

PMOC MONTHLY REPORT

Second Avenue Subway Phase 1 (MTACC-SAS) Project

Metropolitan Transportation Authority

New York, New York

Report Period July 1 to July 31, 2016



PMOC Contract No. DTFT6014D00017

Task Order No. 2, Project No. DC-27-5287, Work Order No. 3

Urban Engineers of New York, D. P.C., 2 Penn Plaza, Suite 1103, New York, New York 10121

PMOC Lead: Charles A. Halboth, PE, 212-736-9100; cahalboth@urbanengineers.com

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

TABLE OF CONTENTS

TABLE OF CONTENTS	2
THIRD PARTY DISCLAIMER.....	3
REPORT FORMAT AND FOCUS.....	3
MONITORING REPORT	3
1.0 PROJECT STATUS.....	3
a. Procurement	3
b. Construction.....	3
c. Quality Assurance and Quality Control (QA/QC).....	11
d. Readiness Revenue Operation	14
2.0 SCHEDULE DATA.....	14
3.0 COST DATA.....	26
4.0 RISK MANAGEMENT	31
5.0 ELPEP.....	33
6.0 SAFETY AND SECURITY	36
7.0 ISSUES AND RECOMMENDATIONS.....	37

APPENDICES

APPENDIX A – ACRONYMS

APPENDIX B – TABLES

Table 1 - Summary of Schedule Dates

Table 2 - Project Budget/Cost

Table 3 - Estimate at Completion

Table 4 - Allocation of Current Working Budget to Standard Cost Categories

Table 5 - Core Accountability Items

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

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

REPORT FORMAT AND FOCUS

This monthly report is submitted in compliance with the terms of the Federal Transit Administration (FTA) Contract No. DTFT6014D00017. 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 Second Avenue Subway (SAS) Phase 1 Project managed by MTACC. MTA is the Grantee and financed by the FTA FFGA.

MONITORING REPORT

1.0 PROJECT STATUS

NOTE: The dates in Section 1.0 are the latest dates based on conversations between the PMOC and SAS management representatives. The dates in Section 2.0 are based on the most recent MTACC approved scheduled updates.

During July 2016, the MTACC continued advancing SAS Phase 1 to meet a Revenue Service Date (RSD) of December 30, 2016, within its Current Working Budget (CWB) of \$4.451 billion (exclusive of financing). The overall project is approximately 90.9% complete. Substantial Completion has been achieved on three of the eight active construction contracts. Progress in this reporting period is discussed below:

a. Procurement

Procurement of construction contractors for SAS – Phase 1 is complete. Three construction contracts are currently in the closeout process.

b. Construction

As of July 31, 2016, there are eight (8) active construction contracts on the SAS Phase 1 Project. Construction progress on the active contracts during this period includes:

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

- Substantial Completion was achieved on November 5, 2013.
- Close Out of the contract has been delayed again due to DEP's ongoing inspection of the installed utilities to the "As-Built" drawings. The inspection should be completed by August 30, 2016.

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

The following near term milestones are associated with activities that are being accelerated to achieve the December 30, 2016 Revenue Service Date:

- Milestone #15 - The milestone consisted of all work required to perform Field Installation Acceptance Tests on the Tunnel Station Smoke Management (TSSM) System.
Status: Contractor has completed the Milestone and work was verified by MTACC's Construction Manager.
- Milestone #16 - The milestone consisted of all work required to perform Field Installation Acceptance Tests of the Fire and Life Safety Systems.
Status: Contractor has completed the Milestone and work was verified by MTACC's Construction Manager.
- Milestone #17 - The Contractor has to complete all work and pass all tests through Simulated Integrated System Testing (L5a) for the Fire Suppression System, HVAC Systems and Inergen System on line.
Status: Milestone #17 was scheduled to be completed by July 31, 2016, but was not completed. Work is ongoing.
- Milestone #18 - The Contractor has to complete all work required to perform Field Installation Acceptance Tests (L3/4) on all Escalators and Elevators
Status: The milestone was to be completed on or before July 31, 2016, but was not completed. Work is ongoing, the last L3/4 escalator test is forecast to occur on August 9, 2016 and the last elevator test is forecast to occur on August 27, 2016.
- Milestone #19 – The Contractor has to complete all work and complete and pass all tests through Final Systems Integrated Testing (L5b) except for endurance type tests.
Status: Milestone #19 is scheduled to be completed on or before August 31, 2016. It is currently forecast to be completed on September 18, 2016. The slippage is being driven by ongoing work on the fire alarm and CCTV systems.

