

PMOC COMPREHENSIVE MONTHLY REPORT

Second Avenue Subway Phase 1 (MTACC-SAS) Project
Metropolitan Transportation Authority
New York, New York

June 1 to June 30, 2015



PMOC Contract No. DTFT6014D00017

Task Order No. 2, Project No. DC-27-5287, Work Order No. 1

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

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THIRD PARTY DISCLAIMER

This report and all subsidiary reports are prepared solely for the Federal Transit Administration (FTA). This report should not be relied upon by any party, except FTA or the project sponsor, in accordance with the purposes as described below.

For projects funded through FTA Full Funding Grant Agreements (FFGAs) 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 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. DTFT6014D00017, 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

The contents of this report are cumulative in nature, and may reference or build upon topics discussed in previous reports. All comments received pertaining to previous reports have been incorporated in this report.

EXECUTIVE SUMMARY

1. PROJECT DESCRIPTION

The Second Avenue Subway project will include a two-track line under Second Avenue from 125th Street to the Financial District in lower Manhattan. It will also include a connection from Second Avenue through the 63rd Street tunnel to existing tracks for service to West Midtown and Brooklyn. Sixteen new ADA accessible stations will be constructed. The Second Avenue Subway will reduce overcrowding and delays on the Lexington Avenue line, improving travel for both city and suburban commuters, and provide better access to mass transit for residents of the far East Side of Manhattan. Stations will have a combination of escalators, stairs, and, in compliance with the Americans with Disabilities Act, elevator connections from street-level to station mezzanine and from mezzanine to platforms.

Phase One of the project includes the construction of new tunnels from 92nd Street and Second Avenue to 63rd Street and Third Avenue, with new stations along Second Avenue at 96th , 86th and 72nd Streets and new entrances to the existing Lexington Ave./63rd Street Station at 63rd Street and Third Avenue. New track and rail systems will extend from the 63rd Street Station through the new tunnels and previously constructed tunnels to 105th Street; facilitating intermediate service at the completion of Phase 1 between 96th Street and Brooklyn via the connection to the existing Broadway Line.

2. CHANGES DURING 2nd Quarter 2015

a. Engineering/Design Progress

The Design Consultant continues to provide contract administrative and technical support for ongoing construction contracts, develop design modifications as required and provide technical support throughout the construction phase of the project.

b. New Contract Procurements

Procurement of all design and construction services required for the execution of SAS, Phase 1 has been completed.

c. Construction Progress

All construction is approximately 83% complete (overall project completion is approximately (77.9%) as of June 30, 2015. Summary progress for each contract is as follows:

- The 96th Street Station Heavy Civil/Structural Contractor (Contract C2A) achieved Substantial Completion on November 5, 2013. Contract closeout is ongoing.
- The 96th Street Station Finishes, Mechanical, Electrical, and Plumbing Systems and Ancillary Building and Entrances (Contract C2B). Construction activity is ongoing in the Station Area, Ancillary #1 and #2, and Entrance #1, #2 and #3. Acceleration of Ancillary #2 is underway. By re-sequencing the installation of the 4 axial fans for the tunnel ventilation at the street level and the installation of the duct work in the mezzanine levels delays are being mitigated.
- At the 86th Street Station (Contract C5B). ”. Substantial Completion of all contract work was achieved on December 16, 2014. Contract closeout is ongoing.
- 86th Street Station Architectural and MEP (Contract C5C). “Short-Run” escalators from the street to the upper mezzanine continue in Entrance #2. Mezzanine to Platform escalator installation has begun. Facility Power switchgear has been delivered in both north & south Facility Power Rooms (FPR).
- The 72nd Street Station Heavy Civil/Structural (Contract C4B) achieved Substantial Completion on January 14, 2014. Contract closeout is underway.
- The 72nd Street Station Finishes, MEP Systems, Ancillary Buildings and Entrances (Contract C4C). Work at Ancillary #2 is approaching the final 4th floor erection. Floor Slab and 1st Floor walls have been completed at Ancillary #1. The Entrance #3 shaft lining has reached the street level.

- Rehabilitation of the 63rd Street Station (Contract C3). Entrance #2 ADA Elevator frame has been installed on E. 63rd St. Installation of escalators at Entrance #1 continues. Installation of elevator cabs (4) in the shaft has begun.
- The Track, Signal, Traction Power, and Communication Systems Contract (C6) continued installation of communications, traction power and signal systems in all station areas. The goal is to have the Local Area and Wide Area Networks operational to support integration testing by year-end. Installation of track and wayside equipment is ongoing as well.

d. Continuing and Unresolved Issues

- Concerns over water infiltration at the 96th Street Station (C2B) continues. While MTACC reports substantial progress in resolving this issue, PMOC independent observations indicate substantial infiltration remains with ongoing impact to construction progress.
- Location-specific issues continue to pose risks to the timely installation of equipment and establishment of permanent station power at 72nd, 86th and 96th Street Stations.

e. New Cost and Schedule Issues

- MTACC ability to plan and execute the testing and commissioning of SAS Phase 1 in a timely and reasonably efficient manner. To date, efforts to plan and organize this work have been disappointing.

f. Amended FFGA

- In March 2015, the Amended FFGA for Phase 1 of the Second Avenue Subway Project between the FTA and MTA was executed.
- The Amended FFGA establishes the Total Project Cost as \$5,574,614,000.
- The Amended FFGA defines the Revenue Operations Date as occurring on or before February 28, 2018.

3. PROJECT STATUS SUMMARY AND PMOC ASSESSMENT

a. Grantee Technical Capacity and Capability

The Grantee has generally demonstrated the technical capacity and capability to execute Phase 1 of the SAS project. With overall project completion nearing 85%, the Grantee has successfully managed the project through several “phases” of construction. Significant staffing changes have been made with negligible adverse impact on performance. While several elements of the project and construction management effort may not have been optimally executed, MTACC has generally demonstrated the effort and ability to respond to and resolve deficiencies.

b. Real Estate Acquisition

All real estate for the SAS Phase 1 Project has been acquired. Real estate acquisition and tenant relocation was performed in accordance with the approved SAS Real Estate Acquisition Management Plan, and Relocation Plan. These plans address Title 49 CFR Part 24, which implements the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970, as amended and FTA real estate requirements 5010.1C.

c. Engineering/Design

The final design phase of the project was completed in late November 2010. Construction phase support by the Design Engineering Consultant during this reporting period focused on review of submittals, technical assistance in resolving construction discrepancies, and evaluation of user group requested changes.

While some delays in technical submittal processing have been noted, the Design Engineering Consultant has generally provided adequate support to the project during the construction phase in a timely fashion. Design Engineering Consultant support is projected and funded thru December 2017.

d. Procurement

All design and construction services required for the execution of SAS, Phase 1 have been completed.

e. Railroad Force Account (Support and Construction)

The Force Account requirements are documented in the SAS Force Account Plan. The plan gives a description and a cost estimate of the NYCT services required for the design of the track and signal elements of the system and to support construction activities for each individual contract (general orders, work trains, and flagging support) and start-up and commissioning.

f. Vehicles

No additional vehicles will be procured for the SAS Phase 1 Project. MTA has previously demonstrated to FTA, and FTA has agreed, that the rolling stock needed for Phase 1 SAS operations can be provided from the existing fleet of New York City Transit (NYCT).

g. Systems Testing and Start-Up

Due to the size and complexity of the project it is crucial for the project to follow a comprehensive systems integration and test program to manage and monitor the testing of systems components, systems and the integration and interconnectivity of the systems. Each Station MEP Contractor (C-26006, C-26010, C 26011 and C26012) will install, integrate and test the equipment via a Test Plan. Interconnectivity of systems in each station is under the scope of the C-26009 Systems Contractor. The C-26009 Systems Contractor has a Systems Integration Manager (SIM) supported by Systems Engineering Specialists (SES) who will coordinate the efforts of the Systems Contractor and the Stations MEP Contractors in the preparation of their Plans. Testing of the equipment provided by the C-26009 Systems contractor and the interconnectivity of the equipment installed by the Station MEP Contractors will be per a three volume System Test Plan. Volume 1 is the Management Plan, Volume 2 is the Interface Control Plan, and Volume 3 is the System Test Procedures. Tests that will be performed, including, but not limited to Factory Acceptance Tests (FAT), Field Installation Acceptance Test (FIAT), Facilities Integrated Systems Testing (FIST), and Systems Integrated Testing (SIT).

The Systems Test Program is a commissioning process that is designed to ensure that the project will meet the design requirements. The program spans the entire construction process beginning with the product and work submittal reviews and ending with the post-substantial completion review of the systems performance with the O&M staff. The program is broken into five phases: Pre-Installation Phase, Installation Phase, Integration Phase, Post-Station

Construction Substantial Completion Phase, and System Acceptance Phase. Each phase will have a unique set of deliverables from the Contractors Test Group.

- **Pre-installation Phase:** The focus of the Contractors Test Group during the pre-installation phase is determining and documenting the systems performance requirements, planning the testing process and integrating the test schedule into the construction schedule. The SIM will develop the list of Contractors Test Group tasks and their durations to be included in the construction schedule. Factory Acceptance Testing (FAT) will be scheduled and performed with the Systems Test, Engineer and User representatives as required. The Manufacturer/Vendor/Contractor performing the FAT will submit the FAT procedures to the SIM, who will review and forward to the Engineer for approval. At the conclusion of FAT, the SIM will write an executive summary of the FAT results to submit along with the test data to the Engineer.
- **Installation Phase:** The System Test Team's focus during the installation phase will be documenting the systems installation progress, reporting and tracking deficiencies, and conducting and reporting on the Field Installation Acceptance Tests (FIAT). Key Contractors Test Group tasks will include developing the individual System Test Plans, conducting site installation inspections, reporting on progress and deficiencies, attending progress meetings, tracking corrective actions and updating the integrated test schedule.
- **Integration Phase:** During the systems integration phase, the Contractors Test Group will demonstrate that the systems work together in accordance with the design specifications. Facilities Integrated Systems Tests (FIST) will be conducted to confirm that the systems function together as a fully integrated system. Simulated Integrated System Testing (SIST) will be performed when necessary. FIST data, with an executive summary prepared by the SIM, will be submitted for approval to the Engineer.
- **Post-Station Construction Substantial Completion Phase:** Systems Integrated Testing (SIT) will be conducted with the Station Construction contractor once the station construction project achieves Substantial Completion. SIT will confirm that the system functions properly in accordance with contract documents and will be witnessed by the Engineer or representative. At the conclusion of SIT, the SIM will prepare an executive summary and submit it along with SIT data to the Engineer for approval.
- **System Acceptance Phase:** Final Systems Acceptance Testing will occur after the Systems Substantial Completion milestone is achieved. All systems will be shown to be operating as designed and meeting all functional requirements and CQP /2/ specifications. FSIT will be a collaborative effort of the Systems and Station Contractors and MTACC. At the conclusion of FSIT, a final test report and as-built documentation will be submitted to the Engineer for approval.

The PMOC has concerns about MTACC's process for the verification and validation of functional requirements. Test procedures are being utilized to perform the various tests of the equipment and systems. How each procedure is traced to a set of requirements is not

clearly defined. MTACC will be requested to give FTA/PMOC an overview of the process.

h. Project Schedule

During the 2nd Quarter 2015, progress was made in advancing the project to a timely completion. MTACC continues to forecast a Revenue Service Date (RSD) of December 30, 2016. In the opinion of the PMOC, this remains an achievable goal; however this will require reversal of several current trends:

- A general inability to complete construction work in accordance with schedule goals and milestones generally increases the risk of project-level delay.
- MTACC must develop the ability to plan and execute its testing and commissioning function in a timely manner. Based on experience, schedule risks associated with station and system testing, commissioning and acceptance by NYCT could delay the RSD for an indeterminate period of time.
- The PMOC remains confident that all construction can be completed within the risk-adjusted RSD of February 2018.

Table 1: Summary of Critical Dates

	FFGA (March 2015)	Forecast Completion	
		Grantee	PMOC
Begin Construction	January 1, 2007	March 20, 2007A	March 20, 2007A
Construction Complete	August, 2016	November 15, 2016	October 2017
Revenue Service	February 28, 2018	December 30, 2016	February 2018

i. Project Budget/Cost

The Current Working Budget (Estimate Revision 10) for the SAS Phase 1 Project is still \$4,451.000M (exclusive of \$816.614M financing cost). The MTA Board has approved Local Funds totaling \$3,509.000M. Total Federal participation in the SAS Phase 1 Project is \$1,373.893M of which \$1,250.508 has been obligated. On March 17, 2015 the NYMTA and the FTA executed an amendment to the FFGA for Phase 1 of the SAS Project. With the execution of the amendment the restriction on the distribution of funds from Grant NY-03-0408-9 were lifted.

MTA’s Estimate at Completion (EAC) and the PMOC’s analysis currently indicate the project can be built within the limits of the Current Working Budget, assuming substantial completion of all construction and testing activities within the overall time frame identified in the current Integrated Project Schedule (IPS).

Table 2: Project Budget/Cost Table 

	FFGA			FFGA Amend	MTA Current Working Budget (CWB)		Expenditures as of June 30, 2015	
	\$ Millions	% of Total	Obligated (\$ Millions)	3/17/2015	\$ Millions	% of Total	\$ Millions	% of Total
Grand Total Cost:	4,866.614	100	4,572.942	5,574.614	5,267.614	100	3,468.732	65.85
Financing Cost	816.614	16.78		816.614	816.614	15.50		
Total Project Cost:	4,050.000	83.22	4,572.942	4,758.000	4,451.00	84.50	3,468.732	65.85
Total Federal:	1,350.693	27.75	1,063.942	1,373.893*	1,350.693	24.60	1,095.704	20.80
Total FTA share:	1,300.000	96.25	990.049	1,300.000	1,300.000	23.68	1,021.811	19.40
5309 New Starts share	1,300.000	100	990.049	1,300.000	1,300.000	23.68	1,021.811	19.40
Total FHWA share:	50.693	3.75	73.893	73.893	50.693	0.96	73.893	1.40
CMAQ	48.233	95.15	71.433	71.433	48.233	0.88	71.433	1.35
Special Highway Appropriation	2.460	4.85	2.460	2.460	2.460	0.04	2.460	0.05
Total Local share:	2,699.307	55.47	3,509.000**	3,384.107	3,509.000 **	63.92	2,373.028	45.05
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 and expended amounts obtained from the Transportation Electronic Award Management (TEAM) system and MTACC's Grant Management Department.

