

PMOC MONTHLY REPORT

Second Avenue Subway Phase 1 (MTACC-SAS) Project

Metropolitan Transportation Authority

New York, New York

Report Period July 1 to July 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 July 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). The 86th Street Excavation, Utility Relocation and Road Decking contract (C-26013 (C5A)) has been closed and the TBM Tunneling Boring contract (C-26002 (C1)) is scheduled to be closed during the 3rd Quarter 2013. The overall project is approximately 55.6% 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 96.8% complete. Substantial completion of this contract is forecasted for September 23, 2013. Remaining structural work and demolition work at Entrance 1 is driving the completion.
- C-26010 (C2B) "96th Street Station Civil, Architectural, and MEP" Overall contract is approximately 18.2% complete. Efforts are ongoing to complete Milestone 1 work which will allow contractor C6 shared access to the existing tunnels from 99th Street to 105th

Street and the hatch at 102nd Street. Early access to C6 for rail delivery is projected for September 16, 2013.

- C-26006 (C3) “63rd Street Station Rehabilitation” Overall contract is approximately 54.0% complete. Concrete slab placement in Area 5 mezzanines is complete. The focus of the work is on completing the concrete masonry block walls in all mezzanines in Area 5. Work at Entrance #1 and Ancillary #1 is ongoing. Work at the fan rooms and track areas continue. Initial work has begun for Ancillary 2.
- C-26007 (C4B) “72nd Street Station Cavern Mining and Lining” Overall contract is approximately 86.0 % complete. Work is progressing to achieve Substantial Completion by December 27, 2013. Ongoing work includes waterproofing, installation of cast in place (CIP) walls, concrete placement of arches, inverts and benches.
- C-26011 (C4C) “72nd Street Station Architectural and MEP Systems” Mobilization and pre-construction activities are underway. Baseline Schedule with cost resources and detail cost breakdown has been approved.
- C-26008 (C5B) “86th Street Station Cavern Mining and Lining” Overall contract is approximately 57.2 % complete. The majority of blasting is complete with the exception of top-down blasting at Entrance #2. The overall project is changing from a rock excavation project to an installation of permanent work project. Option #1 work in the south tunnels is progressing with waterproofing and invert slab placement.
- C-26009 (C6) “Track, Power, Signals and Communication Systems” Overall contract is approximately 11.4 % complete. Preparation of submittals, clipboard surveys, review of station drawings, and procurement of material is in process. Ongoing work at the 63rd Street Station includes installation of conduits, cable trays, insulation joints, and plinth.

a. Procurement

Procurement of construction contractors for SAS – Phase 1 is complete.

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

- Overall the contract is 96.8% complete.
- Overall mass excavation is 100.0% complete.
- Concrete invert slab placement 94.59% complete (35 of 37 placed)
- Ancillary #1 shotcrete work is remaining. Projected completion is August 12, 2013
- Ancillary #2 ongoing works include the completion of the plenum walls in the placement of two inverts. Projected completion is August 11, 2013.
- Entrance #1 ongoing work in the basement of Rainbow Hardware includes cutting of mini piles and installation of structural steel.
- Entrance #2 work is 100.00% complete.

- Entrance #3 ongoing work
- **Contract C-26010 (C2B) 96th Street Station Civil, Architectural, and MEP**
 - Overall the contract is 18.2 % complete.
 - Existing tunnel (99th Street thru 105th Street) ongoing work includes; repair of steel columns and roof beams (98.0% complete); installation of benches (97.0% complete); installation of FRE pipes in S1/S2 (96.0% complete).
 - Launch Box (92nd Street thru 95th Street) activity includes concrete placement of walls, installation of mezzanine decking (scaffolding) and invert pour of mezzanine (gridline 9.5 to 11.5)
 - Ongoing tracking of long lead items.
 - South Tunnel (92nd Street to 86th Street) concrete invert work 100.0% completed.
- **Contract C-26006 (C3) 63rd Street Station Rehabilitation**
 - Surveying of the Deformation Monitoring Points (DMPs) is ongoing and will continue throughout the project.
 - **Area 5 (Reconstruction consists of 6 mezzanines and the deck plaza roof)**
 - In Area 5, the structural steel is complete; placement of mezzanine floor slabs is complete. The work focus during July 2013 is on completing erection of CMU (concrete masonry unit) walls and setting of all associated door frames and window units.
 - **Entrance #1**
 - At Entrance #1 water meter relocation was completed. Continued building out the gas meter room.
 - At Entrance #1 continuing with final pier excavations.
 - **Ancillary #1**
 - At Ancillary #1 continuing with plenum slab placement. Installing duct risers and electrical room panels. Work is scheduled to be complete in September 2013.
 - The gas tanks (2) and oil/water separator have been removed by the building owner.
 - **Platforms**
 - Continued with Stair S45 installation at the G3 platform. Began installation of Stair S41.
 - Continuing with column cladding clips & ceiling framing on the G4 platform.
 - **Fan Plants**
 - Continued with installation of fans in the East Fan Room.
 - **C6 Coordination**
 - The C6 contractor continues to do trackwork at both the C3 & C4 platforms on the inactive track.
- **Contract C-26007 (C4B) 72nd Street Station Cavern Mining and Lining**
 - Overall contract is 86.0 % complete.

- As of July 29, 2013, Milestone #1 turnover is August 6, 2013 and Substantial Completion is December 27, 2013.
 - Cavern walls-The west/east side is complete except 2 east walls which will remain open for the 69th Street shaft. Current plan is to install the walls in late August 2013.
 - 72nd Street muck house has been removed as well as the concrete mat and 25.0% of the column footings. Shaft covers, fans and collars are expected to be removed by August 2, 2013. Gas and steam work is planned to start August 8, 2013. Backfilling of the shaft is in process.
 - Removal of the 69th Street muck house is scheduled to start mid-October 2013.
 - East/West walls and arches in the main cavern are complete through gridline #17.
 - G4 Turnout and walls are complete. Waterproofing, rebar installation, and forming for concrete placement is in progress.
 - G3 Turnout Cavern II and mid endwall are complete. Rebar installation and forming for concrete placement in Cavern I is also in progress.
 - High and low electrical bench installation in the G4 TBM is in progress. The high bench has been completed and the low bench is progressing.
 - Rebar installation and forming for the electrical bench concrete placement in the 63rd Street Stub Cavern is in progress.
 - Entrance #3 is complete. Contractor is performing final reviews to ensure compliance to specification as well as demo of the decking and clean-up.
- **Contract C-26011 (C4C) 72nd Street Station – Station Finishes, MEP, Ancillary Buildings & Entrances**
- Job Progress Meeting: The third Job Progress Meeting was held, on site construction has not begun. The contractor reported that most sub-contractors have been selected and approved and shop drawings are being developed and submitted.
 - Quality Kick Off: The contractor's Quality Manager presented 29 slides of how they plan to implement their Quality System. The presentation consisted of the benefits of the Contractor's Quality Program and the specifics of the 19 elements of the plan and questions & answers throughout the presentation. Later in the month, the Quality Manager resigned for personal reasons and was replaced temporarily by the contractor's Director of Quality.
- **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**
 - In the South Cavern, the 1st and 2nd sections of invert slab were placed.
 - Miscellaneous blasting continues at the north end of the cavern. All muck removal now being done at the north shaft.
 - The south muck station is being dismantled and decommissioned. Only the gantry hoist will remain to support the project.

