

PMOC COMPREHENSIVE MONTHLY REPORT

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

March 1 to March 31, 2016



PMOC Contract No. DTFT6014D00017

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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, Phase One, managed by MTACC with 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 (16) 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 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 1st Quarter 2016

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.

Additional engineering support, provided both through the Designer of Record and Independent Consultant, has been procured to support the schedule acceleration initiative.

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 92.5% complete (overall project completion is approximately 86.5%) as of March 31, 2016. Summary progress for each contract is as follows:

- 96th Street Station Heavy Civil/Structural (Contract C2A) achieved Substantial Completion on November 5, 2013. Contract closeout was anticipated on March 31, 2016, however it was delayed to allow incorporation of NYCT and DEP comments into the revised “As-Built-Drawings”. April 30, 2016, is now the projected contract closeout date.
- 96th Street Station Finishes, Mechanical, Electrical, and Plumbing Systems and Ancillary Building and Entrances contract (C2B). The contractor is working to the acceleration plan to have the fire life safety system, tunnel station smoke management system, elevators, escalators, and the heating ventilation and air conditioning systems completed to allow Pre-Revenue Service Testing to start on September 1, 2016, and subsequent Revenue Service to start on December 31, 2016.
- 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). Architectural finishes continue throughout. “White Glove” cleaning began in the Facility Power Rooms (FPRs) in preparation for ConEd trip checks.
- 72nd Street Station Heavy Civil/Structural (Contract C4B). Achieved Substantial Completion on January 14, 2014. Contract closeout is underway.

- 72nd Street Station Finishes, MEP Systems, Ancillary Buildings and Entrances (Contract C4C). ConEd began trip checks at the site. The concrete arch placement along the escalator incline in Entrance #1 was completed. At Entrance #3, erection of the above grade concrete structure was completed.
- Rehabilitation of the 63rd Street Station (Contract C3). Architectural finishes in the 6th Mezzanine and Entrance #1 continued toward completion. Artwork in the 6th Mezzanine and Entrance #1 is complete. Restoration of the 63rd St/3rd Ave Plaza continues.
- Track, Signal, Traction Power, and Communication Systems Contract (C6) continued installation of communications, traction power, and signal systems in all station areas. Major accomplishments during the quarter consisted of the completion of the crossovers north and south of the 72nd Street Station and south of the 96th Street Station. Work is ongoing to get the local area and wide area networks operational to support field installation acceptance testing and simulated integrated system testing.

d. Continuing and Unresolved Issues

- Unresolved AWOs and the impact of the associated revisions to the work have always been problematic, and have become increasingly “critical”. Not only are unresolved AWOs a problem, the contractors are complaining that new AWOs are being introduced to the contracts on a regular basis. The impact to the acceleration schedule has not yet been determined, but this is very concerning.
- Access constraints at 87th Street have been addressed. The 87th Street shaft has been the primary access point for equipment delivery and refuse removal from the work areas. With completion of the west downtown track at the station, work trains can now perform that task. Accordingly, closure of the shaft is scheduled to begin in April 2016.

e. New Cost and Schedule Issues

- Throughout this period, MTACC has continued to adjust milestone completion dates with individual contractors.
- MTACC is in the process of implementing its schedule acceleration initiative. If successful, the majority of work will be completed by September 1, 2016, and allow two months for NYCT Pre-Revenue Testing in advance of the RSD. If all plans are successful, this schedule acceleration will be accomplished within the existing project budget.

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 established the Total Project Cost as \$5,574,614,000 (including estimated financing cost); and,
- The Amended FFGA defined 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 at 92.5% the Grantee has effectively managed the project during the construction phase and the start of the testing and commissioning phase. MTACC has 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, evaluation of user group requested changes, supporting test activities, and resolution of code compliance issues.

The Design Engineering Consultant is funded through December 2017.

d. Procurement

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

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 cost estimate of the NYCT services required for design of the track and signal elements of the system, construction support activities for each individual contract (general orders, work trains, and flagging support), and start-up and commissioning. In support of the initiative to accelerate the schedule, NYCT has to provide dedicated personnel, co-located with the project team, in order to address test and commissioning issues in a timely manner.

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 comprehensive systems integration and test program to manage and monitor the testing of systems components 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 in accordance with 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 include, but are 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 will be conducted in 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 to determine and document the systems performance requirements, plan the test process and integrate 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 them 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.

Status: Factory Acceptance Testing is ongoing with NYCT personnel performing test witnessing of selected equipment.

- **Installation Phase:** The System Test Team's focus during the installation phase will be to document the systems installation progress, report and track deficiencies, and conduct and report on the Field Installation Acceptance Tests (FIAT). Key Contractors Test Group tasks will include development of individual System Test Plans, conduct site installation inspections, report on progress and deficiencies, attend progress meetings, track corrective actions and update the integrated test schedule. Resequencing of equipment installation to mitigate delays is an ongoing process and is being effectively implemented;

Status: FIAT activity is ongoing with the installation of equipment at each station.

- **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.

Status: FIST activity has started at the 63rd Street Station.

- **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.

Status: No SIT activity has started; and,

- **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 Contractor's Quality Program 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.

Status: Final Systems Acceptance Testing has not started.

As a part of the schedule acceleration, test durations have been reduced and time available for testing has been compressed. Sequencing of tests has been revised that requires like systems to be tested in the three new stations almost concurrently. As a result, additional NYCT personnel to support this effort may be required.

h. Project Schedule

During the 1st Quarter 2016, MTACC amended four (4) construction contracts and the Systems contract to accelerate the project schedule and provide additional schedule contingency for NYCT pre-revenue service startup activities.

- The accelerated schedule initiative increases the chances of achieving the December 30, 2016 RSD goal;
- The overall project's record of achieving timely completion of intermediate construction goals (milestones) has not been satisfactory. This must be improved if the accelerated schedule is to be successful. Based on information through February 29, 2016, there has been minimal increase in the rate at which work is completed;
- MTACC must continue to resist changes in the work requested by end users and limit review and acceptance criteria to those contained within the construction contract documents. In support of the accelerated schedule initiative, MTACC Management has made the commitment to minimize these changes, except in situations related to systems safety or fire and life safety. One hundred-fifteen (115) AWOs have been identified from February 1, 2016, to March 31, 2016. These AWOs must be reviewed to assure no impact on the acceleration schedule; and,

- Despite these challenges, the PMOC believes that all construction and testing can be completed within the risk-adjusted RSD of February 2018.

Table 1: Summary of Critical Dates

	FFGA (Amended March 2015)	Forecast Completion	
		Grantee	PMOC
Begin Construction	January 1, 2007	March 20, 2007A	March 20, 2007A
Construction Complete	August, 2016	September 1, 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 \$4,451,000,000 (exclusive of \$816,614,000 financing cost). The MTA Board has approved Local Funds totaling \$3,509,000,000. Total Federal participation in the SAS Phase 1 Project is \$1,373,893,000, of which \$1,250,508,000 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.

MTA’s Estimate at Completion (EAC) and the PMOC’s analysis currently indicate that the SAS Phase 1 project can be completed within the limits of the Current Working Budget, assuming substantial completion of all construction and testing activities by December 30, 2016.

Table 2: Project Budget/Cost Table 

	FFGA			FFGA Amend	MTA Current Working Budget (CWB)		Expenditures as of March 31, 2016	
	\$ 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	3,848.995	73.07
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	3,848.995	73.07
Total Federal	1,350.693	27.75	1,063.942	1,373.893*	1,350.693	24.60	1,171.593	22.24
Total FTA share	1,300.000	96.25	990.049	1,3000.000	1,300.000	23.68	1,097.700	20.84
5309 New Starts share	1,300.000	100	990.049	1,3000.000	1,300.000	23.68	1,097.700	20.84
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	2,677.402	50.83
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 FTA's Transit Award Management 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 1st Quarter 2016 have been summarized as follows:

Decrease	Increase
<ul style="list-style-type: none"> ▪ MTACC’s schedule acceleration initiative is intended to decrease the risk of delay to the scheduled December 30, 2016, Revenue Service Date. ▪ MTACC has devoted additional staff resources exclusively to the SAS Project to assist in expediting review and acceptance of work in the field and implementing contract modifications. ▪ MTACC and NYCT are reviewing those systems and work areas that must be complete to support revenue service and those that may be incomplete at that time. 	<ul style="list-style-type: none"> ▪ Late development and approval of system test and acceptance procedures and criteria pose a potential delay to timely systems testing and acceptance. ▪ Quality of construction deficiencies and apparent deficiencies in contract-level quality management programs introduce a significant risk of corrective action and rework. ▪ Review of project documentation suggests a negligible decrease in the initiation of new AWOs. Anecdotal information from contractors supports this observation. ▪ The accelerated construction provides no time for either system test failure and retesting or significant rework or punchlist activity. Use of schedule contingency may be needed if significant occurrences of this type work are encountered.

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 September 17, 2015. The next ELPEP Quarterly Review Meeting with MTACC, FTA-RII, SAS and the ESA project, and the PMOC is scheduled for March 3, 2016. 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 SAS PMP;
- **Schedule Management Plan (SMP):** MTACC's position is that the SAS management processes remain ELPEP compliant. The PMOC is developing comments to MTACC's recently submitted Schedule Management Plan, Revision 2, dated October 2015;
- **Cost Management Plan (CMP):** Comments on the ESA/SAS Cost Management Plan (CMP) were received on June 2, 2015. MTACC and the PMOC have held meetings to resolve remaining issues. 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; and,

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:

Additional NYCT force account personnel will be required to support the accelerated construction, testing and commissioning activities.

Observation:

Test durations have been reduced and test sequencing now requires like systems to be tested in the three new stations all most concurrently.

Concerns and Recommendations:

A mitigation plan needs to be developed to assure NYCT personnel will be available to support the acceleration effort.

