

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, 2014



PMOC Contract No. DTFT60-09-D-00007

Task Order No. 7, Project No. DC-27-5235, Work Order No. 2

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Length of time on project: Three years on project for Urban Engineers

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THIRD PARTY DISCLAIMER

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

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

REPORT FORMAT AND FOCUS

This monthly report is submitted in compliance with the terms of the Federal Transit Administration (FTA) Contract No. DTFT60-09-D-00007. Its purpose is to provide information and data to assist the FTA as it continually monitors the grantee's technical capability and capacity to execute a project efficiently and effectively, and hence, whether the grantee continues to be ready to receive federal funds for further project development.

This report covers the project management activities on the MTACC (Capital Construction) Second Avenue Subway (SAS) Mega-Project managed by MTACC and MTA as the grantee and financed by the FTA FFGA.

MONITORING REPORT

1.0 PROJECT STATUS

During July 2014, MTACC continued advancing SAS, Phase 1 to meet a Revenue Service Date (RSD) of December 30, 2016 within its Current Working Budget (CWB) of \$4.451B (exclusive of financing). The overall project is approximately 68% complete. Progress continued on the eight (8) active construction contracts and featured the following accomplishments:

- C-26005 (C2A) "96th Street Site Work and Heavy Civil" Substantial Completion was achieved on November 5, 2013. The contractor has completed all but 6 of the punch list items. Submittal of contract closeout documentation is ongoing.
- C-26010 (C2B) "96th Street Station Civil, Architectural, and MEP". Efforts in the main station area progressing with the installation of concrete masonry wall units, platform construction, and HVAC ducts.
- C-26006 (C3) "63rd Street Station Rehabilitation". The focus of the work effort continues to be Area 5, the progress at Entrance #1 and meeting the milestones for turnover of rooms to the C6 contractor.

- C-26007 (C4B) “72nd Street Station Cavern Mining and Lining” Substantial Completion was achieved on January 14, 2014. Punch list and submittal of contract closeout documentation is ongoing.
- C-26011 (C4C) “72nd Street Station Architectural and MEP Systems”. Construction of the Mezzanine level is complete, with construction of the Upper Mezzanine continuing. At the Platform level installation of precast wall panels continued and is nearing completion.
- C-26008 (C5B) “86th Street Station Cavern Mining and Lining”. Work effort is directed to meeting the near term milestone to turnover of the cavern area and provide by full cavern access to the C5C contractor by September and October 2014 respectively.
- C-26012 (C5C) “86th Street Station Architectural and MEP”. Focus of the initial work continues in the south tunnels with conduit embedded bench construction. Continued erection of formwork and placement of mezzanine deck slabs. Full access to the site is still forecast for October 2014.
- C-26009 (C6) “Track, Power, Signals and Communication Systems”. Installation of tracks, signals, traction power, communication equipment and cables is ongoing throughout the various work zones.

a. Procurement

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

b. Construction

As of July 31, 2014, there are eight (8) active construction contracts on the SAS Phase 1 Project. Construction progress on the active contracts during this period includes:

Contract C-26005 (C2A) 96th Street Site Work and Heavy Civil

- Substantial Completion was achieved on November 5, 2013.
- All punch list work with the exception 6 items has been completed. Submittal of contract closeout documentation is ongoing.

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

- Installed 7,450 LF out of 10,200 LF of traction power conduit in the main station.
- Completed 46 out of 47 roof slabs in the main station.
- Completed removal of 451 of 463 total wales and struts in the main station.
- Completed MC Cable installation for tunnel lighting in South Tunnels S1 and S2.
- Installed approximately 57,400 SF out of 159,100 SF of total Concrete Masonry Unit (CMU) walls in the main station and tunnels.
- Installed approximately 20% of the HVAC duct throughout the station.

- Installed 237,100 SF out of 246,000 SF of waterproofing in the station.
- Installed approximately 70% of platform in the main station.
- Completed installation of conduits and sanitary piping embedded in the platform between gridlines 9 and 11.
- Completed piping and area drains embedded in the low benches.

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

- Surveying of the Deformation Monitoring Points (DMPs) is ongoing and will continue throughout the project. There have been no instrumentation issues during micro-pile installation at Entrance #1.
- The focus of the work effort remains Area 5 and the progress at Entrance #1.
- **Area 5 (Reconstruction consists of 6 mezzanines and the deck plaza roof)**
 - Continued setting traction elevator equipment in the Elevator Machine Room.
 - Continued installation of power & communication conduits throughout.
 - Continued finishes in Area 5 Lobbies.
- **Entrance #1**
 - Completed installation and load testing of micro-piles
 - Began preparation for installation of permanent piles.
- **Platforms**
 - Continued wall tile framing at the G3 and G4 platforms.
 - Continued installation of platform pavers on G4 (lower) platform.
- **Fan Plants**
 - Continuing installation of chiller piping, communication & power conduits in the West Fan Room.
 - Finalizing installation of Building Management System (BMS) in both East & West Fan Rooms.
- **C6 Coordination**
 - Continuing installation of chiller piping, communication & power conduits in the West Fan Room.
 - Finalizing installation of Building Management System (BMS) in both East & West Fan Rooms.
- **Systems Safety Certification**
 - The Factory Acceptance Test (FAT) for the UPS Equipment began July 21, 2014 and is continuing. Commissioning of the UPS is scheduled for August 15, 2014.
 - ConEd energized the SB-2A Switchgear on July 29, 2014.

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

- Substantial Completion was achieved on January 14, 2014

- Ongoing contract efforts
 - Submission of As-Built documentation and Quality Control Records
 - Closeout of punchlist items identified during inspection by Maintenance of Way inspection
 - Third Part acceptance by Con-Ed, ECS and DEP-Sewer (completed)

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

- **Ancillary #1 and Ancillary #2**
 - The erection of the concrete walls and slabs is ongoing
- **Main Cavern**
 - At the North Mezzanine completed Fan/Chiller Room CMU walls.
 - Ductwork for the Smoke Management System continues in the public area of the mezzanine and is approximately 50% complete.
 - At the South Mezzanine continuing work in Communication Rooms for Milestone #7.
- **G3/G4 Tunnels**
 - Electrical work is approximately 90% complete.
- **Ancillary #1:**
 - Work continued with the forming and placements of Lower Mezzanine walls.
- **Entrance #1:**
 - Completed fireproofing of the structural steel.
- **Schedule**
 - The date for Milestones #7, #12, and #13 remains August 25, 2014.

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

- **Main Cavern (North and South)**
 - Placement of the Cavern North End Wall neared completion.
- **Ancillary #2**
 - Continued installation of waterproofing of the walls and continued form, rebar and concrete placement of the inverts and walls.
- **Entrance #1**
 - Masonry work neared completion along with installation of electrical conduit.
- **Entrance #2**
 - Continued waterproofing and arch concrete placement along the lower and upper incline ceilings.

