

PMOC MONTHLY REPORT

Second Avenue Subway Phase 1 (MTACC-SAS) Project

Metropolitan Transportation Authority

New York, New York

Report Period November 1 to November 30, 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 November 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 overall project is approximately 60.5% complete. Progress continued on the eight (8) active construction contracts and featured the following accomplishments:

- C-26005 (C2A) "96th Street Site Work and Heavy Civil" Substantial Completion was achieved on November 5, 2013. Punch list and submittal of contract closeout documentation is ongoing.
- C-26010 (C2B) "96th Street Station Civil, Architectural, and MEP" Milestone 5 work in the east and west tunnels south of the 96th Street Station is ongoing. Completion of this milestone is scheduled for February 21, 2013 and will provide "Shared Access" to the C-26009 (C6) "Track, Power, Signals and Communication Systems" contractor.
- C-26006 (C3) "63rd Street Station Rehabilitation". The contract is progressing to an increasing focus on the installation of permanent architectural finishes throughout the

station. Concrete and masonry work is complete. Mechanical and electrical work continued. Ancillary 2 work in the existing garage is complete and work began above grade.

- C-26007 (C4B) “72nd Street Station Cavern Mining and Lining” Substantial Completion has been revised to December 30, 2013. This is a two day improvement from the previous forecast.
- C-26011 (C4C) “72nd Street Station Architectural and MEP Systems” Work to-date includes waterproofing of Ancillary 2 & Entrance 3 shafts and erecting formwork for mezzanine level concrete pours.
- C-26008 (C5B) “86th Street Station Cavern Mining and Lining” .Blasting is 100% complete. Waterproofing in the Entrance 2 incline is complete. Placement of concrete lining for both the cavern walls and the southeast tunnel arch continues and construction of arch forms in the Public Cavern is underway.
- C-26012 (C5C) “86th Street Station Architectural and MEP” Mobilization continues and the contractor is continuing with submittals and purchasing. Site access for construction activity remains early April 2014 with full access still forecast for October 2014.
- C-26009 (C6) “Track, Power, Signals and Communication Systems” The contractor started the installation of the conduits and cables from 96th Street to 105th Street. All available work in three of the four communication rooms in the 63rd Street Station was completed. Equipment delivery is ongoing.

a. Procurement

Procurement of construction contractors for SAS – Phase 1 is complete. Contract C-26002 (TBM Tunnels from 92nd Street to 63rd Street) was officially closed with the Final Payment Certificate issued on November 12, 2013.

b. Construction

As of November 30 2013, there are eight (8) active construction contracts on the SAS Phase 1 Project. Construction progress on the active contracts during this period includes:

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

- Substantial Completion was achieved on November 5, 2013. Punch list and submittal of contract closeout documentation is ongoing.

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

- Milestone 5 is the next near term milestone. Contractor’s forecasted completion date (schedule Update #10) is May 23, 2014. All work in the east and west tunnels south of 96th Street Station (between STA. 1225+25 and STA. 1209+00) needs to be completed which will allow “Shared Access” to the C-26009 (C6) Track, Power, Signals and Communication Systems contractor.
 - Work in progress includes mezzanine concrete placement from grid lines 1 to 4. Sequencing of work includes steel installation, installation of conduits/sleeves and box outs, and mezzanine formwork.
- Ancillary 1

- Four week look-ahead work effort includes: erection of shoring and decking; steel installation for mezzanine slab; installation of mezzanine formwork; concrete placement for mezzanine slabs A1-1 and A1-2.
- Entrance 1 and 2
 - Four week look-ahead work effort includes: erection of shoring for roof; rebar, form, and concrete placement for buttress columns; demolition of knockout panel; and installation of steel for roof slab.
- Entrance 3
 - Four week look-ahead work effort includes: rebar and form installation column C24 upper section; demolition of remaining slurry wall panel; clean and prep for waterproofing; waterproofing of invert.

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)
 - Emphasis this period is on installation of electrical conduits throughout.
 - Began removal of the Gantry Crane and reconfiguring the hoisting scheme from 6th Mezzanine. This opens more area for completing 6th Mezzanine work.
 - Began installation of mechanical ductwork.
- Entrance 1
 - Completing new gas connections to the existing building tenant suites.
 - Continued with installation of electrical work and water lines.
- Ancillary 2
 - Milestone 5 – “Completion of all work within the underground parking garage...” is complete. A walkthrough to inspect the work is scheduled for December 17, 2013.
 - Above grade work is ongoing.
- Platforms
 - Continued with installation of column cladding and ceiling panels.
 - Began installation of rubbing boards.
- Fan Plants
 - Completed installation of fans in the East and West Fan Rooms.
- C6 Coordination
 - The C6 contractor continues to work in Signal Room 2189 installing support steel racks. After completing their initial work they will turn the room back over to the C3 contractor. Milestone 4A, Completion of all Signal Rooms (3), continues to be scheduled for January 2014.

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

- Substantial Completion revised to December 30, 2013, a two day improvement from previous forecast.
- Work to be completed includes concrete placement for: low benches in the South Cross-over and the south-end of the main cavern; high and low benches in the G4 Turnout-Cavern and the G3-TBM tunnel.

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

- Ancillary 2/ Entrance 2: The steel access stair, configuration of temporary power, installation of drainage piping in trenches and waterproofing at the Mezzanine level has been completed. Installation of waterproofing at the mezzanine level is in progress. Draining piping at the invert slab is in progress.
- Entrance 3: Invert waterproofing is in progress.
- Street/Utility Work: MPT in place and being maintained. Excavation of trenches for pipe runs from manhole 72-1 to Ancillary 2 is in progress.
- Station North of 71st Street: Rebar installation 1st Mezzanine concrete pour (Form A Pour 1) completed to be followed by the placement of concrete the week of December. Erection of forms and installation of rebar for 2nd Mezzanine concrete pour (Form B Pour 2) is in progress and will be followed by placing concrete the 2nd week of December.

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

- Work continues with 2 shifts. All surface operations end at 10:00PM daily.
- Through November 29, 2013 the overall excavation was approximately 99.3% complete and forecast completion remains December 2013. The remaining excavation is at Entrance 2.
- Permanent concrete placement was approximately 39.2% complete with completion still forecast for August 2014.

➤ **Schedule**

- Through November 30, 2013 the contractor's schedule update (#28) shows the overall project at -119 days. The delays generally are focused on Entrance 2 and the Pump Room work in the southeast tunnel. Additional delays are being realized with the delivery and erection of the arch forms for the south Ancillary Cavern.
- The first arch concrete placement (Public Cavern) is forecast for early January 2014. The forecast for completion of the south Ancillary Arch is the end of February 2014.
- MTACC continues to review & negotiate the contractor's proposal for acceleration at Entrance 2. The proposal recovers 16 weeks, using double shifts weekends at a cost of approximately \$5 million.