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.

c) Grantee’s Approach to Force Account Plan

Status:

As of March 31, 2016, New York City Transit (NYCT) Engineering Force account expenditures are \$64,058,359 of the \$95,400,000 budget. NYCT labor expenditures are \$13,560,029 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 has been a concern and has been identified in the SAS Risk Register. Reduced demand as a result of the completion of other major capital projects should make adequate resources available. Grantee's Approach to Safety and Security Plan

Status:

During 1st Quarter 2016 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, investigating 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 Lost Time Injury Rate and Recordable Injury Rate from the start of construction until February 29, 2016, is 1.59 and 4.37, 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 12,546,023 hours. Total lost time injuries since project inception is 100 and other recordable injuries are 174. The total number of recordable injuries is 274 (sum of lost time injuries and recordable injuries).

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

d) 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 and Signals and Communications Systems Contractor (C6), Station Contractors (C2B, C4C and C5C) and NYCT's Department of Subways.

Concerns and Recommendations: None

e) Grantee's Approach to Community Relations

Status:

MTACC continues its efforts to provide up-to-date information and improve community access to SAS project staff and provide transparency to the project. Additional details are contained within Section 2.6 of this report.

Observation:

MTACC's planned approach to community relations as set forth in detail in Section 12 of its Project Management Plan for SAS Phase 1 is generally focused on the pre-construction activities involving dissemination of project-related information to the affected community and public hearings to support the NEPA process.

MTACC's actual community relations effort during construction has included establishment of a Community Information Center, numerous publications and sources of information, tours of the construction and periodic outreach and information sharing meetings with affected stakeholders.

Conclusions and Recommendations:

The PMOC recommends the overall approach involved in this effort be formally documented as a "lesson learned" so that subsequent MTACC projects may share the insights and benefits of this effort.

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

a) Federal Requirements

During 1st Quarter 2016, MTA continued its grant management process by issuing monthly financial reports and transitioning over to the Transit Award Management System (TrAMS).

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 Project have 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.

1.2 Project Controls

1.2.1 Scope Definition and Control

Status:

During 1st Quarter 2016, 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 March 2016, the Second Avenue Subway Quality Management team continued to conduct Quality Meetings and Quarterly Quality Oversight of the Contractor with CCM, MTACC, and PMOC participation. The Quality Management Team 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:

C2B: The C2B Contractor's Quality Manager has not met the dates he has committed to complete action items. Among the actions that keep slipping are:

- A Special Inspection Matrix has not been updated;
- Submittal of certifications from the Special Inspection Agency for completed work have not been received;
- Eleven (11) nonconformance reports (NCRs) have been open for more than nine months and;
- Submittal of Daily Inspection Reports is still two weeks behind.

The Contractor's Corporate Quality Manager is now providing assistance to the contractor's Quality Manager. Some improvement has been noted but the 11 NCRs that have been open for more than 9 months is a serious issue.

C5C: There are many issues on this contract that affect Quality. These include:

- Submittals that have been returned for additional information have not been returned;
- Preparation of new submittals for approval has been delayed;
- The Quality Staff has been reduced from four to three;
- There is insufficient supervision for field activities;
- Performance of external Quality Audits are behind schedule;
- The electrical subcontractor's NCRs have not been processed for over three months;
- Record drawings at 50% completion has been delayed;
- Work is not ready for NYCT inspection;
- Check lists for many activities are not submitted on CMS;
- Work is progressing without Preparatory Phase Meetings being held and;
- Submittal of Daily Inspection Reports is four weeks behind.

At the suggestion of the PMOC, a meeting was held on March 31, 2016, with the contractors and SAS C5C executive managers in attendance. The contractor's executive manager committed to provide additional help to the contractor's quality manager and to use their field supervisors to help close the open NCRs. As a result, based on a suggestion from the PMOC, the SAS Quality Manager will hold a meeting in April to review each of the open non-concrete NCRs, assign an owner from the contractor, a projected closure date, and an analysis to determine if there are any issues since work has progressed after the NCRs were written. The following are among the significant non-conformances that are still open, all of which occurred at least six months ago:

NCR NUMBER	DATE OCCURRED	DESCRIPTION OF NONCONFORMANCE
88	Apr 14, 2015	STAIR 205 RISERS POURED OUT OF TOLERANCE
90	Apr 28, 2015	STAIR S-01 DOES NOT ALIGN WITH SUPPORT PILASTER
96	Jul 3, 2015	REBAR DOWELS WERE NOT INSTALLED FOR CIP CEILING
97	Jul 13, 2015	UNDER PLATFORM, CONDUIT RUNS EXCEED 180° OF BENDS
135	Sep 22, 2015	SIGNAL CONDUITS ARE STUBBING UP IN FRONT OF DOORWAY

There is no indication on any of the NCRs whether the work was performed or whether the engineer of record approved the work or accepted the nonconformance, depending on the nonconforming condition. Failure to complete or resolve these items has the potential to delay availability of significant elements of the project.

Contract Package C2B	
Status:	Through March 31, 2016, a total of 150 NCRs have been issued. One Hundred Twenty-Nine (129) have been closed and 21 NCRs are open. In March 2016, two new NCRs were written and 38 were closed. Thirty-six (36) of the NCRs closed in March were for concrete that was out-of-specification. Six (6) of the 21 open NCRs are for concrete that was out-of-specification.
Observation:	Bi-weekly Quality Management Meetings, as suggested by the PMOC, are being held. Submittal of Daily Inspection Reports is still 2 weeks behind.
Concerns and Recommendations:	Eleven (11) of the open 15 non-concrete NCRs have been open more than nine months. Based on the PMOC's suggestion, the contractor has established closure dates with the assistance of their Corporate Quality Manager who is now actively involved in managing the quality effort. The contractor should make an effort to meet these dates. The PMOC also recommends that effort be devoted to resolving the other issues listed in the beginning of this section.
Contract Package C3	
Status:	Through March 31, 2016, a total of 127 NCRs have been issued. One hundred eighteen (121) have been closed and 6 are still open. In March 2016, one new NCR was written and none were closed.
Observation:	Submittal of Daily Inspection Reports is current.
Concerns and Recommendations:	The PMOC has no concerns.
Contract Package C4C	
Status:	Through March 31, 2016, a total of 224 NCRs have been issued. One hundred fifty-one (164) have been closed and 60 NCRs are still open. In March 2016, six (6) NCRs were written and 12 were closed.
Observation:	One hundred eighty-four (187) of the 224 NCRs are for concrete that was out of specification. Four of the six NCRs generated in March were for concrete. Submittal of Daily Inspection Reports is current. The majority of the NCRs were for concrete that was placed beyond the 90 minute time limit.
Concerns and Recommendations:	Forty-three (43) of the remaining 60 open NCRs are for concrete that was out of specification. The contractor has stated that 15-20 of the open concrete NCRs will be closed in April 2016 based on reports from their test lab.
Contract Package C5C	
Status:	Through March 31, 2016, 177 NCRs have been issued. Seventy-four (74) have been closed and 103 NCRs are still open. In March 2016, three new NCRs were written and two were closed.
Observation:	Fifty-six (56) of the 103 NCRs that are open are for concrete that is out of specification. The majority of the open concrete NCRs were for concrete that was placed beyond the 90 minute time limit. The contractor prepared and submitted a concrete statistical analysis in March 2016. When it is approved by the Engineer of Record, 47 of these NCRs should be closed in April 2016.

	Submittal of Daily Inspection Reports is four weeks behind.
Concerns and Recommendations:	The PMOC continues to recommend that the contractor establish a schedule for closing the 47 non-concrete NCRs. The PMOC also recommends that effort be devoted to resolving the issues listed in the beginning of this section.
Contract Package C6	
Status:	Through March 31, 2016, a total of 60 NCRs have been issued. Forty-one (41) NCRs have been closed and 19 are still open. In March 2016, five new NCRs were written and none were closed.
Observation:	Fourteen of the open NCRs are for concrete that was placed beyond the 90 minute time limit. Submittal of Daily Inspection Reports is current.
Concerns and Recommendations:	The cause for the concrete NCRs that were placed beyond the 90 minute time limit was due to trucks that were delayed getting to the site due to heavy traffic. The PMOC recommends that the contractor perform a statistical concrete analysis to justify closing the open concrete NCRs.

Concerns and Recommendations:

As discussed under each Contract Package.

1.2.3 Project Schedule

Status:

A summary of project schedule information is as follows:

	FFGA (Amended March 2015)	Forecast Completion	
		Grantee	PMOC
Begin Construction	January 1, 2007	March 20, 2007A	March 20, 2007A
Construction Complete	August 2016	September 29, 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/PMOC 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 amended 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 (September, 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

Table 1-2 lists the associated grants in the Transportation Electronic Award Management (TEAM) System with respective appropriated, obligated, and disbursed amounts as of December 31, 2015.

Table 1-2: Appropriated and Obligated Funds

Grant Number	Amount (\$)	Obligated (\$)	Disbursement (\$) through March 31, 2016
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	\$107,650,866
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	\$1,171,593,066.00

 *Grant issued to outline components of the Early Systems Work Agreement. **Grant issued to explain the “Total Eligible” cost for the project. ***Appropriated pending FTA approval. **** Denotes American Recovery and Reinvestment Act (ARRA) funds.

Observation:

Total project distribution is \$3,848,995,205 of which \$2,677,402,139 is local funds and \$1,171,593,066 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 that have potential to delay the project beyond its currently scheduled RSD. Publishing of monthly reports that document project risk management activities continues.

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.

By implementing its schedule acceleration initiative, 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 February 29, 2016, is 1.59 and 4.37, 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 12,546,023 hours. Total lost time injuries since project inception is 100 and other recordable injuries are 174. The total number of recordable injuries is 274 (sum of lost time injuries and recordable injuries).

Security – Implementation of the Contractor’s Site Security Plans is ongoing. Entrance into work areas and subsurface areas are being closely monitored.