- **Schedule**
 - The MTACC scheduler advised the PMOC that no more significant delays are anticipated at Entrance #2.
- **Main Cavern (North and South)**
 - As the invert slab placement and waterproofing proceeds, erection of formwork for the cavern walls will begin.
- **Ancillary #1/Ancillary #2**
 - The current bench levels at Ancillary #1 & Ancillary #2 is being used for storage and general project support.
- **Entrance #1**
 - Completing encasement of existing concrete columns. Completed placement of concrete base slab for the escalator and stair.
 - Waterproofing is ongoing.
- **Entrance #2**
 - Began the top-down blasting.
- **Option #1 (Lining the south, east tunnel and mining the Cross Passageways)**
 - In the east tunnel invert waterproofing is underway. The placement of invert slab will continue from south to north.
- **Rock Excavation Summary (as of the week ending July 31, 2013)**
 - Rock excavation is complete with the exception of the rock blasting at Entrance #2, which is approximately 2,373 BCY of the total estimated amount of 154,623 BCY of rock to be excavated.
- **Contract C-26012 (C5C) 86th Street Station Finishes, MEP Systems, Ancillary Buildings & Entrances**
 - The Project Kickoff Meeting was held on July 18, 2013.
 - Immediate Key dates for this contract are:
 - Notice to Proceed – June 12, 2013
 - Project Duration – 35 ½ Months
 - Limited Access to the site – April 2014
 - Full Access to the site (except Entrance #2) – October 27, 2014
- **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. Testing is pending.
 - **Track Work**
 - All major procurements except the U69 Guard Rail have been procured.

- Insulated joint work is currently in progress at the 63rd Street Station. The work is reported 18 months ahead of schedule.
- Delivery of LVT blocks is in progress (4,032 delivered to date).
- **Track Power**
 - Transdyne SCADA Equipment is progressing and is expected by the end of 2013.
 - Power cables (2000MCM and 500MCM) have been delivered.
- **Submittal Progress**
 - Total projected submittals 4,235
 - Total submitted to date 2,266
 - Total projected to complete 1,976
 - Percent complete 53.0%
 - Pending MTACC response 445

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 July 2013 were continued delinquent submittals of Inspection Daily Reports on the C2A and C2B contracts, out of specification conditions for concrete on all contracts, and the excessive number of nonconformance reports that are still open on the C4B contract. Inspection Daily Reports on C2A and C2B were being submitted in a timely manner but lapsed again. The new C2A/C2B Contractor's Manager stated he would provide additional support so that this condition is rectified and that the backlog would not exceed one week. At the end of July, the backlog was between two and three weeks on both contracts. 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, all have now been closed. The last two NCRs were closed in July.</p>

Concerns and Recommendations:	The PMOC has no concerns. This is the last month that Contract C1 will be reported in this section of the PMOC's monthly report.
Contract Packages C2A and C2B	
Status:	<p>On C2A, through July 31, 2013, a total of 27 NCRs have been issued. 13 have been closed and 14 are still open. One new NCR was written in July on concrete placement.</p> <p>On C2B, through July 31, 2013, a total of 12 NCRs have been issued. Five have been closed and seven are still open. One NCR was written in July on concrete placement.</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 stated that he would provide additional resources to both contracts and Inspection Daily Reports will be submitted within one week; however, at the end of July, both contracts were two to three weeks behind in submitting their Daily Inspection Reports.</p>
Observation:	The contractor has accumulated a two to three week backlog of Inspection Daily Reports on each contract.
Concerns and Recommendations:	The PMOC is concerned that the Inspection Daily Report backlog continues to recur and recommends that the promise of additional help become permanent and not a one-time occurrence.
Contract Package C3	
Status:	On the C3 contract, through July 31, 2013, a total of 51 NCRs have been issued. 36 have been closed and 15 are still open. Six new NCRs were written in July, five of which were for concrete placement. One NCR was closed in July.
Observation:	The five open concrete NCRs that were out of specification included one involving entrained air entrainment, one pertaining to slump, one exceeding the weight requirement, and two exceeding the two-hour requirement for placing the concrete.
Concerns and Recommendations:	The C3 Contractor's Quality Manager has taken the proper action and the PMOC has no concerns at this time.
Contract Package C4B	
Status:	On the C4B contract, through July 31, 2013, a total of 84 NCRs have been issued. 35 have been closed and 49 are still open. Seven new NCRs were written in July, five of which were for concrete placement. Eight

	NCRs were closed in July.
Observation:	<p>The five open concrete NCRs that were out of specification included one involving entrained air entrainment and four exceeding the two-hour requirement for placing the concrete.</p> <p>The C4B contractor had submitted a waiver to the specification requesting a maximum pour time of 180 minutes. In July, they announced that they will retract that waiver and submit one requesting a maximum pour time of 150 minutes.</p>
Concerns and Recommendations:	<p>The PMOC is concerned that the new 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.</p> <p>The PMOC is also concerned that there are still 49 open NCRs on this Contract.</p>
Contract Package C5B	
Status:	On the C5B contract, through July 31, 2013, a total of 29 NCRs have been issued. 14 have been closed and 15 are still open. Four new NCRs were written in July, all of which were for concrete placement. No NCRs were closed in July.
Observation:	The four open concrete NCRs that were out of specification included one involving entrained air entrainment, two pertaining to slump, and one exceeding the weight requirement.
Concerns and Recommendations:	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. The PMOC has no concerns 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 will be sent to the PMOC for review in August 2013.