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

- The C5B/C5C Project Office is relocating to 327 E. 94th St., between 1st & 2nd Aves. As of the date of this report that move has not taken place.
- The erection of concrete walls and slabs is ongoing in Ancillary #1 & Ancillary #2.
- At Entrance #1 fireproofing to structural steel is complete.
- At the North Mezzanine completed Fan/Chiller Room CMU walls.
- Ductwork for the Smoke Management System continues in the public area of the mezzanine and is approximately 50% complete.
- At the South Mezzanine continuing work in Communication Rooms for Milestone #7.
- At the Platform level precast panel installation is nearing completion.
- At Entrance #3 continued with waterproofing, rebar and concrete wall placement up to street level.
- Electrical work is approximately 90% complete in the G3/G4 Tunnels.

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

- Electrical 63rd Street Communication and Signal Rooms: WAN fiber optic cable pulling between the communication rooms was completed with the exception of Room 1399. Delays continued in this room due to conduit work not being completed.
- Electrical 96th Street Tunnel Work (Zone 1): Contractor completed all fiber, communication, power and signal cable pulling.
- Electrical 96th Street Tunnel Work (Zone 2): Contractor completed the cable pulling out of sequence per AWO #40 (delivery of material through 86th Street shaft). All fiber, communication, power and signal cable pulling is complete.
- Electrical 72nd Street Tunnel Work (Zone 3): 95% of all fiber, communication, power and signal cables have been pulled.
- Civil (North of 63rd Street Station (Zone 3 and 4): Running rail for Zone 3 was delivered. The chopping operations for Zone 3 have been delayed because of the Station Contractor. Contractor has requested an AWO to capture the cost associated with addition relocation of the running rail.
- Civil 96th Street South Tubes (Zone 2): Tracks in the East and West tubes have been constructed. Surfacing and aligning the East track in preparation for the first concrete pour is in process.
- Civil 96th Street (Zone 1): Tracks S1 and S2 are now complete. Contractor plans to install cover board by the end of August 2014.
- Procurement
 - Antenna cable (delivered).
 - Signal cable (delivered).
 - Communication cable (delivered).

- Power cable 2000MCM & 500MCM (delivered).
- Fiber optic cable (delivered).
- Wayside Tray 63rd (delivered).
- Stops & Layouts (delivered).
- Wayside Signal Equipment (released; various stages in manufacturing).
- Running rail (delivered).
- LVT Blocks (delivered).
- 3rd Rail (delivered).
- SWP's (delivered).
- Guard Rail is now due in late August 2014.
- ALU: Network, CCTV and IAC for 96th and 72nd Street Stations are due by September 18, 2014; 86th Street Station CCTV, Network and IAC will be delivered by October 31, 2014.
- Simplex (All Fire Alarm equipment for 63rd Street (delivered).
- MKJ: FAT Testing for PACIS Cabinets is now rescheduled for June 2014.
- Pinnacle: 63rd Street equipment for wireless radio is (delivered). AWOs for the Class B to Class A changes for 72nd, 86th and 96th Street Stations is ongoing.
- PRI (HVAC SCADA) is still awaiting design information from 63rd Streets contractor.
- Belfour Circuit Breakers & Rectifiers (delivered).
- Belfour Transformers (in storage in VA).
- Meridian: EA Alarm Boxes: (delivered).
- Meridian: EA Recorder: Keltran equipment due the end of August 2014.
- Transdyne (Power SCADA) (delivered).
- Submittal Progress
 - Total projected submittals: 5,625
 - Total submitted to date: 3,695
 - Total projected to complete: 1,930
 - Percent completed: 66%
 - Pending MTA response: 209

c Quality Assurance and Quality Control (QA/QC)

Status:

During July 2014, the Second Avenue Subway Quality Management team continued holding Quality Meetings and Quarterly Quality Oversight of the Contractor with CCM, MTACC, and PMOC participation. They participated in the job progress meetings, monitored quality matters in the field for each construction contract, reviewed and provided comments for Quality Work Plans, and participated in Preparatory Phase Sessions for numerous construction processes.

Observation:

Major Issues

The major issues noted by the PMOC during July 2014 include:

➤ Nonconformance Reports (NCRs)

Six nonconforming conditions were noted on the C5B contract but no NCRs were issued. Many of the concrete related nonconformances on the C5B and C4C contracts are documented much later than when the nonconformance occurred. Only two NCRs on the C3 contract and one NCR on the C4C contract have been closed in the last 4 ½ months. The PMOC recommends that the SAS Quality Manager reinforce the requirement that all nonconforming conditions must be documented when the nonconformance occurs and dispositioned and closed in a timely manner.

➤ Inspection Daily Reports

Past Monthly Reports identified a major issue that it took excessive time on several SAS contracts to enter Daily Inspection Reports into the Contractor Management System (CMS). During Monthly Quality Management Meetings, the PMOC stressed the importance to enter Daily Inspection Reports promptly. At the end of July 2014, all contractors are current with their entries with the exception of the C4C and C5C contractors, both of whom are two weeks behind.

➤ Project Quality Manual

Revision 3 of the SAS Project Quality Manual (PQM) was issued in April 2009. The SAS Quality Manager prepared a draft of Revision 4 to reflect the new MTACC QOQ checklist requirements and other changes that have occurred since Revision 3 was issued. The PMOC received a draft of Revision 4 to review in July 2014. Comments will be returned to the SAS Project Quality Manager in August 2014.

Contract Package C2A	
Status:	Through July 31, 2014, a total of 36 NCRs have been issued. All 36 have been closed by both the contractor and SAS. In July 2014, no new NCRs were written and three were closed.
Observation:	The last three open NCRs on this contract were closed in June 2014.
Concerns and Recommendations:	None.
Contract Package C2B	
Status:	Through July 31, 2014, a total of 47 NCRs have been issued. 33 have been closed and 14 NCRs are still open. In July 2014, no new NCRs were written and three were closed.
Observation:	Of the 14 open NCRs, 12 are for concrete that was out of specification. Concrete delivered after May 24, 2014 has all been within slump and air entrainment specification. Trucks that exceeded the specified two-hour delivery time were rejected. Entry of Inspection Daily Reports was consistently late but is now current.
Concerns and Recommendations:	None.

Contract Package C3	
Status:	Through July 31, 2014, a total of 81 NCRs have been issued. 68 have been closed and 13 NCRs are still open. In July 2014, one new NCR was written and none were closed.
Observation:	Of the 13 open NCR's, 5 were written by the contractor on one of their subcontractors. Four of these NCRs have been open 4 to 11 months. Entry of Inspection Daily Reports into CMS is current.
Concerns and Recommendations:	Only two C3 NCRs have been closed in the past 4 ½ months. The PMOC is concerned that 9 of the 12 open NCRs have been open for 5 to 11 months.
Contract Package C4B	
Status:	Through July 31, 2014, a total of 122 NCRs have been issued. 121 have been closed and 1 NCR is still open. In July 2014, no new NCRs were written and none were closed.
Observation:	The contractor has done an effective job of documenting NCRs as the nonconforming condition occurs and closing them in a timely manner.
Concerns and Recommendations:	None.
Contract Package C4C	
Status:	Through July 31, 2014, a total of 56 NCRs have been issued. Two have been closed and 54 NCRs are still open. In July 2014, 8 new NCRs were written and one was closed. Six of the new NCRs were for concrete that was out of specification. These conditions occurred in June 2014 but were not documented by the contractor until July.
Observation:	49 of the open NCRs are for concrete that was out of specification. The contractor is performing two concrete analyses, one for each of their suppliers. Both analyses were supposed to be submitted to the SAS C4C CCM in July 2014 but only one was. Submittal of Inspection Daily Reports is 2 weeks behind with 10 reports from June still outstanding.
Concerns and Recommendations:	The PMOC is concerned that the C4C contractor has not been generating NCRs for concrete that was out of specification when the nonconforming conditions occur. Entry of Inspection Daily Reports is still too far behind.
Contract Package C5B	
Status:	Through July 31, 2014, a total of 80 NCRs have been identified but only 74 have been issued. Of the 74 that have been issued, 65 have been closed and 9 NCRs are still open. In July 2014, no new NCRs were written and five were closed.