Observation:

Data published by MTACC’s Office of Quality, Safety, Site Security, and Certification shows the Lost Time Injury Rate to be below the national average for the last twelve months and the Recordable Injury Rate to be above the national average for the last twelve months. Both rates are trending downward.

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 key FTA milestone achieved was entry into the Full Funding Grant Agreement (FFGA) on November 19, 2007. The FFGA was subsequently amended on March 17, 2015.

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

The Amended FFGA was executed in March 2015.

The ELPEP Hold Point “100% Project Bid/85% Construction Complete” was achieved in mid-2015.

All construction contracts have been awarded and construction is 90.3% complete.

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 construction and test activities.

Observation:

The primary role of the design team currently includes:

- Construction Administration, (generally including shop drawing review), response to RFIs, provide design clarifications as needed and technical support;
- Detail and document design changes as may be required; and
- 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 has attempted 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 and;
- Contract closeout was anticipated on March 31, 2016, however was delayed to allow incorporation of NYCT and DEP comments into the revised “As-Built-Drawings”. April 30, 2016, is now the projected contract closeout date.

Construction Progress near term Milestones

- ConEd completed the forth electrical feed which provides facility power to the station.
- The contractor completed the distribution of facility power to the rooms associated with Milestone #13. These rooms included:
 - Communication rooms associated with Milestone #6;
 - Signal rooms associated with Milestone #7;
 - Traction Power rooms associated with Milestone #8;
 - Station Service Center associated with Milestone #9; and,
 - Other rooms associated with Milestone #10.
- In addition, Milestone #13 activities included:
 - Work in connection with the uninterruptible power supply (UPS) system;
 - Provide permanent power through UPS;
 - Completion of all work in the dispatcher’s office and RTO tower and turnover facilities to the C6 contractor;
 - Completion of all conduit grounding and carrier systems and turnover to the C6 contractor; and,
 - Completion of megger tests of the security wires from the doors and frames to the adjacent electrical box.
- Milestone #14 has to be completed on or before May 31, 2016, and includes:
 - Completion of all work required to perform Field Installation Acceptance Tests on all electrical and mechanical systems including but not limited to:
 - Permanent power to all equipment;
 - Battery backup for the UPS system;
 - Chilled water piping and equipment;
 - Cooling towers and dry coolers;
 - HVAC ductwork and insulation;
 - Chillers;
 - Air handling units;
 - Fan coil units;
 - Condenser water piping;
 - Sump pump equipment;
 - All work required to provide a controlled environment in rooms that house electrical and mechanical system equipment; and,
 - Provide controlled environment through temporary means if equipment necessary to provide the controlled environment is unavailable due to testing.

Critical Systems required for the start of Pre-Revenue Service Testing (fragnets have been generated for each)

- Fire Life Safety
 - Water Mist System;
 - Sprinkler System;
 - Inergen System;
 - Dry Fire Standpipe
 - Prep/Rev/Approval of Test Procedures; and,

- O&M.
- Track Station Smoke Management (TSSM) system
 - Axial Fans Ancillary #1;
 - Axial Fans Ancillary #2;
 - Prep/Rev/Approval of Test Procedures; and,
 - O&M.
- Elevators
 - Hydraulic Elevator 01 (platform);
 - Hydraulic Elevator 07 (Entrance #3);
 - Prep/Rev/Approval of Test Procedures; and,
 - O&M.
- Escalators
 - Escalator Entrance #1;
 - Escalator Entrance #2;
 - Escalator Entrance #3;
 - Prep/Rev/Approval of Test Procedures; and,
 - O&M.
 (Additional escalators need to be listed)
- HVAC
 - Ancillary #1;
 - Ancillary #2;
 - South chiller room;
 - North chiller room;
 - UPS room;
 - Prep/Rev/Approval of Test Procedures; and,
 - O&M.

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

- **General**
 - MTACC is planning to open the inactive track side of this station when the new track from the 57th Street Station to the 63rd Street Station is complete, ahead of the remaining new stations revenue service date. The date of this opening has not been determined.
- **Area 5**
 - At the 6th Mezzanine, porcelain tile cladding of the beams and walls are complete;
 - Elevator cabs (4) fit out has been completed. Installation of Arts-N-Transit mosaic tile feature walls is complete;
 - Above ceiling work at the stainless steel access panels continues; and,
 - Remaining work includes installation of the fare separation fencing and gates and installation of the fare turnstiles and ticket machines by NYCT.
- **Entrances (#1, #2, #3 & #4):**
 - At Entrance #1, the contractor is continuing with finish ceiling tiles in the entrance and escalator incline. Artwork along the tile wall is complete;
 - At Entrance #2, glazing of the headhouse is complete; and,

- At Entrances #3 and #4, all finishes are complete. Entrance #3 is currently being used as the construction access to the site.
- **G3 and G4 Platforms:**
 - The Elevator Lobby operable glass panels installation is complete;
 - The demising construction wall has been moved to allow the Link Stairs to be used by the public; and,
 - New Concession Stands have been erected on the G3 and G4 Platforms.
- **Site:**
 - The Plaza restoration work is complete.
- **Contract C6 Coordination:**
 - System testing continues throughout the station.

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 Street Station Finishes, MEP Systems Ancillary Buildings and Entrances

- **Ancillary #2/ Entrance #2**
 - At Ancillary #2, the contractor completed the grounding and conduits at the street manhole;
 - Began punch list, cleaning and demobilizing electrical work in the Ancillary #2 basement and sub-basement FPRs;
 - Third Party testing continued in the Ancillary #1 and Ancillary #2 FPRs;
 - Continuing setting anchors, shims and bolting fan assemblies for Fans #1 and #2 in Ancillary #2;
 - Splicing and installation of Escalators #9, #10 and #11 units continue along with installation of equipment in the Escalator Machine Room at Entrance #2;
 - The installation of the channel supports for the architectural terra cotta building stone continued; and,
 - Temporary hoisting beams for the escalators in Entrance #2 have been removed.
- **Ancillary #1**
 - Cleaning and demobilizing from the electrical work continues in the FPR Rooms at the sub-basement and basement levels.
- **Mezzanine**
 - In the Public Mezzanine, the porcelain tile on the W30 walls installation is complete with exception of the Arts-N-Transit panels.
 - In the North and South Mezzanines installation of equipment, devices BMS (Building Management System) panels, etc. in the Fan/Chiller Rooms continues.

- **Entrance #3 Elevator Bank**
 - Placement of the concrete walls and roof deck for the upper street level structure is complete. Installation of the geoplastic roofing remains.
 - Continued installation of guiderails, brackets and other components for the street to mezzanine elevator array.
- **Entrance #1**
 - The incline conduit installation continued. Installation of the escalators is scheduled to begin May 1, 2016. Began layout and installation of incline ceiling light fixtures.
 - On the outside at Entrance #1, Escalator #12 components installation is ongoing.
- **Platform Level**
 - Installation of the platform granite wall tiles at the stairs and escalators nears completion.
 - Installation of the Elevator #1 (Mezzanine to Platform) guiderails, hydraulic oil pipe, & other components continues.
 - Continued with the platform service carrier conduits and lights installation.
 - Installation of Platform pavers is complete with the exception of some wall and stair abutment tiles.
- **C6 Coordination**
 - The C6 contractor continues with conduit, bus runs and terminations in various Communications and EDR rooms.
 - The contractor has begun work in the Station Service Center (SSC).

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

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

Contract C-26012 (5C) – 86th Street Station Finishes, MEP Systems, Ancillary Buildings and Entrance

- **General**
 - North Shaft – The shaft will be closed starting April 13, 2016. The 3rd Rail will not be energized until August 2016;
 - April 7, and 8, 2016 remain the dates for the ConEd approved C4C electrician training so that ConEd will turn over the north and south energized substations to the project, pending turnover to NYCT;
 - Escalators #5, #6 and #7 (Entrance #1) will be sufficiently complete to perform additional finish work by June 2016; and,
 - Escalators #8, #9 and #10 (Entrance #2) will be the first to undergo Field Installation Acceptance Testing (FIAT).
- **Ancillary #1**
 - At Ancillary #1, the concrete building structure is complete. Delivery of the Cooling Towers and Dry Cooler is being scheduled.

- **Ancillary #2**
 - At Ancillary #2, the structure has reached street level. The CCM has expressed concern that this progress is moving slowly and there are 2 above street levels of the structure remaining; and,
 - The contractor continues to utilize 2 shifts in this zone.
- **Mezzanine**
 - The Public Mezzanine wall tile installation is 50% complete along the west wall;
 - In the FPRs electricians are doing “white glove” cleaning;
 - In the north and south mezzanines, installation of silencers and transition ducts for the fans is approximately 85% complete;
 - In the South Fan Rooms, the VFDs are set in place. Fan delivery will begin the weekend of April 1-3, 2016; and,
 - Representatives from the Code Compliance Unit (CCU) visit the site every Wednesday and develop observation lists.
- **Entrance #1**
 - The hoisting beams have been removed and the contractor continues with alignment and completion of components installation.
- **Entrance #2**
 - At Entrance #2, the water mist piping has been installed under the trusses of Escalators #8, #9, and #10.
 - The alignments are complete and removal of rigging is underway.
- **Platform Level**
 - Installation of the granite pavers is approximately 99% complete.
 - Service carrier installation work is ongoing on the Platform level.
 - Installation of doors & hardware is ongoing for the north and south platform rooms.
 - Installation of the porcelain tile trackwall cladding is complete.
- **Site**
 - For street restoration along 2nd Ave., east side between 83rd/84th Streets the 48” utility line installation is complete. Between 82nd/83rd placement of the new sidewalk was completed.
- **Schedule**
 - The forecast for energizing the first ConEd feed remains April 30, 2016, but this may slide 1 week. The goal was to get ConEd to start their site presence (Trip Checks) on Friday, April 1, 2016.