➤ **Main Cavern (North and South)**

- The concrete wall placements are continuing in the Cavern, moving south to north. Work continues in the deep sump pit at the north end of the cavern with completion of waterproofing.
- Continuing with erection of the Public Cavern arch forms and building arch rebar cages.
- **Ancillary 1/Ancillary 2**
 - Smooth shotcreting was completed at Ancillary 1 in preparation for turnover of the area to the C5C contractor.
 - Ancillary 2 continues to be a support/laydown area for the project.
- **Entrance 1**
 - The contractor continued with removal of temporary underpinning steel.
 - Waterproofing is complete & concrete wall placement is underway along the inclined walls.
- **Entrance 2**
 - The contractor made full breakthrough to the cavern and continues with final mining & mucking out the area. Preparing for mud slab placements.
 - Blasting was completed, completing the final blasting for the project.
- **Option #1 (Lining the South and East tunnels, and mining the Cross Passageways)**
 - In the Pump Room erection of structural concrete walls is ongoing and is approximately 5% complete.
 - In the East Tunnel concrete lining continues from north (cavern) to south (73rd St), has advanced south of the Pump Room and is approximately 48% complete. Trimming of steel ribs is ongoing prior to lining placement.

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

- The second Project Progress Meeting is scheduled for December 10, 2013. Starting January 2014 the progress meetings will be bi-weekly.
- During November 2013 the contractor continued to focus on submittals and major sub-contractor agreements.
- Significant meetings being scheduled for December 2013 are the Schedule Presentation and the Escalator Technical Meeting.
- The contractor has advised that they submitted a power availability request to ConEd in October 2013 but through November 2013 ConEd has not been responsive.
- Development of the Baseline CPM Schedule is ongoing. MTACC's comments with all required coding needs to be incorporated into the schedule. Once the comments are incorporated, a more complete review for logic can be performed prior to adding resources.

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

- Electrical: Contractor's electrical continued working in warehouse preparing the EA Alarms for 96th Street. Conduit and cable installation 96th Street to 105th Street was started.
- Civil (Yard Work): Welding of the rail for the northern part of the project (96th Street to 102nd Street) was expected.
- Procurement
 - Antenna, fiber optic and communication cable (delivered)
 - Signal cable (due by December 31, 2013)
 - Power cable -2000MCM and 500MCM (delivered)
 - Wayside tray 63rd Street (delivered)
 - Wayside Signal Equipment 96th Street (released and in manufacturing)
 - Stops and layouts (delivered)
 - Simplex (material for 63rd Street was delivered)
 - Running rail (delivered)
 - LVT Blocks (15,337 delivered)
 - 3rd rail (in manufacturing and expected to be delivered by December 31, 2013)
 - SWP's (final delivery scheduled for January 2014)
 - Meridian EA Alarm Boxes (delivered)
 - Balfour Circuit Breakers and Rectifiers (due by December 2013)
- Submittal Progress
 - Total projected submittals: 4,528
 - Total submitted to date: 2,629
 - Total projected to complete: 1,899
 - Pending MTA response: 314

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 (CQPs). 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 November 2013 was the excessive time that it takes to submit Daily Inspection Reports on the C2B and C5 contracts and that the C3 and C5 contractors have not started to prepare the requested analysis that will allow them to close the open concrete NCRs. During October 2013 only one NCR for the entire SAS project had been entered into the electronic database. Following a conversation between the PMOC and the SAS Quality Manager, 20 NCRs that were written in October were subsequently entered into the database. The SAS Quality Managers and the contractor's Quality Managers on each project

were reminded of the requirement that NCRs must be written as soon as a nonconforming condition is identified and should also be immediately entered into their respective electronic databases.

Revision 3 of the SAS Project Quality Manual (PQM), issued in April 2009, has been revised by the SAS Quality Manager. However, MTACC is revising their quality system to utilize 19 quality elements instead of the present 15. Until this is official and the MTACC Quarterly Quality Oversight (QO) checklists are revised, Revision 4 cannot be issued. This may take several months since the MTACC QO rating system is also being modified.

An analysis of concrete strength results was performed on the C4B project and a draft document entitled "Statistical Evaluation of CIP Concrete Strength Results", dated October 15, 2013, was issued. This document contains a statistical evaluation of concrete strength test results to demonstrate compliance with the Contractual acceptance criteria of 5,000 psi for all cast-in-place concrete placed under Contract C4B. Based on this analysis, the Engineer of Record, AAJV, agreed that the 57 concrete NCRs that are open can be closed. The NCRs are now with the SAS Quality Manager for closure. When the C3 and C5B contractors perform a similar analysis, 15 C3 and 26 C5B NCRs can be closed.

Contract Packages C2A and C2B	
Status:	<p>On C2A, through November 30, 2013, a total of 36 NCRs have been issued. 30 have been closed, 2 were voided, and 4 are still open. Two of the open NCRs are related to concrete placement. No new NCRs were written in November and since work has been completed, no more are expected to be written. Four NCRs were closed in November.</p> <p>Daily Inspection Reports on the C2A contract are current and since work has been completed, no more Daily Reports will be written.</p> <p>On C2B, through November 30, 2013, a total of 14 NCRs have been issued. Seven have been closed and seven are still open. No NCRs were written in October or November. Two NCRs were closed in November. Only one of the seven open NCRs is related to concrete placement.</p> <p>The C2B contract is still two weeks behind in submitting their Daily Inspection Reports.</p>
Observation:	The C2A Quality Manager will be assigned to the C2B contract to assist the C2B Quality Manager after she completes the close-out effort on C2A.
Concerns and Recommendations:	The PMOC is concerned that there were no NCRs written on the C2B contract in October or November. The PMOC is also concerned that it is still taking too long to submit their Daily Reports and recommends that the contractor's management provides additional support until the C2A Quality Manager is available. The PMOC will continue to monitor the time it takes to submit Daily Inspection Reports on the C2B contract.
Contract Package C3	

Status:	On the C3 contract, through November 30, 2013, a total of 62 NCRs have been issued. Forty-three have been closed and 19 are still open. No new NCRs were written in November. Five NCRs that were written in October were not entered into the contractor's NCR log until November. Three of the five were for concrete placement. No NCRs were closed in November 2013. Submission of Daily Inspection Reports is current.
Observation:	Fifteen of the open 19 NCRs are for concrete placement. Following an analysis by the contractor, the Engineer of Record, AAJV, has indicated that they will agree the NCRs can be closed.
Concerns and Recommendations:	The PMOC is concerned that the contractor has not begun to prepare the requested analysis.
Contract Package C4B	
Status:	On the C4B contract, through November 30, 2013, a total of 113 NCRs have been issued. Fifty one (51) have been closed and 62 are still open, 57 of which are for concrete placement. Four NCRs were written in November and eleven NCRs were written in October but were not entered into the contractor's NCR log until November. One NCR was closed in November. Submission of Daily Inspection Reports is now current. Last month, submission was one month behind.
Observation:	Based on an analysis performed by the C4B contractor, the Engineer of Record, AAJV, agreed that the 57 concrete NCRs can be closed. The NCRs are now with the SAS Quality Manager for closure.
Concerns and Recommendations:	Based on approval by the Engineer of Record, only five NCRs will remain open. Daily Inspection Reports are now current. As a result of this improvement, the PMOC has no concerns.
Contract Package C5B	
Status:	On the C5B contract, through November 30, 2013, a total of 49 NCRs have been issued. Seventeen (17) have been closed and 32 are still open, 26 of which are for concrete placement. Three new NCRs were written in November 2013 and four NCRs were written in October but were not entered into the contractor's NCR log until November. One NCR was closed in November. Submission of Daily Inspection Reports is five weeks behind.
Observation:	Of the 32 open concrete NCRs, 26 are for concrete placement. Following an analysis by the contractor, the Engineer of Record, AAJV, has indicated that they will agree the NCRs can be closed.
Concerns and Recommendations:	The PMOC is concerned that Daily Inspection Reports are one month behind. The PMOC is also concerned that the contractor has not begun