Observation:	Three NCRs have been issued since April 28, 2014. They were for concrete that was out of spec during December 2013 and January 2014 and for which a statistical analysis is required. Of the 9 open NCRs, 5 are for concrete that was out of specification. The C5B contractor identified 6 nonconforming conditions between June 17, 2014 and July 30, 2014, assigned NCR numbers to them, but did not issue nonconformance reports. Entry of Inspection Daily Reports into CMS is current.
Concerns and Recommendations:	The PMOC is concerned that nonconformance reports are not written as soon as the nonconforming condition is found and that nonconformances may not even be written at all. The PMOC is also concerned that out of spec concrete conditions have not been documented on NCRs since January 2014. Based on these concerns raised by the PMOC, the SAS C5B Quality Manager stated that he would issue a warning to the C5B contractor's Quality Manager.
Contract Package C5C	
Status:	Through July 31, 2014, three NCRs have been issued. All three are still open.
Observation:	Although the three NCRs were written on June 26, 2014, they were not submitted to the SAS CM until July 30, 2014. Submittal of Inspection Daily Reports is 2 weeks behind.
Concerns and Recommendations:	The PMOC is concerned that nonconformance reports are not submitted to the SAS CM as soon as the nonconforming condition is found and recommends that the SAS C5C Quality Manager resolve this issue.
Contract Package C6	
Status:	Through July 31, 2014, a total of eight NCRs have been issued. Six have been closed and two NCRs are still open. In July 2014, one new NCR was written and one was closed. None of the eight total NCRs were for concrete placement. Entry of Inspection Daily Reports into CMS is current.
Observation:	The contractor has done an effective job of documenting NCRs as the nonconforming condition occurs and closing them in a timely manner.
Concerns and Recommendations:	None.

Concerns and Recommendations:

Refer to previous section.

2.0 SCHEDULE DATA

The Integrated Project Schedule (IPS) is a management level schedule that integrates all ten construction packages along with design, procurement, startup and other support activities. IPS

Update #95 was received on July 8,, 2014 and is based on a Data Date of June 1, 2014. This update contained “.PDF” schedule reports for all remaining work, the critical/longest path, variance tabulation between Updates # 94 and 95; summary schedule and the “.XER” schedule file for the IPS. The IPS forecasts the completion of all construction and NYCT Pre-Revenue Training & Testing activities by September 20, 2016, with approximately 102 calendar days (CD) or 73 work days (WD) of contingency when measured against MTACC’s target Revenue Service Date (RSD) of December 30, 2016.

Project Critical Path:

There are two independent critical paths indicated in Update #95 of the SAS IPS.

Critical Path #1 is initiated by Activity C6TW-020 “Zone 2 Track S1 @ 86th – Set ties, surface & align, thread & clip rail, install boxes, CDTs and rebar” and continues through the installation of the Trackwork in Zones 6, 3, 4,5, 7, 8 and 10 which is forecast to complete on September 3, 2015. This path then shifts to the installation of the wayside equipment at 86th Street which starts with Activity #C6C2-435 “Wayside @86th – Install Riser Boxes” and completes with Activity #C6C2-455 “Wayside @86th – MTA inspect and provide punch list, perform punchlist work” on July 28, 2016. The completion of the wayside equipment punchlist at 86th Street then ties to C6 Substantial Completion for Revenue Service which is forecast for July 28, 2016 and then ties into the “Proof of Operations Tests”, then completion of “Dispatch Tower Tests at 96th St. Station”, “Traction Power Operational Test”, “Route Familiarization and Equipment Training”, tying to an Operational Revenue Service Date (ORD) of September 20, 2016.

Critical Path #2 is initiated with ongoing construction of Ancillary #2 at the 72nd Street Station. General construction of this area extends through C4C MS#9 (Complete Work in all Signal Rooms (except M8) which is forecast for December 10, 2014. To date, this milestone has experienced approximately 71 WD of delay. Signal equipment installation and testing work extends from December 11, 2014 through July 28, 2016, whereupon this path merges with **Critical Path #1** at Activity C6TC 30A C6 Substantial Completion for Revenue Service Testing.

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

- +3 WD:** This path is initiated by C5C, Milestone #9 which provides access for the C6 Contractor to all traction power rooms at the north end of the 86th Street Station on March 18, 2015. Installation of equipment and cable is forecast to continue through June 10, 2016, at which time field testing, facility in-service testing and in-service testing starts and continues through July 25, 2016.
- +4 WD:** This path branches off of the critical path with the completion of Act. # C6TW-075 – Zone 7 S2 @ 72nd – Set ties, surface & align, thread & clip rails, install riser boxes, CDTs and rebar” which is forecast to complete on March 4, 2015. This initiates the start of wayside equipment installation at 72nd Street which starts with Activity #C6C4-495 “Wayside @72nd – Install Riser Boxes and completes with Activity #C6C4-299 “Wayside @72nd – Perform Punchlist Work” on July 11, 2016. The completion of the wayside equipment punchlist at 72nd Street then ties to Substantial Completion of Contract 6 which finishes on August 18, 2016 and

then ties into the “Proof of Operations Tests”, then completion of “Dispatch Tower Tests at 96th St. Station”, “Traction Power Operational Test”, “Route Familiarization and Equipment Training”, tying to an Operational Revenue Service Date (ORD) of September 20th, 2016.

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

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

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

+28 WD: This path starts with the relocation of sewer service at Entrance 1 of the 63rd Street Station which is currently underway as part of AWOs #30 and 40. The path then follows pile installation, foundations, structural and architectural construction and escalator installation and commissioning. This is the controlling path leading to Substantial Completion of the C3 contract, which is currently forecast for September 24, 2015.

Schedule Contingency: The critical path is now dominated by work activities performed by the systems (C6) contractor. A comparison of key dates contained in the IPS Critical Path and the C6 Update #22 (both with DD=6/1/14) provides the following:

	Start Wayside @ 86th Street	All Work Complete
C6 Update #22	10/28/2015	9/14/2016
IPS Update #95	9/4/2015	7/28/2016
Δ (Calendar Days)	54	48

Based on this comparison, the PMOC concludes the IPS does not accurately model the corresponding construction schedule upon which it is supposed to be based. Variances are based upon MTACC’s assumed recovery of previous delays which have yet to be achieved or agreed upon by all involved parties.