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

- **Track**
 - Track installation in Zones 1, 2, 3, 4 (crossover south of 72nd St. Station), 5, 6 (crossover south of 96th St. Station), 7, and 8 (crossover north of 72nd St. Station) has been completed; and,
 - Track installation in Zones 10 and 11 are on schedule to be completed by April 10, 2016, and May 13, 2016, respectively.
- **63rd Street Station**
 - Comm. Rooms: Contractor has completed the build out of the 4 communication. FIAT testing has resumed;
 - Signal Room(s): Build out and testing completed;
 - Wayside Installation complete;
 - Circuit Breaker House: The upper level room has been built out as far as possible. Contractor is waiting for turnover of lower rooms (basement) of Circuit Breaker House in order to start cable pulling operations; and,
 - Mezzanine Local Antenna Cable (area 5): Work commenced and has progressed up to, but not including, mezzanine 6. It has progressed as far as it can go.
- **72nd Street Station**
 - Tunnel Work (Zone 3): Contractor has completed the pulling of all fiber, communication, power and signal cables;
 - Communication and Signal Rooms: Three (3) of five (5) communication rooms have been turned over. Equipment has been installed. Signal room has been turned over and equipment installed. CBH has been turned over and equipment installed. Cable pulling is ongoing;
 - Traction Power: Equipment has been delivered and installation is ongoing; and,
 - Pulling of signal cable from the tunnel to the Cable Termination Room was started.
- **86th Street Station**
 - Communication and Signal Rooms: Contractor is awaiting room turnover; and,
 - Traction Power: Epoxy flooring has been reworked and equipment has been delivered. Pulling of rack to rack wire is ongoing.
- **96th Street Station**
 - Tunnel Work (Zone 2): All signal, fiber, and communication cable is pulled;
 - Communication and Signal Rooms: Network and Public Address/Customer Information Sign (CIS) cabinets have been installed and rack to rack wiring is ongoing;
 - Tunnel Work (Zone 1): Contractor completed pulling of all fiber, communication, power, and signal cables;
 - Communication and Signal Rooms: Communication rooms are partially turned over and equipment installation is ongoing; and,
 - Traction Power Substation Room: Rack to rack wiring is ongoing.

Concerns and Recommendations:

MTACC's schedule acceleration initiative has compressed the test activity such that it is a major concern of the PMOC. Mitigation plans need to be considered if there are test failures and regression testing needs to be performed.

2.1.4 Force Account (FA) Contracts

Status:

As of March 31, 2016, New York City Transit (NYCT) Engineering Force Account expenditures are \$64,058,359 of the \$95,400,000 budget. NYCT labor expenditures are \$13,560,029 of the \$25,600,000 budget.

NYCT has committed to have the adequate force account personnel to support the construction, testing, and commissioning activities.

Observations:

Remaining budgets appear adequate to support the remaining activities of the project.

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:

The Technical Working Groups for Testing and Commissioning and Systems Safety Certification Program efforts are ongoing. Lessons Learned from the Testing and Commissioning of the Line 7 Extension Project are being implemented on the SAS Phase 1 Project.

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 Agreements

Status:

During the 1st Quarter 2016, the SAS Project Team continued its Interagency Coordination as defined in Section 12 of the SAS PMP.

Through March 31, 2016, \$58,078,233 of the \$91,586,000 Third-Party reimbursement budget (Rev. 10 Current Working Budget) has been spent.

Observation:

MTACC/NYCT has entered into cooperative 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 1st Quarter 2016.

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 a significant amount of effort in maintaining effective communication and good relations with the residential and business community affected by the Second Avenue Subway construction. 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 1st Quarter 2016, MTACC Community Outreach activities included:

- Continued production of monthly newsletters updating residents and business owners on construction progress, major milestones achieved, and providing a forward looking schedule so the community will know what to expect as the project progresses. These newsletters are delivered electronically and via hard copy;
- The Community Outreach Team, in conjunction with the Manhattan Chamber of Commerce, produces a quarterly store report tracking the commercial vacancy on Second Avenue from 65th to 105th Streets. This report tracks store occupancy and allows comparisons over time and against other locations in the city;

- The Community Outreach team provides professional courtesy tours to various groups over the month of October including NYCT, Citizens Permanent Action Committee, Regional Planning Association, The Chairman’s LEAD (Leadership Exchange and Development) group, and ASCE;
- MTACC project executives conduct guided tours of the construction site on a periodic basis;
- SAS managers conduct quarterly Construction Advisory Committee (CAC) meetings in the Lexington Ave. /63rd Street, 86th Street, and 96th Street Station areas. Station area issues and project wide updates are provided. Follow up reports are provided for stakeholders to share with their constituents; and,
- The Community Outreach Team, in conjunction with the Manhattan Chamber of Commerce, produces a quarterly store report tracking the commercial vacancy on Second Avenue from 65th to 105th Streets. This report tracks store occupancy and allows comparisons over time and against other locations in the City.

Conclusions and Recommendations:

MTACC’s Community Outreach Program is very effective in providing project information to the community and responding to its concerns.

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:

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 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 #115 (Preliminary) was received by the PMOC on March 29, 2016, and is based on a Data Date of March 1, 2016. No narrative report or supporting contractor schedules were provided as part of this submittal.

“Netpoint” schedule fragments (Data Date ranging from 3/21 to 4/5/2016) were transmitted to the PMOC on April 8, 2016.

IPS Update #115 is based on updated construction contractor acceleration schedules. However, as previously noted, some dates are still being adjusted to ensure timely completion of work activities and the ability to support the testing and commissioning effort.

MTACC’s future schedule reporting is not clear. MTACC has requested relief from preparing and distributing the IPS schedule in favor of a summarized “Netpoint” graphical summary of the updated construction schedules. At the Cost/Schedule meeting of March 23, 2016, MTACC presented a series of these schedules with Data Date of March 1, 2016. MTACC has indicated that these schedules are to be updated every two weeks, but as of the writing of this report, the PMOC has not received any subsequent “Netpoint” schedule updates.

IPS Update #115 forecasts the completion of all construction and testing activities to be completed by September 29, 2016, followed by two months of NYCT Pre-Revenue Training and Testing activities (scheduled completion December 1, 2016, and 21 WD of schedule contingency, resulting in a forecast completion date of December 30, 2016). Table 4-1 presents a summary of schedule dates based on IPS Update #115.

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	September 29, 2016	October 2017
Revenue Service	February 28, 2018	December 30, 2016	February 2018

Milestone Summary: A tabulation of current schedule milestones is presented in the following table. The format of this table has changed. Additional milestones have been added; MTACC did not submit an IPS last month (Feb. 2016) and month-over-month status comparisons are not available.

Table 4-2: Schedule Milestone Performance

Pkg	MS	Description	Dates				
			Feb. 2016	UD#115	Float 115	Monthly Δ	Δ (9/1/16)
C2B	7A	Full access to Signals Rooms	04/20/16	05/23/16	57	33	101
C2B	7B	Full access to Signals Rooms	04/20/16	05/23/16	57	33	101
C2B	7C	Full access to Signals Rooms	04/20/16	05/23/16	138	33	101
C2B	9	Full access to Station Service Centers	04/05/16	03/21/16	183	-15	164
C2B	10	Complete all remaining Comms, Signal , & Traction Power work	02/11/16	1/31/16A	N/A	N/A	N/A
C2B	NS00100	LAN Available	02/01/16	05/15/16	70	104	109
C2B	NS00200	WAN Available	02/01/16	05/15/16	76	104	109
C2B	SS	Substantial Completion	10/27/16	09/26/16	49	-31	-25
C4C	12	Full access @ Station Service Center(s)	Not Incl.	04/29/16	47	N/A	125
C4C	SCT1000	Access to LAN	04/30/16	05/13/16	105	13	111
C4C	SCT1020	Access to WAN	04/30/16	05/13/16	105	13	111
C4C	STC14730	Comm./Turn Over UPS / Battery	08/03/16	07/28/16	20	-6	35
C4C	STC13280	Comm./Turn Over Water Mist	10/31/16	10/14/16	24	-17	-43
C4C	STC16630	Comm./Turn Over Escalators 9/10/11	09/23/16	10/14/16	34	21	-43
C4C	STC15310	Comm./Turn Over SCADA/PLC	11/01/16	10/19/16	21	-13	-48
C4C	STC16750	Comm./Turn Over Escalator 12	09/20/16	09/20/16	40	0	-19
C4C	STC11540	Comm./Turn Over Escalators 1/3/5	08/09/16	08/10/16	26	1	22
C4C	STC16510	Comm./Turn Over Escalators 6/7/8	10/26/16	10/26/16	26	0	-55
C4C	STC11800	Comm./Turn Over HVAC (Dry)	08/17/16	08/17/16	52	0	15
C4C	STC11250	Comm./Turn Over Hyd. Elevators	10/31/16	10/24/16	26	-7	-53
C4C	STC14150	Comm./Turn Over Track Drainage	09/06/16	09/27/16	44	21	-26
C4C	STC16350	Comm./Turn Over Traction Elevator	10/31/16	10/28/16	22	-3	-57
C4C	STC12120	Comm./Turn Over TSSM (N & S)	10/06/16	10/18/16	30	12	-47
C4C	FC	Final Completion	12/30/17	10/29/16	34	-427	-58
C4C	SC	Substantial Completion - Ent. #1	11/17/16	10/28/16	24	-20	-57
C5C	11	Full access @ Station Service Center(s)	02/14/16	03/04/16	114	19	181
C5C	15	Comp. Permanent Power	04/28/16	04/28/16	76	0	126
C5C	16	Elec & Mech Installations	05/31/16	06/01/16	-1	1	92
C5C	17	Axial Fan Installations	05/25/16	05/27/16	4	2	97
C5C	18	Fire & Life Safety Systems	05/26/16	05/17/16	14	-9	107
C5C	19	Elevators / Escalators	09/01/16	09/02/16	-2	1	-1
C5C	20	Substantial comp.	11/30/16	03/15/16	261	-260	170
C5C	C5CTC16 875	Comm./Turn Over Track Drainage	08/11/16	10/03/16	32	53	-32