	to prepare the requested analysis.
Contract Package C6	
Status:	On the C6 contract, through November 30, 2013, a total of four (4) NCRs have been issued. All four NCRs have been closed. No NCRs were written in November and two were closed.
Observation:	The C6 Contractor's Quality Manager is documenting NCRs as they occur.
Concerns and Recommendations:	The C6 Contractor's Quality Manager has taken the proper action and the PMOC has no concerns at this time.

2.0 SCHEDULE DATA

Integrated Project Schedule (IPS) Update #88 was received on December 10, 2013 and is based on a data date of November 1, 2013. This update submission was limited to the ".XER" schedule file for the IPS and component contractor construction schedules. IPS Update #88 forecasts a completion of all construction and NYCT Pre-Revenue Training & Testing activities on September 19, 2016, with 74 working days (approximately 102 calendar days (CD)) 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 November 2013 include the following:

- MTACC continues the process of recasting the IPS in an effort to enhance its accuracy and reliability. Overall, IPS Update #88 appears to be a significant upgrade when compared to IPS Update #87. Update summaries of all active construction contracts have been "cut-in" to the IPS. Most of the schedule constraints used in the production of the contract schedule summaries have been eliminated. MTACC acknowledges that additional work is required in subsequent updates to refine the IPS.
- As noted, the C4C construction schedule was cut-in to the IPS. Consequently, the PMOC will start monitoring milestone schedule performance for this contract.
- Contract C2A achieved Substantial Completion during this reporting period.

Project Critical Path: The most "critical" or longest schedule path that controls the completion of SAS Phase 1 extends through the construction of the 72nd Street Station. The TF=0 portion of the path starts on September 18, 2014, when the systems contractor is provided access to the work site. Preceding this milestone, the most critical path has schedule float of TF=13.

- This path begins with the 72nd Street Station, Ancillary 2 mezzanine structural and architectural construction, which is currently forecast to complete on February 5, 2014. This work is followed by a 105 WD schedule lag which prevents interior MEP work from starting until July 9, 2014. The "logic" associated with the use of this lag is unclear. Following completion of Signal Rooms (C4C MS #9); currently forecast for September 26, 2014, these areas are turned over to the C6 Contractor for signal system installation.

- Signal system installation begins on November 3, 2014. However a two-month schedule lag effectively restrains the start of major work until January 5, 2015. From this date, installation of signal equipment is continuous until the completion of inspection and testing activities on August 1, 2016.
- This schedule presumes that Proof of Operations Testing can start and complete before the completion of all signal system testing. Proof of Operations testing is currently scheduled to start on April 27, 2016 and complete on July 27, 2016. The PMOC questions the validity of this logic.
- Based on this schedule, the only work that follows the signal system testing are the Route Familiarization, and Systems and Equipment Familiarization activities required by NYCT, resulting in a theoretical completion of all work on September 19, 2016.

The PMOC has several concerns relative to this path.

- Based on experience, the time period between completion of C4C work on September 26, 2014 and start of C6 work on November 3, 2014 represents a reasonable duration for necessary punchlist and turnover activities.
- The undocumented gaps in time documented above represent approximately seven months of time. These gaps may represent discretionary logic at the contract level that can be adjusted at minimal cost to the MTACC and result in limited “schedule acceleration”. Gaps of time such as these, particularly in a critical or near-critical path should be fully documented and validated in the schedule narrative report.
- The PMOC questions the validity of the logic that allows the completion of the Proof of Operations Test Period to precede the completion of signal system testing.

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

+5/8 WD: NYCT Pre-Revenue Operation Activities scheduled to start on August 18, 2014 is unchanged this period. Float on this path remains unchanged this update period.

+16 WD: This path involves a second, independent schedule path through 72nd Street Station mezzanine, platform and signal vault room construction, concluding with C4C MS#9.

+16 WD: This path involves track installation starting north of 96th Street Station and generally proceeding south. Limited work started on October 21, 2013. Unrestricted access to the tunnels north of 96th Street on November 18, 2013 allows the continuous start of work, currently forecast for November 18, 2013. This path includes continuous work through completion of wayside work at 72nd Street and C6 Substantial Completion on August 26, 2016.

MTACC has noted the contractor’s schedule is based on a very low production estimate. Documentation of actual production rates may serve to increase schedule float associated with this work.

It is noted that Activity C6T4-655, FIAT and TSIT testing (TF=0) complete before the completion of wayside equipment installation. The PMOC questions the validity of this logic.

+25/26 WD: This path involves the completion of Entrance 1 at the 63rd Street Station and is initiated by utility relocations, which are currently underway and forecast to complete on January 3, 2014. Subsequent activities include shoring, foundation piles and the structural construction of Entrance 1. Escalator installation and testing completes the work at this location. Completion of all work is forecast for February 12, 2015.

Milestone Summary: For contracts actively under construction, a tabulation of current schedule performance against contractual milestones is presented in Table 4. Based on these milestones, the PMOC notes the following:

- Contract C2A achieved Substantial Completion on November 5, 2013.
- Contract C4B is on track to achieve Substantial Completion in late December 2013 or early January 2014.
- For C2B; the IPS does not reflect the Contractor's Milestone forecast dates for MS Nos. 2 through 9. The IPS was updated to reflect MTACC's position with respect to these milestones. The PMOC notes that in most cases, the variances between the contractor and the MTACC forecast dates for these milestones is not significant.
- For C4B, C5B and C6; the IPS reflects the Contractor's Milestone forecast dates.
- C3, MS#5 is on track to complete on or about December 31, 2013.
- For C5C; the IPS is based on and reflects the Access and Milestone dates per the Contract Documents.
- Delays involving Yorkshire Towers have resulted in a forecast completion date for all C5B work of February 6, 2015 which is a significant delay compared to the contract completion date of September 4, 2014. This delay should not affect the overall SAS RSD date, however rather than paying contractor delay costs, MTACC is exploring schedule acceleration strategies that should recover lost time for the same or lower cost as the forecast extended overhead/delay costs.