** Current MTA Board approved budget.

j. Project Risk

Major issues that have either increased or decreased the risk of project schedule and cost increases during the 2nd Quarter 2015 have been summarized as follows:

Decrease	Increase
<ul style="list-style-type: none">Track installation activities have been re-sequenced and are not currently controlling the overall project schedule.	<ul style="list-style-type: none">Water leakage at 96th Street Station – MTACC reports progress in leak mitigation; contractors report continued delays. Damage to installed equipment has been observed.Very limited progress is evident in the detailed planning of testing and commissioning activities. This is generally considered the primary risk to achieving RSD.

MONTHLY UPDATE

The information contained in the body of this report is limited, in accordance with Oversight Procedure 25, to “inform the FTA of the most critical project occurrences, issues, and next steps, as well as professional opinions and recommendations.” Where a section is included with no text, there are no new “critical project occurrences [or] issues” to report this month.

ELPEP SUMMARY

The most recent ELPEP Quarterly Review Meeting was held on June 12, 2015. The next ELPEP Quarterly Review Meeting with MTACC, FTA-RII, SAS and ESA projects and the PMOC is scheduled for mid-September, 2015. With respect to SAS, the current status of each of the main ELPEP components is summarized as follows:

- **Technical Capacity and Capability (TCC):** MTACC has resolved all remaining FTA/PMOC comments and has issued the final revised PMP. MTACC is not planning any further updates to the PMP. Comments on the MTACC Technical Capacity and Capability (TCC) Plan were received on June 2, 2015 and the revised TCC Plan was resubmitted on June 12, 2015.
- **Schedule Management Plan (SMP):** MTACC's position is that the SAS management processes remain ELPEP compliant. No other update this period.
- **Cost Management Plan (CMP):** Comments on the ESA/SAS Cost Management Plan (CMP) were received on June 2, 2015. MTACC expects to issue the revised document during the week of June 15, 2015. MTACC's position is that the SAS management processes remain ELPEP compliant.
- **Risk Mitigation Capacity Plan (RMCP) and Risk Management Plan (RMP):** MTACC's position is that the SAS management processes remain ELPEP compliant.

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.

1.0 GRANTEE'S CAPABILITIES AND APPROACH

1.1 Technical Capacity and Capability

1.1.1 Organization, Personnel Qualifications and Experience

Status:

No significant changes noted.

Observation:

MTACC continues to make select changes to improve the organization's ability to respond to the evolving needs and challenges of the project.

Concerns and Recommendations:

Select enhancements to the SAS project team's technical capability appear to provide satisfactory capacity to manage and resolve technical challenges.

1.1.2 Grantee's Work Approach, Understanding, and Performance Ability

a) Adequacy of Project Management Plan and Project Controls

Status:

Refer to "ELPEP SUMMARY" for any updated information.

Observation:

Refer to "ELPEP SUMMARY" for any updated information.

Concerns and Recommendations:

Refer to "ELPEP SUMMARY" for any updated information.

b) Grantee's Approach to FFGA and other FTA/Federal Requirements

Status:

MTACC continues to utilize the ELPEP and its various sub-plans in management of the FFGA. A collaborative effort with FTA-RII and the MTACC to update the original ELPEP document, dated January 15, 2010, to reflect the current status of the SAS projects' scope, schedule and budget baselines is in progress.

Observation:

None.

Concerns and Recommendations:

None

c) Grantee's Approach to Force Account Plan

Status:

As of June 30, 2015, New York City Transit (NYCT) Engineering Force account expenditures are \$52,130,418 of the \$95,400,000 budget. NYCT labor expenditures are \$11,385,055 of the \$25,600,000 budget.

Observation:

The Force Account requirements are documented in the SAS Force Account Plan. The plan gives a description and a cost estimate of the NYCT services required for the design of the track and signal elements of the system and to support construction activities for each individual contract. NYCT labor expenditures are for general orders, work trains, and flagging support.

The Force Account budget appears to be adequate and has not changed in Revision 10 of the SAS Cost Estimate. In order to support the SAS project as it transitions into the testing and commissioning phase additional NYCT force account personnel will be required.

Concerns and Recommendations:

The ability of NYCT to supply force account personnel for the SAS project is of concern and has been identified in the SAS Risk Register. There are three major capital projects currently vying for NYCT force account personnel. MTACC is currently developing a mitigation strategy. It is recommended that the strategy be expedited and presented to the FTA/PMOC.

d) Grantee's Approach to Safety and Security Plan

Status:

During the 2nd Quarter 2015 reporting period the SAS Project Safety Team (CCM and OCIP representatives) continued its oversight of the construction contractors' Safety, Security and Health Programs by performing daily/weekly inspection of work areas, investigation of incidents, and performing quarterly safety audits. First aid, recordable and lost time incidents are reported, investigated and corrective action taken to address deficiencies and negative trends. Recordable incidents are trending below the national average and lost time incidents are above the national average.

The SAS Project Safety Team (CCM and OCIP representatives) continued its oversight of the construction contractors' Safety, Security and Health Programs by performing daily/weekly inspection of work areas, investigation of incidents, and performing quarterly safety audits. First aid, recordable and lost time incidents are reported, investigated and corrective action taken to address deficiencies and negative trends.

The Monthly Project Wide Safety Meeting continues to be held the first Friday of each month. The safety performance of each construction contract is discussed and "Lessons Learned" from incidents/accidents are shared such that the total project can benefit. OCIP observations are being trended to focus uniform corrective action across the project.

Observation:

Section 4 of the PMP includes the required project Health and Safety Plan (HASP) that describes the responsibility and protocols to maintain a safe environment throughout the construction of the SAS Project. The Monthly Project Wide Safety Meeting is ongoing and is a good forum in providing "Lessons Learned" in order to promote safe practices across the entire project.

Section 4 of the PMP also outlines the Project Safety and Security Management Plan (SSMP) as required by 49 CFR Part 659, which includes the Safety and Security Certification Plan (SSCP) and the Systems Safety and Reliability Assurance Program Plan (SSRA).

Concerns and Recommendations: None

e) Grantee's Approach to Asset Management

Status:

The Station Contractors and the Systems Contractor continued population of the database which captures the identification, configuration, and installed location of the equipment.

Observation:

Identification and control of project assets is being coordinated among the Track, Power, Signals and Communications Systems Contractor (C6), Station Contractors (C2B, C4C and C5C) and NYCT's Department of Subways.

Concerns and Recommendations:

None

f) Grantee's Approach to Community Relations

Status:

The Community Outreach team kicked off 2015 with a round of Construction Coordination meetings with area buildings directly impacted by entrance and ancillary structures located adjacent to these buildings. The Outreach team, Construction Management Team, and Contractor representative meet with the Boards of impacted buildings to provide a construction update and three-month look-ahead. The Community Outreach team also coordinated and staffed community tours of the underground work area, and conducted a Quarterly Public Workshop to provide project update and to address concerns.

Observation:

The MTACC's approach to community relations is set forth in detail in Section 12 of its Project Management Plan for SAS Phase 1. This plan is focused on the pre-construction activities generally involving dissemination of project-related information to the affected community and public hearings to support the NEPA process. Construction phase activities are described in Section 12.3.3 of the PMP as "appropriate outreach activities."

Conclusions and Recommendations:

MTACC's approach to Community Relations has been successful in addressing and mitigating the adverse impacts of the construction process on the adjacent community. The PMOC notes that the overall goals and approach involved in this effort have not been formally documented. The PMOC has recommended MTACC update its Project Management Plan with a more comprehensive plan for construction phase community relations. MTACC has not acted on this recommendation.

1.1.3 Grantee's Understanding of Federal Requirements and Local Funding Process

a) Federal Requirements

During the 2nd Quarter 2015, MTA continued its grant management process by issuing monthly financial reports and updating the Transportation Electronic Award Management (TEAM) System to reflect disbursements from the active grants and status of pending grants.

b) Uniform Property Acquisition and Relocation Act of 1970

Real estate acquisition and tenant relocation has been completed in accordance with the approved SAS Real Estate Acquisition Management Plan and Relocation Plan. These plans address Title 49 CFR Part 24, which implements the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970, as amended, and FTA real estate requirements 5010.1C.

c) Local Funding Agreements

All local funds required for the SAS Phase 1 Projected has been allocated. Funds totaling \$2.964 billion were allocated in MTA's 2000-2004 and 2005-2009 Capital Plans. The balance of \$1.487 billion to complete SAS Phase 1 was budgeted in the 2010-2014 Capital Plan. On April 28, 2010, the MTA Board approved the 2010-2014 Capital Plan. The Capital Program Review Board (CPRB) approved the plan on June 1, 2010. The MTA Board and CPRB approved amendments (latest July 2013) to the 2010-2014 Capital Plan and retained the \$1.487 billion to complete SAS Phase 1.

The PMOC notes an apparent discrepancy with respect to local funding in the Amended FFGA. In the amended FFGA (ref. page 2) it states that the Grantee agreed to pay additional state and local funds in the amount of \$708,000,000 which combined with federal funds provided under the amendment as herein defined will be sufficient to complete the project.

An analysis of the local and federal funding participation suggests that the \$708,000,000 of additional local funds is overstated. The additional local funds require should be \$684,799,711. See below.

Original FFGA:

Federal Participation	\$1,350,693,000
Local Participation	\$3,515,922,468
Total	\$4,866,614,468

Amended FFGA:

Federal Participation	\$1,373,892,821
Local Participation	\$4,200,721,179
Total	\$5,574,614,000

Increase in Project: **\$707,999,532** (\$5,574,614,000 - \$4,866,614,468)

Increase in Federal Participation: **\$23,199,821** (\$1,373,892,821 - \$1,350,693,000)

Increase in Local Participation: **\$684,799,711** (\$707,999,532 - \$23,199,821)

1.2 Project Controls

1.2.1 Scope Definition and Control

Status:

During the 2nd Quarter 2015, there has been no material change in the scope of the SAS Project. The scope of the SAS Project – Phase 1 is formally defined by the FEIS, ROD and the

FFGA. Using these documents as guides, the scope was further detailed in ten construction packages (contracts).

Observation:

The PMOC continues to monitor the scope of work to ensure compliance with the FEIS, ROD, FFGA and other reference documents and plans. Several design changes and construction operation scenarios have required formal review and approval by the FTA.

The SAS Project Team continues to effectively manage the project scope to maintain compliance with governing documentation and provide a cost-effective final product.

Concerns and Recommendations:

None

1.2.2 Quality

Status:

During June 2015, 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 Meetings for numerous construction processes.

Observations:

Project Quality Manual (PQM): The SAS Quality Manager prepared a draft of Revision 3 to the PQM that reflects the new MTACC QOO checklist requirements and other changes that have occurred since the last revision was issued. The PMOC received a draft of Revision 3 to review and returned comments to the SAS Project Quality Manager. A Final Draft of Revision 3 is being reviewed by the PMOC.

Daily Inspection Reports: At the end of June 2015, the following contractors were behind in entering their Daily Inspection Reports into the Contractor Management System (CMS):

Contractor	Weeks Behind
2B	3
C5C	3

C5C Contractor: Besides being three weeks behind in submitting Daily Inspection Reports and not following its approved nonconformance reporting system, the C5C contractor is not implementing its approved Contractor's Quality Plan (CQP). Among the requirements that have not been followed are:

- Work is being performed without approved Quality Work Plans (QWPs)
- Preparatory Phase Meetings are not held
- NCRs are not being issued and those that are, do not get closed
- Mock-up work is proceeding without approval

- Mechanical/electrical/plumbing (MEP) hold point inspections are being bypassed
- Electrical issues have not been documented on nonconformance reports (NCRs)
- External quality audits are not performed

The contractor's Project Manager resigned in June and the contractor's Project Executive is the acting Project Manager. At the suggestion of the PMOC, the contractor hired two assistants for their Quality Manager. Both of them started work in June. Bi-weekly Quality Management Meetings continue.

Contract Package C2B	
Status:	Through June 30, 2015, a total of 111 NCRs have been issued. 42 have been closed and 69 NCRs are still open. In June 2015, 4 new NCRs were written and none were closed.
Observation:	Of the 69 open NCRs, 45 are for concrete that was out of specification. A concrete analysis was prepared on May 6, 2015. The designer approved the analysis on June 9, 2015 but requested that concrete cylinder break results be added to each NCR. Once this is done, over 30 NCRs can be closed. Entry of Daily Inspection Reports into CMS is three weeks behind. Bi-weekly Quality Management Meetings, as suggested by the PMOC, are still being held.
Concerns and Recommendations:	Numerous NCRs have been open for many months. During June 2015, the contractor's management hired two individuals to assist their Quality Manager. The PMOC recommends that these individuals provide the concrete break information on the NCRs and enter Daily Inspection Reports into CMS more quickly.
Contract Package C3	
Status:	Through June 30, 2015, a total of 105 NCRs have been issued. 96 have been closed and 10 NCRs are still open. In June 2015, no new NCRs were written and one was closed.
Observation:	Entry of Daily Inspection Reports into CMS is current.
Concerns and Recommendations:	The PMOC has no concerns.
Contract Package C4C	
Status:	Through June 30, 2015, a total of 141 NCRs have been issued. 93 have been closed and 48 NCRs are still open. In June 2015, 17 NCRs were written and 61 were closed.
Observation:	121 of the 141 NCRs are for concrete that was out of specification. Fifteen of the seventeen NCRs generated in June were for concrete. Submittal of Daily Inspection Reports is current.