Pkg	MS	Description	Dates				
			Feb. 2016	UD#115	Float 115	Monthly Δ	Δ (9/1/16)
C5C	C5CTC16 960	Comm./Turn Over BMS System	08/30/16	08/29/16	56	-1	3
C5C	C5CTC16 775	Comm./Turn Over Dry Fire Standpipe	05/23/16	05/17/16	118	-6	107
C6	2A	Complete LAN - 96th St. Station	05/02/16	05/05/16	70	3	119
C6	2B	Complete WAN - 96th St. Station	05/02/16	05/05/16	70	3	119
C6	3A	Complete LAN - 86th St. Station	05/31/16	05/31/16	0	0	93
C6	3B	Complete WAN - 86th St. Station	05/31/16	05/31/16	0	0	93
C6	4A	Complete LAN - 72nd St. Station	05/22/16	05/13/16	75	-9	111
C6	4B	Complete WAN - 72nd St. Station	05/22/16	05/13/16	75	-9	111
C6	5A	Complete LAN - 63rd St. Station	02/22/16	03/29/16	106	36	156
C6	5B	Complete WAN - 63rd St. Station	03/01/16	03/29/16	106	28	156
C6	5C	Complete all 63rd St. Station work	08/02/16	07/19/16	97	-14	44
C6	SS	Substantial Completion	11/21/16	12/01/16	0		-91

Milestone Summary: Based on the acceleration agreements, the following table contains those milestones showing a negative variance against September 1, 2016, the date on which all construction and testing was originally scheduled to be complete.

Pkg	MS	Description	UD#115	Δ (9/1/16)
C4C	STC16350	Complete/Turn Over Traction Elevator	10/28/16	-57
C4C	STC16510	Complete/Turn Over Escalators 6/7/8	10/26/16	-55
C4C	STC11250	Complete/Turn Over Hyd. Elevators	10/24/16	-53
C4C	STC15310	Complete/Turn Over SCADA/PLC	10/19/16	-48
C4C	STC12120	Complete/Turn Over TSSM (N & S)	10/18/16	-47
C4C	STC13280	Complete/Turn Over Water Mist	10/14/16	-43
C4C	STC16630	Complete/Turn Over Escalators 9/10/11	10/14/16	-43
C5C	C5CTC16875	Complete/Turn Over Track Drainage	10/03/16	-32
C4C	STC14150	Complete/Turn Over Track Drainage	09/27/16	-26
C4C	STC16750	Complete/Turn Over Escalator 12	09/20/16	-19
C5C	19	Elevators / Escalators	09/02/16	-1

Source Schedule Comparison:

No contractor source schedules for IPS Update #115 were submitted by MTACC.

Observations and Analysis:

- MTACC/contractor acceleration agreements require the completion of work such that 1) NYCT pre-revenue testing and training can start by September 1, 2016 and 2) that revenue service can start no later than December 30, 2016. The first of these stipulations appears to have already been superseded, as considerable contract work (beyond the architectural finish work anticipated) is forecast later

than September 1, 2016. IPS #115 indicates the start of NYCT Pre-revenue testing and training to start on September 29, 2016.

- Significant variances with the September 1, 2016, schedule requirement contained in the acceleration agreements are found primarily at the 72nd Street Station. The risk of this station not being complete in time to support the December 30, 2016 RSD appears to be significant.

Concerns and Recommendations: Refer to See Section 4.3 of this report for all schedule comments and recommendations.

4.2 90-Day Look-Ahead

Status:

Based on the Integrated Project Schedule (IPS) Update #115 (DD=03/01/16), 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		
Perform FAT Test - BMIS		05/30/16
Way Side @ 72nd - Megger Test Cables, Connect and Terminate, Install Relays		04/11/16
Install Lighting Fixture Including Emergency Light and terminate wire at Platform		05/31/16
Perform FAT Test - Emergency Vent Fans - Anc2		03/07/16
C3 – 63rd Street Station Rehab		
Arch Finishes Work Entrance 3		05/24/16
Conduct Final Inspection of HVAC Systems		05/26/16
Conduct FA Testing for Traction Elevators		03/15/16
Conduct Final Inspection of Sprinkler System		05/16/16
C4C—72nd Street Station Finishes		
Con Ed Inspect/Accept Perm Power (Anc#1&2)		04/14/16
Conduct Final Inspection FDNY - Dry Fire Standpipe System		05/03/16
Escalator BMS Installation		05/27/16
Anc. #1 4th Floor Drainage, HVAC, Conduits Light Fixtures		03/01/16
C5C – 86th St. Station Finishes & MEP		
Field test Div. 20 equipment in each comm. room – 86 th Street (FIAT)		05/17/16
Fire Alarm @ 86th - Install Devices in Mezzanine & Platform and Terminate Wiring		05/06/16
Escalator 06 Installation Entrance 1 incline IPS		05/26/16

Activity ID	Start	Finish
Final Inspection and Acceptance - Lighting Tunnels (FIAT)		03/11/16
C6 – Systems		
Zone 11 WaySide @ 86th - Megger Test Cables, Connect and Terminate, Install Relays		04/11/16
CCTV @ 63rd - Terminate Wiring and Install Devices		03/14/16
Token Booth @ 96th - Install Equipment in SECR		05/23/16
Wayside @ 63rd - Perform Punchlist Work		04/28/16

Observations and Analysis:

Testing activities are forecast at multiple locations throughout the project site. MTACC’s ability to support these activities will be tested over the next several months.

Concerns and Recommendations: Refer to See Section 4.3 of this report.

4.3 Critical Path Activities

Status:

IPS Update #115 forecasts the completion of all contractor construction testing activity necessary to allow NYCT Pre-Revenue activity to begin on September 29, 2016, subsequent to NYCT Pre-Revenue Training and Testing activities to be complete on December 1, 2016, with approximately 21 calendar days (CD) or 29 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	09/29/2016		
NYCT Complete Pre-Revenue Test	12/01/2016	0	
MTACC RSD	12/30/2016	29	MTACC Contingency
ELPEP Threshold	07/03/2017	185	Additional Contingency
FTA RSD	02/28/2018	240	Min. ELPEP Contingency
		454	TOTAL

Observations and Analysis:

IPS Update #115 identifies a single “critical” schedule path with TF=0 and numerous “Near-critical” paths with TF less than or equal to 22 WD, or approximately one month. There is significant risk that a delay to any of these paths could result in a project-level delay potentially impacting the RSD.

Critical Path (TF=0): The longest schedule path with TF=0 identified by IPS Update #115 involves installation and termination of fiber optic cable in Rooms 476A to 476E at the 86th Street Station. The start of this work is controlled by access to these rooms provided by the C5C Contractor. In this regard, the schedule contains contradictory information; C6 activities indicate this access will not be provided until March 14, 2016, and C5C information indicates

this work was completed on April 16, 2015. Based on the IPS, coordination of this room turnover and subsequent work between both contractors and MTACC appears lacking. Installation activities are forecast to be complete on April 26, 2016, with follow-on testing complete by May 31, 2016, which marks the achievement of C6 Milestone #s 3A and 3B. Contractor testing and MTA acceptance of system testing is then forecast to extend through September 29, 2016, at which time the project is turned over to NYCT for Pre-Revenue Testing.

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

- 2 WD:** This path involves testing and commissioning of the station electrical power control system (PLC/SCADA) at the 86th Street Station. According to the schedule logic, completion of this work is required to allow the start of elevator and escalator testing on August 31, 2016. The path is “near critical” because it is constrained by C5C MS #19, “Elevators, Escalators and Testing” on August 31, 2016. There are no successor activities to this milestone, so its validity is questioned. Actual escalator/elevator testing (48 hour run test) is scheduled to start of September 2, 2016, although there is no logic tie between the permanent power and testing activities.
- +8 WD:** This path involves the completion and supply of permanent station power at 72nd Street Station. The contractor is currently addressing Con-Ed punchlist items, which should be completed with permanent power available by April 15, 2016. Availability of permanent power allows the testing of communication equipment and network testing from 63rd Street to 72nd Street to be performed. This work is forecast to be complete on May 12, 2016. At this time, this path merges with the TF=0 path to allow the start of network testing throughout the project site, which should be completed on May 31, 2016.
- +13 WD:** This path involves the installation and testing of equipment and fiber optic cable at the 96th Street Station. Installation work is underway and forecast to be complete on April 11, 2016. Completion of installation allows FIAT and FIST testing at 96th Street, which should be complete by May 2, 2016, followed by network testing from 63rd Street to 96th Street. At this time, this path merges with the TF=0 path to allow the start of network testing throughout the project site, which should be completed on May 31, 2016.
- +18 WD:** This path involves installation and testing of the Watermist system at the 72nd Street Station. Fabrication of this system is forecast for completion by March 14, 2016, with installation starting throughout the station on March 28, 2016. This work should be complete by June 20, 2016. All testing for this system should be completed by September 6, 2016. The schedule then indicates a two month period for preparation, review, and approval of O & M manuals, which then signifies FSIT testing to be complete and the station ready for revenue service on November 2, 2016.
- +18 WD:** This path involves elevator installation and testing at the 72nd Street Station. Installation of Elevator #1 (Hydraulic) is underway and, along with contractor testing and punchlist work, should be completed by July 14, 2016. Preparation, testing, and acceptance in accordance with ASME 17.1 should be completed by

October 11, 2016. NYCT training and completion of O & M manuals extend this path to November 1, 2016, at which point this path merges with the completion of FIST testing and acceptance of the station for revenue service on November 2, 2016.