Adjusting the IPS to reflect the completion of all contractor construction activities on September 14, 2016 approximates the effect of realizing the current risks which are identifiable along the project critical path and results in the following:

IPS #95	RSD	Construction Complete	Contingency (measured against)

			Dec. 30, 2016	Feb. 28, 2018
Risk-Mitigated (MTACC)	Dec. 30, 2016	Sept. 21, 2016	102 CD	526 CD
Risk-Realized (PMOC)	Dec. 30, 2016	Nov. 7, 2016	54 CD	478 CD

Schedule Comments:

The PMOC is concerned about the accuracy and consistency of the transfer and summarization of information between contractor schedule updates and the IPS. This can never be a completely accurate process. However, the PMOC believes that a more rigorous and consistent transfer of information from an approved contractor schedule update to the IPS will benefit the usefulness of the IPS in describing the current schedule status, consequential forecast of future schedule events and development of mitigation schemes where necessary.

Observations and Analysis:

- Forecast Revenue Service Date (RSD) and minimum schedule contingency:
 - ELPEP Requirement: February 28, 2018 (RSD)
 - ELPEP Requirement: 240 CD (measured against February 28, 2018)
- Minimum Allowable Float; Real Estate Acquisition
 - ELPEP Requirement: 60 CD
 - Current Forecast: All Real Estate takings are complete as of November 1, 2011 with the last “Title Vesting” occurring on October 25, 2011.
- Minimum Allowable Secondary Float Path
 - ELPEP Requirement: 25 Calendar Days (approximately 18 WD).
 - Secondary float paths with Total Float (TF) =3 WD (approximately 4 CD), 3 WD (approximately 4 CD) and 21 WD (approximately 29 CD). PMOC notes that an increase in “near-critical” paths is likely as project completion nears and that satisfaction of this requirement may not be consistent with maintaining the project budget.
- Secondary Schedule Mitigation (critical path compression)
 - ELPEP Requirement: 125 CD
 - Mitigation opportunities will be pursued as they are identified.
 - Evaluation of the C6 Contractor’s comprehensive schedule acceleration/proposal is currently on hold.

Concerns and Recommendations:

MTACC considers the IPS and the associated schedule management procedures to be in compliance with the ELPEP and Schedule Management Plan. The PMOC has identified those areas where it believes current SAS schedule practices compromise the accuracy and usefulness of the IPS.

ELPEP/SMP Compliance: Based on the current status of the IPS, SAS Phase 1, it is the PMOC's opinion that MTACC is not in full compliance with the metrics, deliverables and intangible goals enumerated in the Enterprise Level Project Execution Plan (ELPEP), dated January 15, 2010 (Section IV. b, page 8) and as further described by the Schedule Management Plan (SMP).

3.0 COST DATA

Based upon financial expenditures reported by the MTACC through July 31, 2014 SAS Phase 1 is approximately 67.9% complete. The completion status of the individual construction contracts through July 31, 2014, also based upon reported expenditures through that date, is as follows:

- C26002 (Tunnel Boring) – 100.0%
- C26005 (96th Street Station) – 99.8%
- C26010 (96th Street Station) – 43.9%
- C26013 (86th Street Station) – 100%
- C26008 (86th Street Station) – 95.4%
- C26012 (86th Street Station) – 7.3%
- C26006 (63rd Street Station) – 79.0%
- C26007 (72nd Street Station) – 98%
- C26011 (72nd Street Station) – 19.0%
- C26009 (Systems) – 35.4%

Aggregate Construction % Completion:

- 100% of all construction has been bid.
- 100% of all construction is under contract
- 67.9% of all construction is complete

Based upon cost data received from MTACC for the period through July 31, 2014:

- Value of construction in place this period = \$46,817,112
- Estimated value of construction remaining = \$695,347,231
- Target construction completion = September 20, 2016
- Number of months remaining = 25.7

The estimated average rate of construction required to achieve target completion date is \$27,031,401 per month. The average progress (payments) achieved over the most recent six month period is \$35,553,481 per month. Based on a review of cost data for July 2014, it appears that adequate overall progress was made on the project to achieve the RSD of December 30, 2016.

Soft Cost expenditures (not including real estate, OCIP, etc.) reported this period by MTACC totaled \$6.07M. This expenditure is somewhat higher than the CWB. At the current rate of expenditure, the current soft cost budget will be sufficient through October 2016.

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

	<u>Executed AWOs</u>	<u>AWO Exposure</u>
July 2014	\$134,579,711	\$195,830,610
June 2014	\$133,321,230	\$187,003,644
Δ	\$1,258,481	\$8,826,966
Δ	.94%	4.72%

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

Const. Pkg.	AWO Exposure			
	14-Jul	14-Jun	Period Δ	Changes this Period
Completed Packages	\$ 47,612,118	\$ 47,612,118	\$ -	Final values for Packages C1 and C5A as reported by MTACC.
C2A	\$ 54,112,659	\$ 54,237,897	\$ (125,238)	Net decrease based on initial estimates for AWO # 130, 178, 179 and an revised estimate for AWO # 177.
C2B	\$ 32,299,884	\$ 23,273,686	\$ 9,026,198	Net increase based on initial estimates for AWO # 32, 70, 76, 84, 88, 90, 93, 97, 102 as well as revised estimates for AWO # 37, 61, 77 and 85.
C3	\$ 12,796,799	\$ 12,325,398	\$ 471,401	Net increase based on revised estimates for AWO # 71, 92, 102, 103, 107, 119, 123, 131, 134, 138, 144, 145, 151, and initial estimates for AWO # 152, 154, 155, 156, 157, 159 and 160.
C4B	\$ 1,469,478	\$ 2,715,423	\$ (1,245,945)	AWO Log total of \$1,511,228 is incorrect and does not account for AWOs 96 through 100. Decrease is based on revised estimates for AWO # 67, 85 and 88 as well as initial estimates for AWO # 92, 95, 96 and 99.
C4C	\$ 20,502,768	\$ 19,051,160	\$ 1,451,608	Net increase based on initial estimates for AWO # 34, 35, 59 and 63 as well as a revised estimate for AWO # 42.
C5B	\$ 20,579,489	\$ 20,641,288	\$ (61,799)	Decrease is based on a revised estimate for AWO # 50.
C5C	\$ 330,551	\$ 381,566	\$ (51,015)	Decrease is based on a revised estimate for AWO #3.
C6	\$ 6,126,864	\$ 6,765,108	\$ (638,244)	Net decrease based on initial estimates for AWO # 16 and 52 as

Const. Pkg.	AWO Exposure			
	14-Jul	14-Jun	Period Δ	Changes this Period
				well as revised estimates for AWO # 17 and 43.
	\$ 195,830,610	\$ 187,003,644	\$ 8,826,966	

The changes in Executed AWO Value are summarized as follows:

Const. Pkg.	Executed AWOs			
	14-Jul	14-Jun	Period Δ	Changes this Period
Completed Packages	\$ 47,612,118	\$ 47,612,118	\$ -	Final values for Packages C1 and C5A as reported by MTACC.
C2A	\$ 42,739,350	\$ 42,620,350	\$ 119,000	Increase is based on execution of AWO # 130 and 180.
C2B	\$ 8,910,257	\$ 8,835,257	\$ 75,000	Increase based on execution of AWO # 37.
C3	\$ 9,751,465	\$ 9,004,125	\$ 747,340	Increase is based on execution of AWO # 84, 90, 105, 114, 115, 117, 120, 126, 127, 130, 133 and 138.
C4B	\$ 5,719,478	\$ 5,719,478	\$ -	No change reported this period
C4C	\$ 891,140	\$ 767,299	\$ 123,841	Increase is based on execution of AWO # 37, 52, 53, 55, 57, 60, 63 and 64.
C5B	\$ 15,590,272	\$ 15,590,272	\$ -	No change reported this period.
C5C	\$ 185,000	\$ -	\$ 185,000	Increase is based on execution of AWO # 3
C6	\$ 3,180,631	\$ 3,172,331	\$ 8,300	Increase based on execution of AWO # 52.
	\$ 134,579,711	\$ 133,321,230	\$ 1,258,481	

As of July 31, 2014, the status of Additional Work Orders (AWOs) for each construction contract on Phase 1 of the Second Avenue Subway Project is summarized as follows:

Contract / (Package)	% Complete	Award	Exposure		Executed	
			\$	% of Award	\$	% of Award
C26002 (1)	100.00%	\$337,025,000	\$41,086,647	12.19%	\$41,086,647	12.19%
C26005 (2A)	99.84%	\$325,000,000	\$54,112,659	16.65%	\$42,739,350	13.15%
C26010 (2B)	43.87%	\$324,600,000	\$32,299,884	9.95%	\$8,910,257	2.74%
C26006 (3)	78.80%	\$176,450,000	\$12,796,799	7.25%	\$9,751,465	5.53%
C26007 (4B)	98.00%	\$447,180,260	\$1,469,478	0.33%	\$5,719,478	1.28%
C26011 (4C)	19.17%	\$258,353,000	\$20,502,768	7.94%	\$891,140	0.34%
C26013 (5A)	100.00%	\$34,070,039	\$6,525,471	19.15%	\$6,525,471	19.15%

C26008 (5B)	95.44%	\$301,860,000	\$20,579,489	6.82%	\$15,590,272	5.16%
C26012 (5C)	7.33%	\$208,376,000	\$330,551	0.16%	\$185,000	0.09%
C26009(6)	35.39%	\$261,900,000	\$6,126,864	2.34%	\$3,180,631	1.21%
TOTAL TO DATE		\$2,674,814,299	\$195,830,610	7.32%	\$134,579,711	5.03%

To date, approximately \$1,854,162,960 (69.3%) worth of all base contract construction work has been completed. As a % of work completed, the AWO exposure for these contracts = 10.56% and the executed AWO % = 7.25%.

The PMOC notes an extremely high correlation between AWO exposure estimates and the final negotiated AWO value. Consequently, forecasting total AWO expenditures at completion based on the current AWO exposure values appear justified and reasonable. This forecast suggests the final AWO value will be approximately \$280M, which is significantly above the \$229M AWO contingency contained in the MTACC CWB. The PMOC considers this forecast to be conservative for the following reasons:

- This forecast assumes the RSD remains December 30, 2016.
- AWO exposure for C5C remains inexplicably low. Based on experience at the other stations, significant outstanding cost exposures exist for this contract.
- There remain a significant number of active AWOs for which there is no exposure estimate. As such, the value of these AWOs is not included in the PMOC forecast @ completion.
- The current soft cost budget appears insufficient for extended project operation beyond December 2016.

Cost Contingency: Recent months have seen a substantial increase in AWO exposure. Based upon the MTACC Current Working Budget, expenditures as of July 31, 2014 reported by MTACC and the current AWO Exposure analyses; the PMOC has developed a more comprehensive contingency analysis as follows:

Contingency Analysis

	<u>Current</u>	<u>@ Completion</u>	
Phase 1 Budget	\$ 4,451,000,000	\$ 4,451,000,000	
Construction Awards	\$ 2,674,814,299	\$ 2,674,814,299	
Soft Cost Expended	\$ 1,041,953,079	\$ 1,041,953,079	
Soft Cost Forecast to Complete	\$ 266,155,006	\$ 303,155,006	
<u>AWO Exposure</u>	<u>\$ 195,830,610</u>	<u>\$ 278,379,504</u>	(1)
Total Contingency	\$ 272,247,006	\$ 152,698,112	(2)
Reserved Contingency	\$ 160,000,000	\$ 152,698,112	(3)
Available Contingency	\$ 112,247,006	\$ -	

Notes:

(1) The “AWO Exposure @ Completion” is an average of the MTACC and PMOC forecasts.

(2) Total Contingency = budget balance after forecast expenditures.

(3) Reflects \$7,301,888 transfer from “Reserved Contingency”.

Conclusions based upon this analysis include:

- The project can be completed within the current MTACC CWB of \$4.451B.
- It will be necessary to transfer funds from the “Executive” or “Reserved” Contingency in order to cover forecast project costs.

ELPEP/CMP Compliance: The SAS Project Team maintains an EAC for all construction cost, which is updated monthly. Revision #10 of the Project Cost Estimate, which includes a complete forecast of remaining soft cost has been prepared and incorporated into the project CWB. It is the opinion of the PMOC that SAS Phase 1 is in substantial compliance with the metrics, deliverables and intangible goals enumerated for Cost Management in the Enterprise Level Project Execution Plan (ELPEP), dated January 15, 2010 (Section IV. b, page 8) and as further described by the Cost Management Plan (CMP).

4.0 RISK MANAGEMENT

A recent Risk Mitigation Meeting was held in July 2014 at MTACC headquarters at 2 Broadway. The following table identifies and discusses the status of the most significant risks presently identified on the project.