2.0 SCHEDULE DATA

Integrated Project Schedule (IPS) Update #84 was received on August 1, 2013 and is based on a data date of July 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 forecasts the completion of all construction and NYCT Pre-Revenue Training & Testing activities by September 20, 2016, with approximately 101 calendar days (CD) or 72 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 July 2013 include the following:

- At the 63rd Street Station, the Communications Rooms were turned over to the C6 contractor (Milestone #3) on July 22, 2013. The C3 contractor continues to work on punch list items. The C3 Contractor's forecast date for substantial completion of Entrance #1 is June 2015. MTACC does not agree with this date. Entrance #1 is the area that is driving the Substantial Completion date for work at 63rd Street.
- MTACC reports that the baseline schedule for C4C, 72nd St Station MEP & Finishes was fully approved on July 25, 2013. No forecast of when this schedule will be fully incorporated in the IPS was provided.
- In response to PMOC observations regarding IPS Update #83 (DD=June 1, 2013), MTACC notes that

“During this update period, the contractor for C6 Systems Contract revised portions of the shop drawing and procurement logic for the signal, traction power, and communication scope which reflects the current plan for submittals and procurement. This is an ongoing process and will continue to be refined in the coming months.”

The PMOC's review of Update #84 indicates that some improvement to C6 schedule has been made, however there are still far too many obvious discrepancies and inconsistencies for this work product to be considered “acceptable”.
- Full incorporation of the C2B, 96th St. Station MEP / Finishes; Final Utilities & Site Restoration into the IPS has yet to occur.
- MTACC's commitment to an enhanced level of schedule detail for communications system procurement and installation has yet to be realized.
- MTACC continues to evaluate a separate schedule initiative involving the accelerated completion of Signals Testing at the 72nd Street Station from July 2016 to May 2016. Both schedule acceleration initiatives will be evaluated over the next several reporting periods.

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

1. This path starts with the C5B “86th Station Mining & Lining,” construction package commencing with C5B N240 North Cavern Excavation – Public Cavern Bottom Bench with 24 WD of float. This path continues through concrete invert, wall and arch construction in the North Cavern leading to C5B Substantial Completion and handoff to C5C, which is currently forecast for October 9, 2014.
2. The “most critical” then path shifts to start and completion of Contract C5C concrete work in the northern half of the station, including the start of critical “below ground work” at the Traction Power Rooms in Ancillary No. 2. The schedule float is reduced to +14 WD as a result of a schedule buffer between C5B Substantial Completion and the actual handoff to C5C. The IPS currently forecasts the handoff to C5C on October 23, 2014. C5C will then construct and handoff the Traction Power Rooms (MS Nos. 9 and 10) to the C6 Systems Contractor.
3. The critical path then shifts to C6 Systems installation work in the 86th Street Station Traction Power Substation Room. This is where the 0 WD float path begins, again as the

result of a schedule buffer between C5C MS #9 and #10 on February 26, 2015 and the actual handoff to C6, forecast for March 18, 2015. Work within the TPSS continues through January 21, 2016 where once completed is followed by Local Testing of the Traction Power System at 86th Street Station. From that time, Traction Power Integrated Testing is estimated to require approximately six months through July 28, 2016, at which point the critical activities become the “Dispatch Tower Tests at 96th Street Station,” “Traction Power Operational Test” and “Route Familiarization and Equipment Training,” resulting in a forecast Revenue Service Date (RSD) of September 20th, 2016.

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

- +14 WD:** NYCT Pre-Revenue Operation Activities scheduled to start on August 18, 2014 is unchanged this period. Float on this path has been reduced from +23 WD to +14 WD as a consequence of the 9 WD reduction in the critical path previously reported in the PMOC June Monthly Report and IPS Update #83.
- +22 WD:** This path involves the shop drawing development, manufacture, and installation and testing of signal equipment at the 96th Street Station. This work (Act # C6S 96 40, Circuit Design – 96th St. RR) was originally scheduled to start on April 1, 2013 (IPS Update #81). The current IPS update has revised the start date to July 8, 2013. Based upon the shortening of the “critical path” discussed as part of IPS Update #83 and the apparent lack of any progress on the activities within this path, this path should have become the critical path for this update (#84). Once again, downstream activities, specifically the relationships between equipment fabrication/delivery and the start of field installation activities have been “adjusted” to prevent this path from becoming critical.
- +24 WD:** This path represents excavation and structural concrete installation at the north caverns of the 86th Street Station (C5B). Excavation of the public cavern is currently underway and will be followed by invert drainage, waterproofing and invert, wall and arch concrete installation. Completion of the north cavern is forecast for October 9, 2014 (Contract Substantial Completion). This work was previously discussed as a “most critical” path preceding the zero-float critical path.
- +24 WD:** There are two independent schedule paths both of which have +24 WD of schedule float. The second of these paths is initiated by Act # C6S 72 45, Circuit Check – 72nd Street RR, which has a constrained start date of July 11, 2013. Progress on this path was reported this period with predecessor Act # C6S 72 15, Circuit Design – 72nd St. RR being reported as 100% complete. The PMOC expressed concern in its June Monthly Report about the apparent lack of progress on this path and its “near-critical” status within the IPS. MTACC reported this was the result of a data reporting discrepancy with the C6 Contractor. The PMOC will monitor this path over the next several updates to verify correction of this “reporting discrepancy”.
- +30/33 WD:** This path involves the construction of Entrance #1 by the C3 Contractor and subsequent installation of the signal system in and adjacent to the 63rd Street Station. Construction of Entrance #1 currently controls the Substantial Completion of the C3 construction contract, which is currently forecast for January 15, 2015.

The C3 Contractor has exclusive access to its work area excepts for specified joint occupancies and without some modification, the C6 Contractor is constrained from starting signal system installation at 63rd Street until C3 is substantially complete.

MTACC continues to use a negative schedule lag of approximately 155 WD duration to allow the start of signal system installation work to supersede the schedule logic and start before the Substantial Completion of the C3 contract. 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.