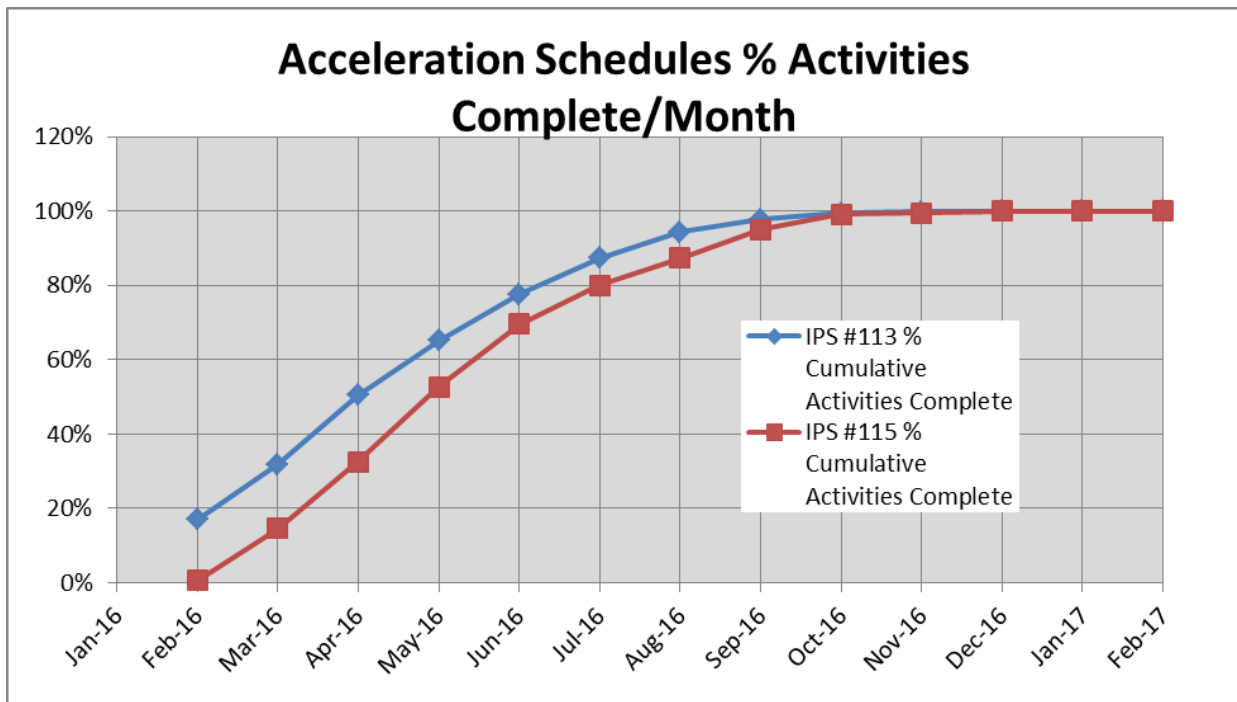
+18 WD: This path represents the remaining installation, third-party testing and Con-Ed final inspection and acceptance of facilities required for permanent power at the 86th Street Station. Con-Ed activities are forecast to be complete on April 28, 2016, at which time permanent power will be available to the station. This path then merges with the TF=0 path for network testing throughout the project, followed by combined station and system contractor testing and subsequent NYCT Pre-Revenue Testing.

Concerns and Recommendations:

MTACC has stated that the IPS will no longer be its primary tool for schedule management. However the IPS is a useful tool for evaluating planned vs actual schedule performance. The PMOC understands that the last two IPS submissions can be characterized as follows:

- IPS #113 was a combination of current schedule status, contractor performance targets, and MTACC goals for the accelerated schedule. IPS #113 may be considered a draft version of an SAS accelerated schedule.
- IPS #115 (IPS #114 was not provided) is an advanced draft of the acceleration schedule combining further contractor input. Refinement of select dates may be needed.

Comparing these two schedules based upon percentage of activities complete per month results in the following.



For IPS #113, the data for February 2016 is “actual”. This data indicates MTACC’s original schedule acceleration goals to be significantly more aggressive than contractors were willing to

accept. In addition, a small but significant number of activities are now scheduled to occur later than September 1, 2016. The PMOC will monitor both of these trends in the following months. As implemented by MTACC, the “Netpoint” schedule fragnet approach being used by MTACC to manage and coordinate activities at each station affords both advantages and disadvantages over the “Primavera/IPS” methodology.

- The graphic interrelationships between activities are clearly depicted, making the fragnet approach a very good tool for communicating with different levels of management.
- Fagnets are limited to station construction and testing activities. Remaining rail systems installation, testing and acceptance activities are not included.
- Fagnets are based upon updates of individual contract schedules. Elimination of the “contract clutter” which has accumulated within these schedules is an aid to understanding and focusing on the work remaining.
- Activities are frequently summarized (i.e. “escalator installation”). The fagnets themselves do not provide sufficient information to allow the evaluation of performance, relative schedule “criticality”, etc. For this type of analysis, the contract level P6 schedules are needed.

4.4 Compliance with Schedule Management Plan

Status:

Based on the current status of the IPS, SAS Phase 1 can be considered generally compliant with the metrics, deliverables and intangible goals enumerated in the Enterprise Level Project Execution Plan (ELPEP), dated January 15, 2010 (Section IV. b, page 8), and as further described by the Schedule Management Plan (SMP).

The PMOC notes that MTACC’s transition from the IPS to the “Netpoint Fragnet” method of schedule management is not included in its Schedule Management Plan.

Observations and Analysis:

- Forecast Revenue Service Date (RSD) and minimum schedule contingency:
 - ELPEP Requirement: February 28, 2018 (RSD); and,
 - 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); and
 - Each contract-level schedule contains multiple critical paths in which schedule float is less than 25 CD. It is not feasible to accelerate all the numerous schedule activities necessary to conform to this requirement.

- Secondary Schedule Mitigation (critical path compression)
 - ELPEP Requirement: 125 CD; and,
 - MTACC has complied with the intent of this requirement through numerous acceleration initiatives documented in previous reports.

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:

The PMOC has attempted to develop performance metrics that can assist in evaluating MTACC’s 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. February 2016 is the latest month for which this information is available.

Value Earned		February-16				Req'd Const Comp Date	Est. Const. Complete Date
Contract \$ (x100K)	Plan \$ Earned	Actual \$ Earned	Plan Month for Actual \$ Earned	Months Ahead (+) or Behind (-)			
C2B	\$324	\$324	\$286	Apr-15	-8.1	9/1/16	5/3/17
C3	\$176	\$176	\$170	Sep-13	-27.4	9/1/16	12/1/18
C4C	\$258	\$255	\$198	Feb-15	-10.6	9/1/16	7/16/17
C5C	\$208	\$199	\$162	Jul-15	-5.1	9/1/16	2/1/17
C6	\$261	\$250	\$198	May-15	-7.2	9/1/16	4/5/17
TOTAL	\$1,227	\$1,204	\$1,015	Mar-15	-9.2	9/1/16	6/5/17

$$\begin{aligned} \text{Cost Variance} &= \text{Plan \$ Earned} - \text{Actual \$ Earned} \\ &= \$1,204\text{M} - \$1,015\text{M} = \$189\text{M} \end{aligned}$$

This summary level analysis suggests the following:

1. Had the work progressed according to baseline “plans”, an additional \$189M worth of original contract work would have been performed as of February 29, 2016.

2. MTACC's acceleration plan requires that almost \$212M (remaining contract balances) of baseline construction be completed over the next 5 months which equates to a "Burn Rate" of over \$40M/month. This does not include change order work or the value of the acceleration agreements. The Baseline "Burn Rate" for February 2016 was \$18.3M
3. During February 2016, only the C2B and C5C contracts completed sufficient baseline construction to be progressing satisfactorily toward this goal.
4. Based on current schedule assumptions, NYCT will require a minimum 2 months for pre-revenue testing after all construction is complete. This results in a forecast RSD of August 5, 2017, absent significant schedule improvement.
5. As MTACC's schedule acceleration initiative "ramped up", some increase in baseline work achievement was expected. This evaluation suggests the actual increase in work completed was minimal.

Conclusions and Recommendations:

MTACC's schedule acceleration initiative must accomplish two things:

- Reverse the overall inability of the project to complete work in accordance with schedule goals; and,
- Significantly improve schedule performance beyond that which is currently forecast.

5.0 BUDGET/COST

Status:

The FFGA baseline budget (Jan 2008) and MTACC's current working budget (September 2015) 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 (September, 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, September 2015 of its CWB for the FTA Standard Cost Categories. Revisions to the SCC allocations incorporate Revision 10 modifications to MTACC's CWB. MTACC converts the CWB to the SCC format quarterly.

Conclusions and Recommendations:

MTACC continues to execute Phase 1 of the SAS Project 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:

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

- Full Funding Grant Agreement (FFGA) – 11/19/07;
- Enterprise Level Project Execution Plan (ELPEP) – 01/15/10;
- Amended FFGA (R) – 03/17/15;
- MTACC Current Working Budget (CWB) – 11/15; and,
- Contemporaneous Estimate @ Completion (EAC) - 11/15.

Budget and forecast cost variances at these milestones are included in the following table. Exclusive of additional schedule acceleration cost, project final cost is forecast to exceed the original FFGA by approximately 8% at completion and will be within the budget established by the amended FFGA.

<u>Estimate</u>	<u>Date</u>	<u>Construct.</u>	<u>Eng./Prof. Svs.</u>	<u>3rd Party Exp.</u>	<u>TA Exp.</u>	<u>Cont.</u>	<u>Total (1)</u>	<u>% FFGA</u>	
FFGA	Jun-07	\$2,360,000	\$491,000	\$626,000	\$75,000	\$498,000	\$4,050,000	100%	
ELPEP	Oct-09	\$2,791,066	\$541,000	\$747,000	\$103,000	\$490,934	\$4,673,000	115%	
FFGA(R)	Mar-15	\$2,848,815	\$721,297	\$626,000	\$75,000	\$486,887	\$4,757,999	117% (5)	
CWB	Mar-16	\$2,674,494	\$681,643	\$562,086	\$132,881	\$402,296	\$4,453,400	110% (4)	
CTD	Mar-16	\$2,675,361	\$643,494	\$448,222	\$81,918		\$3,848,995	95%	
ETC(B)	Mar-16	\$215,879	<i>(construction - base contracts)</i>						0%
ETC(A)	Mar-16	\$135,129	<i>(AWO forecast to complete)</i>						0%
EAC	Mar-16	\$3,026,369	\$681,643	\$562,086	\$132,881		\$4,402,979	109% (2)	
						\$48,021			

↑
Est remaining contingency

Notes:

- (1) w/o any financing costs
- (2) Forecast cost growth since FFGA = 9%
- (3) Based on December 31, 2016 RSD; IPS Update #112
CTD as reported by MTACC through Mar. 30, 2016
Does not include "acceleration initiative" costs
- (4) Assumes CWB includes all forecast soft cost increases
- (5) Amended FFGA includes commitment of \$708M local funding if necessary.