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

- **Remaining Project Work**

This chart, from the MTACC CCM Office, identifies the areas of work that the CCM believes are necessary to open the east side of the station to the public

Work Item	Forecast Completion	Req'd to Open
Street Level		
Install all stair entrance railings at street level	In progress – Just starting	X
Install limestone at top of plaza ancillary structure	Completed	
Demobilize from street		
Complete plaza leak remediation work and replace plaza lights, raise plaza plantings	Completed	
Complete sidewalk restoration at Lexington and 63 rd street	Completed	
Complete/replace Entrance One boarder ceilings	Starting 8/5/16	
Install closure pieces at ancillary and aluminum soffits	In progress	
Mezzanine 6		
Perform corrective work at suspended ceiling	In progress	X
Complete installation of floor drains (AWO)	In progress – 5% left	X
Complete all AFC railing/gate hardware	In progress: Only gate closure left	X
Install missing ceiling panels, beam soffits, and wall or column finishes	Starting 8/5/16	X
Complete all OL work at various rooms, inspect and turn over	In progress	X
Install escalator railings	Completed	X
Install pipe insulation for water mist and sprinkler	Completed	
Sovereign Grouting of Roof (AWO coming)		X
Other Levels& Systems		
Complete installation of communication and UPS cooling, test, and commission the equipment	In progress	X
Test summer loop of HVAC	Planned for 9/2	
Perform remote shakedown of fans	Planned for 8/20	
Complete Level 3 &4 Testing of elevators	Done	
Install elevator pit ladders (AWO)	In progress – 95% complete	X
Perform Lift Net test of escalators	Planned 8/11	X
Perform Level 5 testing of elevators	Pending F.A. Testing	X
Perform Level 5 testing of escalators	Pending F.A. Testing	X
Complete stair pressurization test	Partial done – Planned 8/16	X
Perform testing of UPS	9/1	X
Level 5 Test of Water Mist	Pending F.A. Testing	X

Work Item	Forecast Completion	Req'd to Open
Level 5 test of Inergen	Pending F.A. Testing	X
Remove storage barricades and materials at Lexington Avenue end of station		
Perform NVD inspection		
Separations for Utility in stairs		X
Replace galvanized glycol piping in west HVAC room		
Complete tamper switch installations – six missing		X
Add / relocate Sprinklers as Required		
Complete missing exit sign conduit and boxes		
Platform Level Work		
Complete installation of skins over service carrier		
Complete installation of porcelain panels over track		
Install elevator lobby ceilings and soffits	In progress	X
Install remaining ceiling and fins at platform ceilings		
Complete work on Link stairs	In progress	
Complete all railings on safety walks	In progress	
Complete all painting – tunnel areas		
Adjust platform rubbing boards to meet tolerances		
General		
Install all signage brackets and hangers		X
Provide all required SI reports		
Paint all fire stand pipe and sprinkler red	In progress	X
Close out all open NCR's		
Provide complete set of as-built drawings	In progress	
Submit all O&M Manuals	In progress	
Submit all test reports	In progress	
Complete all OL work	In progress	
Final cleaning	Starting	X

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

- Substantial Completion was achieved on January 14, 2014. Submittal of contract closeout documentation is ongoing;
- The punchlist items, including correcting the deficiencies to the architectural finish along the escalator incline at Entrance #2, are complete and the area has been turned back over to the C4C contractor; and,
- Similar corrective work will also be required on the Entrance #1 incline finish.