+33 WD: There are two independent schedule paths both of which have +33 WD of schedule float. The second of these paths is initiated by Act #C2B S170, Build Mezzanine 95th to 92nd Streets. This path follows construction of the 96th Street Station structure between 95th and 92nd Streets through April 22, 2014, at which time MEP system installation is forecast to commence. Architectural and MEP construction in this portion of the station is forecast to complete on January 15, 2015, at which time Ancillary #1 is made available to the C6 Contractor for signal system installation.

+38 WD: This path represents excavation and structural concrete installation at the south cavern of the 86th Street Station (C5B). The path follows the 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 20, 2014, (Milestone #1). Handoff of the area to C5C is forecast for April 21, 2014.

+44 WD: This path is initiated by the “design” of the communications system at the 96th Street Station (Act #C6C 150, Communications Design – 96th Street) , 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 previously 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 November 16, 2015 and is forecast to complete in approximately 18 months, completing on May 27, 2016, followed by integrated system and proof of operation testing.

The work represented by this schedule path gained 35 WD of schedule float during this reporting period. Identification of the specific cause of this change is not possible when the schedule activity scope is indeterminate and its duration excessive. This lack of definition is common throughout the systems portion of the IPS.

+46 WD: This path is initiated by equipment submittal and approval, manufacture and delivery of traction power equipment at the 86th Street Station. This path is initiated by two activities, C6 TP86-165 Submit DC Breaker Wirings-86th St. and C6 TP86-170 Submit HT SWGR Wirings-86th St. No progress was reported on these activities during this update period. Last period, this path had approximately +53 WD of schedule float. With no progress reported this path lost 7 WD of float

in a 20 WD update period. Activity durations were unchanged. The manipulation of downstream schedule relationships and lags appears to account for the inconsistent float change in this path.

+47 WD This path is initiated by signal circuit design and equipment manufacture for installation throughout the 63rd Street area (Act # C6S 63 35, Circuit Check – 147 CIR). Delivery of equipment is forecast for January 23, 2015. Field installation is forecast to start in mid-August 2014 and is contained within the +30 WD float path.

Over the last three reporting periods, progress reported for the first activity in this path (Act # C6S 63 35 Circuit Check – 147 CIR) is as follows:

Update #	Progress	Sch. Float
82	0 WD	+44 WD
83	0 WD	+7 WD
84	0 WD	+47 WD

The consistent lack of progress combined with the inconsistent float variance suggests either manipulation of the schedule data to conceal the lack of progress or a general inability to manage the schedule update process.

+50 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 December 26, 2013. This is the most critical active path at the 72nd Street Station. Three (3) CD were recovered this period against the current adjusted Substantial Completion date of December 3, 2013.

+63 WD: This path involves the shop drawing development, manufacture, and installation and testing of signal equipment at the 86th Street Station. This work (ACT # C6S 86 50, Circuit Design – 1200 CIR) was scheduled to start on April 1, 2013 (IPS Update #81). Current IPS Update # 84 has revised the start date to July 9, 2013. Once again, over the past 4 updates, float values for the path have varied significantly, ranging from +16 to +63, although no progress was reported and no revisions were noted in the Revision History section of the narrative report accompanying the update.

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. #84	Upd. #83	
+34	+90	Rainbow Hardware, Excavation Stage 7A, MS#2 handoffs to C2B
+124	+82	Deliver Concrete Ties (including LVT) and Track
+64	+74	Handoff C5B→C5C @ Entrance #2
+186	+186	C4C – Entrance #1 Design & Construction
+194	+243	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:

- The adjusted Substantial Completion date for C2A is July 15, 2013. Substantial Completion (and achievement of Milestone #2) did not occur during July 2013 and is currently forecast for mid-September 2013. The Contractor may be entitled to some relief due to delays involving underpinning and protection of Rainbow Hardware. Based on the IPS, Milestone #2 currently has approximately 34 WD of schedule float. Current forecast dates for turnover of work areas represented by this milestone (Entrance #1, Ancillary #1) must be maintained to avoid potential delay to the RSD.
- MTACC continues to report contractual dates for all C2B milestones due to its disagreement with the Contractor's reported dates for these milestones. Reportedly, execution of an MOU between the C2B and C6 contractors will resolve the issues that result in these schedule variances.
- 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. Handoff of the Entrance #2 work area to the C5C Contractor currently has 64 WD of schedule float.
- Regarding the heavy civil excavation and structural concrete installation in the caverns of the 86th Street Station (Contract C5B), Milestone #1 and Substantial Completion each lost approximately 14 CD of schedule float during this update period. At 24/25 WD of schedule float, these Milestones should now be considered "near-critical".
- Contract C4B, recovered 3 CD against Milestone #1 and 18 CD against Milestone #2 this period. The current variance between forecast completion and contractual dates is approximately two months Milestone #1 and one month for Substantial Completion.
- At the 63rd Street Station, the IPS does not reflect the Contractor's Substantial Completion forecast date as of 01-July-13. MTACC is not in agreement with the Substantial Completion date as reflected in the C3 Contractor's monthly update. MTACC and the Contractor have started a joint review of delays and potential time entitlements which may affect this date.
- All C3 schedule milestones experienced between 21 and 43 CD loss in schedule float. According to the IPS, adequate float remains and these losses do not represent an immediate threat to the scheduled RSD.
- Milestones #4 (A & B) and #5 (A, B & C) for Contract C6 lost 29 and 21 CD of schedule float respectively during this update period. These float losses are similar to the losses incurred by the C3 contract and appear to be a consequence of those schedule delays. According to the IPS, 61 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: 526 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:
 - 72nd Street Station – Entrance #1; TF = +186 WD.
4. Minimum Allowable Secondary Float Path
 - ELPEP Requirement: 25 Calendar Days (approximately 18 WD).
 - Current Forecast: There are no independent float paths with float less than 25 CD in this update.
5. Secondary Schedule Mitigation (critical path compression)
 - ELPEP Requirement: 125 CD
 - Current Forecast: Schedule mitigation efforts are under review.

Schedule Contingency: IPS Update #84 forecasts all Phase 1 construction and pre-revenue testing to be complete on September 20, 2016. This results in 102 CD (73 WD) contingency when measured against the MTACC’s target RSD of December 30, 2016 and a 526 CD contingency when measured against the FTA Risk-Informed RSD of February 28, 2018.