ELPEP/SMP Compliance: Based on the current status of the IPS, SAS Phase 1 can be considered conditionally compliant 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). The PMOC recognizes the complexity of the recent updating process, but considers full compliance to be conditional on completion and validation of this effort.

- Forecast Revenue Service Date
 - ELPEP Requirement: February 28, 2018
 - Current Forecast: December 30, 2016

- The RSD has been maintained this update although the PMOC has questions regarding certain schedule logic that has not been maintained through the IPS updating process.
- Minimum schedule contingency (measured against February 28, 2018 RSD)
 - ELPEP Requirement: 240 CD
 - Current Forecast: 537 CD
 - ELPEP float requirement against risk-adjusted completion date was maintained although significantly reduced. Refer to comments regarding negative float.
- Minimum Allowable Float; Real Estate Acquisition
 - ELPEP Requirement: 60 CD
 - Current Forecast: Indeterminate.
 - N/A.
- Minimum Allowable Secondary Float Path
 - ELPEP Requirement: 25 Calendar Days (approximately 18 WD).
 - Current Forecast: Indeterminate
 - Secondary float paths with TF=16WD (approximately 22 WD). PMOC notes that satisfaction of this requirement may not be consistent with maintaining the project budget.
- Secondary Schedule Mitigation (critical path compression)
 - ELPEP Requirement: 125 CD
 - Current Forecast: Schedule mitigation efforts are under review.
 - Evaluation of the C6 Contractor's schedule acceleration/mitigation proposal is ongoing.

Schedule Contingency: Via IPS Update #88, MTACC forecasts all Phase 1 construction and pre-revenue testing to be complete on September 20, 2016. This results in 102 CD (73 WD) of contingency when measured against the MTACC's target RSD of December 30, 2016 and a 526 CD contingency when measured against the FTA Risk-Informed RSD of February 28, 2018. As previously noted, the PMOC is concerned about some scheduling logic and completeness of certain schedule paths. Adjustments involving these paths may affect schedule contingency.

Schedule Comments: There are several issues of concern involving the IPS:

- MTACC appears to have made good progress in removing the excessive schedule constraint dates used in the reformulation of the IPS. Continued evaluation and use of the IPS will confirm if this effort has been completed.
- The narrative report accompanying Update #88 indicates that "Signal testing starts on January 4, 2016 and completes on July 28, 2016 marking the completion of all Systems Integration Testing for the SAS Phase I Project". The PMOC's review of Update #88 identifies several signal system activities with completion dates substantially later than July 28, 2016. The PMOC considers it unlikely that system testing can be completed

prior to the completion of all installation activities. Additional validation of the revised IPS appears to be needed to ensure that all required logical connections have been established.

- Development of detailed and updated schedule information and logical relationships regarding the permanent station power system(s) is a potentially critical item. Detail within Update #88 is not adequate for a comprehensive evaluation and understanding of the potential schedule impact of this work.
- For Construction Package Contract C-26006 “63rd Street Station Upgrades”, meetings with the contractor to review the status of Entrance 1 as well as the delays to Milestones 3 and 4 are ongoing. SAS is reviewing the amount of GO’s requested by the contractor and the availability of those GOs in early 2014. Reasonable forecasting the schedule for completion of these milestones is dependent on the schedule for these GOs.
- The C5C construction schedule has not been approved and therefore cannot be fully incorporated into the IPS. If MTACC anticipates an extended review process prior to the approval of this schedule, the PMOC recommends some form of summarized construction logic be cut-in to the IPS.

To some extent, the SAS Project Team has used the IPS in developing “mitigation strategies” for several issues that could have resulted in a delay to the RSD. The issues noted above should be resolved to ensure the IPS can be reliably used as a management tool.

3.0 COST DATA

Based upon financial expenditures reported by the MTACC through November 30, 2013, SAS Phase 1 is approximately 60.5 % complete. The completion status of the individual construction contracts through November 30, 2013, also based upon reported expenditures through that date, is as follows:

- C26002 (Tunnel Boring) – 100.0%
- C26005 (96th Street Station) – 99.1%
- C26010 (96th Street Station) – 27.9%
- C26013 (86th Street Station) – 100%
- C26008 (86th Street Station) – 73.8%
- C26006 (63rd Street Station) – 63.5%
- C26007 (72nd Street Station) – 96.0%
- C26011 (72nd Street Station) – 3.2%
- C26009 (Systems) – 17.7%

Aggregate Construction % Completion:

- 100% of all construction has been bid.
- 100% of all construction is under contract
- 61.2% of all construction is complete

Based upon cost data received from MTACC for the period through November 30, 2013:

- Value of construction in place this period = \$41,385,965
- Estimated value of construction remaining = \$971,144,656
- Target construction completion = September 20, 2016
- Number of months remaining = 33.7

The estimated average rate of construction required to achieve target completion date is \$29,488,165 per month. The average progress (payments) achieved over the most recent six month period is \$42,050,651 per month. Based on a review of cost data for November 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 \$8.9M. The PMOC is concerned that over \$13M of engineering cost has been expended over the past two reporting periods. If this rate of expenditure continues, a further revision to the soft cost budget will be required.

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 \$4,266,375,000. This update includes the updated construction EAC and all revisions included in Revision 10 of the Project Cost Estimate.

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 November 2013 is summarized as follows:

	<u>Executed AWOs</u>	<u>AWO Exposure</u>
November 2013	\$116,465,680	\$147,505,764
October 2013	\$112,382,536	\$150,314,749
Change	\$4,083,124	\$(2,808,985)
Change	3.63%	(1.87)%

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

Const. Pkg.	AWO Exposure \$			Changes this Period
	Nov.-13	Oct.-13	Period Δ	
C1	\$41,086,647	\$41,086,647	\$0	Final value as reported by MTACC.
C2A	\$51,274,883	\$50,492,565	\$782,318	Increase is based on a revised estimate for AWO #144 and initial estimates for AWO # 150, 153 and 169.
C2B	\$21,555,697	\$18,570,405	\$2,985,292	Net increase is based on revised estimates for

Const. Pkg.	AWO Exposure \$			Changes this Period
	Nov.-13	Oct.-13	Period Δ	
				AWO # 2, 15, 20 and 44 as well as the initial estimate for AWO # 51.
C3	\$10,850,028	\$10,589,180	\$260,848	Net increase is based on revised estimates for AWO # 52, 65, 78, 82, 92, 94, 98 and 100 as well as initial estimates for AWO # 104, 105, 108 and 110.
C4B	\$2,632,742	\$2,632,804	\$(62)	Reduction based on a revised estimate for AWO # 79.
C4C	\$110,278	\$117,263	\$(6,985)	Net reduction is based on revised estimates for AWO # 4 and 5.
C5A	\$6,525,471	\$6,525,471	\$0	Final value as reported by MTACC.
C5B	\$10,774,895	\$9,569,649	\$1,205,246	Increase is based on initial estimates for AWO # 43, 45, 46, 50, 80, 83, 84 and 85.
C5C	\$0	\$0	\$0	No change this period.
C6	\$2,695,123	\$10,730,765	\$(8,035,642)	Reduced exposure value is the result of revised estimates for AWO # 12, 22 and 23. Note the value of the proposed schedule acceleration initiative (AWO #22) was reduced to \$0 this reporting period.
	\$147,505,764	\$150,314,749	\$(2,808,985)	