Concerns and Recommendations:	The PMOC had discussed the open concrete NCRs with the SAS C4C Quality Manager and the contractor's C4C Quality Manager and they stated that once the concrete analysis was approved, many of the open concrete NCRs would be closed. This occurred in June and therefore the PMOC has no concerns or recommendations.
Contract Package C5C	
Status:	Through June 30, 2015, 73 NCRs have been written and entered in CMS. 22 have been assigned a number but have been identified either "not issued" or "not submitted in CMS". Of the 73 that have been issued, 11 have been closed and 62 NCRs are still open. Of the 62 still open, 33 have been identified as "statistical analysis to be submitted". In June 2015, no new NCRs were written and none were closed. In the past 3½ months only one NCR was closed.
Observation:	Submittal of Daily Inspection Reports is 3 weeks behind. When an NCR is written, it should be issued and entered into CMS immediately. Bi-weekly Quality Management Meetings, as suggested by the PMOC, are still being held.
Concerns and Recommendations:	In February 2015, the PMOC recommended that all NCRs be issued and entered into CMS immediately and that the contractor establish a schedule to close the non-concrete NCRs. This has still not occurred. The contractor's Quality Manager has stated that he cannot keep up with the workload. In June 2015, the contractor hired two assistants for their Quality Manager. Additional PMOC concerns are listed in the front of this section.
Contract Package C6	
Status:	Through June 30, 2015, a total of 36 NCRs have been issued. 17 have been closed and 19 NCRs are still open. In June 2015, no new NCRs were written and none were closed. Entry of Daily Inspection Reports into CMS is current.
Observation:	17 of the open NCRs are for concrete placement that is out of specification. The contractor submitted Waiver #23 to extend the time of concrete placement from 90 minutes to 120 minutes. The Designer of Record will not approve this waiver. The contractor has prepared an analysis of concrete strength, was requested to provide additional information, and is in the process of updating the analysis.
Concerns and Recommendations:	The PMOC has no concerns.

Concerns and Recommendations:

Refer to previous section.

1.2.3 Project Schedule

Status:

A summary of project schedule information is as follows:

	FFGA (March 2015)	Forecast Completion	
		Grantee	PMOC
Begin Construction	January 1, 2007	March 20, 2007A	March 20, 2007A
Construction Complete	August, 2016	November 15, 2016	October 2017
Revenue Service	February 28, 2018	December 30, 2016	February 2018

MTACC established December 30, 2016 as its target Revenue Service Date (RSD) and bases its schedule and schedule contingency reporting on this target. Based on risk assessment, FTA/ELPEP identified February 28, 2018 as its target RSD with the condition that a minimum 240 CD of contingency be maintained against this target through September 30, 2016. To date, the MTACC criteria has been the more stringent and has therefore been the basis of routine schedule and schedule contingency reporting.

Observation/Concerns and Recommendations:

None

1.2.4 Project Budget and Cost

Status:

Total project cost in the approved ammended FFGA (\$5,574,614,000) and Current Working Budget (CWB) which is based on Revision 9 to the Project Cost Estimate, are allocated into the Standard Cost Categories (SCC) as shown below in Table 1-1.

Table 1-1: Standard Cost Categories

Std. Cost Category (SCC)	Description	FFGA (January 2008)	FFGA Amended (March, 2015)	MTA's Current Working Budget (March, 2015)
10	Guideway & Track Elements	\$612,404,000	\$195,346,781	\$622,478,000
20	Stations, Stops, Terminals, Intermodal	\$1,092,836,000	\$1,666,605,679	\$1,277,642,000
30	Support Facilities	\$0	\$0	\$0
40	Site Work & Special Conditions	\$276,229,000	\$793,118,232	\$524,561,000
50	Systems	\$322,707,000	\$250,379,966	\$250,134,000
60	ROW, Land, Existing Improvements	\$240,960,000	\$281,500,000	\$281,500,000
70	Vehicles	\$152,999,000	\$0	\$0

Std. Cost Category (SCC)	Description	FFGA (January 2008)	FFGA Amended (March, 2015)	MTA's Current Working Budget (March, 2015)
80	Professional Services	\$796,311,000	\$1,026,608,168	\$1,185,742,929
90	Unallocated Contingency	\$555,554,000	\$544,441,174	\$308,942,010
Subtotal		\$4,050,000,000	\$4,758,000,000	\$4,451,000,000
Financing Cost		\$816,614,000	\$816,614,000	\$816,614,000
Total Project		\$4,866,614,000	\$5,574,614,000	\$5,267,614,000

Table 1-2 lists the associated grants in the Transportation Electronic Award Management (TEAM) System with respective appropriated, obligated, and disbursed amounts as of June 30, 2015.

Table 1-2: Appropriated and Obligated Funds

Grant Number	Amount (\$)	Obligated (\$)	Disbursement (\$) thru June 30, 2015
NY-03-0397	\$4,980,026	\$4,980,026	\$4,980,026
NY-03-0408	\$1,967,165	\$1,967,165	\$1,967,165
NY-03-0408-01	\$1,968,358	\$1,968,358	\$1,968,358
NY-03-0408-02	\$24,502,500	\$24,502,500	\$24,502,500
NY-03-0408-03	0	0	0
NY-03-0408-04	0	0	0
NY-03-0408-05	\$167,810,300	\$167,810,300	\$167,810,300
NY-03-0408-06	\$274,920,030	\$274,920,030	\$274,920,030
NY-03-0408-07	\$237,849,000	\$237,849,000	\$237,849,000
NY-03-0408-08	\$197,182,000	\$197,182,000	\$197,182,000
NY-03-0408-09	\$186,566,000	\$186,566,000	\$31,761,776
NY-03-0408-10**	\$123,384,621	0	0
NY-17-X001-00	\$2,459,821	\$2,459,821	\$2,459,821
NY-36-001-00*	\$78,870,000	\$78,870,000	\$78,870,000
NY-95-X009-00	\$25,633,000	\$25,633,000	\$25,633,000
NY-95-X015-00	\$45,800,000	\$45,800,000	\$45,800,000
Total	\$1,373,892,821.00	\$1,250,508,200.00	\$1,095,703,976.00



* Denotes American Recovery and Reinvestment Act (ARRA) funds. **Appropriated pending FTA approval

Observation:

Total project distribution is \$3,468,719,467 of which \$2,373,015,491 is local funds and \$1,095,703,976 is federal funds.

Concerns and Recommendations:

None

1.2.5 Project Risk Monitoring and Mitigation

Status:

The SAS Project Team continued implementation of risk management techniques to identify, quantify and manage risks that may impact the project cost or schedule. Efforts are directed to those risk issues with potential to delay the project beyond its currently scheduled RSD. Publishing of monthly reports documenting project risk management activities is ongoing

Observation:

The SAS risk management process has been instrumental in the development of strategies and techniques to manage a variety of retained risks including inter-contract interfaces, safety and security certification and submittal processing, among others.

The SAS Project Management Team has focused its risk management effort on those risk issues with potential to delay the project beyond its currently scheduled RSD.

Concerns and Recommendations:

None.

1.2.6 Project Safety and Security

Status:

Safety – The Lost Time Injury Rate and Recordable Injury Rate from the start of construction until May 31, 2015 are 1.68 and 4.75, respectively. The Bureau of Labor Statistics (BLS) national Lost Time Injury Rate is 1.8 and the Recordable Injury Rate is 3.2. The cumulative construction hours worked since the project inception is 10,821,284 hours. Total lost time injuries since project inception is 91 and other recordable injuries are 166. The total number of recordable injuries is 257 (sum of the lost time injuries and the other recordable injuries).

Security – Implementation of the Contractor's Site Security Plans are ongoing. No security concerns noted during this reporting period.

Observation:

Both rates are trending downward over the last five months. Contractors are being proactive in addressing incidents. Tool box meetings, increased training and increased monitoring of construction activities are being performed in order to highlight safety awareness. Personnel with repeat safety violations are being removed from the project.

Concerns and Recommendations:

None

1.3 FTA Compliance

Status:

MTACC remains compliant with all FTA requirements.

Observation:

None.

Concerns and Recommendations:

None.

1.3.1 FTA Milestones Achieved

The last key FTA milestone achieved was entry into the Full Funding Grant Agreement (FFGA) on November 19, 2007.

The ELPEP Hold Point “90% Project Bid/50% Construction Complete” was achieved in March 2013.

The Amended FFGA was executed in March 2015.

Achievement of the next ELPEP Hold Point “100% Project Bid/85% Construction Complete” will be reviewed at the July 2015 Cost and Schedule Review Meeting.

1.3.2 Readiness for Revenue Operations

Status:

No change this period.

2.0 PROJECT SCOPE

2.1 Status & Quality: Design/Procurement/Construction

2.1.1 Engineering and Design

Status:

The design phase of SAS Phase 1 was completed in late November 2010. Engineering activities are currently focused on supporting the construction activities.

Observation:

The primary role of the design team currently includes:

- Construction Administration, generally including shop drawing review, responding to RFIs, providing design clarifications where needed and technical support during construction package bidding.
- Detailing and documentation of design changes as may be required.
- Supporting AWO evaluation and resolution.

Concerns and Recommendations:

Incorporation of user-requested and third-party agency design changes during the construction phase continues as a significant risk to the overall project schedule. The SAS project staff should continue to minimize and prioritize the design changes to ensure that only necessary changes are incorporated and that their impact to construction cost and schedule is limited.

2.1.2 Procurement

Status:

Procurement of all design and construction services required for the execution of SAS, Phase 1 has been completed.

Observations:

None

Concerns and Recommendations:

None

2.1.3 Construction

Status:

All 10 construction contracts for SAS Phase 1 Project have been awarded. Two contracts have been completed and closed-out. An additional three contracts have achieved Substantial completion and the close-out process is ongoing. Accomplishments during this reporting period on the eight open contracts are summarized as follows:

Observations:

Contract C-26005 (C2A) 96th Street Station Heavy Civil, Structural and Utility Relocation

- Substantial Completion was achieved on November 5, 2013. Punchlist and contract closeout activities are ongoing.
- Closeout of the contract is pending resolution of water leaks, closure of 3 punchlist items and completion of the “As Built” document set of drawings.

Contract C-26010 (C2B) 96th Street Station Concrete, MEP/Finishes, Utilities, and Restoration

- **Station Area 1:** Contractor completed the OTE duct, installation of the Ductwork in different rooms and continued working on fan coil units, miscellaneous plumbing, lighting conduits and installation of conduits, flooring and painting and completion of rooms, tunnel lighting and utility work at street level, installation of guiderail and stair railing and running interconnecting conduit at the low voltage switchboard.
- **Station Area 2:** Contractor completed the OTE ductwork at the track level and OTE duct support. Contractor continues working on the installation of the platform conduit, platform plumbing pipes, duct installation of Acoustic Board (AM3), completion of concrete stairs and masonry walls at the platform and panel system and completion of rooms and installation of the electrical equipment.
- **Station Area 3:** Installation of the above platform conduits, fast response sprinklers, lighting fixtures at the platform level is ongoing. Also, the contractor continues working on installation of the service carrier, emergency lighting fixtures, mezzanine lighting fixtures and conduits.
- **Ancillary 1:** Contractor completed working on building walls up to lower roof level, installation of duct insulation, concrete curbs and pads and continued working on rebuilding (12x12x19) ECS Manhole at 93rd St, masonry walls, duct installation, completion of lower and upper roof slab.
- **Ancillary 2:** The lower and upper roof slabs were completed. Installation of power and lighting conduit at the mezzanine level is ongoing.
- **Entrance 1:** Continues working on building the masonry walls and Build Entrance 1 Stair.
- **Entrance 2:** Continues working on Building Masonry Walls and Building Invert at Escalator Pit.

Contract C-26006 – (C3) 63rd Street Station Upgrade

- Surveying of the Deformation Monitoring Points (DMPs) has ceased. Equipment is being removed from all respective buildings.
- Area 5
 - In Area 5 inspections of completed rooms resumed in Mezzanines 1 – 4.
 - In Area 5 the last Back-of-House stair is nearing completion.
 - At the 6th Mezzanine beam cladding has begun and CMU work was completed.

- Completing installation of the Elevator Entrances (Sills & Stainless Steel Frames). Began installation of the Elevator Cabs.
- Entrances (#1, #2, #3 & #4)
 - At Entrance #1 continuing with installation of escalators (2) and MEP work.
 - At Entrance #2 the hydraulic elevator main kiosk frame at street level is installed. Framing in the shaft is underway.
 - Granite cladding is being delivered for street Entrances #3 & #4 July 17, 2015. Framing installation is complete for the interior entrance incline wall tiles.
 - At Entrance #4 completed placement of new stairs. The stair opening has been temporarily covered to maintain pedestrian access on that side of the E. 63rd St. sidewalk.
- Platforms
 - Continued installation of trackwall tiles on the active track side under a GO.
 - Continued installation of ceiling panels and column cladding at the G3 & G4 platforms.
 - At the G-4 platform completed installation of the Elevator Lobby paving stones.
 - At the G-4 platform began installing the channels for the operable glass panels.
- Site
 - Completed new sewer work and began installation of 2 new fire hydrants.
- Contract C6 Coordination
 - The C6 contractor has completed the trackwork in the G3 & G4 tunnels going north. There are still issues to be resolved with the transition of the 3rd Rail.
 - C6 continues to work in the Signal and communication rooms.
 - System testing was deterred because the UPS System is not working. The contractor has reported that the cause is construction dust getting into the UPS components. The manufacturer is switching out affected components.

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

- Substantial Completion was achieved on January 14, 2014. Punchlist and contract closeout activities are ongoing.

Contract 26011 (C4C) 72nd St Station Finishes, MEP Systems Ancillary Buildings & Entrances

- Ancillary 2/ Entrance 2
 - Completed placement of 3rd Floor walls and began preparations for 4th floor slab at Ancillary #2.
 - Continued Basement & Sub-Basement Level Facility Power Rom (FPR) conduit, electrical & equipment installation at Ancillary #2.
 - Completing remaining framing for the porcelain tile walls in the mezzanine cavern at Entrance #2.

- Ancillary #1
 - Completed 1st Floor slab and erection of street level walls. Began formwork for 2nd Floor slab.
 - Continued with MEP at the 2nd Floor, Upper Mezzanine & Sub-Basement levels.
- Mezzanine
 - At the North & South Mezzanines continuing MEP installation in Fan/Chiller rooms.
 - Continuing installation of fixtures & conduit in the North & South EDR rooms.
 - Completing floor topping and remaining MEP work in the TPSS Room in the North Mezzanine.
 - Continued installation of service carrier framing in the Public Mezzanine.
- Entrance #3
 - Completed placement of walls to the upper street level.
 - Began preparations for placement of the street level slab. This work has been slowed due to material deliveries through the shaft.
- Entrance #1
 - Completed the underpinning of the existing building foundation and began construction of the permanent support system.
 - Continued waterproofing on the incline and perimeter support walls.
- Platform Level
 - Continuing with installation of the 3 escalators from platform to mezzanine and outfitting the Machine Rooms.
 - Continuing installation of framing for the trackwall tiles and ceiling framing.
 - Continued installation of MEP in all remaining rooms.