<u>Risk Description</u>	<u>Mitigation Summary</u>	
Risk CNS 4 (C6): Delay resulting from management of contractual interfaces during construction.	Risk Type	
	Cost	Schedule
Mitigation Strategy: <ol style="list-style-type: none"> 1. The previously detailed mitigation strategy has not resulted in effective management of contractual interfaces. 2. It has been determine that the overall strategy remains sound; however significant improvements in implementation are necessary. 3. The status of milestones that are one to three months in the future will be reviewed at monthly risk management meetings to verify satisfactory progress or problems where additional effort is required. 	Current Status: <ol style="list-style-type: none"> 1, 2. An Interface Manger was added to the SAS Project Team to facilitate the turnover of station areas from to Station Contractors to the Systems Contractors. Coordination meetings are held each Friday to address access dates, scope requirements in the areas to be turned over and any mitigation actions if needed. 3. Positive progress reported on achieving upcoming milestones. Revisions to process and personnel appear to have had a positive impact on the management of this risk. 	
Risk C3, C2B, C4C, C5C and C6 Schedules: Construction contract delays that will extend Project Completion beyond the current RSD.	Risk Type	
	Cost	Schedule

<u>Risk Description</u>	<u>Mitigation Summary</u>	
<p>Mitigation Strategy:</p> <ol style="list-style-type: none"> 1. The previously detailed strategy of achieving significant schedule improvement by accelerating systems installation and testing remains a valid, but will be placed “on hold” for the immediate future. 2. Ongoing schedule improvement will focus on “targets of opportunity” where specific action directed to critical or near-critical work tasks will result in measurable schedule improvement. 	<p>Current Status:</p> <ol style="list-style-type: none"> 1. Acceleration of specific “targets of opportunity” will be detailed as they are identified. 2. Mitigation actions to recover delays encountered with track installation (C6) and to avoid additional delay of C2B Milestone #5 have been identified as “targets of opportunity” and are discussed in Technical Advisory Committee (TAC) Paper 2014/156 (Draft). Implementation of a recovery plan supported by all affected parties is reportedly in progress. 	
<p>Permanent (Station) Power:</p> <p>Permanent facility power to 72nd, 86th, and 96th Street Stations may be delayed and result in subsequent delays to equipment testing and commissioning.</p>	Risk Type	
	Cost	Schedule
<p>Mitigation Strategy:</p> <ol style="list-style-type: none"> 1. Obtain services of an experienced ConEd liaison engineer to facilitate design and review process. 2. Expedite contractor design and ConEd review processes where possible. 3. Development of detail schedule “fragnet” to identify schedule problems and monitor progress. 4. Expedite construction of supporting infrastructure at each station to minimize potential delay. 5. Advance scheduling and coordination of feeder “cut-in” to minimize delays 	<p>Current Status:</p> <ol style="list-style-type: none"> 1. Mitigation Strategy Items #1 and #2 continue. Cooperation and progress among all parties appears to be good. 2. Development of a detail schedule which models this issue is still incomplete. This risk was identified in August 2013. MTACC’s inability to develop a schedule and quantify the potential impacts suggests a significant deficiency in its management of this risk. 3. Transformers and switchgear for 96th and 86th Street Stations were released for fabrication on April 18, 2014 and delivery is scheduled for August 15, 2014. 	
<p>Risk C4C Entrance 1 (301 E 69th Street):</p> <p>Work on Entrance 1 will be delayed due to delays in obtaining design approval from Owner for utility relocation in the building.</p>	Risk Type	
	Cost	Schedule
<p>Mitigation Strategy:</p> <ol style="list-style-type: none"> 1. Develop an alternate design (relocation from inside building to sidewalk) to reduce impacts to building utilities. 2. Prepare a Tech memo and submit to FTA for approval. 3. Develop and negotiate access agreements 	<p>Current Status:</p> <ol style="list-style-type: none"> 1. Completed. 2. Complete. 3. Access agreements with affected adjacent property owners have been obtained and work is progressing. 4. Concern remains over resolution of the 	

<u>Risk Description</u>	<u>Mitigation Summary</u>
with affected property owners 4. Excavate/concrete and underpin the common wall via C4C. 5. Exercise C4C options for Entrance # 1 in order to engage contractor's engineering and to provide time to develop an underpinning design and construction staging plan.	significant AWOs required to implement this work and the reliability of schedule information developed to date.

<u>Risk Description</u>	<u>Mitigation Summary</u>	
<p>Risk COM 2 (C6): Frequent late changes to the communications systems could delay C6 and the RSD.</p>	<p>Risk Type</p>	
<p>Mitigation Strategy:</p> <ol style="list-style-type: none"> 1. Confirm that previously agreed Communications design changes have been incorporated into the design. Resolve any outstanding issues. 2. Future User Department requested changes shall go through the CCG/ CCB approval process. A User Department representative’s approval signature is required on the change request forms. The request will include cost and schedule impacts of the requested change. 3. Requested changes exceeding \$50,000 or having any schedule impact, must be presented to the Board by a User Department representative with substantiation of need provided. 	<p>Cost</p>	<p>Schedule</p>
<p>Current Status:</p> <ol style="list-style-type: none"> 1. MTACC has reported that this item has been completed. 2. CCG/CCB review and approval process appears to be having a positive effect on limiting the number of User Department requests for design changes. 3. Monitoring of the effectiveness of the risk mitigation strategy is ongoing. 4. This risk is applicable to all major operating systems, not just the communications system. 		

<u>Risk Description</u>	<u>Mitigation Summary</u>	
Risk CNS 8 (C6) Delayed Safety Certification results in delay to the RSD	Risk Type	
	Cost	Schedule
Mitigation Strategy: <ol style="list-style-type: none"> 1. Develop a detailed plan for executing the work required to achieve certification of SAS Phase 1. 2. Implement that plan. 3. Concern continues to be expressed regarding the role of NYSPTSB in this process, primarily due to the lack of precedent and explicit definition of the roles and responsibilities of all parties 4. Internal meeting(s) to prepare the outline of the committee meeting with NYS. 5. There is concern that delays in finding a new Safety and Security Certification Manager will adversely impact this process. 6. Hold Safety Certification Meeting with NYS representative in attendance. 	Current Status: <ol style="list-style-type: none"> 1. MTACC has developed a detailed plan for executing the work required to achieve safety certification of SAS Phase 1. 2. Implementation of that plan is ongoing. 3, 4. NYSPTSB role has been confirmed to be one of oversight and verification of the MTACC/NYCT certification process. Their role will not impact the RSD. 5. A Safety and Security Certification Manager was added to the SAS Project Team. The Safety and Security Certification Manager visited all five CM Offices and Contractors, to provide program guidance and to assess where each contract was relative to construction/installation versus safety and security requirements verification. 6. Meetings were held with: <ul style="list-style-type: none"> ▪ MTA Safety and Quality Assurance to discuss 2nd Avenue Subways Safety and Security Management Plan and the Safety and Security Certification Plan. ▪ CMs to discuss safety and security certification requirements and the certifiable items list. ▪ Core Safety and Security Certification Team to define team responsibilities. ▪ Monthly to keep FTA/PMOC abreast of the progress of the safety and security certification efforts. 	

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

status of the management of specific interface milestones one to three months in the immediate future.

The MTACC has used the risk management process to assist in identifying potential cost/schedule risks to the project and develop mitigation strategies in a timely and effective manner. At this stage in the project lifecycle, it is necessary to refine the risk management process to include specific issues that may threaten project objectives, rather than exclusively the focus on general, high-level risks.