The changes in Executed AWO Value are summarized as follows:

Const. Pkg.	Executed AWO \$			Changes this Period
	Nov.-13	Oct.-13	Period Δ	
C1	\$41,086,647	\$41,086,647	\$0	Final value as reported by MTACC.
C2A	\$41,124,870	\$40,746,797	\$378,073	Increase is based on the execution of AWO # 91, 99 and 151.
C2B	\$4,791,943	\$2,073,943	\$2,718,000	Net increase is based on execution of AWO # 7, 15, 44 and 50.
C3	\$7,990,751	\$7,084,596	\$906,155	Increase is based on execution of AWO # 21, 57, 62, 64, 76, 79, 80, 82, 83, 87, 88, 89 and 110.
C4B	\$5,004,513	\$5,013,513	\$(9,000)	Decrease is based on the execution of AWO # 79.
C4C	\$32,062	\$42,062	\$(10,000)	Decrease is based on the execution of AWO # 5.

Const. Pkg.	Executed AWO \$			Changes this Period
	Nov.-13	Oct.-13	Period Δ	
C5A	\$6,525,471	\$6,525,471	\$0	Final value as reported by MTACC.
C5B	\$7,937,172	\$7,837,276	\$99,896	Net increase is based on the execution of AWOs # 54, 65, 67, 72, 73, 78 and 79.
C5C	\$0	\$0	\$0	No change this period.
C6	\$1,972,234	\$1,972,234	\$0	No change this period.
	\$116,465,660	\$112,382,536	\$4,083,124	

As of November 30, 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	\$41,086,647	12.19%	\$41,086,647	12.19%
C26005 (2A)	99.05%	\$325,000,000	\$51,274,883	15.78%	\$41,124,870	12.65%
C26010 (2B)	27.93%	\$324,600,000	\$21,555,697	6.64%	\$4,791,943	1.48%
C26006 (3)	63.54%	\$176,450,000	\$10,850,028	6.15%	\$7,990,751	4.53%
C26007 (4B)	95.98%	\$447,180,260	\$2,632,742	0.59%	\$5,004,513	1.12%
C26011 (4C)	3.19%	\$258,353,000	\$110,278	0.04%	\$32,062	0.01%
C26013 (5A)	100.00%	\$34,070,039	\$6,525,471	19.15%	\$6,525,471	19.15%
C26008 (5B)	73.80%	\$301,860,000	\$10,774,895	3.57%	\$7,937,172	2.63%
C26012 (5C)	0.00%	\$208,376,000	\$0	0.00%	\$0	0.00%
C26009(6)	17.73%	\$261,900,000	\$2,695,123	1.03%	\$1,972,231	0.75%
TOTAL TO DATE		\$2,674,814,299	\$147,505,764	5.51%	\$116,465,660	4.35%

To date, approximately \$1,596,023,701 (59.7%) worth of all base contract construction work has been completed. As a % of work completed, the AWO exposure for these contracts = 9.24% and the executed AWO % = 7.30%. Based on performance to date, a forecast of total AWO expenditure of approximately \$200M appears reasonable. This compares favorably with the \$229M AWO contingency contained in the MTACC CWB. The PMOC continues to recommend that all AWOs be critically reviewed, evaluated and documented on a contemporaneous basis to determine if compensable responsibility exists for some of these expenditures.

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

Cost Contingency: Based upon the MTACC Current Working Budget, expenditures to date reported by MTACC and the current AWO Exposure Estimate, the PMOC estimates the available contingency as follows:

Phase 1 Budget	\$ 4,451,000,000
Construction Awards	\$ 2,674,814,299
Soft Cost Expended	\$ 989,898,188
Soft Cost Forecast to Complete	\$ 318,210,170
AWO Exposure	\$ 147,505,764
Available Contingency	\$ 320,571,579
ELPEP Requirement	\$ 142,222,000

As of October 31, 2013, MTACC estimated the available contingency to be \$351,188,000. The variance is based upon the PMO's use of the AWO Exposure versus MTACC's use of executed AWOs. Cost models calculated by both the PMOC and the SAS Project Team verify that the current contingency balance is greater than the Planned Balance and exceeds the ELPEP Required Balance.

4.0 RISK MANAGEMENT

Risk Registers for active construction contracts were updated during September 2013. The following table identifies the most significant risks presently identified on the project.

#	<u>Risk Description</u>	<u>Mitigation Summary</u>
1.	Risk CNS 4 (C6): Delay resulting from management of contractual interfaces during construction.	
	Mitigation Strategy: 1. Develop Detailed Contract interface Management Plan. 2. Provide an organization that is capable of identifying interface issues and resolving them in a timely manner to support the schedule. 3. Interface management position descriptions and responsibilities. 4. A detailed process for interface management and status reporting. As a minimum, this includes a detailed work list of items to be completed in chronological order to meet the required interface date. 5. Interface management meetings on	Current Status: 1. Complete. 2. Interface Manager started work on August 5, 2013. Additional staff is being added. 3. Complete 4. Complete 5. The interface management effort is beginning to show results through better definition of interface requirements, development of detailed tasks required to execute turnovers and prompt elevation of significant problem issues. 6. Monitoring of the overall interface management process and specific problematic interface issues will continue.

#	<u>Risk Description</u>	<u>Mitigation Summary</u>
	a bi-weekly basis.	
Risk C3, C2B, C4C, C5C and C6 Schedules: Construction contract delays that will extend Project Completion beyond the current RSD.		
2.	Mitigation Strategy: <ol style="list-style-type: none"> 1. Develop TAC paper to identify potential schedule acceleration options. 2. Refine schedule acceleration options within MTACC and with contractor(s) as appropriate. 3. Solicit contractor cost proposals for preferred schedule acceleration options. 4. Negotiate and implement. 	Current Status: <ol style="list-style-type: none"> 1. Complete. 2. Complete. 3. To date, the primary schedule acceleration strategy has involved double-shifting systems installation and testing activities. The SAS project team is continuing to evaluate the C6 Contractor's proposal for schedule acceleration. There are significant issues involving equitable distribution of risk and flexibility of implementation that must be incorporated in any agreement. 4. The opportunity to accelerate construction of Entrance #2 at the 86th Street Station has been recently identified. Recovering time lost as a result of issues involving adjacent Yorkshire Towers does not affect the RSD, but will mitigate forecast delay costs for which the contractor will be entitled. .
Permanent (Station) Power: Permanent facility power to 72 nd , 86 th , and 96 th Street Stations may be delayed and result in subsequent delays to equipment testing and commissioning.		
3.	Mitigation Strategy: <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 	Current Status: <ol style="list-style-type: none"> 1. Complete. 2. For 72nd and 96th Street Stations, review comments for the 30% submittal have been received. Development of 60% submittals are underway. Submittal of 30% design for 86th Street Station (C5C) is pending. 3. Detail schedule fragnet is under development. 4. Based on current schedules, it appears some acceleration of infrastructure construction to support permanent power will be required. 5. "Cut-in" coordination with ConEd will occur when construction schedules are fully