Schedule Comments: In its review of IPS Update #83, the PMOC expressed concern over the apparent lack of progress and consequential loss of schedule float for numerous rail system preconstruction and engineering submittal activities. MTACC acknowledged these concerns and ultimately attributed them to errors in schedule updating by the C6 Contractor. It was further reported by MTACC that significant progress had been made in resolving these matters in IPS Update #84 and that further improvement would be demonstrated in subsequent updates.

The PMOC notes some resolution of issues previously identified in IPS Update #84. However, in some cases the “solution” appears to involve schedule manipulation rather than positive action directed toward the root cause of the issue.

Integration of the Systems Package work into the IPS and accurate updating of its status is a key element in controlling the project going forward. As such, the PMOC notes the following:

1. The PMOC questions the technical capacity of the project team (C6 Contractor and MTACC CM) to effectively manage the construction schedule. The PMOC recommends every effort be made, including executive intervention at the highest levels, to identify and rectify these deficiencies.

2. As a result of deficiencies in schedule data for the Systems Package, the PMOC is concerned that the overall integrity and reliability of the IPS is compromised. Consequently, the MTACC cannot be “in compliance” with its Schedule Management Plan.
3. Based on these concerns, the PMOC questions the merit of any further consideration or review of schedule acceleration of work within the Systems Package.

3.0 COST DATA

Based upon financial expenditures reported by the MTACC through July 31, 2013, SAS Phase 1 is approximately 55.6 % complete. The completion status of the individual construction contracts through May 31, 2013, also based upon reported expenditures through that date, is as follows:

- C26002 (Tunnel Boring) – 100.0%
- C26005 (96th Street Station) – 96.8%
- C26010 (96th Street Station) – 18.2%
- C26013 (86th Street Station) – 100%
- C26008 (86th Street Station) – 57.2%
- C26006 (63rd Street Station) – 54.0%
- C26007 (72nd Street Station) – 86.0%
- C26009 (Systems) – 11.4%

Aggregate Construction % Completion:

- 100% of all construction has been bid.
- 100% of all construction is under contract
- 54.9% of all construction is complete

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

- Value of construction in place this period = \$50,937,615
- Estimated value of construction remaining = \$1,150,101,901
- Target construction completion = September 20, 2016
- Number of months remaining = 39.7

The estimated average rate of construction required to achieve target completion date = \$28,942,962/MO. The average progress (payments) achieved over the most recent six month period is \$46,457,056/MO. Based on a review of cost data for July 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 \$7.73M. 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 39.7 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 \$4,223,556,486. 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 July 2013 is summarized as follows:

	<u>Executed AWOs</u>	<u>AWO Exposure</u>
July 2013	\$105,776,829	\$132,373,637
June 2013	<u>\$108,704,729</u>	<u>\$134,795,447</u>
Change	\$(2,927,900)	\$(2,421,810)
Change	(2.69)%	(1.80)%

The changes in AWO Exposure are summarized as follows:

Const. Pkg.	AWO Exposure \$			Changes this Period
	July-13	June-13	Period Δ	
C1	\$41,184,443	\$41,184,443	\$0	Final value as reported by MTACC. Contract closeout in progress.
C2A	\$50,722,786	\$50,813,752	\$(90,966)	Net reduction based on revised exposure estimates for AWO #145, 147 and 149 as well as initial exposure estimates for AWO # 156, 157 and 158. Two new AWOs were added this period, one of which includes an exposure cost estimate.
C2B	\$11,337,396	\$11,206,128	\$131,268	Increase based upon initial exposure estimates for AWO # 31, 34 and 39. Eight AWOs were added this period, two of which include an exposure estimate.
C3	\$9,765,271	\$8,909,077	\$856,194	Net increase based on revised exposure estimates for AWO # 30, 42, 44, 47, 50, 55, 58 through 60 and 63 through 82 as well as initial exposure estimates for AWO # 75 through 82. Nine AWOs were added this period, all of which include an exposure estimate.
C4B	\$2,353,783	\$6,033,920	\$(3,680,137)	Net decrease based on initial exposure estimates for AWO # 67, 77 and 78.

Const. Pkg.	AWO Exposure \$			Changes this Period
	July-13	June-13	Period Δ	
C4C	\$48,564	\$10,788	\$37,759	Net increase based on initial exposure values for AWO # 3, 4, 5 and 7.
C5A	\$6,525,471	\$6,525,471	\$0	Final. Contract has been closed out.
C5B	\$8,013,139	\$7,911,712	\$101,427	Net increase based upon initial exposure estimates for AWO # 30, 54 and 60. Six AWOs were added this period, none of which include an exposure estimate.
C5C	\$0	\$0	\$0	No AWO exposure to date.
C6	\$2,422,802	\$2,200,156	\$222,646	Increase based on a revised exposure estimate for AWO #18 and the initial exposure estimate for AWO # 19.
	\$132,373,637	\$134,795,447	\$(2,421,810)	

The changes in Executed AWO Value are summarized as follows:

Const. Pkg.	Executed AWO \$			Changes this Period
	July-13	June-13	Period Δ	
C1	\$41,184,443	\$45,212,443	\$(4,028,000)	Final value as reported by MTACC. Contract closeout in progress.
C2A	\$36,978,189	\$36,590,189	\$388,000	Increase based on execution of AWO # 48 and 148.
C2B	\$1,1412,543	\$1,129,543	\$283,000	Increase based on execution of AWO # 17 and 23.
C3	\$3,840,512	\$3,555,912	\$284,600	Increase based on execution of AWO # 38, 43, 45 and 53.
C4B	\$7,760,628	\$7,694,128	\$66,500	Increase based on execution of AWO # 76.
C4C	\$10,788	\$10,788	\$0	No change this period.
C5A	\$6,525,471	\$6,525,471	\$0	Final. Contract has been closed out.
C5B	\$7,505,688	\$7,427,688	\$78,000	Increase based on execution of AWO # 44.
C5C	\$0	\$0	\$0	No AWOs executed to date.
C6	\$558,567	\$558,567	\$0	No change this period.
	\$105,776,829	\$108,704,729	\$(2,927,900)	

As of July 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)	100.00%	\$337,025,000	\$41,184,443	12.22%	\$41,184,443	12.22%
C26005 (2A)	96.80%	\$325,000,000	\$50,722,786	15.61%	\$36,978,189	11.38%
C26010 (2B)	18.20%	\$324,600,000	\$11,337,396	3.49%	\$1,412,543	0.44%
C26006 (3)	54.00%	\$176,450,000	\$9,765,271	5.53%	\$3,840,512	2.18%
C26007 (4B)	86.00%	\$447,180,260	\$2,353,783	0.53%	\$7,760,628	1.74%

