety certification process. (6) The process of obtaining documentation from NY State on the acceptability of the safety certification process has commenced. (7) Safety Certification training for C6 and C2B Contracts have been completed. (8) An internal Safety Certification Meeting to prepare for meeting with NYS representative was held. (9) A Safety Certification Meeting with NYS representative in attendance was held. (10) Update of the IPS to include high level Safety Certification activities is in progress. (11) Process of updating and revising the SAS Project's System Safety Management Plan has commenced to provide more detail and accurately reflect the project's management of the Safety and Security Certification Program during the construction, testing and pre-revenue operation phases. This action also serves to assist with the inclusion of Safety and Security Certification activities into the contract and project schedule.

Schedule Monitoring – Contract C6: *Preconstruction engineering and equipment procurement are the primary activities on this package at this time. IPS activities representing this work are of such long duration and general scope that they are not useful in monitoring*

progress or identifying problem issues. Supplemental reporting has been implemented for the procurement of long lead items by the Contractor and is being reported on at the monthly Progress Meeting. Station contractors will be required to report on long lead items as well. Turnover of specific areas by the other contractors to the C6 contractor is being closely monitored as part of the Milestone tracking process. Forecast dates currently do not exceed contract dates. Substantial completion is scheduled for August 18, 2016.

Schedule Performance: Contract C3: *This issue continues to be a concern as delays continue and the project's ability to achieve its initial milestone turnover of areas to the C6 contractor appears to be in serious jeopardy. Forecast completion of steel erection has now slipped another month, to late March 2013. To date, recovery plans to mitigate the impact of this delay to follow-on work have not been developed. In this instance, the MTACC's "Interface Tracking System" appears to have provided ample warning of this problem; however the project team has not initiated timely or effective mitigation measures.*

Schedule Management and Reporting: *The PMOC is concerned that, in select cases, the IPS is being updated in such a way as to mask and conceal the result of schedule delays encountered on individual packages on the overall project schedule. Refer to the discussion of the +39 CD Secondary Path in Section 2.0 of this report for an example. In this instance, it is likely the MTACC believes it can overcome the impact of these delays and maintain the project schedule however; the method chosen to adjust the schedule, combined with the absence of a narrative explanation of the situation represents a significant flaw in the overall schedule reporting methodology. The PMOC recommends the SAS Schedule Management Plan be updated to better document and describe the manner by which "potential delays" to the IPS will be managed and reported upon in the monthly updates.*

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 #	74	75	76	77	78	79
Data Date	09/01/12	10/01/12	11/1/12	12/1/12	1/1/13	2/1/13
Contingency (CD)						
RSD=12/31/2016	No	90	90	90	90	90
RSD=02/28/2018	Report	513	513	513	513	513

Table 3 – 1st Quarter 2013 Schedule Milestone Comparison

			Milestone Updates				
Pkg.	Act.	Description	Baseline	M-1	Baseline Δ	Monthly Δ	TF
1st Qtr 2012 Tracking Milestones (Carryover)			1-Jan-12	1-Feb-13			
C3	005	Complete Sub/App Struct. Steel Shop Dwgs	20-Jul-12	29-Mar-13	252	30	53
	EN105	Begin Structural Work - Ent #1	22-May-12	21-Aug-13	456	16	42
	010	Begin Elevator Fab	7-Mar-12	15-Feb-13	345	43	150
2nd Qtr 2012 Tracking Milestones (Carryover)			1-Apr-12	1-Feb-13			
C2A	E105	Relocate MEP @ Rainbow Hardware (AWO98)	25-Jun-12	1-Feb-13	221	30	72
C3	MZ5001/010/015	Lead Abatement/Demo - M1->M6	10-Jul-12	5-Feb-13	210	28	98
3rd Qtr 2012 Tracking Milestones (Carryover)			1-Jul-12	1-Feb-13			
C3	UP001	Demo Upper Platform (Complete)	19-Aug-12	10-Feb-13	175	28	92
	MZC15	Structural Work Lower Mezz (Complete)	10-Sep-12	7-Feb-13	150	30	95
	MZ5020	Structural Work @nd Mezz (Complete)	11-Oct-12	7-Feb-13	119	27	101
4th Qtr 2012 Tracking Milestones (Carryover)			1-Oct-12	1-Feb-13			
C2A	6S235	Pour Invert + Embedded MEP 93-95 (MS#2)	28-Dec-12	18-Jan-13 A	21	9	-
	M2-STA	Milestone 2 - 92nd - 95th Complete	28-Dec-12	18-Jan-13 A	21	9	-
	A129	Inst. Tier 2 Bracing & Exc to Tier 3 - St 6A	27-Dec-12	7-Feb-13	42	6	64
C2B	415	Fireproof Steel	21-Feb-13	15-Aug-13	175	106	251
C3	LP010	Conc Stairs & Wall - Lowe Platform Area 6	30-Nov-12	8-Feb-13	70	30	361
	UP045	Reframe Steel/Construct Platform	29-Nov-12	1-Mar-13	92	24	330
	MZB25	Structural Work-East Fan Plant	20-Dec-12	1-Mar-13	71	31	155
C4B	G3S11140	G3/S1 Cavern II Wall F/R/P/S	13-Dec-12	25-Feb-13	74	53	111
	NCC10	North Crossover Wall	30-Nov-12	7-Mar-13	97	36	56