#	<u>Risk Description</u>	<u>Mitigation Summary</u>
	coordination of feeder “cut-in” to minimize delays	developed and within ConEd planning window.
Buy America		
Delay resulting from resolution of MTA’s request for a non-availability waiver for the LVT Pad and Boot.		
4.	Mitigation Strategy: 1. On September 11, 2013, MTACC transmitted its request for a “non-availability” waiver for the LVT Pad and Boot. 2. Options include: a. MTACC’s position accepted – no changes required. b. Request rejected – exclude FTA funding & use local funding only. c. Request rejected – develop alternative with compliant materials.	Current Status: 1. No formal response has been received. 2. Informal discussions continue. 3. MTACC is considering a request to allow it to proceed “at risk” until the matter is resolved. 4. Approximately 15,300 LVT’s have been delivered to the C6 Contractor’s warehouse.
Risk C4C Entrance 1 (301 E 69th Street):		
Work on Entrance 1 will be delayed due to delays in obtaining design approval from Owner for utility relocation in the building.		
5.	Mitigation Strategy: 1. Develop an alternate design (relocation from inside building to sidewalk) to reduce impacts to building utilities. 2. Prepare a Tech memo and submit to FTA for approval. 3. Develop and negotiate access agreements with affected property owners 4. Excavate/concrete/adit 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.	Current Status: 1. In progress. 2. Complete. 3. In progress. 4. Work forecast to start in early December 2013. 5. Complete.
6.	Risk COM 2 (C6): Frequent late changes to the communications systems could delay C6 and the RSD.	

#	<u>Risk Description</u>	<u>Mitigation Summary</u>
	<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>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. The effectiveness of the CCG/CCB review process should be periodically monitored to verify that it is functioning properly.
<p>Risk CNS 8 (C6)</p> <p>Delayed Safety Certification results in delay to the RSD</p>		
7.	<p>Mitigation Strategy:</p> <ol style="list-style-type: none"> 1. Develop a plan to show how the safety certification will be organized and implemented. 2. Identify a candidate for Safety Certification Manager. 3. Develop preliminary training program for respective contract CM's, office engineers, etc. that will assure that all parties involved in the safety certification process are aware of their responsibilities. 4. Develop EDMS workflow to manage approvals and to store electronic documents. 5. Work with A/A JV IT to set up an EDMS file for the safety certification process. 6. Contact OSS/NYCT to commence the process of obtaining documentation from NY State on 	<p>Current Status:</p> <ol style="list-style-type: none"> 1. Complete 2. Complete 3. Complete. 4. Complete 5. Complete 6. Complete 7. Complete 8. Complete 9. Conversations with the NYS Public Transportation Safety Board have confirmed their role to be one of oversight and verification of the MTACC/NYCT certification process. Their role will not impact the RSD. 10. This risk, combined with the Safety Certification process will be periodically reviewed.

#	<u>Risk Description</u>	<u>Mitigation Summary</u>
	<p>the acceptability of the safety certification process.</p> <p>7. Schedule Safety Certification training for C6 and C2B Contracts.</p> <p>8. Internal meeting(s) to prepare the outline of the committee meeting with NYS.</p> <p>9. Hold Safety Certification Meeting with NYS representative in attendance.</p>	
<p>Risk C3 Entrance 1 (200 E 63rd Street):</p> <p>Work on Entrance 1 will be delayed due to delays in design approval from Owner for utility relocation in the building at 200 E 63rd Street.</p>		
8.	<p>Mitigation Strategy:</p> <ol style="list-style-type: none"> 1. Develop schematic design of all utility relocations. 2. Determine the means of access to utilities in the area between the station structure and existing building structure. 3. Submit design package to building owner. 4. Obtain owner's approval and building permits. 5. Commence construction. 	<p>Current Status:</p> <ol style="list-style-type: none"> 1. Complete 2. Complete 3. Complete 4. Complete 5. Contractor commenced work in March 2013. This risk will be periodically monitored.

It is noted that the Project is in the process of developing an updated subset of risks associated with engineering submittals and testing & commissioning activities. These risks will be incorporated in the respective contract risk registers.

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. Ongoing efforts to engage construction managers in more active participation in the process will be beneficial.

5.0 ELPEP

There were no ELPEP meetings held during November 2013. The next ELPEP meeting is scheduled for December 12, 2013. With respect to SAS, the current status of each of the main ELPEP components is summarized as follows:

- **Technical Capacity and Capability (TCC):** There are revisions to the Change Control Committee (CCC) processes that are being considered that will affect the TTC Plan and that these potential changes are currently in the review/discussion stage. The PMOC has completed its review of SAS PMP Rev. 9 and is reviewing these comments with FTA-RII

to finalize the comment details. FTA expects to send the final comments to MTACC in the near future.

- **Schedule Management Plan (SMP):** The MTACC internal audit may identify necessary revisions to the SMP. The SAS final audit report was not received during October 2013 as previously forecast. The SAS 3rd Quarter 2013 ELPEP Compliance Checklist indicates MTACC is “in compliance” with its SMP.

The PMOC notes that the SAS Integrated Project Schedule (IPS) is currently undergoing a major “reconstruction” to better incorporate construction schedules and to correct and improve upon shortcomings and inaccuracies that have been identified over recent updates. The SAS 3rd Quarter 2013 ELPEP Compliance Checklist does not address this effort. Update #88 demonstrates continued progress in this area. Full implementation of this effort is required before the SAS IPS can be considered fully ELPEP compliant.

- **Cost Management Plan (CMP):** The MTACC internal audit may identify necessary revisions to the CMP. The SAS final audit report was not received during October 2013 as previously forecast. The SAS 3rd Quarter 2013 ELPEP Compliance Checklist indicates MTACC is “in compliance” with its CMP. The PMOC concurs with this assessment.
- **Risk Mitigation Capacity Plan (RMCP) and Risk Management Plan (RMP):** The MTACC internal audit may identify necessary revisions to the RMP. The SAS final audit report was not received during October 2013 as previously forecast. The SAS 3rd Quarter 2013 ELPEP Compliance Checklist indicates MTACC is “in compliance” with its RMP. The PMOC concurs with this assessment.