C26011 (4C)	1.40%	\$258,353,000	\$48,546	0.02%	\$10,788	0.00%
C26013 (5A)	100.00%	\$34,070,039	\$6,525,471	19.15%	\$6,525,471	19.15%
C26008 (5B)	57.18%	\$301,860,000	\$8,013,139	2.65%	\$7,505,688	2.49%
C26012 (5C)	0.00%	\$208,376,000	\$0	0.00%	\$0	0.00%
C26009(6)	11.36%	\$261,900,000	\$2,422,802	0.93%	\$558,567	0.21%
TOTAL		\$2,674,814,299	\$132,373,637	4.95%	\$105,776,829	3.95%

To date, approximately \$1,524,712,398 (54.9%) worth of all construction work has been completed. As a % of work completed, the AWO exposure for these contracts = 8.68% and the executed AWO % = 6.94%. Based on performance to date, a forecast of total AWO expenditure of approximately \$190M 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 have significantly reduced previous forecasts. 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 July 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>June 2013</u>	<u>July 2013</u>
Required Balance (ELPEP):	\$191,000,000	\$181,000,000
Planned Contingency Balance:	\$244,507,425	\$241,302,590

	<u>June 2013</u>	<u>July 2013</u>
Actual Contingency Balance (PMOC):	\$346,571,000	\$361,500,000
Actual Contingency Balance (MTACC):	\$359,046,000	TBD

4.0 RISK MANAGEMENT

The Monthly Risk Report for June 2013 was received on July 26, 2013. Recent risk management activities included:

- 1) Conducted Risk Mitigation Meeting No. 26 on July 29, 2013.
- 2) Produced and published SAS Monthly Risk Report No. 16 (June 2013) on July 24, 2013.

Significant risks reviewed and updated during this period include:

<u>Risk</u>	<u>Discussion Summary</u>
<p>Risk CNS 4 (C6) Problems related to managing the contractual interfaces during construction may result in delays and related claims.</p>	<p>An enhanced interface management plan has been issued and is in the process of being implemented. Supplemental staff dedicated to this effort has been added to the project team.</p>
<p>Risk COM 2 (C6) Continuous and potentially late changes to the communications systems could delay C6 and the RSD.</p>	<p>It is reported that all design changes requested by user departments during the final design reviews have been agreed upon and will be implemented. Future design changes that impact project cost or schedule must be justified by the User Department making the request.</p> <p>The Shop Drawing review process for systems work is being evaluated to ensure that design changes are not being incorporated into review comments.</p> <p>These mitigation strategies are being monitored continuously as an aid to effective implementation.</p>
<p>Risk C5B, C2B, C4C, C5C and C6 Schedules There is the risk that the Project schedule will be delayed beyond the present revenue service date.</p>	<p>The SAS project team is continuing to evaluate the C6 Contractor's proposal for schedule acceleration. Partial or staggered implementation may be an option, and dependent on the progress of predecessor work activities.</p> <p>It is understood that any acceleration agreement must involve an equitable distribution of risk between contractor and MTACC.</p> <p>The ability to achieve the handoff milestones between finish contractor and the systems contractor are the key element in this effort.</p>
<p>Risk CNS 8 (C6) Delayed Safety Certification</p>	<p>Progress on technical activities supporting this effort has been reported to be satisfactory. An updated SSMP is under review and will be distributed.</p>

<u>Risk</u>	<u>Discussion Summary</u>
delays RSD	Concern remains over the alignment of the SSMP with applicable NYSDOT Oversight Standards. MTA and FTA are working in parallel to better define and coordinate the roles of the various oversight organizations.
Availability of Permanent Power	Potential cost and schedule risk. A breakout schedule for this work will be developed as a supplement to the IPS.

5.0 ELPEP

There were no ELPEP meetings held during July 2013. With respect to SAS, the current status of each of the main ELPEP components is summarized as follows:

- **Technical Capacity and Capability (TCC):** The TCC Plan update has been completed. FTA/PMOC review is in progress. SAS PMP Rev. 9 was received on July 16, 2013. The PMOC's review of this document is in progress.
- **Schedule Management Plan (SMP):** The SMP will require changes in response to results of the MTACC's internal ELPEP audit of project procedures. Draft revisions to this plan have yet to be received.

The PMOC continues to monitor and verify SAS substantial compliance with the SMP.

- **Cost Management Plan (CMP):** The CMP will require changes in response to results of the MTACC's internal ELPEP audit of project procedures. New proposed cost curves have been completed and were presented to the FTA/PMOC at the June 2013 Monthly Budget and Schedule Meeting. Formal submission will be part of the PMP update process. The PMOC continues to monitor and verify SAS substantial compliance with the CMP.
- **Risk Mitigation Capacity Plan (RMCP) and Risk Management Plan (RMP):** Monthly Risk Review Meetings continue. At the present time, the Project Budget is \$4.451 billion and the Revenue Service Date is December 31, 2016. The risk analysis output based on the data gathered shows a very high level of confidence in completing SAS Phase 1 within the budget. However, the output for the unmitigated schedule contingency drawdown shows that for an 80% confidence level, the Revenue Service Date would move from December 31, 2016 to June 10, 2017. This is more than six months beyond the present plan, but the present plan is also within the range of forecast. Therefore, active mitigation of the most significant risks affecting schedule will benefit the project to ensure that the project finishes as planned.

The SAS Project Team has implemented the principles and requirements embodied in the ELPEP. The procedural changes instigated by the ELPEP have become an integral part of the management of the project and gives the FTA/PMOC greater insight into the risk, cost and schedule elements of the project.

6.0 SAFETY AND SECURITY

Implementation of the Safety Requirements as specified in Section 01 11 50 of the General Requirements for each construction contract is ongoing. The contractors' safety management held tool box meetings, trained new employees, monitored the work areas individually and with the CCM Safety and OCIP representatives, and promptly investigated safety incidents. Safety Oversight by the CCM continued with Quarterly Assessments of selected contractors and sharing of Lessons Learned during the project wide monthly Safety Meeting. Site visits by MTA's office of Risk Management is ongoing.