5.0 ELPEP

The most recent ELPEP Quarterly Review Meeting was held on June 19, 2014. The next ELPEP Quarterly Review Meeting with MTACC, FTA-RII, SAS and ESA projects and the PMOC is scheduled for September 25, 2014. With respect to SAS, the current status of each of the main ELPEP components is summarized as follows:

- **Technical Capacity and Capability (TCC):** FTA has requested MTACC to update the Technical Capacity and Capability Plan. Completion of the update is pending resolution of coordination issues between the existing Change Control Committee (CCC) and the two newly established high level committees (MTA Chairman Level and LIRR/Amtrak Management Level). As of July 31, 2014, the revised TCC Plan was not submitted.
- **Schedule Management Plan (SMP):** MTACC's 2nd Quarter 2014 ELPEP Compliance Checklist indicates MTACC is "in compliance" with its SMP.
- **Cost Management Plan (CMP):** MTACC's 2nd Quarter 2014 ELPEP Compliance Checklist indicates MTACC is "in compliance" with its CMP.
- **Risk Mitigation Capacity Plan (RMCP) and Risk Management Plan (RMP):** MTACC's 2nd Quarter 2014 ELPEP Compliance Checklist indicates MTACC is "in compliance" with its RMP.

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

6.0 SAFETY AND SECURITY

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

As of June 2014, a total of 8,720,059 construction hours have been logged on the project with 78 lost time and 221 recordable incidents documented. The total hours and incidents equates to a Lost Time Rate (LTR) of 1.79 and a Recordable Rate (REC) of 5.07. The LTR and the REC showed a slight improvement from the previous month. The US Bureau of Labor Statistics (BLS) national rate (Heavy & Civil construction) for Lost Time and Recordable incidents are 1.7 and 3.2 respectively.

7.0 ISSUES AND RECOMMENDATIONS

Schedule Reliability: The PMOC remains concerned about the reliability and usefulness of the IPS in forecasting the project RSD and as a tool in identifying schedule risk and potential mitigation strategies. Key portions of the IPS continue to have significant variances with construction schedules which are reportedly used as the source for IPS data. Basic comparisons and QC checks demonstrate significant changes between monthly IPS updates. These changes are not documented or explained by MTACC.

C4C – Revisions to Entrance #1: This effort represented a major redesign and contract repackaging effort that was the result of stakeholder issues beyond the control of the MTACC. At this time approximately \$14M worth of additional work in this area remains to be incorporated into the C4C contract. The cost and schedule consequences associated with this work are significant risks to the overall cost and schedule goals of the project and need to be resolved as soon as possible.

Safety and Security Certification: The SAS Project Executive has addressed the PMOC's concern about the level of management attention directed to the Safety and Security Certification requirements for the project. A 2nd Avenue Subway Safety and Security Certification Manager was added to the project team. He has visited all five CM Offices and Contractors, to provide program guidance and to assess where each contract was relative to construction/installation versus safety and security requirements verification. The importance of being in full compliance with FTA safety and security certification requirements was stressed. In addition a core team was established to be responsible for the day to day requirements for safety and security certification. Monthly meetings are now being held to update the FTA/PMOC on the progress of implementing the safety and security certification process.

APPENDIX A - ACRONYMS

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

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

APPENDIX B – TABLES

Table 1 - Summary of Schedule Dates

	FFGA	Forecast Completion	
		Grantee	PMOC
Begin Construction	January 1, 2007	03/20/2007A	03/20/2007A
Construction Complete	December 31, 2013	September 21, 2016	October 2017
Revenue Service	June 30, 2014	December 30, 2016	February 2018

A = Actual

Table 2 - Schedule Contingency

IPS Update #	90	91	92	93	94
Data Date	01/1/14	02/1/14	03/1/14	4/1/14	5/1/14
	Contingency (CD)				
RSD=12/31/2016					
Risk Mitigated	102	102	102	102	102
Risk Realized	20	-20	44	44	21
RSD=02/28/2018					
Risk Mitigated	526	526	526	526	526
Risk Realized	446	425	446	446	445

Table 3 – Schedule Milestone Comparison

Pkg	MS	Description	Dates			Variance		Sch. Float
			Adjusted (2)	Ud #93 (3)	Ud #94 (4)	Contract = (2) - (4)	Month = (3) - (4)	
C2B	MS #2	Shared site access @ 93rd Street shaft	03/22/14	11/4/14	11/26/14	-249	-22	135
C2B	MS #4	Shared access in East & West trackways thru Sta (1238+50 - >1225+25); 97th -> 99th St Tunnel in 99th to 105th St Tunnels	09/21/14	2/10/15	1/16/15	-117	25	98
C2B	MS #5	Shared access @ East & West Tunnels South of 96th St Station (1225+25 and STA. 1209+00)	02/20/14	7/7/14	7/7/14	-137	0	8
C2B	MS#5A	Shared Access E & W Track to grid 11		7/30/14	7/30/14			1
C2B	MS #6	Full access to Comms Rooms & Closets	08/21/14	12/31/14	12/10/14	-111	21	125
C2B	MS #7	Full access to Signals Rooms	08/21/14	12/31/14	12/10/14	-111	21	51
C2B	MS #8	Full access to Traction Power Rooms:	08/21/14	12/31/14	12/10/14	-111	21	125
C2B	MS #9	Full access to Station Service Centers	11/21/14	7/23/15	6/26/15	-217	27	109
C2B	MS #10	Complete all remaining Comms, Signal , & Traction Power work	09/21/14	5/28/15	4/6/15	-197	52	382
C2B	SS	Substantial Completion	12/21/15	7/6/16	7/26/16	-218	-20	40
C3	#3c	Compl Mezz Lvl's Comm Rms/Sta Serv Ctr	04/15/13	05/27/14	05/30/14	-410	-3	337
C3	#4	Compl Lwr/Uppr Platforms & Signal Rms	10/14/13	04/17/14	05/30/14	-228	-43	196
C3	#4b	Compl Lwr/Uppr Platforms & Signal Rms	10/14/13	11/10/14	10/27/14	-378	14	377

Pkg	MS	Description	Dates			Variance		Sch. Float
			Adjusted (2)	Ud #93 (3)	Ud #94 (4)	Contract = (2) - (4)	Month = (3) - (4)	
C3	SS	Substantial Completion	05/13/14	08/05/15	07/31/15	-444	5	67
C4C	MS #2	Limited access thru 72nd Street Station 1172+40 - >1163+00	01/13/14	06/13/14	06/13/14	-151	0	48
C4C	MS #3	Shared access thru 72nd Street Station 1172+40 - >1163+00	11/27/14	11/26/14	11/26/14	1	0	40
C4C	MS #5	Limited access south of 72nd Street Station 1163+00 -> 149+50	4/14/14	04/14/14	04/14/14A	0	0	
C4C	MS #6	Shared access south of 72nd Street Station 1163+00 -> 149+50	6/13/14	06/13/14	06/13/14	0	0	48
C4C	MS #7	Turnover of Communications Rooms to Systems Contractor	8/28/14	11/07/14	12/02/14	-96	-25	231
C4C	MS #8	Turnover of Signal Rooms South of station to C6	7/15/14	07/11/14	09/16/14	-63	-67	56
C4C	MS #9	Complete all Signal Roms except M8	9/29/14	10/06/14	12/09/14	-71	-64	0
C4C	MS #10	Complete north power rooms	2/25/15	10/29/14	12/30/14	57	-62	149
C4C	MS #11	Complete south power rooms	03/24/15	11/26/14	11/26/14	118	0	169
C4C	MS #12	Full access @ Station Service Center(s)	08/28/14	08/27/14	08/13/15	-350	-351	71
C4C	MS #13	Full access @ Lubrication Room(s)	08/28/14	08/29/14	10/09/14	-42	-41	259
C4C	MS #14	Complete all remaining Comm, Signal & Traction Power Rooms	08/28/14	08/29/14	06/16/15	-292	-291	253
C5B	#1	Compl All work South of Grid Line 15	03/04/14	04/15/14	04/14/14A	-41	1	
C5B	SS	Substantial Compl/All Work	09/04/14	09/24/14	09/23/14		1	128