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 October 31, 2013, a total of 7,122,282 construction hours have been logged with 67 lost time and 194 recordable incidents documented. The total hours and incidents equates to a lost time rate (LTR) of 1.88 and a recordable rate of 5.45. No change in both rates was noted 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

Schedule Reliability

MTACC has made significant progress in resolving previously identified deficiencies in the IPS. Completion of this effort as well as in-service validation of usefulness and results will confirm if this effort is complete.

Schedule Recovery/Acceleration

The SAS Project Team's efforts to improve the project schedule currently involve two major efforts:

1. Reduce the duration of systems installation and testing.
2. Reduce the remaining duration of work at 86th Street Station, Entrance 2.

The PMOC has previously expressed its concerns over the proposed acceleration of the systems installation and testing. Recovery of time lost at 86th Street Station represents a reasonable approach to maximizing value achieved for expenditure.

Quality Management

The manner by which NCRs documenting variances between actual and specified delivery time for concrete were recorded and resolved has been extensively discussed in prior PMOC monthly reports.

The MTACC has determined the "statistical analysis" will be used to resolve open NCRs involving concrete delivery time for construction contracts C2A, C3, C4B and C5B. The PMOC considers this exercise to be of no value, particularly in light of the fact that the design engineer has indicated its willingness to close out these NCRs based on available information.

However, the PMOC does not understand the MTACC's proposed approach for handling the concrete delivery matter on Contracts C4C and C5C. For these contracts, MTACC has provided direction to document variances in concrete delivery time with established requirements via the NCR process, with resolution of all NCRs to be based on the "statistical analysis".

Experience suggests a more pro-active and meaningful approach could involve development of a contract modification or "waiver" for concrete delivery time based upon an acceptable concrete mix design, and contemporaneous monitoring of concrete cylinder strength test results. MTACC's proposed approach is not consistent with its Quality Management Plan, and establishes a negative precedent for resolution of future nonconformances.

Construction Management

In recent reports, the PMOC has identified construction management performance issues it believed to be significant risks to the project. SAS senior management has not taken exception to any of these findings and opinions. However, to date there have not been any tangible actions taken to resolve these concerns. The PMOC reiterates its previous concerns with respect to CM performance and recommends an appropriate action plan be developed and implemented as soon as possible.

Permanent Power

The PMOC has previously documented SAS project team concerns regarding the time required to design, fabricate and install permanent station power facilities. One element of the mitigation strategy for this risk was to develop a detailed schedule "fragnet" representing all activities

involved in delivering permanent power to the affected stations. Without this effort, it is difficult to assess the actual magnitude of this risk. The PMOC continues to recommend the complete modeling of this issue be expedited to allow management to thoroughly understand the magnitude of any problem and determine if any mitigating actions are possible.

Low Vibration Track (LVT) Buy America Decision

On September 11, 2013, MTACC submitted its “Request for Non-Availability Waiver for Low Vibration Track System” to the FTA in accordance with 49 C.F.R. §661.7(c). As of the writing of this report, there has been no formal decision regarding this request.

IPS Update #88 indicates track installation is forecast to start on November 26, 2013; initial track installation activities have 16 WD of schedule float. The start date is consistent with previous IPS updates; however the float value has changed with this update. It should be noted that the contractor was not ready to start work this period due to delays for which it was completely responsible. On December 9, 2013, after discussion with FTA, MTACC proceeded with LVT tie block installation “at its own risk”.

This issue represents a significant cost and schedule risk to the successful completion of SAS Phase 1 and resolution needs to be expedited to the greatest extent possible.

APPENDIX A - ACRONYMS

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

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

APPENDIX B – TABLES

Table 1 - Summary of Schedule Dates

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

A = Actual

Table 2 - Schedule Contingency

IPS Update #	74	77	80	83	86	87	88
Data Date	09/01/12	12/01/12	3/1/13	6/1/13	9/1/13	10/1/13	11/1/13
Contingency (CD)							
RSD=12/31/2016	No	90	90	109	102	102	102
RSD=02/28/2018	Report	513	513	530	537	537	537

Table 3 – Schedule Milestone Comparison

Pkg	MS	Description	Dates			Variance		Sch.
			Adjusted (2)	Ud #87 (3)	Ud #88 (4)	Contract = (2) - (4)	Month = (3) - (4)	Float (87)
C2A	#1	96th Tunnel Exc, Inv. 97-99, Anc. #2	07/15/13	9/23/13A	9/23/13A	-70	0	-
C2A	#2	96 th Tunnel Inv.92-95, Anc. #1	07/15/13	10/28/13	11/5/2013A	-113	-8	-
C2A	#2	96 th Tunnel Ent #1	07/15/13	10/28/13	11/5/2013A	-113	-8	-
C2A	#2	96 th Tunnel Inv. 92-95, Ent #2	07/15/13	7/15/13A	7/15/13A	0		-
C2A	SS	Completion of all work, including Entrance #3.	07/15/13	10/28/13	11/5/2013A	-113	-8	-
C2B	MS #1	Complete work 99th to 105th Streets; provide shared access at 102nd St access shaft	09/21/13	9/21/13A	9/21/13A	0	1	-
C2B	MS #2	Complete work & provide shared site access @ 93rd St shaft	03/22/14	3/21/14	3/21/14	1	0	724
C2B	MS #3	Complete work & provide limited access @ E&W Trackways thru Sta. (1238+50 and 1225+25), & 99th to 105th St Tunnel and Exclusive Access @ Rail Shaft	10/21/13	10/21/13	10/18/2013A	3	3	-
C2B	MS #4	Complete work & provide shared access in East & West track-ways thru Sta. (1238+50 ->1225+25); 97th -> 99th St Tunnel in 99th to 105th St Tunnels	09/21/14	10/2/14	10/20/14	-29	-18	63
C2B	MS #5	Complete work & provide shared access @ East & West Tunnels South of 96th St Station (1225+25 and STA. 1209+00)	02/20/14	2/21/14	2/21/14	-1	0	26
C2B	MS #6	Complete work & provide full access to Comm. Rooms & Closets	08/21/14	8/21/14	10/21/14	-61	-61	237
C2B	MS #7	Complete work & provide full access to Signals Rooms	08/21/14	8/21/14	10/21/14	-61	-61	290
C2B	MS #8	Complete work & provide full access to Traction Power Rooms:	08/21/14	8/21/14	10/21/14	-61	-61	208
C2B	MS #9	Complete work & provide full access to Station Service Centers	11/21/14	11/21/14	3/6/15	-105	-105	475