As of June 31, 2013, a total of 6,275,867 construction hours have been logged with 62 lost time and 173 recordable incidents documented. The total hours and incidents equates to a lost time rate of 1.08 and a recordable rate of 5.51. Both rates decreased slightly from the previous month. The US Bureau of Labor Statistics (BLS) national rate (Heavy & Civil construction) for lost time and recordable incidents are 2.0 and 3.5 respectively.

7.0 ISSUES AND RECOMMENDATIONS

Organization

The PMOC is concerned that organization changes within the SAS Project Management Team are not addressing the root cause of management problems and may actually be causing some confusion within the team regarding roles and responsibilities. Specifically:

1. At 96th Street Station, an MTACC Program Manager has been inserted into the organization with responsibility for the C2A and C2B construction packages. These packages are no longer overseen by the Construction Program Director. It is the observation of the PMOC that this organizational change has not had a positive effect and actually appears to have created some confusion as to roles and responsibilities among the CM and PM positions.
2. A new "interface coordinator" position has been created. This is actually the second interface coordination position created. The original "Contracts Interface Manager" with a poorly defined role and responsibility remains on the project staff. It is the PMOC's experience and opinion that this contract interface function could be more effectively dealt by existing CM staff, assuming they receive adequate staff support and instruction in MTACC procedures.

Schedule Reliability

In the opinion of the PMOC and as discussed in Section 2.0 of this report, significant flaws in the management and updating of the Systems (C6) Package schedule pose a significant risk to the reliability and overall usefulness of the IPS. The IPS has been a useful tool in management of the project to date. The PMOC recommends the schedule management function for the Systems Package be thoroughly evaluated and modified as necessary so it can support the overall needs of the SAS Project.

APPENDIX A - ACRONYMS

A/A	AECOM/Arup
AFI	Allowance for Indeterminates
ARRA	American Recovery and Reinvestment Act
AWO	Additional Work Orders
BA	Budget Adjustment
CCM	Consultant Construction Manager
CD	Calendar Days
CMP	Cost Management Plan
CSSR	Contact Status Summary Report
CIL	Central Instrument Location
CPRB	Capital Program Review Board
CPP	Contract Packaging Plan
CWB	Current Working Budget
CY	Cubic Yards
DCB	Detailed Cost Breakdown
DMP	Deformation Monitoring Points
EAC	Estimate at Completion
ELPEP	Enterprise Level Project Execution Plan
EPC	Engineering-Procurement-Construction
FFGA	Full Funding Grant Agreement
FTA	Federal Transit Administration
GO	General Outage
IPS	Integrated Project Schedule
MO	Month
MPT	Maintenance Protection of Traffic
MTA	Metropolitan Transportation Authority
MTACC	Metropolitan Transportation Authority – Capital Construction
N/A	Not Applicable
NOA	Notice of Award
NTP	Notice to Proceed
NYCT	New York City Transit

NYSPTSB	New York State Public Transportation Safety Board
OSS	NYCT Office of System Safety
PE	Preliminary Engineering
PEP	Project Execution Plan
PMOC	Project Management Oversight Contractor (Urban Engineers)
PMP	Project Management Plan
PQM	Project Quality Manual
QA	Quality Assurance
RAMP	Real Estate Acquisition Management Plan
RMCP	Risk Mitigation Capacity Plan
RMP	Risk Management Plan
ROD	Revenue Operations Date
ROW	Right of Way
RSD	Revenue Service Date
SAS	Second Avenue Subway
SCC	Standard Cost Category
SMP	Schedule Management Plan
SOE	Support of Excavation
SSCC	Safety and Security Certification Committee
SSOA	State Safety Oversight Agency
SSPP	System Safety Program Plan
TBD	To Be Determined
TBM	Tunnel Boring Machine
TF	Total Float (Schedule)
TCC	Technical Capacity and Capability
VE	Value Engineering
WBS	Work Breakdown Structure
WD	Work Days

APPENDIX B – TABLES

Table 1 - Summary of Schedule Dates

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

A = Actual

Table 2 - Schedule Contingency

IPS Update #	71	74	77	80	83	84
Data Date	6/1/2012	9/1/2012	12/1/2012	3/1/2013	6/1/2013	7/1/2013
Contingency (CD)						
RSD= 12/31/2016	89	No	89	89	109	102
RSD= 2/28/2018	513	Report	513	513	533	526

Table 3 – Schedule Milestone Comparison

Pkg	MS	Description	Dates			Affected Pkg.	Variance		Sch. Float
			Adjusted (2)	Ud #83 (3)	Ud #84 (4)		Contract = (2) - (4)	Month = (3) - (4)	
C2A	#1	96 th Exc, 97-99, Anc. #2	07/15/13	07/29/13	08/07/13	C2B	-23	-9	58
C2A	#2	96 th Exc, 92-95, Anc. #1, Ent #1& #2	07/15/13	09/24/13	09/23/13	C2B	-70	1	34
C2A	SS	Comp. all remaining work – 95 th -97 th Streets incl. Ent. #3.	07/15/13	09/24/13	09/23/13	C2B	-70	1	130
C2B	MS #1	Complete work 99 th – 105 th St; provide shared access at 102nd St access shaft	09/21/13	09/20/13	9/20/13	C6	1	0	140
C2B	MS #2	Comp. work & provide shared site access @ 93 rd St shaft	03/22/14	03/21/14	7/22/14	C6	-122	-123	277
C2B	MS #3	Comp. work & provide limited access @ E&W Trackways thru Sta. (1238+50 and 1225+25), & 99 th – 105 th St Tunnel and 'Exclusive Access @ Rail Shaft	10/21/13	10/21/13	10/21/13	C6	0	0	166
C2B	MS #4	Comp. work & provide shared access in E&W track-ways thru Sta. (1238+50 - >1225+25); 97 th -> 99 th St Tunnel in 99 th – 105 th St Tunnels	09/21/14	09/22/14	9/22/14	C6	-1	0	143
C2B	MS #5	Comp. work & provide shared access @ East & West Tunnels South of 96 th St Station (1225+25 and STA. 1209+00)	02/20/14	02/21/14	2/21/14	C6	-1	0	92
C2B	MS #6	Comp. work & provide full access to Comm. Rooms & Closets	08/21/14	08/21/14	8/21/14	C6	0	0	248
C2B	MS #7	Comp. work & provide full access to Signals Rooms	08/21/14	08/21/14	8/21/14	C6	0	0	89
C2B	MS #8	Comp. work & provide full access to Traction Power Rooms:	08/21/14	08/21/14	8/21/14	C6	0	0	165
C2B	MS #9	Complete work & provide full access to Station Service Centers	11/21/14	11/21/14	1/15/15	C6	-55	-55	170
C2B	MS #10	Comp. all Comm., Signal , & Traction Power work in remaining areas	09/21/14	09/22/14	1/26/15	C6	-127	-126	33
C2B	SS	Substantial Completion	12/21/15	12/22/15	3/10/16		-80	-79	100