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

- **Ancillary #2/Entrance #2**
 - At Ancillary #2, exterior granite building cladding is 80% complete.
 - Installation of light fixtures in the Mezzanine Access is 70% complete.
 - At the Entrance #2 escalator arrays, installation of water mist piping is complete.
 - At Entrance #2, installation of framing for wall finishes continues.
- **Ancillary #1**
 - The glazing was completed at the southeast corner curtainwall.
 - All terra cotta exterior wall tile is complete on the east face of the building and 90% complete on the south face.
 - Granite cladding of the exterior columns continues.
- **Mezzanine**
 - In the Public Mezzanine glazing above the Service Carrier is 80% complete.
 - In the Public Mezzanine permanent light fixtures at the service carrier and walkway cove lighting are installed, but not illuminated.
 - In the north and south back of house areas, Level 3/4 testing continues.
 - Escalators #1, #2 and #3, to the platform, are ready for testing.
- **Entrance #3 Elevator Bank**
 - Installation of porcelain wall tiles at the interior of the elevator shaft is 90% complete.
 - The Elevator Machine Room wiring has been completed.
 - 1 elevator cab has been assembled.
 - Installation of exterior terra cotta wall tile is 95% complete on the north & west faces of the upper building.
- **Entrance #1**
 - At the Entrance #1, incline work continues at the three escalators to the mezzanine.
 - At the Entrance #1 Upper Mezzanine, wall tile cladding installation continues at interior and exterior entrance walls.
 - Installation of porcelain wall tiles at the street level entrance & mezzanine is 60% complete.

- **Platform Level**

- Installation of the Elevator #1 (Mezzanine to Platform) glazing is complete.
- Installation of 34 Water Mist control valves is complete.
- Installation of the stainless steel perforated riser architectural stairs continues.
- Platform service carrier light fixtures are installed, but not illuminated.
- All north end rooms are scheduled to be complete by August 8, 2016. All south end rooms are scheduled to be complete by August 15, 2016.

- **Schedule**

- Milestone #25 (Complete Level 5 Testing for All Systems except Milestone #26) – By September 6, 2016
- Milestone #26 (Complete Level 5 Testing for Entrance #1 Escalators & Entrance #3 Elevators) – By August 22, 2016

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

- Substantial Completion of all contract work was achieved on December 16, 2014.
- The architectural finish corrections at Entrance #2 and Entrance #1 escalator inclines has been completed and the areas turned back over to the C5C contractor.

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

- **General**

- Representatives from the Code Compliance Unit (CCU) visit the site every Wednesday and develop observation lists. The lists for this contract are at 2,500 items and rising.
- Distribution of permanent power to the distribution panels is complete. Permanent lights are operating where light fixture installation is complete.
- Traction power to the TPSS Room has been energized.

- **Ancillary #1**

- The building fit-out is continuing, including electrical, ductwork, C6 conduit, etc.

- **Ancillary #2**

- The building fit-out is also continuing here. Material deliveries to this area are made through the permanent air shaft.

- **Mezzanine**

- The Public Mezzanine the stainless steel paid/unpaid fence installation continues north and south. The fare turnstiles are installed by NYCT.
- In the Public Mezzanine, the glazing above the service carrier is complete.
- In the Public Mezzanine the service carrier light fixtures installation is complete and are illuminated.

- **Entrance #1**

- Scaffolding and work platforms have been installed in the incline and light fixture installation continues on the arch.

- **Entrance #2**
 - At Entrance #2, the escalator work is substantially complete with Level 3/4 testing underway.
 - Finish work continues at the Entrance #2 Upper Mezzanine with installation of porcelain enamel wall tiles.
 - Installations of the arch light fixtures have been completed and are illuminated.
 - The cab for the Traction Elevator (Street to Mezzanine ADA) has been installed.
- **Platform Level**
 - The service carrier light fixtures installation is complete and are illuminated.
 - Over the track, finished ceilings are complete.
 - Installation of the stainless steel perforated riser architectural stairs is complete.
 - Installation of hydraulic elevator framing is complete. Installation of glazing continues.
 - Installation of the travelling cable for the hydraulic (Platform to Mezzanine) elevator is complete. The elevator cab has been installed.
 - The granite installation is underway for the platform wall finishes at stair & escalator walls.
- **Site**
 - Sitework construction continues along E. 86th St. and along 2nd Ave.
- **Schedule**
 - Level 3/4 equipment testing is underway throughout.
 - The goal is to get the platform ready by August 31, 2016.

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

The remaining near term milestones are associated with activities that are being accelerated to achieve the December 30, 2016 Revenue Service Date:

▪ **63rd Street Station**

- Milestone #16 - Communication Systems buildout of all work and preliminary testing and pre-testing required to perform Field Installation Acceptance Tests FIAT) (L3/4) by May 31, 2016.