Pkg	MS	Description	Dates			Variance		Sch. Float
			Adjusted (2)	Ud #93 (3)	Ud #94 (4)	Contract = (2) - (4)	Month = (3) - (4)	
		w/o Ent. #2						
C5B	SS	Substantial Compl/All Work incl. Ent. #2	-	12/16/14	12/16/14		0	98
C5C	MS #1	Vehicle access thru 86th Street Station 1209+00 -> 1198+00	10/23/14		10/27/14	-4		101
C5C	MS #2	Limited Access; Sta. 1209+00->1198+00	01/22/15		01/26/15	-4		204
C5C	MS #3	Shared Access; Sta. 1209+00->1198+00	05/22/15		03/25/15	58		163
C5C	MS #4	Shared Access; Sta. 1198+00->1172+00	10/23/14		10/31/14	-8		30
C5C	MS #5	Turnover of Comm. Rooms	09/23/14		09/30/14	-7		262
C5C	MS #6	Turnover of Comm. Rooms	03/24/15		02/10/15	42		193
C5C	MS #7	Turnover of Signal Rooms	02/25/15		02/20/15	5		93
C5C	MS #8	Turnover of Signal Rooms	02/25/15		02/20/15	5		93
C5C	MS #9	Turnover Traction Power Rooms	02/26/15		02/23/15	3		19
C5C	MS #10	Turnover Traction Power Rooms	02/25/15		01/28/15	28		264
C5C	MS #11	Full access @ Station Service Center(s)	03/24/15		02/17/15	35		379
C5C	MS #14a	Complete all remaining Comm, Signal & Traction Power Rooms	09/23/14		09/15/14	8		11
C5C	MS#14b	Limited Access all locations	09/23/14		06/24/15	-274		315
C5C		Substantial Completion	05/31/16		05/31/15	366		78
C6	#2A	Complete LAN - 96th St. Station	05/18/15	08/28/15	08/10/15	-84	18	146
C6	#2B	Complete WAN - 96th St. Station	05/18/15	08/28/15	08/10/15	-84	18	146
C6	#3A	Complete LAN - 86th St. Station	07/18/15	07/17/15	07/28/15	-10	-11	300

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

Table 4 - Project Budget/Cost 

	FFGA			FFGA Amend	MTA Current Working Budget (CWB)		Expenditures as of July 31, 2014	
	\$ Millions	% of Total	Obligated (\$ Millions)	TBD	\$ Millions	% of Total	\$ Millions	% of Total
Grand Total Cost:	4,866.614	100	4,572.942		5,267.614	100	3,021.564	57.36
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	3,021.564	57.36
Total Federal:	1,350.693	27.75	1,063.942		1,350.693	24.60	886.318	16.83
Total FTA share:	1,300.000	96.25	990.049		1,300.000	23.68	812.425	15.42
5309 New Starts share	1,300.000	100	990.049		1,300.000	23.68	812.425	15.42
Total FHWA share:	50.693	3.75	73.893		50.693	0.96	73.893	1.40
CMAQ	48.233	95.15	71.433		48.233	0.88	71.433	1.35
Special Highway Appropriation	2.460	4.85	2.460		2.460	0.04	2.460	0.05
Total Local share:	2,699.307	55.47	3,509.000**		3,509.000 **	63.92	2,135.246	40.53
State share	450.000	16.67	100.000		450.000	8.20		
Agency share	2,249.307	83.33	1,145.782		3,059.000	55.72		
City share	0	0			0	0		

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

** Current MTA Board approved budget.

Table 5 - Estimate at Completion

Category	Current Working Budget	EAC Forecast
Total Construction	\$2,674,814,299	\$ 2,953,193,803
Engineering Services Subtotal	\$622,862,000	\$655,000,000
Third Party Expenses	\$554,086,273	\$557,500,000
TA Expenses	\$131,160,085	\$130,775,000
Contingency	\$308,077,343	
Executive Reserve	\$160,000,000	
Subtotal	\$4,451,000,000	\$4,296,468,803

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

Std. Cost Category (SCC)	Description	FFGA	MTA's Current Working Budget (December 31, 2013)
10	Guideway & Track Elements	\$612,404,000	\$642,478,000
20	Stations, Stops, Terminals, Intermodal	\$1,092,836,000	\$1,277,642,000
30	Support Facilities	0	\$0
40	Site Work & Special Conditions	\$276,229,000	\$524,561,000
50	Systems	\$322,707,000	\$250,134,000
60	ROW, Land, Existing Improvements	\$240,960,000	\$281,500,000*
70	Vehicles	\$152,999,000	0**
80	Professional Services	\$796,311,000	\$1,026,608,085
90	Unallocated Contingency	\$555,554,000	\$448,076,915
Subtotal		\$4,050,000,000	\$4,451,000,000
Financing Cost		\$816,614,000	\$816,614,000
Total Project		\$4,866,614,000	\$5,267,614,000

Table 8 -- Core Accountability Items

Project Status:		Original at FFGA	Current*	ELPEP**
Cost	Cost Estimate	\$4,050M	\$4,451M	\$4,980M
Contingency	Unallocated Contingency	\$555.554M	\$272M	\$174M
	Total Contingency (Allocated plus Unallocated)	\$555.554M	\$272M (May 2014)	\$174M
Schedule	Revenue Service Date	June 30, 2014	December 30, 2016	February 28, 2018
Total Project Percent Complete	Based on Expenditures	67.9%		
	Based on Earned Value	N/A		
Major Issue	Status	Comments		
Design Changes Requested by NYCT Operations	Open	A significant number of changes to the design have been “requested” by NYCT Operations long after the formal completion of the project design. To date, the SAS Project Team’s ability to resist the incorporation of these requests appears limited. Procedures have been established requiring Operating Departments to justify design changes. This issue is currently being managed adequately but continued monitoring is required.		
Construction Contract Management and Coordination	Open	Coordination of turnovers between independent prime construction contractors has significantly improved. Numerous turnovers remain. Successful management of inter-		

		contractual interfaces remains a critical issue for timely completion of this project.
Project Schedule Reliability	Open	The PMOC is concerned that information contained within the Integrated Project Schedule (IPS) does not accurately reflect project status. MTACC project staff is reluctant to document delays in the IPS and demonstrate their impact on the overall RSD.
Date of Next Quarterly Meeting:	TBD	

* MTACC's Current Working Budget

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

Schedule data based upon IPS Update #91; Data Date = 5/01/2014

Financial data based upon MTACC reporting through 7/31/2014