Contract C-26008 (C5B): 86th Street Station Cavern & Heavy Civil

- Substantial Completion on was achieved on December 16, 2014. Contract closeout is ongoing.

Contract C-26012 (5C) – 86th St. Station Finishes, MEP Systems, Ancillary Buildings & Entrances

- Tunnels (east & west)
 - The contractor continues to grout the leaks to varying degrees of success.
 - The C6 contractor began pulling cables through the bench ductbanks.
- Ancillary #1
 - The focus of the work is Ancillary #1 wall and slab placement which continues to the street deck “roof”. The previous forecast to reach street level by June 30, 2015 has not been achieved. The contractor continues working 6 days, 2 shifts in this area.

- Ancillary #2
 - Continued with waterproofing walls to street level. Continued with floor slabs and walls erection. This work will be ongoing for some time.
- Mezzanine
 - In the North Mezzanine the focus is on completing CMU walls for room enclosures and completing the platform to upper mezzanine stair.
 - In the South Mezzanine MEP continues.
 - Mechanical and conduit work is ongoing in the Public Cavern and North Mezzanine.
 - MEP work is ongoing on the 1st, 2nd & 3rd Upper Mezzanines.
 - Facility Power Room (FPR) switchgear has been delivered and placed in both the north and south FPRs.
- Entrance #2
 - Kone continues with installation of the “short run” escalators from the street to the upper mezzanine.
 - Completing CMU walls in the upper back-of-house area.
- Platform Level
 - CMU wall erection is nearing completion.
 - Installation of the trackwall tile supports has begun.
 - Completing construction of the last sections of Platform between Column Lines 2- - 22.
 - Installation of the mezzanine to platform escalators has begun.
- Schedule
 - The CCM and the contractor continue to be at odds on schedules for completing/turning over milestone rooms. This has been ongoing for some time. To date there is no reliable milestone room turnover date schedule for this contract.
- C6 Coordination
 - The C6 contractor continues to deliver material & equipment through the 87th St. Shaft and through Zone 11 (station) to support new track work in the south East/West Tunnels. Closure of the shaft remains tentatively scheduled for the end of July 2015.

Contract C-26009 (C6): Systems – Track, Power, Signals and Communications

- 63rd Street
 - To date the contractor has completed work in four communication rooms and the 147 Signal room. Communication rooms are built out and ready for FIAT testing. The signal room is built out and breakdown testing is ongoing.
 - Circuit Breaker House (room) has been built out, equipment delivered and awaiting wayside conduits.

- Local antenna cable installation (area 5) has commenced and has progressed up to level 6.
- Racks are being installed and cable pulling is ongoing in the Lexington Avenue Relay Room (UL/LL). Breakdown testing has commenced.
- 96th Street
 - Contractor completed all fiber communication, power and signal cable pulling (tunnel work Zones 1 and 2).
 - Equipment installation in communication and signal rooms is ongoing as well as cable pulling and termination.
 - Cable pulling in the tunnel area (Zone 2) was completed out of sequence in conjunction with AWO 40. All fiber, communication, power and signal cable have been installed.
- 72nd Street
 - All fiber, communication, power, and signal cables in Zone 3 have been pulled.
 - Equipment has been installed in three of the five communication rooms.
 - The signal room has been turned over and the equipment installed.
 - Cable pulling and termination is ongoing.
- 86th Street
 - Contractor is awaiting turnover of the communication and signal rooms
- Track Work
 - Contact rail and concrete pours on G3 and G4 in Zones 3 and 4 (63rd Street) are complete.
 - Contact rail and concrete pours on S1 and S2 in Zones 1 and 2 (96th Street) are complete.
 - Track construction is almost complete and awaiting profile approval to pour.

Concerns and Recommendations:

Ongoing water leaks in various areas could impact equipment and track installation. MTACC needs to expedite the mitigation action to resolve the water leak issue.

2.1.4 Force Account (FA) Contracts

Status:

As of June 30, 2015, New York City Transit (NYCT) Engineering Force account expenditures are \$52,130,418 of the \$95,400,000 budget. NYCT labor expenditures are \$11,385,055 of the \$25,600,000 budget.

The Force Account budget appears to be adequate and has not changed in Revision 10 of the SAS Cost Estimate. In order to support the SAS project as it transition into the testing and commissioning phase additional NYCT force account personnel will be required.

Observations:

Remaining budgets appear adequate for a testing and commissioning period of reasonable duration and staffing level.

Concerns and Recommendations:

None.

2.1.5 Operational Readiness

Status:

NYCT has developed a Concept of Operations Plan for the SAS Project. NYCT will validate SAS Phase 1 readiness during Pre-Revenue Service Operations Training and Testing scheduled from October 25, 2016 to December 15, 2016.

Observation:

Customer Service Centers are being deleted at various stations. Completion of the Safety and Security Certification Program is a major activity prior to Revenue Service. Coordination of the Safety and Certification Program has greatly improved during this reporting period. Technical Work Group is effectively working with the station contractors to capture the body of evidence need for the certifiable items for each element.

Concerns and Recommendation:

The SAS Project Team needs to expedite the update of the Concept of Operations Plan to reflect how the stations will function with the deletion of the Customer Service Centers.

2.2 Third-Party Agreement

Status:

During the 2nd Quarter 2015, the SAS Project Team continued its Interagency Coordination as defined in Section 12 of the SAS PMP.

Through June 30, 2015, \$54,779,457 of the \$91,586,000 Third-Party reimbursement budget (Rev. 10 Current Working Budget) has been spent.

Observation:

MTACC/NYCT has entered into cooperative and force account agreements as needed with other agencies and utility providers to perform construction work for the Project. The Third-Party Agreement budget appears to be adequate to support the remaining construction.

Concerns and Recommendation:

None

2.3 Contract Packages and Delivery Methods

Phase 1 of the Second Avenue Subway is being delivered via ten separate construction packages. Each construction contract package utilizes the design-bid-build process based upon a fixed price construction contract. Competitive procurements are based on NYCT standard procedures. There was no change to the procurement or delivery method for any of the construction packages during the 2nd Quarter of 2015.

2.4 Vehicles

No change. No additional vehicles will be procured for the SAS Phase 1 Project.

2.5 Property Acquisition and Real Estate

Status:

Real estate acquisition and tenant relocation was performed in accordance with the approved SAS Real Estate Acquisition Management Plan and Relocation Plan. These plans address Title 49 CFR Part 24, which implements the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970, as amended and FTA real estate requirements 5010.1C.

All real estate acquisitions required for the construction of SAS Phase 1 have been completed.

Observation:

None

Conclusions and Recommendations:

None

2.6 Community Relations

Status:

MTACC continues to expend significant amount of effort in maintaining effective communication and good relations with the residential and business community affected by the Second Avenue Subway construction effort. These efforts have generally been effective in facilitating the resolution of adverse construction impacts and addressing the concerns of community stakeholder groups.

Observation:

During the 2nd Quarter 2015, Community Outreach activities included the following:

- Production of a monthly newsletter providing updates on construction progress, major milestones achieved and a schedule of upcoming events. These newsletters are available in electronic and hard copy formats.
- Coordinated and staffed community tours of the underground work area on April 25th, May 16th and May 21st at the 86th Street Station progress and walk the running tunnels to the 96th Street Station.
- In April and May, interactive presentations were delivered to school students living and going to school along the project alignment. More than 25 students took part in these information sessions.
- On April 23rd the MTACC Executive Team delivered a construction progress update and three month look ahead to the Community Board 8 Second Avenue Subway Task Force.
- In May, the quarterly Construction Advisory Committee (CAC) meeting was held with area stakeholders. Station area issues and project wide updates are discussed.
- As part of MTACC's Good Neighbor Initiative, new work zone fence wraps were introduced in May. The new design highlights images of what the finished station and entrances will look like and incorporates Q line maps.

- On May 28th the SAS simulator was opened at the Community Information Center. This interactive train simulation lets you drive a virtual train from the 96th Street Station to the 72nd Street Station and uses real SAS graphics and finishes.
- The project manned an information booth at the Third Avenue Street Fair on May 30th, where many people stopped to get maps depicting the Phase 1 Q line extension, ask questions, and get a general sense of progress to date.
- MTACC continues to interact with local elected officials and maintains an open dialogue with the offices of Congresswoman Carolyn Maloney, Council Member Ben Kallos, Councilmember Daniel R. Garodnick, and Assemblymen Dan Quart.

Conclusions and Recommendations:

None

3.0 PROJECT MANAGEMENT PLAN AND SUB-PLANS

3.1 Project Management Plan

Status:

Refer to “ELPEP SUMMARY” for any updated information.

Observation:

None.

Concerns and Recommendations:

None.

3.2 PMP Sub Plans

Status:

Refer to “ELPEP SUMMARY” for any updated information.

Observations:

None.

Concerns and Recommendations:

None.

3.3 Project Procedures

Status:

The MTACC has issued all the procedures required to effectively manage the SAS Phase 1 project.

Observations:

SAS Project team members have been trained in the various procedures issued by the MTACC.

Concerns and Recommendations:

None

4.0 PROJECT SCHEDULE STATUS

4.1 Integrated Project Schedule

Status:

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 #107 was received on July 1, 2015 and is based on a Data Date of June 1, 2015. A narrative report and the “.XER” schedule file for construction schedules were included. The IPS forecasts the completion of all construction and NYCT Pre-Revenue Training & Testing activities by November 15, 2016. The available schedule contingency of 33 work days (WD) or 45 calendar days (CD) is then added, resulting in a forecast completion date of December 30, 2016. Table 4-1 presents a summary of schedule dates based on IPS Update #107.

Table 4-1: Summary of Schedule Dates

	FFGA (March 2015)	Forecast Completion	
		Grantee	PMOC
Begin Construction	January 1, 2007	March 20, 2007A	March 20, 2007A
Construction Complete	August, 2016	November 15, 2016	October 2017
Revenue Service	February 28, 2018	December 30, 2016	February 2018

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

Table 4-2: Schedule Milestone Performance

Pkg	MS	Description	UD #106	UD #107	Variance		Sch. Float 107
					Contract	Month	
C2B	6B	Full access to Comms Rooms & Closets	06/24/15	06/24/15	-307	0	134
C2B	6C	Full access to Comms Rooms & Closets	06/24/15	06/24/15	-307	0	134
C2B	7A	Full access to Signals Rooms	05/08/15	06/08/15	-291	31	72
C2B	7B	Full access to Signals Rooms	06/24/15	06/24/15	-307	0	93
C2B	7C	Full access to Signals Rooms	06/24/15	06/24/15	-307	0	232
C2B	8A	Full access to Traction Power Rooms:	05/08/15	07/15/15	-328	68	98
C2B	8B	Full access to Traction Power Rooms:	06/24/15	07/15/15	-328	21	198
C2B	8C	Full access to Traction Power Rooms:	06/24/15	07/15/15	-328	21	198
C2B	9	Full access to Station Service Centers	11/13/15	11/13/15	-357	0	262
C2B	10	Complete all remaining Comms, Signal, & Traction	05/14/15	07/27/15	-309	74	178

Pkg	MS	Description	UD #106	UD #107	Variance		Sch. Float 107
					Contract	Month	
		Power work					
C2B	SS	Substantial Completion	11/10/16	11/11/16	-326	1	2
C3	4c	Compl Lwr/Uppr Platforms & Signal Rms	05/14/15	5/27/2015A	-590	13	X
C3	SS	Substantial Completion	02/19/16	02/19/16	-647	0	193
C4C	7A	Complete Work in all Comm Rooms	03/01/16	02/29/16	-42429	-1	182
C4C	7B	Complete Work Ancillary #1	05/29/15	06/25/15	-42180	27	31
C4C	10	Complete north power rooms	07/31/15	09/30/15	-217	61	49
C4C	12	Full access @ Station Service Center(s)	05/29/15	07/15/15	-321	47	204
C4C	SS	Substantial Completion w/o Ent. #1	09/16/16	09/30/16	-322	14	47
C4C	SS	Substantial Completion - Ent. #1	09/16/16	09/15/16	22	-1	43
C5C	2	Limited Access; Sta. 1209+00->1198+00	05/04/15	06/12/15	-141	39	120
C5C	3	Shared Access; Sta. 1209+00->1198+00	06/09/15	06/12/15	-21	3	119
C5C	6	Turnmover of Comm. Rooms	07/31/15	07/22/15	-120	-9	44
C5C	6A	Room-to-Room Conduit Ready	07/31/15	07/22/15	-120	-9	79
C5C	7	Turnover of Signal Rooms	06/02/15	06/19/15	-114	17	65
C5C	7A	Room-to-Room Conduit Ready	06/02/15	06/19/15	-42174	17	67
C5C	8	Turnover of Signal Rooms	06/02/15	06/19/15	-114	17	65
C5C	8A	Room-to-Room Conduit Ready	06/02/15	06/19/15	-114	17	67
C5C	9	Turnover Traction Power Rooms	05/21/15	06/19/15	-113	29	15
C5C	9A	Room-to-Room Conduit Ready	05/21/15	06/19/15	-113	29	117
C5C	10	Turnover Traction Power Rooms	05/15/15	06/09/15	-104	25	63
C5C	10A	Room-to-Room Conduit Ready	05/15/15	06/09/15	-104	25	126
C5C	11	Full access @ Station Service Center(s)	05/20/15	06/08/15	-76	19	235
C5C	14b	Limited Access all locations	05/21/15	06/05/15	-255	15	368
C5C	15	Comp. Permanent Power	01/05/16	12/30/15	-42368	-6	111

Pkg	MS	Description	UD #106	UD #107	Variance		Sch. Float 107
					Contract	Month	
C5C	SS	Substantial Completion	08/12/16	08/12/16	-73	0	66
C6	2A	Complete LAN - 96th St. Station	12/30/15	12/30/15	-226	0	141
C6	2B	Complete WAN - 96th St. Station	12/30/15	12/30/15	-226	0	141
C6	3A	Complete LAN - 86th St. Station	01/22/16	02/18/16	-215	27	114
C6	3B	Complete WAN - 86th St. Station	01/22/16	02/18/16	-215	27	114
C6	4A	Complete LAN - 72nd St. Station	01/15/16	02/16/16	-363	32	127
C6	4B	Complete WAN - 72nd St. Station	01/15/16	02/16/16	-363	32	127
C6	5A	Complete LAN - 63rd St. Station	06/16/15	07/01/15	-439	15	260
C6	5B	Complete WAN - 63rd St. Station	06/16/15	07/01/15	-439	15	260
C6	5C	Complete all 63rd St. Station work	06/16/16	04/18/16	-731	-59	151
C6	SS	Substantial Completion	10/24/16	10/24/16	-67	0	0

Milestone Summary: For contracts actively under construction, periodic progress of construction and schedule-related issues based on changes to contractual milestones includes the following.