Status: The milestone was not achieved. Work is ongoing; forecast to be completed on August 14, 2016. Slippage of the milestone is due to delays associated with the fire alarm, emergency alarm, Public Address Customer Information Screen (PACIS), Closed Circuit Television (CCTV), Intrusion Access Control (IAC), Help Point Intercom (HPI) and Safe Point Intercom (SPI) systems.

- Milestone #16A - Completion of all work and testing through Systems Integrated Testing (SIT) for the Communication Systems, except UHF SIT and Fire Alarm combined SIT by June 30, 2016.

Status: The milestone was not achieved. Work is ongoing, forecast to be completed on September 15, 2016. Slippage of the milestone was due to delays associated with the fire alarm, emergency alarm, PACIS, CCTV, IAC, and HPI/SPI systems.

▪ **72nd Street Station**

- Milestone #17 - Completion of all work and preliminary testing and pre-testing required for FIATs on the Communication Systems except for the UHF Radio system by June 13, 2016.

Status: The milestone was not achieved. Work is ongoing, forecast to be completed on September 25, 2016. Slippage of the milestone was due to delays associated with the fire alarm, emergency alarm, PACIS, CCTV, and IAC systems.

- Milestone #17A - Completion of all work and testing through SIT of all communications systems except escalators, elevators, UHF Radio SIT and Fire Alarm combined SIT by August 29, 2016.

Status: The milestone was not achieved. Work is ongoing, forecast to be completed on September 24, 2016. Slippage of the milestone is due to delays associated with the fire alarm, emergency alarm, PACIS, CCTV, and IAC systems.

▪ **86th Street Station**

- Milestone #13 - Completion of all FIATs of the Signal System by July 18, 2016. Work includes breakdown testing of all relays, ground detectors, transfer switches and other components in the relay rooms and wayside, Signal system Wide Track Circuit Bulletin Certification and Code Signal In-service acceptance

Status: Incomplete. Contractor completed the work and submitted the track Circuit Bulletin. NYCT would not approve the Bulletin until permanent power and grounding issues at the 72nd and 96th Street Signal rooms are completed by the Station Contractor.

- Milestone #18 - Completion of all work and preliminary testing and pre-testing required to performing FIATs (L3/4) on the Communication Systems, except UHF Radio system by June 27, 2016.

Status: The milestone was not achieved. Work is ongoing, forecast to be completed on October 10, 2016. Slippage of the milestone was due to delays associated with the fire alarm, PACIS, CCTV, and IAC systems.

- Milestone #18A - Completion of all work and testing through SIT of the communications systems, except escalators, elevators, UHF SIT and fire alarm combined SIT by August 1, 2016.

Status: The milestone was not achieved. Work is ongoing, forecast to be completed on October 30, 2016. Slippage of the milestone is due to delays associated with the fire alarm, PACIS, CCTV, and IAC systems.

- **96th Street Station**

- Milestone #19 - Completion of all work and preliminary testing and pretesting required to perform FIATs (L3/4) on the Communication Systems, except for the UHF radio system by June 20, 2016.

Status: The milestone was not achieved. Work is ongoing, forecast to be completed on September 2, 2016. Slippage of the milestone was due to delays associated with the fire alarm, CCTV, and IAC systems.

- Milestone #19A - Completion of work and testing through SIT of all communication systems, except escalators, elevators, UHF SIT and fire alarm combined SIT by August 1, 2016.

Status: The milestone was not achieved. Work is ongoing, forecast to be completed on September 25, 2016. Slippage of the milestone is due to delays associated with the fire alarm, CCTV and IAC systems.

- **LAN/WAN**

- Milestone #20 - Completion of all work and testing through Final System Integrated Testing of all systems over the 72nd, 86th and 96th Street local area network and overall wide area network, such that the LAN and WAN systems are available for Final Systems Integrated Testing by the Station Contractors. Scheduled completion date is June 6, 2016.

Status: The milestone was not achieved. Work is ongoing, forecast LAN/WAN availability at the 96th, 86th, and 72nd Street Stations to be achieved on August 12, 2016, September 4, 2016 and September 15, 2016 respectively. Slippage is due to access to rooms, grounding, and water issues.

c. Quality Assurance and Quality Control (QA/QC)

Status:

During July 2016, the Second Avenue Subway Quality Management team continued to conduct Quality Meetings 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.