Pkg	MS	Description	Dates			Affected Pkg.	Variance		Sch. Float
			Adjusted (2)	Ud #83 (3)	Ud #84 (4)		Contract = (2) - (4)	Month = (3) - (4)	
C3	#3	Comp. Mezz Comm. Rms/Sta. Service Center	04/15/13	03/10/14	03/31/14	C6	-350	-21	60
C3	#4	Comp. Lwr/Uppr Platforms & Signal Rms	10/14/13	03/12/14	04/02/14	C6	-170	-21	130
C3	#5	Comp. All work Anc. #2	08/30/13	11/04/13	11/04/13		-66	0	328
C3	#6	Complete work @ Ancillary #1	07/09/12	08/08/13	09/20/13		-438	-43	357
C3	SS	Substantial Completion	05/13/14	01/15/15	01/15/15	C6	-247	0	33
C4B	#1	Comp. All work North of Grid Line 17	06/25/13	08/09/13	08/06/13	C4C	-42	3	129
C4B	SS	Comp. all work South GL 17	12/03/13	01/14/14	12/27/13	C4C	-24	18	52
C5B	#1	Comp. all work South of Grid Line 15	03/04/14	03/25/14	04/08/14	C5C	-35	-14	25
C5B	SS	Comp/all work North GL 15 (w/0 Ent. #2)	09/04/14	01/27/14	02/10/15	C5C	-159	-379	24
C6	#2A	Complete LAN - 96th St. Station	05/18/15	05/18/15	05/18/15	C2B	0	0	124
C6	#2B	Complete WAN - 96th St. Station	05/18/15	05/18/15	05/18/15	C2B	0	0	124
C6	#3A	Complete LAN - 86th St. Station	07/18/15	07/17/15	07/17/15	C5C	1	0	125
C6	#3B	Complete WAN - 86th St. Station	07/18/15	07/17/15	07/17/15	C5C	1	0	125
C6	#4A	Complete LAN - 72nd St. Station	02/18/15	02/18/15	03/19/15	C4C	-29	-29	214
C6	#4B	Complete WAN - 72nd St. Station	02/18/15	02/18/15	03/19/15	C4C	-29	-29	214
C6	#5A	Complete LAN - 63rd St. Station	04/18/14	06/06/14	06/27/14	C3	-70	-21	61
C6	#5B	Complete WAN - 63rd St. Station	04/18/14	06/06/14	06/27/14	C3	-70	-21	61
C6	#5C	Complete all 63rd St. Station work	04/18/14	06/06/14	06/27/14	C3	-70	-21	61
C6	SS	Substantial Completion	08/18/16	08/16/16	08/18/16		0	-2	96

Notes:

1. All schedule dates based upon July 1, 2013 update (IPS Update #84)
2. Contract packages 1 and 5A have completed all work and follow-on activities are proceeding w/o impact.
3. Contract packages 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 July 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	2,473.762	46.96
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	2,473.762	46.96
Total Federal:	1,350.693	27.75	1,063.942		1,350.693	24.60	750.238	14.24
Total FTA share:	1,300.000	96.25	990.049		1,300.000	23.68	676.345	12.84
5309 New Starts share	1,300.000	100	990.049		1,300.000	23.68	676.345	12.84
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	1,723.524	32.72
State share	450.000	16.67	100.000		450.000	8.20		
Agency share	2,249.307	83.33	1,145.782		3,059.000	55.72		
City share	0	0			0	0		

* Obligated amounts obtained from the Transportation Electronic Award Management (TEAM) system and MTACC's Grant Management Department.

** Current MTA Board approved budget.

Table 5 - Estimate at Completion

Category	Current Working Budget	EAC Forecast
Total Construction	\$2,728,172,492	\$2,904,530,820
Engineering Services Subtotal	\$576,541,264	\$625,000,000
Third Party Expenses	\$534,800,000	\$552,500,000
TA Expenses	\$125,160,085	\$130,760,085
Contingency	\$321,104,648	
Executive Reserve	\$160,000,000	
Subtotal	\$4,451,000,000	\$4,223,556,486

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

Std. Cost Category (SCC)	Description	FFGA	MTA's Current Working Budget (March 31, 2013)
10	Guideway & Track Elements	\$612,404,000	\$638,107,000
20	Stations, Stops, Terminals, Intermodal	\$1,092,836,000	\$1,294,629,000
30	Support Facilities	0	\$0
40	Site Work & Special Conditions	\$276,229,000	\$534,865,000
50	Systems	\$322,707,000	\$265,792,000
60	ROW, Land, Existing Improvements	\$240,960,000	\$281,500,000*
70	Vehicles	\$152,999,000	0**
80	Professional Services	\$796,311,000	\$973,000,000
90	Unallocated Contingency	\$555,554,000	\$463,107,000
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 7 -- Core Accountability Items -- July 2013

Project Status:		Original at FFGA	Current*	ELPEP**
Cost	Cost Estimate	\$4,050M	\$4,451M	\$4,980M
Contingency	Unallocated Contingency	\$555.554M	\$361M	\$181M
	Total Contingency (Allocated plus Unallocated)	\$555.554M	\$361M (July 2013)	\$361M
Schedule	Revenue Service Date	June 30, 2014	December 30, 2016	February 28, 2018
Total Project Percent Complete	Based on Expenditures	55.6%		
	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.
Organization	New	The PMOC is concerned that organization changes within the SAS Project Management Team are not addressing the root cause of management problems and may actually be causing some confusion within the team regarding roles and responsibilities.
Date of Next Quarterly Meeting:	TBD	

* MTACC’s Current Working Budget

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

Schedule data based upon IPS Update #84; Data Date = 7/01/2013

Financial data based upon MTACC reporting through 7/31/2013