1. Status of Milestones forecast to complete this update period (05/01/15 to 05/31/15):

Pkg	MS	Description	UD# 106 Date	Status	UD #107 Forecast
C5C	2	Limited Access; Sta. 1209+00->1198+00	05/04/15	Incomplete	06/12/15
C2B	7A	Full access to Signals Rooms	05/08/15	Incomplete	06/08/15
C2B	8A	Full access to Traction Power Rooms:	05/08/15	Incomplete	07/15/15
C2B	10	Complete all remaining Comms, Signal , & Traction Power work	05/14/15	Incomplete	07/27/15
C3	4c	Compl Lwr/Uppr Platforms & Signal Rms	05/14/15	Complete	
C5C	10	Turnover Traction Power Rooms	05/15/15	Incomplete	06/09/15
C5C	10A	Room-to-Room Conduit Ready	05/15/15	Incomplete	06/09/15

Pkg	MS	Description	UD# 106 Date	Status	UD #107 Forecast
C5C	11	Full access @ Station Service Center(s)	05/20/15	Incomplete	06/08/15
C5C	14b	Limited Access all locations	05/21/15	Incomplete	06/05/15
C5C	9	Turnover Traction Power Rooms	05/21/15	Incomplete	06/19/15
C5C	9A	Room-to-Room Conduit Ready	05/21/15	Incomplete	06/19/15
C4C	12	Full access @ Station Service Center(s)	05/29/15	Incomplete	07/15/15
C4C	7B	Complete Work Ancillary #1	05/29/15	Incomplete	06/25/15

2. Milestones forecast to complete during previous update period (04/01/15 to 04/30/15)

Pkg.	MS	Description	UD #105 Forecast	UD #106 Forecast	UD #107 Forecast
C2B	7A	Full access to Signals Rooms	04/08/15	5/08/15	06/08/15
C2B	8A	Full access to Traction Power Rooms:	04/08/15	05/08/15	07/15/15
C5C	2	Limited Access; Sta. 1209+00- >1198+00	04/14/15	05/04/15	06/12/15
C5C	5	Turnover of Comm. Rooms	04/17/15	Complete	-
C4C	12	Full access @ Station Service Center(s)	04/24/15	05/29/15	07/15/15
C5C	14b	Limited Access all locations	04/30/15	05/21/15	06/05/15

3. Milestones scheduled for completion during the next update period (06/01/15 to 06/30/15).

Pkg	MS	Description	UD# 107	
			Date	Float
C5C	14b	Limited Access all locations	06/05/15	368
C2B	7A	Full access to Signals Rooms	06/08/15	72
C5C	11	Full access @ Station Service Center(s)	06/08/15	235
C5C	10	Turnover Traction Power Rooms	06/09/15	63
C5C	10A	Room-to-Room Conduit Ready	06/09/15	126

Pkg	MS	Description	UD# 107	
			Date	Float
C5C	2	Limited Access; Sta. 1209+00->1198+00	06/12/15	120
C5C	3	Shared Access; Sta. 1209+00->1198+00	06/12/15	119
C5C	7	Turnover of Signal Rooms	06/19/15	65
C5C	7A	Room-to-Room Conduit Ready	06/19/15	67
C5C	8	Turnover of Signal Rooms	06/19/15	65
C5C	8A	Room-to-Room Conduit Ready	06/19/15	67
C5C	9	Turnover Traction Power Rooms	06/19/15	15
C5C	9A	Room-to-Room Conduit Ready	06/19/15	117
C2B	6B	Full access to Comms Rooms & Closets	06/24/15	134
C2B	6C	Full access to Comms Rooms & Closets	06/24/15	134
C2B	7B	Full access to Signals Rooms	06/24/15	93
C2B	7C	Full access to Signals Rooms	06/24/15	232
C4C	7B	Complete Work Ancillary #1	06/25/15	31

4. Milestones with unusual schedule variances, generally defined as a forecast date change approximately equal to or exceeding the duration of the reporting period are listed in the following table.

Pkg	MS	Description	UD #106	UD #107	Variance
C2B	10	Complete all remaining Comms, Signal , & Traction Power work	05/14/15	07/27/15	74
C2B	8A	Full access to Traction Power Rooms:	05/08/15	07/15/15	68
C4C	10	Complete north power rooms	07/31/15	09/30/15	61
C4C	12	Full access @ Station Service Center(s)	05/29/15	07/15/15	47
C5C	2	Limited Access; Sta. 1209+00->1198+00	05/04/15	06/12/15	39
C6	4A	Complete LAN - 72nd St. Station	01/15/16	02/16/16	32

Pkg	MS	Description	UD #106	UD #107	Variance
C6	4B	Complete WAN - 72nd St. Station	01/15/16	02/16/16	32
C2B	7A	Full access to Signals Rooms	05/08/15	06/08/15	31
C5C	9	Turnover Traction Power Rooms	05/21/15	06/19/15	29
C5C	9A	Room-to-Room Conduit Ready	05/21/15	06/19/15	29
C4C	7B	Complete Work Ancillary #1	05/29/15	06/25/15	27
C6	3A	Complete LAN - 86th St. Station	01/22/16	02/18/16	27
C6	3B	Complete WAN - 86th St. Station	01/22/16	02/18/16	27
C5C	10	Turnover Traction Power Rooms	05/15/15	06/09/15	25
C5C	10A	Room-to-Room Conduit Ready	05/15/15	06/09/15	25
C6	5C	Complete all 63rd St. Station work	06/16/16	04/18/16	-59

5. Milestones with unusual float variances, generally defined as a forecast date change approximately equal to or exceeding the duration of the reporting period are listed in the following table.

Pkg	MS	Description	UD #106	UD #107	Variance
C2B	7A	Full access to Signals Rooms	95	72	-23
C5C	9A	Room-to-Room Conduit Ready	141	117	-24
C5C	2	Limited Access; Sta. 1209+00- >1198+00	150	120	-30
C4C	10	Complete north power rooms	91	49	-42
C2B	8A	Full access to Traction Power Rooms:	148	98	-50
C2B	10	Complete all remaining Comms, Signal , & Traction Power work	233	178	-55
C4C	12	Full access @ Station Service Center(s)	31	204	173
C6	5C	Complete all 63rd St. Station work	99	151	52

Observations and Analysis:

- Program Contingency increased to 33 WD (45 CD) this period, due to removal of the placeholder activity for Post SC Contractor support for Operational and Train Testing (C6MS-1004) and letting schedule logic drive completion through Proof of Route Familiarization Training (OPSRT2600).
- One of thirteen milestones forecast for completion during this update period was actually achieved.
- Of the six milestones not completed, but forecast to complete during the previous update period (04/01/15 to 04/30/15), one was completed this period.
- Eighteen milestones are forecast for completion during the upcoming reporting period ((06/01/15 to 06/30/15).
- There are seventeen milestones which have experienced with excessive schedule variances between Updates #106 and #107. Sixteen of these variances represent delay to the milestone of at least one month.

4.2 90-Day Look-Ahead

Status:

Based on the Integrated Project Schedule (IPS) Update#107 (DD=06/01/15), major activities that can be anticipated to either start or complete over the upcoming 90 days include the following:

Table 4-3: 90-Day Look-Ahead Schedule

Activity ID	Start	Finish
C2B – 96th Street Station Concrete, Finishes & Utilities		
FAT Testing – Escalators E04, E05		6/30/15
Deliver, Install Elevator and Wiring – Station Area 3	6/29/15	
Bld. parapet walls, masonry walls @ invert level to 4 th level – Ancillary 2	6/1/15	9/3/15
Order/Manufacture/Fabricate/Deliver Cooling Tower – Ancillary #2		6/14/15
C3 – 63rd Street Station Rehab		
Set Elevator Entrance Frames & Sills; 1 st – 4 th Mezz. Levels	6/1/15	6/24/15
Install Elevator Cabs – EL01, EL02	6/25/15	8/18/15
Escalator Installation @ Entrance #1		9/17/15
Fiber @ 63 rd – Test and Final Tests (SIST)	8/4/15	8/10/15
C4C—72nd Street Station Finishes		
Anc. #1 – Install Equipment LV Switchgear/Transformers/Elec. Equipment	6/25/15	7/17/15
Anc. #2 – Install Equipment LV Swgr/Xformers/Elec. Equip./Mimic Pnl.		7/9/15

Activity ID		Start	Finish
	Anc. #2 Roof Concrete	7/22/15	8/4/15
	Anc. #2 Basement HVAC & Doors		8/19/15
C5C – 86th St. Station Finishes & MEP			
	FIAT – Tunnel Lighting	6/11/15	6/12/15
	Install Power Equipment	6/15/15	6/29/15
	Anc. #2 Mechanical – HVAC/AF/DC IPS	6/1/15	8/5/15
	Complete Ancillary 1 structural work – roof/street level		7/17/15
C6 – Systems			
	Submit/Approve Wiring, Testing Plan, Details – Fire Alarm System @ 86 th St.	6/29/15	9/8/15
	Signal Rooms @ 72 nd St. – Inst. Equip. Conduit, Bus & Power Wiring.	6/3/15	7/1/15
	Comm. Room MR477 @ 72 nd St. – Install Equipment	6/1/15	7/13/15
	Signal Rooms @ 86 th St. – Install Kindorf System	6/22/15	7/17/15

Observations and Analysis:

Significant work forecast for the upcoming period involves installation of vertical transportation and electrical distribution equipment.

Concerns and Recommendations:

Refer to See Section 4.3 of this report for additional comments and recommendations.

4.3 Critical Path Activities

Status:

This period schedule contingency for SAS Phase 1 improved nominally from the previous update to 33 WD (45 CD). . The IPS forecasts the completion of all construction and NYCT Pre-Revenue Training & Testing activities on November 15, 2016, with approximately 45 calendar days (CD) or 33 work days (WD) of contingency, resulting in a forecast Revenue Service Date (RSD) of December 30, 2016. Schedule contingency is summarized as follows:

	Dates	Contingency (CD)	
MTACC Completion	11/15/2016	45	MTACC Contingency
MTACC RSD	12/31/2016	184	Additional Contingency
ELPEP Threshold	7/3/2017	240	Minimum ELPEP Contingency
FTA RSD	2/28/2018	470	TOTAL

Observations and Analysis:

MTACC's schedule narrative identifies three independent float paths as "critical". Each of these paths has no more than 3 WD of schedule float. The PMOC concurs with MTACC's evaluation of the relative importance of these paths and for consistency, will follow the same reporting format.

1st Critical Path (TF=0): The longest continuous path involves Contract C6 Fire Alarm Equipment submittal and approval which is forecast to be complete on June 29, 2015. This work is the result of C6 AWO #35, which impact the fire alarm system at all stations. Manufacture and delivery of this equipment to the project site should be complete by September 8, 2015. The path then continues through panel installation, wiring and device installation throughout the 86th Street Station through March 1, 2016. Installation is followed by Fire Alarm Field Installation Acceptance Testing (FIAT), Facility Integrated Systems Testing (FIST) and Final Systems Integrated Testing (FSIT) at 86th Street Station through August 26, 2016. NYCT Pre Revenue Service and System Wide Operational & Train Tests then proceed until November 17, 2016. The Critical Path then completes with 31 WD (43 CD) of Schedule Contingency leading to a RSD date of December 30, 2016.

The critical path is unchanged from IPS Update #106 to #107. Update #107 indicates no progress on the activity (#C6CM86GN-407) that initiates this path. Despite the day-for-day delay to the start of this path, no delay was experienced to the overall project. Select reductions of durations of subsequent activities have masked the effect of this delay.

2nd Critical Path (TF=2): This path is initiated by structural construction and waterproofing of Entrance #3 at the 96th Street Station, which is forecast to extend through August 31, 2015. Follow-on construction of the elevator enclosure, access trim and machine room equipment extends the path through May 13, 2016. The path then follows Elevator Field Installation Acceptance Test (FIAT), Simulated Integrated Systems Test (SIST) and Final Systems Integrated Test (FSIT) at 96th Street Station through November 11, 2016. The path ends with 96th Street Station Substantial Completion on November 11, 2016 and ties to the primary critical path at Phase 1 Construction Complete on November 15, 2016. The schedule then completes with the same 33 WD (45 CD) of Schedule Contingency leading to a RSD date of December 30, 2016.

3rd Critical Path (TF=3): This path involves signal system installation at the 72nd Street Station. The path follows equipment and panel installation, relay installation, wiring and termination through January 5, 2016. The path then follows Field Installation Acceptance Test (FIAT), Facilities Integrated Systems Test (FIST) and Final Systems Integrated Test (FSIT) through October 5, 2016 and ties to Systemwide Operational Testing with 8 WD (11 CD) of float, followed by Phase 1 Construction Complete on November 15, 2016 with the same 33 WD (45 CD) of Schedule Contingency leading to a RSD date of December 30, 2016.

This path lost 9 WD of schedule float during this 21 WD update period.

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

+32 WD: This path represents procurement, installation and testing of permanent power equipment at the 86th Street Station. Following the forecast "Permanent Power Available" date of December 31, 2015, the path follows component and system

testing of mechanical and electrical equipment throughout the station. Last period; this path had 50 WD of schedule float, indicating an 18 WD loss of schedule float over a 21 WD update period.

+37 WD: This path represents the construction of Entrance #1 at the 72nd St. Station. Structural underpinning is forecast to complete on February 24, 2016. The path then follows finish construction, which is concurrent with escalator installation through testing and commissioning. All work at Entrance #1 is forecast to be complete by September 16, 2016. This path lost 31 WD of schedule float this period.