The following issues on the C2B, C4C, C5C, and C6 contracts were discussed by the respective SAS Quality Managers at their Quality Management Meetings:

Observations:

C2B: There are still many issues on this contract that affect Quality. These include:

- Submittals for approval were delayed, but are improving.
- Lack of supervision for many activities.
- Record drawings at 50 % completion of work have been delayed.
- Some electrical and mechanical issues are not documented and resolved.
- NCRs are not resolved within a reasonable time.

C4C: There are several issues on this contract that affect Quality. These include:

- Special Inspection reports submittals are delinquent.
- Submittals awaiting resubmission have increased.
- There are still water leaks in the incline in Entrance 2.
- There is a water leak in Signal Relay Room 3005.
- Repairs to sprayed acoustics materials over the tracks areas in the north and south ends of the platform have been delayed for more than 18 months.

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

- Submittals for approval delayed (example – waterproofing details at Ancillary #1 and Ancillary #2 at street level are pending)
- R & R submittals are delayed (currently 144)
- Lack of field supervision for all activities
- Coring at structural concrete is being done without informing the contractor’s Quality Manager.
- Special inspections for electrical and mechanical seismic installations are being delayed.
- Many punchlist items have not been completed.
- Mock up for items, e.g., wall cladding and mezzanine service carriers, are being delayed.
- The electrical subcontractor’s nonconformance reports (NCRs) are being held up for resolution.
- Record drawings at 50% completion have been delayed.
- As-built drawings are not being submitted as per milestones.
- Checklists for many work activities, e.g., electrical, mechanical, masonry, and plumbing are not submitted.
- Quality staff is not sufficient.

C6: There are several issues on this contract that affect Quality. These include:

- Lack of permanent power creating shortage of ventilation and buildup of humidity.
- Rooms have been turned over but there is a lack of complete conduit runs.
- There are housekeeping issues throughout the SAS Project.
- There is unfinished station contractor work delaying C6 work.

The following table depicts nonconformance report and daily inspection report status for each of the five (5) active SAS contracts:

Contract Package C2B	
Status:	Through July 31, 2016, a total of 168 NCRs have been issued. One Hundred Forty (140) have been closed and 28 NCRs are open. In July 2016, no new NCR’s were written and 2 were closed. None of the NCRs closed in July were for concrete that was out-of-specification. Twenty (20) of the 28 open NCRs are for concrete that was out-of-specification. A statistical concrete analysis for these 20 NCRs was prepared by the contractor in July 2016. It is anticipated that at least 15

	of these NCRs will be closed in August.
Observation:	Bi-weekly Quality Management Meetings, as suggested by the PMOC, are being held. Submittal of Daily Inspection Reports is 1½ weeks behind.
Concerns and Recommendations:	Six of the eight open non-concrete NCRs are more than six months old. Several months ago, the PMOC had recommended that the contractor establish a target date for closure of each NCR. They have done this. However, every time the NCR log is issued, the dates continue to slip. New dates have been established and all are in August 2016. Since the contractor's Quality Manager is on vacation for most of August, these dates are unrealistic.
Contract Package C3	
Status:	Through July 31, 2016, a total of 129 NCRs have been issued. One hundred twenty (120) have been closed and 9 are still open. In July 2016, no new NCR's were 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 July 31, 2016, a total of 240 NCRs have been issued. One hundred sixty-three (163) have been closed and 77 NCRs are still open. In July 2016, two (2) NCRs were written and none were closed.
Observation:	One hundred ninety-eight (198) of the 240 NCRs are for concrete that was out of specification. Both of the NCRs generated in July 2016 were for concrete. Submittal of Daily Inspection Reports is two weeks behind.
Concerns and Recommendations:	Fifty-six (56) of the remaining 77 open NCRs are for concrete that was out of specification. The contractor has prepared a statistical concrete analysis that should enable about 15 of these NCRs to be closed in August 2016.
Contract Package C5C	
Status:	Through July 31, 2016, 215 NCRs have been issued. One Hundred forty-four (144) have been closed and 71 NCRs are still open. In July 2016, 2 new NCRs were written and 12 were closed.
Observation:	Twenty-six (26) of the 71 NCRs that are open are for concrete that is out of specification. Submittal of Daily Inspection Reports is two weeks behind.
Concerns and Recommendations:	The PMOC recommended that the contractor prepare a concrete statistical analysis in July 2016 to close those NCRs that passed the 56-