Pkg	MS	Description	Dates			Variance		Sch.
			Adjusted (2)	Ud #87 (3)	Ud #88 (4)	Contract = (2) - (4)	Month = (3) - (4)	Float (87)
C2B	MS #10	Complete all Comm., Signal , & Traction Power work in remaining areas not identified in Milestones 1 through 9	09/21/14	1/28/15	3/24/15	-184	-55	462
C2B	SS	Substantial Completion	12/21/15	3/10/16	3/25/16	-95	-15	199
C3	#3a	Compl Mezz Levels Comm. Rms/Sta. Service Ctr.	04/15/13	7/22/13A	7/22/13A	-98		-
C3	#3b	Conduits @ Mezzanine Level	04/15/13	11/05/13	11/14/13	-213	-9	-
C3	#3c	Compl Mezz Levels Comm. Rms/Sta. Service Ctr.	04/15/13	03/04/14	03/04/14	-323	0	148
C3	#4	Compl Lwr/Uppr Platforms & Signal Rms	10/14/13	01/13/14	01/13/14	-91	0	53
C3	#4b	Compl Lwr/Uppr Platforms & Signal Rms	10/14/13	05/01/14	05/01/14	-199	0	106
C3	#5	Compl All work Anc. #2 in Parking Garage	08/30/13	12/23/13	12/23/13	-115	0	288
C3	#6	Complete work @ Ancillary #1	07/09/12	10/07/13	10/07/13	-455	0	339
C3	SS	Substantial Completion	05/13/14	01/15/15	01/15/15	-247	0	25
C4B	#1	Compl All work North of Grid Line 17	06/25/13	8/09/13A	8/09/13A	-43		-
C4B	SS	Substantial Compl/All work South GL 17	12/03/13	01/02/14	12/30/13	-27	3	29
C4C	MS #1	Provide vehicle access thru 72nd Street Station 1172+40 - > 1163+00	02/13/14	02/13/14	02/14/14	-1	-1	113
C4C	MS #2	Provide limited access thru 72nd Street Station 1172+40 - >1163+00	01/13/14	01/13/14	06/13/14	-151	-151	88
C4C	MS #3	Provide shared access thru 72nd Street Station 1172+40 - >1163+00	11/27/14	11/27/14	11/25/14	2	2	42
C4C	MS #4	Provide vehicle access south of 72nd Street Station 1163+00 ->149+50	2/13/14	2/13/14	02/14/14	-1	-1	113
C4C	MS #5	Provide limited access south of 72nd Street Station 1163+00 -> 149+50	4/14/14	4/14/14	04/14/14	0	0	131
C4C	MS #6	Provide shared access south of 72nd Street Station 1163+00 -> 149+50	6/13/14	6/13/14	06/09/14	4	4	92

Pkg	MS	Description	Dates			Variance		Sch. Float (87)
			Adjusted (2)	Ud #87 (3)	Ud #88 (4)	Contract = (2) - (4)	Month = (3) - (4)	
C4C	MS #7	Provide full access turnover of Communications Rooms to Systems Contractor	8/28/14	8/28/14	08/27/14	1	1	336
C4C	MS #8	Provide full access turnover of Signal Rooms South of station to Systems Contractor	7/15/14	7/15/14	07/08/14	7	7	374
C4C	MS #9	Comp. work in all Signal Rooms except M8	9/29/14	9/29/14	09/26/14	3	3	13
C4C	MS #10	Comp. work in north power rooms	2/25/15	2/25/15	10/10/14	138	138	261
C4C	MS #11	Comp. work in south power rooms	03/24/15	03/24/15	11/19/14	125	125	238
C4C	MS #12	Complete work, provide full access @ Station Service Center(s)	08/28/14	08/28/14	08/19/14	9	9	344
C4C	MS #13	Complete work, provide full access @ Lubrication Room(s)	08/28/14	08/28/14	08/21/14	7	7	342
C4C	MS #14	Complete work in all remaining Comm. Signals & Traction Power Rooms	08/28/14	08/28/14	08/29/14	-1	-1	336
C5B	#1	Compl All work South of Grid Line 15	03/04/14	03/28/14	04/15/14	-42	-18	100
C5B	SS	Substantial Compl/All Work North GL 15 (w/0 Ent. #2)	09/04/14	08/29/14	09/23/14	-19	-25	101
C5B	SS	Substantial Compl/All Work incl. Ent. #2	-	02/04/15	02/06/15		-2	186
C6	#2A	Complete LAN - 96th St. Station	05/18/15	05/18/15	05/18/15	0	0	313
C6	#2B	Complete WAN - 96th St. Station	05/18/15	05/18/15	05/18/15	0	0	313
C6	#3A	Complete LAN - 86th St. Station	07/18/15	07/17/15	07/20/15	-2	-3	153
C6	#3B	Complete WAN - 86th St. Station	07/18/15	07/17/15	07/20/15	-2	-3	153
C6	#4A	Complete LAN - 72nd St. Station	02/18/15	06/29/15	02/19/15	-1	130	412
C6	#4B	Complete WAN - 72nd St. Station	02/18/15	06/29/15	02/19/15	-1	130	412
C6	#5A	Complete LAN - 63rd St. Station	04/18/14	09/05/14	10/06/14	-171	-31	73
C6	#5B	Complete WAN - 63rd St. Station	04/18/14	09/05/14	10/06/14	-171	-31	73
C6	#5C	Complete all 63rd St. Station work	04/18/14	09/05/14	11/14/14	-210	-70	73
C6	SS	Substantial Completion	08/18/16	08/18/16	08/26/16	-8	-8	16

Table 5 - Project Budget/Cost 

	FFGA			FFGA Amend	MTA Current Working Budget (CWB)		Expenditures as of November 30, 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	2,693.568	51.13
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	2,693.568	51.13
Total Federal:	1,350.693	27.75	1,063.942*		1,350.693	24.60	804.477	15.27
Total FTA share:	1,300.000	96.25	990.049		1,300.000	23.68	730.584	13.87
5309 New Starts share	1,300.000	100	990.049		1,300.000	23.68	730.584	13.87
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	1,889.091	35.86
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 6 - Estimate at Completion

Category	Current Working Budget	EAC Forecast
Total Construction	\$2,728,172,492	\$2,953,100,000
Engineering Services Subtotal	\$576,541,264	\$625,000,000
Third Party Expenses	\$534,800,000	\$557,500,000
TA Expenses	\$125,160,085	\$130,775,000
Contingency	\$321,104,648	
Executive Reserve	\$160,000,000	
Subtotal	\$4,451,000,000	\$4,266,375,000

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

Std. Cost Category (SCC)	Description	FFGA	MTA's Current Working Budget (September 30, 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

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

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

Table 8 -- Core Accountability Items -- November 2013

Project Status:		Original at FFGA	Current*	ELPEP**
Cost	Cost Estimate	\$4,050M	\$4,451M	\$4,980M
Contingency	Unallocated Contingency	\$555.554M	\$320.5M	\$142M
	Total Contingency (Allocated plus Unallocated)	\$555.554M	\$320.5M (Nov. 2013)	\$142M
Schedule	Revenue Service Date	June 30, 2014	December 30, 2016	February 28, 2018
Total Project Percent Complete	Based on Expenditures	58.5%		
	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 55% 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	Open	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 #88; Data Date = 11/01/2013

Financial data based upon MTACC reporting through 11/30/2013