+45 WD: This path represents installation of equipment, third party testing and Con-Ed final inspection and acceptance of facilities required for permanent power at the 72nd Street Station. Following the “Permanent Power Available” date of January 1, 2016, this path merges with numerous other paths involving the testing and acceptance of equipment throughout the station. Last period, this path had 66 WD of schedule float, indicating a 21 WD (day-for-day) loss of schedule float over this update period.

+61 WD: This path involves trackwork and 3rd Rail installation throughout the project. Trackwork was previously a project critical path. The path is initiated by ongoing track installation work in Zone 3, followed by 3rd Rail installation in Zone 3 which is forecast to complete on August 26, 2015. The path then follows track installation through Zones 4, 7, 8, 10 and 11. Track installation is followed by termination of negative current return cables, FIAT, FIST and SIST of the traction power system, forecast for completion on August 10, 2016. This path joins the project critical path with Substantial completion of the C6 Contract.

This path gained 24 WD of schedule float this period.

+138 WD: This path represents procurement, installation and testing of permanent power equipment at the 96th Street Station. Following the forecast “Permanent Power Available” date of November 4, 2015, the path follows component and system testing of mechanical and electrical equipment throughout the station. This path remains unchanged from IPS Update #107.

Concerns and Recommendations:

Based on the PMOC review of IPS Update #107:

- In its milestone variance analysis (IPS Update #107 Narrative, page 19), MTACC rejects the C6 forecast Substantial Completion date of 11/29/16 based on its conclusion that the C6 Contractor is responsible for the delay from 11/2/16 to 11/29/16. The PMOC notes the IPS should provide the best forecast available and should not be edited or filtered based upon delay responsibility.
- MTACC has rejected the C2B Contractor’s May 1 and June 1, 2015 schedule updates. MTACC has updated the IPS using information from these two schedule updates.
- Track installation is no longer a major critical path and driver of forecast RSD. MTACC revised logic for this work in IPS Update #105 and eliminated this work as a primary critical path. .

4.4 Compliance with Schedule Management Plan

Status:

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).

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).
 - There are multiple “critical paths” with TF less than or equal to 17 CD. There are currently no independent, secondary float paths with Total Float (TF) less than 25 CD.
- 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.

Observation:

None

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.

Schedule Performance Indicators:

In an effort to corroborate the IPS forecast the PMOC has reviewed schedule performance to date in an effort to develop performance metrics that can assist in evaluating CPM schedule forecasts. In its periodic reports to the FTA, MTACC details the Budgeted Cost of Work

Scheduled (BCWS) versus the Budgeted Cost of Work Performed (BCWP) for each active construction contract. At a summary level, the resulting “S-curves” compare planned versus actual performance and can identify and provide insight into performance trends and schedule forecasts. For each active construction contract, the following table compares the planned vs. actual monthly level of achievement in terms of value earned by completed construction work. This “earned value” can be used to estimate a variance in planned vs actual schedule performance. May 2015 is the latest month for which this information is available.

Earned Value		May-15						
	Contract \$ (M)	Plan	Actual	Plan Month for EV \$	Ahead (+) or Behind (-)	Contract Compl Date	Post-Const. Testing by NYCT (CD)	Est. Revenue Service Date
C2B	\$ 324	\$ 293	\$ 215	Jul-14	-8.6	12/22/15	34.00	10/16
C3	\$ 176	\$ 176	\$ 158	Apr-13	-23.8	5/13/14	34.00	5/16
C4C	\$ 258	\$ 224	\$ 143	Oct-14	-5.6	9/16/16	34.00	4/17
C5C	\$ 208	\$ 135	\$ 87	Dec-14	-3.5	5/31/16	34.00	10/16
C6	\$ 261	\$ 197	\$ 147	Jan-15	-2.5	8/18/16	34.00	12/16
	\$1,227	\$1,025	\$ 751	Sep-14	-6.6			

The PMOC notes the following:

- This evaluation uses base contract values only. AWOs can be considered a partial cause of the variances indicated.
- Schedule float is also not considered. The significant schedule delay to contract C3 does not pose a risk to achieving the RSD.
- Logical relationships between contracts are also not considered. It is possible that several of these individual contract delays could interact, forming a longer project-level delay.
- Current schedule analysis suggests the possibility that the C2B contract could independently delay the RSD. Successful completion of the C6 contract is necessary to achieve RSD. Consequently, this analysis suggests the possibility of a 4 to 9.1 month delay to the RSD unless schedule performance is significantly improved.
- Between June 2014 and May 2015, this methodology identifies a generally increasing negative variance. This trend is consistent with “stacking” activities later in the schedule and the observed increase in “near-critical” paths and reduction in overall schedule float.

Conclusions and Recommendations:

Each of the five remaining construction contracts has experienced significant delays. The PMOC has documented numerous instances where schedule milestones have been significantly delayed. With respect to actual schedule performance, there is very little to support MTACC's position that it can realistically achieve the RSD by December 30, 2016.

5.0 BUDGET/COST

Status:

The FFGA baseline budget and current working budget are broken down into Standard Cost Categories in year of expenditure dollars as follows:

Table 5-1: Allocation of FFGA and Current Working Budget to Standard Cost Categories

Std. Cost Category (SCC)	Description	FFGA (January 2008)	FFGA Amended (March, 2015)	MTA's Current Working Budget (March, 2015)
10	Guideway & Track Elements	\$612,404,000	\$195,346,781	\$622,478,000
20	Stations, Stops, Terminals, Intermodal	\$1,092,836,000	\$1,666,605,679	\$1,277,642,000
30	Support Facilities	\$0	\$0	\$0
40	Site Work & Special Conditions	\$276,229,000	\$793,118,232	\$524,561,000
50	Systems	\$322,707,000	\$250,379,966	\$250,134,000
60	ROW, Land, Existing Improvements	\$240,960,000	\$281,500,000	\$281,500,000
70	Vehicles	\$152,999,000	\$0	\$0
80	Professional Services	\$796,311,000	\$1,026,608,168	\$1,185,742,929
90	Unallocated Contingency	\$555,554,000	\$544,441,174	\$308,942,010
Subtotal		\$4,050,000,000	\$4,758,000,000	\$4,451,000,000
Financing Cost		\$816,614,000	\$816,614,000	\$816,614,000
Total Project		\$4,866,614,000	\$5,574,614,000	\$5,267,614,000

Observation and Analysis:

Table 5-1 represents MTACC's most recent update March, 2015 of its CWB into the FTA Standard Cost Categories. Revisions to the SCC allocations incorporate the Revision 10 modifications to the MTACC's CWB. MTACC converts the CWB to the SCC format quarterly.

Conclusions and Recommendations:

MTACC continues to execute Phase 1 of the SAS within the constraints of its CWB. The PMOC will continue to monitor MTACC's conformance to its budget.

5.1 Project Cost Management and Control

Status:

The SAS Project Team accumulates and reports actual cost expenditures against MTACC's established cost categories on a monthly basis. The aggregate budget value of the cost categories equals the CWB of \$4.451B. In general, MTACC cost categories correspond to individual contracts or groups of contracts for products or services supplied by a 3rd party

vendor. Values within the MTACC Cost Categories are mapped to the FTA Standardized Cost Categories on a Quarterly basis.

Observation:

MTACC continues to demonstrate that its cost reporting and management processes and procedures are adequate for and responsive to the needs of the project. No new observations this period.

Concerns and Recommendations:

None

5.2 Project Expenditures and Commitments:

Status:

As of June 30, 2015, a summary comparison of the SAS Current Working Budget (Estimate Revision #10) and expenditures is as follows:

Description	CWB	Expended	%
Total Construction (1)	\$2,674,814,299	\$2,354,172,024	83%
Total Soft Cost	\$1,308,108,085	\$1,114,547,443	85%
Contingency	\$468,077,616	(Included above)	
Subtotal	\$4,451,000,000	\$3,468,719,467	77.9%

(1) % complete includes AWOs executed to date.4

Observations:

The PMOC notes that expenditures are generally representative of the level of completion of each project element. It is noted that “soft costs” as defined on this project, include significant front-end costs (property acquisition, OCIP, etc.) which skew the percentage of those categories expended to date.

Based upon financial expenditures reported by the MTACC during June 2015, SAS Phase 1 is approximately 77.9% complete. The completion status of the active construction contracts through June 30, 2015, also based upon reported expenditures through that date, is as follows:

- C26002 (Tunnel Boring) – 100%
- C26005 (96th Street Station) – 100%
- C26010 (96th Street Station) – 68.5%
- C26013 (86th Street Station) – 100%
- C26008 (86th Street Station) – 99.3%
- C26012 (86th Street Station) – 42.6%
- C26006 (63rd Street Station) – 90.3%
- C26007 (72nd Street Station) – 99.9%

- C26011 (72nd Street Station – 57.5%
- C26009 (Systems) – 56.8%

Aggregate Construction % Completion:

- 100% of all construction work is under contract
- 82% of all base construction (not including AWOs) is complete.
- 83% of all construction is complete. Using progress payments to estimate project completion introduces a lag of approximately one month.

Based upon cost data received from MTACC for June 2015:

- Value of construction in place this period = \$25,416,774
- Estimated value of construction remaining = \$320,941,804
- Target construction completion = November 15, 2016
- # Months remaining = 16.6

Professional Services (as generally defined by SCC Category 80) during June 2015 totaled approximately \$9.0M. This rate of expenditure is somewhat higher than that experienced during recent periods and may be partially explained by the lack of a progress payment for the Construction Manager (CM). At the current rate of expenditure, the existing budget should be sufficient to fund professional services into the 3rd Quarter 2017.

Conclusions and Recommendations:

Refer to Section 5.5 and 5.6

5.3 Change Orders

Status:

As of June 30, 2015, the status of Additional Work Orders (AWOs) on Phase 1 of the Second Avenue Subway Project is summarized as follows:

Table 5-2: AWO Summary

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)	100.00%	\$325,000,000	\$47,615,409	14.65%	\$47,615,409	14.65%
C26010 (2B)	68.51%	\$324,600,000	\$32,628,812	10.05%	\$26,380,087	8.13%
C26006 (3)	90.27%	\$176,450,000	\$32,579,796	18.46%	\$15,811,949	8.96%
C26007 (4B)	99.93%	\$447,180,260	\$1,325,639	0.30%	\$1,325,639	0.30%
C26011 (4C)	57.49%	\$258,353,000	\$27,836,744	10.77%	\$24,246,442	9.39%
C26013 (5A)	100.00%	\$34,070,039	\$6,525,471	19.15%	\$6,525,471	19.15%
C26008 (5B)	99.25%	\$301,860,000	\$24,535,222	8.13%	\$18,323,553	6.07%
C26012 (5C)	42.61%	\$208,376,000	\$7,979,813	3.83%	\$2,884,589	1.38%

Contract / (Package)	% Complete	Award	Exposure		Executed	
			\$	% of Award	\$	% of Award
C26009(6)	56.82%	\$261,900,000	\$7,704,886	2.94%	\$7,029,192	2.68%
TOTAL TO DATE		\$2,674,814,299	\$229,818,439	8.59%	\$191,228,978	7.15%

Bold type indicates completed contracts

To date, approximately \$2,193,239,141 (82%) of all base contract construction work has been completed. As a % of work completed, the AWO exposure for these contracts = 10.48% and the executed AWO % = 8.72%. Based on performance to date, a forecast of total AWO expenditure for all base contract work in the range of \$250M to \$260M appears reasonable.

Observation and Analysis:

AWO exposure has equaled the existing budget of \$229M.

The value of AWOs reported by MTACC/NYCT in June 2015 is summarized as follows:

	<u>Executed AWOs</u>	<u>AWO Exposure</u>
Jun-15	\$191,228,978	\$229,818,439
May-15	<u>\$185,112,578</u>	<u>\$216,992,292</u>
Δ	\$6,116,400	\$12,826,147
Δ	3.30%	5.91%

The changes in AWO Exposure for each construction contract reported through June 2015 are summarized as follows:

Const. Pkg.	AWO Exposure			
	Jun-15	May-15	Period Δ	Changes this Period
Completed Packages	\$47,612,118	\$47,612,118	\$0	Final values for Packages C1 and C5A as reported by MTACC.
C2A	\$47,615,409	\$47,615,409	\$0	No change reported this period.
C2B	\$32,628,812	\$31,893,591	\$735,221	Net increase is based on revised estimates for AWO # 101, 109, 121, 122, 144, 146 and initial estimates for AWO # 146, 156, 157, 159, 165.
C3	\$32,579,796	\$23,783,320	\$8,796,476	Net increase is based on revised estimates for AWO # 102, 164, 108, 188, 193, 194, 196, 197, 200, 201, 203, 204, 206, 207, 209, 210, 213, 214, 215, 216, 217, 218, 220 and initial estimates for AWO # 221, 222, 223, 224, 225, 226, 227, 228.

Const. Pkg.	AWO Exposure			
	Jun-15	May-15	Period Δ	Changes this Period
C4B	\$1,325,639	\$1,325,639	\$0	No change reported this period.
C4C	\$27,836,744	\$27,662,484	\$174,260	Net increase is based on a revised estimate for AWO # 142 and initial estimates for AWO # 117, 135, 150, 153.
C5B	\$24,535,222	\$21,633,017	\$2,902,205	No change reported this period.
C5C	\$7,979,813	\$7,844,101	\$135,712	Net increase is based on revised estimates for AWO # 14, 30, 71 and initial estimates for AWO # 54, 80, 91.
C6	\$7,704,886	\$7,622,613	\$82,273	Net increase is based on revised estimates for AWO # 64, 83, 86 and initial estimates for AWO # 93, 94, 95, 96, 97, 101.
	\$229,818,439	\$216,992,292	\$12,826,147	

The changes in Executed AWO Value for each construction contract reported through June 2015 are summarized as follows:

Const. Pkg.	Executed AWOs			
	Jun-15	May-15	Period Δ	Changes this Period
Completed Packages	\$47,612,118	\$47,612,118	\$0	Final values for Packages C1 and C5A as reported by MTACC.
C2A	\$47,615,409	\$47,615,409	\$0	No change reported this period.
C2B	\$26,380,087	\$24,337,819	\$2,042,268	Increase is based on execution of AWO # 63, 106, 135, 138, 139, 141, 158, and 171.
C3	\$15,811,949	\$14,569,549	\$1,242,400	Increase is based on execution of AWO # 137, 160, 177, 180, 184, 193, 201, 203, 204, 209, 210, 213, 215, and 218.
C4B	\$1,325,639	\$1,325,639	\$0	No change reported this period.
C4C	\$24,246,442	\$23,595,435	\$651,007	Increase is based on execution of AWO # 49, 75, 84, 112, 116, 128, 135, and 137.
C5B	\$18,323,553	\$17,823,553	\$500,000	Increase is based on execution of AWO # 12, 49, 92, 94.
C5C	\$2,884,589	\$1,414,524	\$1,470,065	Increase is based on execution of AWO # 13, 41, 81, 100.