This comparison demonstrates that MTACC’s 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 March 31, 2016, a summary comparison of the SAS Current Working Budget and expenditures is as follows:

Description	CWB	Expended	%
Base Construction	\$2,674,814,299	\$2,458,954,887	91.9%
Total Soft Cost	\$1,308,108,085	\$1,173,634,175	89.7%
Contingency	\$468,077,616	\$216,426,144	46.2%
Subtotal	\$4,451,000,000	\$3,848,995,206	86.5%

Observations:

Based upon financial expenditures reported by MTACC during March 2016, SAS Phase 1 is approximately 86.5% complete. The completion status of the active construction contracts through March 31, 2016, are based upon reported expenditures through that date, is as follows:

- C26002 (Tunnel Boring) – 100%;
- C26005 (96th Street Station) – 100%;
- C26010 (96th Street Station) – 92.8%;
- C26013 (86th Street Station) – 100%;
- C26008 (86th Street Station) – 99.6%;
- C26012 (86th Street Station) – 80.4%;
- C26006 (63rd Street Station) – 96.9%;
- C26007 (72nd Street Station) – 99.9%;
- C26011 (72nd Street Station) – 78.9%; and,
- C26009 (Systems) – 76.2%.

Aggregate Construction percentage Completion:

- 100% of all construction work is under contract;
- 91.9% of all base construction (not including AWOs) is complete; and
- 92.5% 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 March 2016:

- Value of construction in place this period = \$25,411,955;
- Estimated value of construction remaining = \$215,879,412;
- Target construction completion = September 1, 2016; and,

- Number of Months remaining = 5

The PMOC notes that expenditures are generally representative of the level of completion of each project element.

Professional Service expenditures (as generally defined by SCC Category 80) during March 2016 totaled approximately \$6.4M. This rate of expenditure is generally within the range of cost anticipated by the current budget. At the current rate of expenditure, the existing budget should be sufficient to fund professional services into the 2nd Quarter 2017.

Conclusions and Recommendations:

Refer to Section 5.5 and 5.6

5.3 Change Orders

Status:

As of March 31, 2016, 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)	85.04%	\$324,600,000	\$59,240,668	18.25%	\$35,122,183	10.82%
C26006 (3)	94.71%	\$176,450,000	\$39,383,057	22.32%	\$27,992,088	15.86%
C26007 (4B)	99.93%	\$447,180,260	\$1,325,639	0.30%	\$1,325,639	0.30%
C26011 (4C)	73.36%	\$258,353,000	\$60,089,406	23.26%	\$30,089,999	11.65%
C26013 (5A)	100.00%	\$34,070,039	\$6,525,471	19.15%	\$6,525,471	19.15%
C26008 (5B)	99.63%	\$301,860,000	\$26,280,122	8.71%	\$21,586,813	7.15%
C26012 (5C)	64.84%	\$208,376,000	\$29,890,264	14.34%	\$6,113,306	2.93%
C26009(6)	69.51%	\$261,900,000	\$31,115,984	11.88%	\$24,692,285	9.43%
TOTAL TO DATE		\$2,674,814,299	\$342,552,667	12.81%	\$242,149,840	9.05%

Bold type indicates completed contracts

To date, approximately \$2,458,934,887 (91.9%) of all base contract construction work has been completed. As a percentage of work completed, the AWO exposure for these contracts is 13.93% and the executed AWO percentage is 9.85%. Based on performance to date, a forecast total of AWO expenditure for all base contract work in the range of \$260M to \$310M appears reasonable.

Observation and Analysis:

The value of AWOs reported by MTACC/NYCT in March 2016 is summarized as follows:

	<u>Executed AWOs</u>	<u>AWO Exposure</u>
Mar-16	\$242,149,840	\$342,552,667
Feb-16	\$221,965,673	\$333,988,472
Δ	\$20,184,167	\$8,564,195
Δ	9.09%	2.56%

The changes in AWO Exposure for each construction contract reported through March 2016 are summarized as follows:

Const. Pkg.	AWO Exposure			
	Mar-16	Feb-16	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	\$59,240,668	\$ 58,522,301	\$718,367	Net increase is based on revised estimates for AWO #s 38, 132, 145, 151, 170, 172, 178, 179, 192, 214, 216, and 220, and initial estimates for AWO #s 162, 184, 206, 215, 217, 221, 222, 223, 224, 225, 228, 230, and 231. 5 AWOs added.
C3	\$39,383,057	\$38,605,684	\$777,373	Net increase is based on revised estimates for AWO #s 92, 93, 190, 223, 260, 267, 268, 274, and 277, and initial estimates for AWO #s 265, 282 through 292. 10 AWOs added
C4B	\$1,325,639	\$1,325,639	\$0	No change reported this period.
C4C	\$60,089,406	\$ 55,442,739	\$4,646,667	Net increase is based on revised estimates for AWO #s 25, 62, 74, 91, 94, 129, 156, 164, 170, 179, 193, 197, and 198 and initial estimates for AWO #s 118, 160, 174, 182, 199, 205, 206, 208, 210, 211 and 214 through 229 and 231. 15 AWOs added
C5B	\$26,280,122	\$26,297,858	-\$17,736	Net increase is based on revised estimates for AWO #s 51 and 109.
C5C	\$29,890,264	\$29,373,089	\$517,175	Net increase is based on revised estimates for AWO # 6, 17, 23, 88, 90, 91, 138, 155, and 158 and initial estimates for AWO #s 136, 137, 150, 153.

Const. Pkg.	AWO Exposure			
	Mar-16	Feb-16	Period Δ	Changes this Period
C6	\$31,115,984	\$29,193,635	\$1,922,349	Net increase is based on revised estimates for AWO #s 2, 79, 117, 124, 135, 139, 151, and initial estimates for AWO #s 106, 107, 146, 157, 163, 170, 171, 172, 181, 185, 186, 189, 192, 194, and 196. 18 new AWOs
TOTAL	\$342,552,667	\$333,988,472	\$8,564,195	

The changes in Executed AWO Values for each construction contract reported through March 2016 are summarized as follows:

Const. Pkg.	Executed AWOs			
	Mar-16	Feb-16	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	\$35,122,183	\$34,553,483	\$568,700	Increase is based on execution of AWO #s 122, 150, 204, 211, and 212.
C3	\$27,992,088	\$26,032,088	\$1,960,000	Increase is based on execution of AWO #s 165, 227, 235, 249, 250, 261, 262, 264, 268, 274, 275, and 282. 10 new AWOs
C4B	\$1,325,639	\$1,325,639	\$0	No change reported this period.
C4C	\$30,089,999	\$ 30,078,999	\$11,000	Increase is based on execution of AWO # 129.
C5B	\$21,586,813	\$20,906,813	\$680,000	Increase is based on execution of AWO # 66.
C5C	\$6,113,306	\$ 5,397,939	\$715,367	Increase is based on execution of AWO #s 24, 28, 80, 83, 91, 92, 94, 98, 104, 110, 111, 114, 115, 116, 122, 126, 134, 135, 140, 142, and 148.
C6	\$24,692,285	\$8,443,185	\$16,249,100	Increase is based on execution of AWO #s 151, 163, 172, 181, 183, 186, 194, and 196.
TOTAL	\$242,149,840	\$221,965,673	\$20,184,167	

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 (\$) through March 31, 2016
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	\$107,650,866
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	\$1,171,593,066.00



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

*** Grant issued to outline components of the Early Systems Work Agreement. **** Grant issued to explain the "Total Eligible" cost for the project

Total project distribution is \$3,848,995,205 of which \$2,677,402,139 is local funds and \$1,171,593,066 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

Status:

Current forecasts indicate SAS Phase 1 can be completed within MTACC's CWB (\$4.451B) assuming all construction, testing, and user acceptance activities are complete on or around December 30, 2016. MTACC's last revision to this budget occurred in late 2015.

Observation and Analysis:

A comparison of the SAS project budget used for development of the original FFGA (June 2007) and the MTACC's Current Working Budget (CWB) for the project is summarized in the following table:

	CWB	EAC	Variance	% CWB
Construction	\$2,674,814,299	\$3,026,089,958	\$348,234,352	13%
Eng./Prof. Services	\$622,862,000	\$681,088,115	\$58,226,115	9%
3rd Party Expenses	\$554,086,273	\$562,086,000	\$7,999,727	1%
TA Exp.	\$131,160,085	\$133,480,650	\$2,320,565	2%
Contingency	\$468,077,343			
Total	\$4,451,000,000	\$4,402,744,723		

In terms of both percentage and actual cost, construction and engineering/professional services have been the major drivers of cost increase on the project.

Conclusions and Recommendations:

Construction cost growth can generally be attributed to incomplete or over-optimistic estimating during Preliminary Engineering and underestimating the potential for cost growth during the later phases of design. A significant component of Professional Services cost growth has been the extension of the construction phase of the project by two years, necessitating significant contract increases for both design and construction management services.

Based on current information, MTACC's Current Working Budget of \$4.451B appears adequate, assuming no significant delays to project RSD are encountered.

5.6 Project Contingency

Status:

The ELPEP requires 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; and,

- \$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 \$45,000,000.