Pkg.	Act.	Description	Milestone Updates					
			Baseline	M-1	Baseline Δ	Monthly Δ	TF	
	70	F/R/P/S						
	G4T102 0	G4 TBM Tunnel Invert F/P/S	4-Dec-12	9-Jan-13 A	36	0	-	
C5B	XP1S11 0	South Cross Passage- Conc Lining	13-Dec-12	8-Mar-13	85	31	198	
C6P	150	Traction Power SS & CBH Design	23-Nov-12	1-Mar-13	98	31	7	
C6T	160	Track & SWP Design	4-Jan-13	25-Apr-13	111	0	31	
1st Qtr 2013 Tracking Milestones			1-Jan-13	1-Feb-13				
C2A	E115	Demolish Rainbow Hardware	28-Feb-13	27-Mar-13	27	27	72	
	6S220	Stage 6 Excavation	13-Mar-13	7-Mar-13	-6	-6	85	
	A250	Mud Mat for Ancil #2	13-Mar-13	19-Apr-13	37	37	119	
C2B	405	Demo/Build New Bench	24-Apr-13	12-Jun-13	49	49	236	
C3	A1010	Demo - Ancillary #1	15-Jan-13	14-Feb-13	30	30	397	
	LP050	Structural; Low Platform Area 2	6-Mar-13	15-Mar-13	9	9	326	
	025	Div 23: HVAC Approvals	24-Apr-13	24-May-13	30	30	209	
C4B	A2C10	Ancil #2 - Excavate Shaft	22-Mar-13	8-Mar-13	-14	-14	99	
	E3C10	Ent #3 - Excavate/Mud Mat	15-Feb-13	5-Mar-13	18	18	180	
	72CN1	F/R/P/S Main Cavern N. Wall	11-Apr-13	7-Mar-13	-35	-35	23	
C4C	PR40C	Award (Contingency)	4-Feb-13	7-Feb-13	3	3	20	
C5B	E130	Ent #1 Rock Exc	22-Feb-13	11-Mar-13	17	17	40	
	E275	Ent #2 North SOE/Decking	8-Mar-13	25-Mar-13	17	17	41	
	S320	Exc - Public Cavern Top Heading	6-Mar-13	18-Jan-13 A	-47	-47	-	
C5C	25a	Advertise	26-Apr-13	26-Apr-13	0	0	19	

Table 4 - Project Budget/Cost 

	FFGA			FFGA Amend	MTA Current Working Budget (CWB)		Expenditures as of February 28, 2013	
	\$ Millions	% of Total	Obligated (\$ Millions)	TBD	\$ Millions	% of Total	\$ Millions	% of Total
Grand Total Cost:	4,866.614	100	4,572.942		5,267.614	100	2,193.647	41.64
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	2,193.647	41.64
Total Federal:	1,350.693	27.75	1,063.942		1,350.693	24.60	672.350	12.76
Total FTA share:	1,300.000	96.25	990.049		1,300.000	23.68	598.457	11.36
5309 New Starts share	1,300.000	100	990.049		1,300.000	23.68	598.457	11.36
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	1,521.297	28.88
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