Const. Pkg.	Executed AWOs			
	Jun-15	May-15	Period Δ	Changes this Period
C6	\$7,029,192	\$6,818,532	\$210,660	Increase is based on execution of AWO # 143, 83, 86, 101.
	\$191,228,978	\$185,112,578	\$6,116,400	

MTACC, with support from NYCT, has generally demonstrated a disciplined and diligent approach to effectively negotiating additional work orders for a fair and reasonable price. Credits for deleted or reduced work scope are pursued aggressively.

Concerns and Recommendations:

None at this time.

5.4 Project Funding

Status:

Total Federal participation is currently \$1,373,892,821. Appropriated, obligated and disbursed totals are shown in Table 5-3 below.

Table 5-3: Appropriated and Obligated Funds (Federal)

Grant Number	Amount (\$)	Obligated (\$)	Disbursement (\$) thru June 30, 2015
NY-03-0397	\$4,980,026	\$4,980,026	\$4,980,026
NY-03-0408	\$1,967,165	\$1,967,165	\$1,967,165
NY-03-0408-01	\$1,968,358	\$1,968,358	\$1,968,358
NY-03-0408-02	\$24,502,500	\$24,502,500	\$24,502,500
NY-03-0408-03	0	0	0
NY-03-0408-04	0	0	0
NY-03-0408-05	\$167,810,300	\$167,810,300	\$167,810,300
NY-03-0408-06	\$274,920,030	\$274,920,030	\$274,920,030
NY-03-0408-07	\$237,849,000	\$237,849,000	\$237,849,000
NY-03-0408-08	\$197,182,000	\$197,182,000	\$197,182,000
NY-03-0408-09	\$186,566,000	\$186,566,000	\$31,761,776
NY-03-0408-10**	\$123,384,621	0	0
NY-17-X001-00	\$2,459,821	\$2,459,821	\$2,459,821
NY-36-001-00*	\$78,870,000	\$78,870,000	\$78,870,000
NY-95-X009-00	\$25,633,000	\$25,633,000	\$25,633,000
NY-95-X015-00	\$45,800,000	\$45,800,000	\$45,800,000
Total	\$1,373,892,821.00	\$1,250,508,200.00	\$1,095,703,976.00



* Denotes American Recovery and Reinvestment Act (ARRA) funds. **Appropriated.

Total project distribution is \$3,468,719,467 of which \$2,373,015,491 is local funds and \$1,095,703,976 is federal funds.

Observation and Analysis:

The New York State Legislature has agreed to fund the remaining three years of MTA’s 2010 – 2014 Capital Program which will provide adequate funds to support the SAS Phase 1 Project’s current working budget.

Concerns and Recommendations: None

5.4.1 Overall Project Funding

Refer to Section 5.2 of this Report.

5.4.2 Local Funding

Refer to Section 5.2 of this Report.

5.5 Cost Variance Analysis

Events that represent major project milestones for measuring cost variances include:

- Full Funding Grant Agreement (FFGA) – 11/19/2007
- Enterprise Level Project Execution Plan – 01/15/2010
- MTACC Current Working Budget – 6/2011
- MTACC Current Working Budget – 8/2013 (Revision 10)
- Contemporaneous EAC forecasts.

Budget variances identified at these milestones provide insight to the internal and external forces shaping the project and their impact on the final cost of the project. The PMOC has analyzed and presented its analysis of cost variances through CWB Revision 10. This analysis has documented a 12.13% cost growth between FFGA and CWB Revision 10.

Observation and Analysis:

A summary comparison of CWB Revision 10 and a current EAC forecast is shown in Table 5-4.

Table 5-4: CWB vs. EAC

Category	Current Working Budget	EAC Forecast
Total Construction	\$2,674,814,299	\$2,992,810,737.00
Engineering Services Subtotal	\$622,862,000	\$684,157,000.00
Third Party Expenses	\$554,086,273	\$562,086,000.00
TA Expenses	\$131,160,085	\$132,890,202.00
Contingency	\$468,077,343	
Total	\$4,451,000,000	\$4,371,943,939

Based on the information available, the PMOC’s EAC validates the reasonableness of the MTACC’s Current Working Budget of \$4.451B.

Conclusions and Recommendations:

Based upon current information, this effort suggests the project can be built within the limits of the Current Working Budget, absent any major delays to the currently forecast RSD. This effort will be revisited periodically, to incorporate updated information and evaluate its effect on the overall EAC.

5.6 Project Contingency

Status:

The ELPEP requires the MTACC to maintain specific contingency funds in accordance with the following “achievement driven” schedule:

- \$220M through 90% Bid and 50% Construction
- A linear reduction in contingency from \$220M to \$140M through 100% Bid and 85% Construction
- \$45M from 100% Bid and 85% Construction through Start Up and Pre-Revenue Operations

The independent analysis of contingency drawdown maintained by the PMO is generally consistent with that maintained by the SAS Project team and confirms it to be in compliance with the estimated minimum contingency balance of \$140,000,000.

Observations and Analysis:

During 2nd Quarter 2015, contingency changes included routine incorporation of AWOs into the individual project and overall program reporting systems. Cost models maintained by both the PMOC and the SAS Project Team verify that the current contingency balance is greater than the Planned Balance and exceeds the ELPEP Required Balance.

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	\$1,114,547,443	\$1,114,547,443
Soft Cost Forecast to Complete	\$193,560,642	\$264,585,759
AWO Exposure	\$216,992,292	\$317,996,438
Total Contingency	\$251,085,324	\$79,056,061
Reserved Contingency	\$160,000,000	\$79,056,061
Available Contingency	\$91,085,324	

Transfer from Reserved Contingency = \$80,943,939

Total Contingency = budget balance after forecast expenditures.

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.

Concerns and Recommendations:

This evaluation is based on a thorough review of construction contingency. Soft cost contingency is evaluated periodically and the analysis adjusted accordingly. At this time, it appears the available contingency is adequate to support completion of the Project.

6.0 PROJECT RISK

6.1 Initial Risk Assessment

No change this period.

6.2 Risk Updates

Status:

The May 2015 Risk Report was distributed this period. Risk mitigation meeting No. 47 was held on June 29, 2015.

Observation and Analysis:

For several months, MTACC has reported that the SAS Contract Risk Registers were updated and Risk Analysis was performed in late December 2014, and that results of this analysis were reviewed with MTACC Executive Management in March 2015. To date, the resulting schedule and cost contingency forecast curves have not been released.

Conclusions and Recommendations:

The PMOC must conclude that the six-month delay in publishing the results of the December 2014 Risk Update is due to negative results. It is recommended that the updated risk registers and risk analysis results be released for review by the FTA and the PMOC.

6.3 Risk Management Status

Status:

In general, MTACC has utilized the risk management process to identify major risks to project performance and develop mitigation plans to address those risks.

Observation and Analysis:

None.

Conclusions and Recommendations:

None.

6.4 Risk Mitigation

Status:

Risk Mitigation efforts have been concentrated on major risks with the potential to impact the overall project RSD. This process has proven to be valuable in managing risks such as contract interface management, availability of permanent power, and others.

Observation and Analysis:

The most significant risks are discussed below. Also included are descriptions of the current mitigation strategies and an update of the status of the mitigation actions.

Testing and Commissioning: MTACC reported that it was constrained from starting detail planning sessions for these activities until early 2015 because the appropriate NYCT personnel were preoccupied with testing and commissioning activities at the Fulton Transit Center and No. 7 Line Extension projects. Since then, MTACC has conducted regular meeting with the

involved parties in an effort to develop a plan that will result in the complete and timely completion of this task.

Based on recent observations, the PMOC is concerned that MTACC has not made adequate progress in this effort.

Track Installation Delay: Installation of track and related work was previously on the project's primary critical path. Resequencing of the work mitigated previous delays and according to IPS Update #107, has currently resulted in 61 WD of schedule float on this path.

Track installation was previously delayed due to the slow progress in approval of technical submissions. Resolution of conflicting survey data has delayed the review and approval of final alignment submittals. Installation of track work has been on the SAS Primary Critical Path (CP); delays to trackwork submittals has consumed project-level schedule contingency although the forecast RSD has been maintained. Based on the increase in reported schedule float this period, mitigation efforts appear to be successful.

MTACC and the Systems Contractor continue to hold bi-weekly meetings to resolve track work issues and expedite the submittal development and review process.

72nd Street Station Entrance 1: In December 2014, MTACC and the 72nd Street Station Contractor executed a change order to accelerate construction at 72nd Street Station Entrance 1 from January 27, 2017 to September 16, 2016. Problems with rock excavation have been encountered, but generally mitigated through a combination of activity resequencing and multi-shift work efforts. Underpinning will be the controlling activity through early 2016. The work is currently on schedule; however it lost 31 WD of schedule float this period.

Facility Power: Timely availability of permanent facility power at the new stations is necessary to ensure the timely completion of system installation, testing and commissioning activities. The current IPS indicates that all stations will be energized by December 2015. All contractors reportedly support this date.

Currently, room access and infrastructure construction issues appear to have been resolved and the actual supply, installation and approval of the equipment by Con-Ed control the achievement of this effort. There is some concern this period as work at both the 72nd and 86th Street Stations encountered delays approximately equal to the entire update period. Although some concern has been expressed over the capacity and capability of the 96th Street Station Contractor to support this effort, supply of permanent power at this station currently has over 4 months of schedule float.

Concerns and Recommendations:

The PMOC does not concur that risk associated with late design changes requested by NYCT can be effectively mitigated through improvements in the AWO management process. The PMOC recommends revisiting the "root causes" of this risk and refining management efforts to address those issues.

6.5 Cost and Schedule Contingency

6.5.1 Cost Contingency

Status: Refer to Section 5.4 of this report.

6.5.2 Schedule Contingency

Status:

Via IPS Update #107, MTACC forecasts all Phase 1 construction and pre-revenue testing to be complete on November 15, 2016. This results in 45 CD (33 WD) of contingency when measured against the MTACC's target RSD of December 30, 2016 and a 469 CD contingency when measured against the FTA Risk-Informed RSD of February 28, 2018.

Observations:

Major risks previously identified in the construction contractor schedules and not represented in the IPS have been reconciled. As such, the current risk-mitigated forecast and a risk-realized forecast are equivalent. The RSD forecast by IPS #107 results in the following contingencies:

Table 6-1: Schedule Contingency

IPS Update #	102	103	104	105	106	107
Data Date	1/1/15	2/1/15	3/1/15	4/1/15	5/1/15	6/1/15
	Contingency (CD)					
RSD=12/30/2016						
Risk Mitigated	69	38	38	49	43	45
Risk Realized	69	38	38	49	43	45
RSD=02/28/2018						
Risk Mitigated	492	461	461	473	467	469
Risk Realized	492	461	461	473	467	469

Concerns and Recommendations:

The PMOC concerns regarding schedule are enumerated in Section 4 of this report.

7.0 LIST OF ISSUES AND RECOMMENDATIONS

Priority in Criticality column 1 – Critical 2– Near Critical

Number with Date Initiated	Section	Issues/Recommendations	Criticality
SAS-09- Jan10	3.0 PMP	<p>The PMP and its sub-plans must be updated to reflect the new management processes and strategies of the ELPEP.</p> <p><u>PMOC Recommendation:</u> Update the PMP and its sub-plans within the timeframes established in the ELPEP.</p> <p><u>Update (June 2014):</u> MTACC is addressing FTA/PMOC review comments.</p> <p><u>Update (September 2014):</u> MTACC’s review comments associated with PMP Update #9 were incorporated into PMP Update #10. A draft copy of PMP Update #10 was forwarded to the FTA/PMOC for review during this reporting period. PMP Draft Update #10 does not adequately address the PMOC’s comments associated with Update #9. FTA/PMOC will schedule a meeting with MTACC to review each area of concern so that any misunderstandings are resolved.</p> <p><u>Update (December 2014):</u> The PMOC’s enhanced comments and explanations resulting from its review of MTACC’s PMP Update #10 were transmitted to FTA on November 5, 2014. Reconciliation of any outstanding issues is being evaluated.</p> <p><u>Update (March 2015):</u> MTACC responses to FTA/PMOC comments regarding the Rev. 10 update to the PMP have been received.</p> <p><u>Update (June 2015):</u> The PMP has been approved. This issue is closed.</p>	2

Number with Date Initiated	Section	Issues/Recommendations	Criticality
SAS-27- Jun 12	3.2 PMP Sub Plans	<p>The PMOC has noted that community relations activities continue to be a very significant element of the overall management of this project. However, neither the PMP nor any applicable sub plan identify this work, the manner by which it will be managed or executed, the scope of the work or any budgetary or financial controls.</p> <p>The PMOC recommends the development or update of applicable plans and procedures governing such work during the next PMP update period.</p> <ul style="list-style-type: none"> ▪ <u>Update (June 2014):</u> Revision of the SAS PMP will be coordinated with the Amendment of the FFGA. Efforts are ongoing. ▪ <u>Update (September 2014):</u> SAS-09-Jan10 above. ▪ <u>Update (December 2014):</u> See SAS-22-Jun 12 above. ▪ <u>Update (March 2015):</u> See SAS-22-Jun 12 above. ▪ <u>Update (June 2015):</u> MTACC has decided that it is not necessary to develop or update any plans or procedures to describe community relations activities. This issue is closed. 	2

8.0 GRANTEE ACTIONS FROM QUARTERLY AND MONTHLY MEETINGS

Priority in Criticality column

1 – Critical

2 – Near Critical

Number with Date Initiated	Section	Grantee Actions	Criticality	Projected Resolution
		No specific Grantee Actions are noted at this time.		