Observations and Analysis:

During 1st Quarter 2016, 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.

	<u>Contingency Analysis</u>	
	<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	\$1,173,634,175	\$1,173,634,175
Soft Cost Forecast to Complete	\$203,020,590	\$203,020,590
AWO Exposure	\$299,046,313	\$348,555,012
Total Contingency	\$100,484,623	\$50,975,924
Reserved Contingency	\$100,484,623	\$50,975,924

Total Contingency = budget balance after forecast expenditures.

Absent any significant delay beyond December 2016, the PMOC concludes that SAS Phase 1 can be completed within the current MTACC CWB of \$4.451B;

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 total 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:

No Risk mitigation meeting was held this period.

Observation and Analysis:

At this stage of the Project, these risks are well understood by senior SAS managers and their mitigation is the focus of almost all project management activity. As such, regular monthly risk management meetings and reports are somewhat redundant and are not currently scheduled.

Conclusions and Recommendations:

It is recommended that a discussion of top project risks be included in the monthly cost and schedule meeting as well as other applicable forums.

6.3 Risk Management Status

Status:

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:

MTACC's schedule acceleration initiative is an effort to avoid further schedule erosion and increase schedule contingency at the end of the project. This effort has commenced and is discussed in detail in Section 4 of this Report.

Observation and Analysis:

Risks involving MTACC's schedule acceleration initiative can be classified as either management and organizational risk or technical and coordination risk. Major risks within each of these categories are summarized as follows:

Management and Organizational Risks		
	Risk	Status
1.	MTACC's ability to implement its schedule acceleration program through compression of construction schedules.	MTACC has achieved "substantial agreement" with contractors regarding schedule acceleration. All schedule details appear to have been resolved. MTACC appears to have avoided consequences associated with this risk.
2.	Design and scope changes requested by	Based on the number and nature of AWOs

Management and Organizational Risks		
Risk	Status	
	<p>NYCT during the late stages of construction. NYCT has agreed that changes not related to safe operation of the railroad and station facilities will be deferred until after the start of Revenue Service.</p>	<p>initiated this period, it does not appear MTACC has been completely successful in managing this risk. This risk remains a significant concern.</p>
3.	<p>Availability of NYCT staff to support testing, commissioning and final acceptance of work performed by SAS contractors</p>	<p>Additional NYCT staff to support testing and acceptance of the work have been and will be made available to support project needs.</p>
4.	<p>Availability of NYCT staff to conduct code compliance and final inspection of constructed facilities.</p>	<p>A consultant has been procured and will provide supplemental staff to support NYCT code compliance inspection activities. An inspection plan has been prepared and implemented. Consultant staff are supervised by NYCT staff to ensure consistency and compliance with NYCT criteria.</p>
5.	<p>MTACC's ability to manage the change order process in a timely manner to avoid contractor delay.</p>	<p>Additional personnel have been assigned to each active contract to expedite and support the management of technical risk and any associated contract modifications. Significant progress in resolving and executing contract modification has occurred.</p>

Technical and Coordination Risks		
Risk	Status	
1.	<p>Critical communication systems: fire alarm system and police radio installation, testing, commissioning and acceptance.</p>	<p>Acceleration schedules currently forecast these systems will be installed and accepted in time to support the December 30, 2016 RSD.</p>
2.	<p>Permanent facility power – all stations</p>	<p>Work is complete at 96th Street Station. Delays have occurred at both 72nd and 86th Street Stations. Current forecasts indicate this work can still be completed without delay to the project.</p>
3.	<p>Traction Power – all stations</p>	<p>Acceleration schedules currently forecast these systems will be installed and accepted in time to support the December 30, 2016, RSD.</p>
4.	<p>Installation, testing, commissioning, and acceptance of elevators and escalators.</p>	<p>Completion of this work is among the last tasks to complete at each station. Contractor capability and resource availability are</p>

Technical and Coordination Risks		
Risk		Status
		ongoing concerns.
5.	Watermist system.	Acceleration schedules currently indicate these systems will be installed in time to support the December 30, 2016, RSD.
6.	The development and approval of test procedures does not appear to be progressing satisfactorily. The risk that the project team will not be ready to test major elements of the project without delay appears to be significant.	Refer to the following table.
7.	Coordination between contractors, MTA personnel, and their consultants.	An MTACC Program Manager has been assigned to each station to coordinate support activities with NYCT support staff.

The following table summarizes progress achieved this period on development and approval of test procedures and acceptance criteria.

		Level 3/4 (FIAT)			Level 5 (FIST)			Level 6 (FSIT/SIT)		
		Sub	App	Begin Test	Sub	App	Begin Test	Sub	App	Begin Test
63rd Street	# Required	32			12			14		
	Test Procedures-(3/31)	29	24	Ongoing	8	5	4/26/16	10	8	7/27/16
	Test Procedures-(2/29)	29	23		7	3		7	4	
	Period Progress	0	1		1	2		3	4	
	% Complete	75%			42%			57%		
72nd Street	# Required	41			21			21		
	Test Procedures-(3/31)	36	29	5/2/16	16	10	8/18/16	14	9	8/1/16
	Test Procedures-(2/29)	33	26		15	8		10	5	
	Period Progress	3	3		1	2		4	4	
	% Complete	71%			48%			43%		
86th Street	# Required	40			18			20		
	Test Procedures-(3/31)	34	20	6/1/16	12	7	6/28/16	13	9	8/4/16
	Test Procedures-(2/29)	32	18		11	5		10	5	
	Period Progress	2	2		1	2		3	4	
	% Complete	50%			39%			45%		
96th Street	# Required	42			23			23		
	Test Procedures-(3/31)	35	26	5/1/16	14	7	6/6/16	15	8	6/1/16
	Test Procedures-(2/29)	31	24		13	5		11	4	
	Period Progress	4	2		1	2		4	4	
	% Complete	62%			30%			35%		

Information for C6 was not available. This table demonstrates that generally, development of test procedures and acceptance criteria has not progressed as rapidly as hoped and that there may be significant risk that procedures are not ready in time to support timely execution of this phase of the work.

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 #115, MTACC forecasts all Phase 1 construction and pre-revenue testing to be complete on September 29, 2016. This results in 30 CD (21 WD) of contingency when measured against MTACC’s target RSD of December 30, 2016, and a 517 CD contingency when measured against the FTA Risk-Informed RSD of February 28, 2018.

Observations:

Major risks previously identified in the construction contractor’s 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 #115 results in the following contingencies:

Table 6-1: Schedule Contingency

IPS Update #	107	110	111	112	113	115
Data Date	6/1/15	9/1/15	10/1/15	11/1/15	12/1/15	3/1/16
	Contingency (CD)					
RSD=12/30/2016						
Risk Mitigated	45	38	33	33	57	21
Risk Realized	45	38	33	33	57	21
RSD=02/28/2018						
Risk Mitigated	469	462	457	457	482	517
Risk Realized	469	462	457	457	482	517

Concerns and Recommendations:

The PMOC concerns regarding schedule are enumerated in Section 4.0 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-1- Oct-15	2.1.3	<p><u>Issue:</u> Failure of the Station contractors to meet room turnover milestones has eroded the schedule contingency and impacted the Systems contractor.</p> <p><u>Status:</u> Station Contractors are working as quickly as possible to meet room turnover milestones.</p> <p><u>Recommendations:</u> The PMOC recommends that MTACC continue with its present mitigation efforts.</p>	1

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//17/15	Amended FFGA Signed		
12/30/16	Revenue Operations Date at date of this report (MTACC schedule)		
92.5%	Percent Complete Construction at March 31, 2016		
91.7%	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
3,849 M	Amount of Expenditures at date of this report from Total Project Budget of \$4,451 M
92.5%	Percent Complete based on Expenditures at date of this report
\$100 M	Total Project Contingency remaining (allocated and unallocated contingency)

APPENDIX C – LESSONS LEARNED

There were no new Lessons Learned to report for 1st Quarter for 2016

#	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?		of the MTA New York City Transit's Systems Safety Program Plan for 2015 on October 27, 2015.
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.

Project Overview		
Has the Grantee established staffing requirements, procedures and authority for safety and security activities throughout all project phases?	Y	Responsibilities during the design and construction 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	Y	Included in SAS project Design Criteria

Project Overview		
criteria?		Manual
Has the Grantee ensured conformance with safety and security requirements in design?	Y	Ongoing part of 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.
Has 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 February 29, 2016, is 1.59 and 4.37, 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	The Bureau of Labor Statistics (BLS) national Lost Time Injury Rate is 1.8 and the Recordable Injury Rate is 3.2.

Project Overview		
	worked since the project inception is 12,546,023 hours. Total lost time injuries since project inception is 100 and other recordable injuries are 174. The total number of recordable injuries is 274 (sum of lost time injuries and recordable injuries).	
If the comparison is not favorable, what actions are being taken by the Grantee to improve its safety record?	Both rates decreased slightly from the last reporting period. Tool box meetings, stand-downs, increased training and monitoring of construction actives are being performed in order to highlight safety awareness.	
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	\$175M	\$45M
	Total Contingency (Allocated plus Unallocated)	\$555.554M	\$100M (Mar. 2016)	\$45M
Schedule	Revenue Service Date	June 30, 2014	December 30, 2016	February 28, 2018
Total Project Percent Complete	Based on Expenditures	86.5%		
	Based on Earned Value	N/A		
Major Issue		Status	Comments	
Project Testing and Commissioning		Open	MTACC's ability to test and commission a system the size of the SAS Phase 1 Project in a reasonable time frame is a major concern. Lessons Learned from testing and commissioning of the 7 Line Extension Project will be implemented on the SAS project.	
Accelerated Completion Schedule		Open	MTACC's accelerated schedule initiative is intended to provide an additional month of schedule contingency between construction completion and RSD. There are major challenges in implementing this accelerated schedule concept.	
Date of Next Quarterly Meeting:		TBD		

All data based on March 31, 2016 reporting.