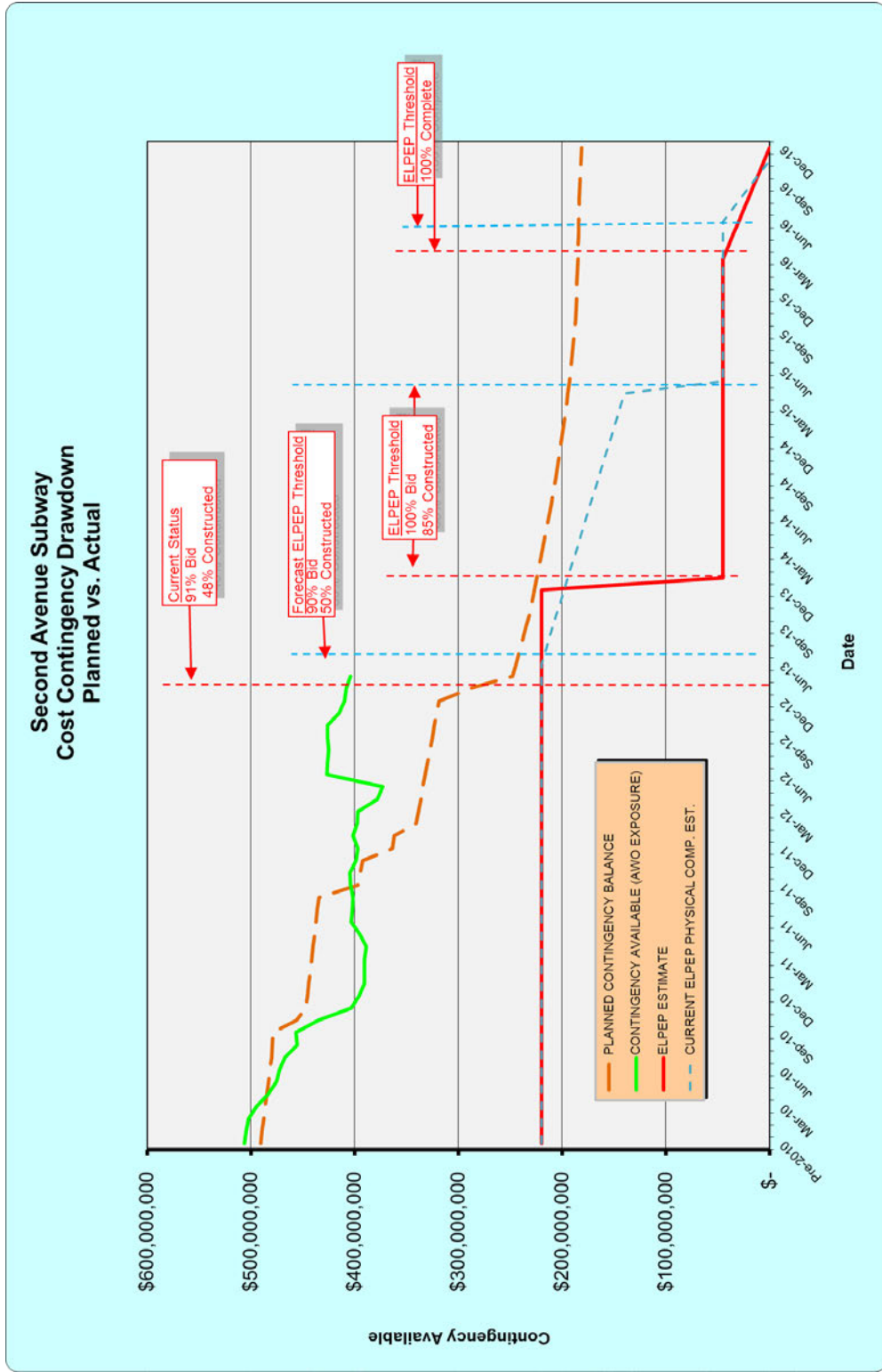


Table 6 - Estimate at Completion

Category	Current Working Budget x	PMOC EAC Forecast
Total Construction	\$2,728,172,492	\$2,987,359,473
Engineering Services Subtotal	\$576,541,264	\$591,500,000
Third Party Expenses	\$534,800,000	\$534,800,000
TA Expenses	\$125,160,085	\$128,160,085
Contingency	\$321,104,648	
Executive Reserve	\$160,000,000	
Subtotal	\$4,451,000,000	\$4,241,819,557

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 -- February 2013

Project Status:		Original at FFGA	Current*	ELPEP**
Cost	Cost Estimate	\$4,050M	\$4,451M	\$4,980M
Contingency	Unallocated Contingency	\$555.554M	\$390M	\$220M
	Total Contingency (Allocated plus Unallocated)	\$555.554M	\$404M <i>(February 2013)</i>	\$220M
Schedule	Revenue Service Date	June 30, 2014	December 30, 2016	February 28, 2018
Total Project Percent Complete	<i>Based on Expenditures</i>	49.3%		
	Based on Earned Value	N/A		
Major Issue	Status	Comments		
Organization and Staffing	Open	Certain relationships on the current Org. Chart do not reflect actual structure and function of project team. Need to fill two open positions ASAP.		
Safety and Security Certification	Closed	<p><i>A Safety and Security Certification Manager was added to the CCM Core Project Staff to manage the SAS certification process.</i></p> <p><i>Process of updating and revising the SAS Project's System Safety Management Plan has commenced to provide more detail and accurately reflect the project's management of the Safety and Security Certification Program during the construction, testing and pre-revenue operation phases. This action also serves to</i></p>		

		<i>assist with the inclusion of Safety and Security Certification activities into the contract and project schedule.</i>
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 #78; Data Date = 1/01/2013

Financial data based upon MTACC reporting through 1/31/2013