APPENDIX A — LIST OF ACRONYMS

AFI	Allowance for Indeterminates
ARRA	American Recovery and Reinvestment Act
AWO	Additional Work Order
BCE	Baseline Cost Estimate
BFMP	Bus Fleet Management Plan
CCM	Consultant Construction Manager
CD	Calendar Day
CMAQ	Congestion Mitigation and Air Quality
CPM	Critical Path Method
CPRB	Capital Program Review Board
CR	Candidate Revision
CSJV	Comstock Skanska Joint Venture
CWB	Current Working budget
DC	Design Consultant
DOB	New York City Department of Buildings
EAC	Estimate at Completion
ELPEP	Enterprise Level Project Execution Plan
FAT	Factory Acceptance Testing
FD	Final Design
FEIS	Final Environmental Impact Statement
FIAT	Field Installation Acceptance Test
FIST	Facilities Integrated Systems Test
FFGA	Full Funding Grant Agreement
FTA	Federal Transit Administration
GC	General Contractor
HASP	Health and Safety Plan
HLRP	Housing of Last Resort Plan
IFP	Invitation for Proposal
IFB	Invitation to Bid
IPS	Integrated Project Schedule
LF	Linear Feet
MEP	Mechanical, Electrical, Plumbing
MTACC	Metropolitan Transportation Authority – Capital Construction
N/A	Not Applicable
NEPA	National Environmental Policy Act
NTP	Notice to Proceed
NYCDEP	New York City Department of Environmental Protection
NYCT	New York City Transit
NYSPTSB	New York State Public Transportation Safety Board
OCIP	Owner Controlled Insurance Program
PE	Preliminary Engineering
PMOC	Project Management Oversight Contractor (Urban Engineers)
PMP	Project Management Plan
PQM	Project Quality Manual

RAMP	Real Estate Acquisition Management Plan
RFMP	Rail Fleet Management Plan
RFP	Request for Proposal
RMCP	Risk Mitigation Capacity Plan
RMP	Risk Management Plan
ROD	Record of Decision
ROD	Revenue Operations Date
RSD	Revenue Service Date
SAS	Second Avenue Subway
SCC	Standard Cost Category
SCIT	Systems Commissioning and Integration Testing
SES	Systems Engineering Specialists
SIM	Systems Integration Manager
SIST	Simulated Integrated System Testing
SIT	Systems Integrated Testing
SOE	Support of Excavation
SSCP	Safety and Security Certification Plan
SSMP	Safety and Security Management Plan
SSOA	State Safety Oversight Agency
SSRA	Systems Safety and Reliability Assurance Program Plan
SOE	Support of Excavation
SSMP	Safety and Security Management Plan
SSOA	State Safety Oversight Agency
SSPP	System Safety Program Plan
TEAM	Transportation Electronic Award Management System
TF	Total Float (schedule)
TBD	To Be Determined
TBM	Tunnel Boring Machine
TCC	Technical Capacity and Capability Plan
TIA	Time Impact Analyses
UNO	Unless Noted Otherwise
WBS	Work Breakdown Structure
WD	Work Day
YOE	Year of Expenditure

APPENDIX B—PROJECT OVERVIEW AND MAP

Project Overview and Map – Second Avenue Subway



Scope

Description: The project will connect Manhattan’s Central Harlem area with the downtown financial district, relieving congested conditions on the Lexington Avenue line. The current project scope includes: tunneling; station/ancillary facilities; track, signal, and electrical work; vehicle procurement; and all other subway systems necessary for operation. The current phase, Phase 1 of 4, will provide an Initial Operating Segment (IOS) from 96th Street to 63rd Street, and will connect with the existing Broadway Line that extends to Lower Manhattan and Brooklyn. Subsequent phases will extend the line northward to 125th Street and to the southern terminus at Hanover Square in Lower Manhattan.

Guideway: Phase 1 is 2.3 miles long, from 63rd Street to 105th Street. It is a two-track project that is below grade in tunnels, and does not include any shared use track.

Stations: In Phase 1 there are: two new mined stations located at 72nd and 86th Streets, one new cut and cover station at 96th Street, and major modifications of the existing 63rd Street Station on the Broadway Line.

Support Facilities: There are no additional support facilities planned for Phase 1 of the project.

Vehicles: MTA envisions the need for eight-and-one-half train sets to satisfy the Phase 1 operating requirements (7) and to provide sufficient spares (1½).

Ridership Forecast: Upon completion of Phase 1, ridership is expected to be 191,000 per average weekday (MTA’s Regional Travel Forecast Model).

Schedule

12/20/01	Approval Entry to PE	06/12	Estimated Rev Ops at Entry to PE
04/18/06	Approval Entry to FD	03/14	Estimated Rev Ops at Entry to FD
11/19/07	FFGA Signed	06/30/14	Estimated Rev Ops at FFGA
03/15	Amended FFGA Signed		
12/30/16	Revenue Operations Date at date of this report (MTACC schedule)		
83%	Percent Complete Construction at June 31, 2015		
83%	Percent Complete Time based on Rev Ops Date of December 30, 2016		

Cost (\$)

3,839 M	Total Project Cost (\$YOE) at Approval Entry to PE (w/o Financing Costs)
3,880 M	Total Project Cost (\$YOE) at Approval Entry to FD (w/o Financing Costs)
4,866 M	Total Project Cost (\$YOE) at FFGA signed (w/ \$816 M Financing Costs)
4,451 M	Total Project Cost (\$YOE) at Revenue Operations (w/o Financing Costs)
5,267 M	Total Project Cost (\$YOE) at date of this report including \$816 M in Finance Charges
3,351M	Amount of Expenditures at date of this report from Total Project Budget of \$4,451M
78%	Percent Complete based on Expenditures at date of this report
259M	Total Project Contingency remaining (allocated and unallocated contingency)

* Being revisited as a result of the Enterprise Level Project Execution Plan

APPENDIX C – LESSONS LEARNED

There were no Lessons Learned to report for 2nd Quarter for 2015

#	Date	Phase	Category	Subject	Lessons Learned
1	Oct-09	Construction	Schedule	Delays to excavation caused by adjacent Fragile Buildings	The PMOC recommended and MTACC adopted a plan to review the stability of all of the buildings affected by the Second Avenue Subway project. MTACC instructed the DC to review all the buildings along the project. Furthermore, they have the designer developing shoring plans for the fragile buildings and including this work in the future contracts. In this way the stabilization work cannot delay the contracts as it is part of the contract.
2	Nov-09	Construction	Schedule	3 rd Party Utilities changed the size of an electric vault after construction began.	The PMOC recommended that MTACC get the utility companies to agree that once they have approved the plans, they cannot make major changes after award. MTACC's SAS Project Executive is meeting with the utilities to work out this problem.

APPENDIX D – SAFETY AND SECURITY CHECKLIST

Project Overview			
Project mode (Rail, Bus, BRT, Multimode)	Rail		
Project phase (Preliminary Engineering, Design, Construction, or Start-up)	Design and Construction		
Project Delivery Method (Design/Build, Design/Build/Operate/Maintain, CMGC, etc.)	Design/Bid/Build		
Project Plans	Version	Review by FTA	Status
Safety and Security Management Plan	7041.01.007308-0	11/15/07	Approved by FTA
Safety and Security Certification Plan	7041.01.007308-0 Appendix D		Certification by New York State Public Transportation Safety Board (NYSPTSB)
System Safety Program Plan			
System Security Plan or Security and Emergency Preparedness Plan (SEPP)			
Construction Safety and Security Plan		N	Each active construction contractor's Construction Safety and Security Program Plan has been approved by MTACC.
Safety and Security Authority			
Is the Grantee subject to 49 CFR Part 659 state safety oversight requirements?	Y		
Has the state designated an oversight agency as per Part 659.9?	Y		NYSPTSB
Has the oversight agency reviewed and approved the Grantee's SSPP as	Y		The NYSTB issued a letter of recertification

Project Overview		
per Part 659.17?		on September 2, 2010.
Has the oversight agency reviewed and approved the Grantee's Security Plan or SEPP as per Part 659.21?		
Did the oversight agency participate in the last Quarterly Program Review Meeting?	N	
Has the Grantee submitted its safety certification plan to the oversight agency?	N	Certification is within the scope of the C6 Systems Contract.
Has the Grantee implemented security directives issues by the Department Homeland Security, Transportation Security Administration?	Y	
SSMP Monitoring	Y/N	Notes/Status
Is the SSMP project-specific, clearly demonstrating the scope of safety and security activities for this project?	Y	
Grantee reviews the SSMP and related project plans to determine if updates are necessary?	Y	
Does the Grantee implement a process through which the Designated Function (DF) for Safety and DF for Security are integrated into the overall project management team? Please specify.	Y	
Does the Grantee maintain a regularly scheduled report on the status of safety and security activities?	Y	Activity included in the monthly and quarterly reports from the Grantee and is reported at each contractor's Job Progress Meeting.
Has the Grantee established staffing requirements, procedures and authority for safety and security	Y	Responsibilities during the design and construction phases

Project Overview		
activities throughout all project phases?		identified
Does the Grantee update the safety and security responsibility matrix/organizational chart as necessary?	Y	
Has the Grantee allocated sufficient resources to oversee or carry out safety and security activities?	Y	
Has the Grantee developed hazard and vulnerability analysis techniques, including specific types of analysis to be performed during different project phases?	Y	Included in Appendix F of the SSMP
Does the Grantee implement regularly scheduled meetings to track to resolution any identified hazards and/or vulnerabilities?	Y	Frequency to be increased
Does the Grantee monitor the progress of safety and security activities throughout all project phases? Please describe briefly.	Y	Nine active construction contracts are being monitored daily by the CCM with oversight being performed by the grantee.
Does the Grantee ensure the conduct of preliminary hazard and vulnerability analyses? Please specify analyses conducted.	Y	Hazard and Vulnerability Analysis
Has the Grantee ensured the development of safety design criteria?	Y	Included in SAS project Design Criteria Manual
Has the Grantee ensured the development of security design criteria?	Y	Included in SAS project Design Criteria Manual
Has the Grantee ensured conformance	Y	Ongoing part of design

Project Overview		
with safety and security requirements in design?		review process
Has the Grantee verified conformance with safety and security requirements in equipment and materials procurement?	Y	Verification is ongoing with the procurement of equipment by the Station Contractors (C3, C2B, C4C, and C5C) and the Systems Contractor (C6).
Has the Grantee verified construction specification conformance?	Y	Reference Section D3.4 Construction Criteria Conformance of the SSMP
Has the Grantee identified safety and security critical tests to be performed prior to passenger operations?	Y	Reference Section D3.2 Certification Items List of SSMP
Has the Grantee verified conformance with safety and security requirements during testing, inspection and start-up phases?	Y	Certifiable elements have been identified. Verification of requirement will be performed as part of the certification process which includes factory acceptance testing, installation testing and integration testing. Efforts are ongoing.
Does the Grantee evaluated change orders, design waivers, or test variances for potential hazards and /or vulnerabilities?	Y	Part of formal configuration control process. Efforts are ongoing.
Has the Grantee ensured the performance of safety and security analyses for proposed work-arounds?	NA	

Project Overview		
Has the Grantee demonstrated through meetings or other methods, the integration of safety and security in the following: Activation Plan and Procedures Integrated Test Plan and Procedures Operations and Maintenance Plan Emergency Operations Plan	Y	Referenced plans are being developed as part of the Systems Contract (C6).
Has the Grantee issued final safety and security certification?	N	To be covered as part of the testing in Systems Contract (C6)
Has the Grantee issued the final safety and security verification report?	N	To be covered as part of the testing in Contract 6
Construction Safety		
Does the Grantee have a documented/implemented Contractor Safety Program with which it expects contractors to comply?	Y	
Does the Grantee's contractor(s) have a documented companywide safety and security program plan?	Y	
Does the Grantee's contractor(s) have a site-specific safety and security program plan?	Y	Reference sections 011150 Safety Requirements and 011160 Security Requirements of the Contract Terms and Conditions
Provide the Grantee's OSHA statistics compared to the national average for the same type of work?	The Lost Time Injury Rate and Recordable Injury Rate from the start of construction until May 31, 2015 are 1.68 and 4.75, respectively. The cumulative construction hours worked since the project inception is 10,821,284 hours. Total lost time injuries since project inception is 91 and	The Bureau of Labor Statistics (BLS) national Lost Time Injury Rate is 1.8 and the Recordable Injury Rate is 3.2.

Project Overview		
	other recordable injuries are 166. The total number of recordable injuries is 257 (sum of the lost time injuries and the other recordable injuries).	
If the comparison is not favorable, what actions are being taken by the Grantee to improve its safety record?	Both rates are trending downward over the last five months. Contractors are being proactive in addressing incidents. Tool box meetings, increased training and increased monitoring of construction activities are being performed in order to highlight safety awareness. Personnel with repeat safety violations are being removed from the project	
Does the Grantee conduct site audits of the contractor's performance versus required safety/security procedures?	Y	
Federal Railroad Administration		
If shared track: has Grantee submitted its waiver request application to FRA? (Please identify specific regulations for which waivers are being requested)	NA	
If shared corridor: has Grantee specified specific measures to address shared corridor safety concerns?	NA	
Is the Collision Hazard Analysis underway?	NA	
Other FRA required Hazard Analysis – Fencing, etc.?	NA	
Does the project have Quiet Zones?	NA	
Does FRA attend the Quarterly Review Meetings?	NA	

APPENDIX E – ON-SITE PICTURES
(To be transmitted in a separate file)

Appendix F -- Core Accountability Items				
Project Status:		Original at FFGA	Current*	ELPEP**
Cost	Cost Estimate	\$4,050M	\$4,451M	\$4,980M
Contingency	Unallocated Contingency	\$555.554M	\$0M	\$0M
	Total Contingency (Allocated plus Unallocated)	\$555.554M	\$251M (June 2015)	\$140M
Schedule	Revenue Service Date	September 30, 2014	December 30, 2016	February 28, 2018
Total Project Percent Complete	Based on Expenditures	78%		
	Based on Earned Value	N/A		
Major Issue				
Project Testing and Commissioning		Status	Comments	
		Open	MTACC's ability to test and commission SAS Phase 1 in a reasonable time is a major concern. MTACC has had problems with this task on previous project and has yet to demonstrate any significant improvements in their process for SAS.	
Date of Next Quarterly Meeting:		TBD		

* MTACC's Current Working Budget

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

All data based on June 30, 2015 reporting.