	day break. The contractor’s Program Manager then directed the contractor’s Quality Manager to prepare the analysis but he did not. The PMOC also continues to recommend that the contractor establish a schedule for closing the 45 non-concrete NCRs and devote the necessary effort to resolving the issues listed in the beginning of this section.
Contract Package C6	
Status:	Through July 31, 2016, a total of 66 NCRs have been issued. Forty-nine (49) NCRs have been closed and 17 are still open. In July 2016, 3 new NCRs were written and 7 were closed.
Observation:	Six of the open concrete NCRs are for concrete that was placed beyond the 90 minute time limit. 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. A concrete statistical analysis will be prepared in August 2016 for the open concrete NCRs. Submittal of Daily Inspection Reports is current.
Concerns and Recommendations:	The PMOC has no concerns.

Concerns and Recommendations:

Discussed under each Contract Package

d. Readiness for Revenue Operation

During May 2016, the FTA initiated a review of SAS’s readiness for revenue operation. The readiness review is being conducted by the PMOC in accordance with OP 54, Readiness for Revenue Operation. This process is intended to evaluate the adequacy, soundness and timeliness of the MTACC-SAS’s Systems Integration Testing; Project System Safety and Security Validation; Pre-Revenue Operation Plan and any required work-arounds; and Management Capacity and Capability.

The PMOC commenced collection of project documents in early May 2015 and started interviewing key NYCT and SAS staff on May 24, 2016. Interviews were completed by mid-June 2016. The PMOC’s draft report for review by FTA and MTA was transmitted to FTA in mid-July 2016. On July 15, 2106, the FTA subsequently forwarded the draft report to the MTA.

Further updates on this review will be included in subsequent reports.

2.0 SCHEDULE DATA

Status:

The PMOC received updated P6 schedules for the four (4) active construction contracts on August 8, 2016. These schedules are updates of those included as part of each contract’s “Schedule Acceleration Agreement”. Each schedule has been updated through July 1, 2016. MTACC is no longer maintaining an Integrated Project Schedule (IPS). The last IPS monthly update modeled the status of the project through February 1, 2016.

Netpoint schedules for 63rd, 72nd, 86th, 96th Street Stations and the Systems Contract, with a data date on or about July 21, 2016 were also reviewed. Subsequent discussions will be based on the PMOC’s review of both schedules.

Observations:

Based on information reviewed by the PMOC, the last construction work task required before RSD is the Level 6, 30 Day Fire Alarm Test. This test is required to be performed at each station, and there are no apparent dependencies or specified order of testing. As of this update, completion of this test, and the required predecessor activities, appear to be the schedule path controlling the RSD. A summary of dates when this testing is scheduled (excerpted from the P6 schedules) is as follows:

Activity ID	Description	Constrained Finish	Float	Unconstrained Finish
CM63ST-260	Final system integration test - Fire Alarm (30 day test) 63rd St. (FSIT)	12/05/16	+26	12/05/16
CM72ST-270	Final system integration test - Fire Alarm (30 day test) 72nd St. (FSIT)	12/30/16	-21	01/21/17
CM96ST-285	Final system integration test - Fire Alarm (30 day test) 96th St. (FSIT)	11/18/16	42	11/18/16
CM86ST-730	Final system integration test - Fire Alarm (30 day test) 86th St. (FSIT)	12/08/16	-69	02/15/17

The P6 schedule uses the C6 Substantial Completion Date as a finish milestone with a specified date of 12/12/16. Predecessor activities calculate float against this constraint. Negative (-) float is the amount of time beyond the scheduled completion actually needed to complete the project or portion of the project.

The column “Unconstrained Finish” eliminates the constraint date discussed above and shows the actual calculated completion date of the Level 6 testing for each station. This table indicates that Level 6 testing at 63rd and 96th Street Stations should be completed in accordance with the acceleration agreements and should not pose a concern with respect to the start of revenue service. Completion of Level 6 testing at 72nd and 86th Street Stations is currently forecast later than MTACC’s goal of a December 30, 2016 RSD.

In the absence of an integrated schedule for the whole project, remaining schedule contingency has been evaluated for each remaining construction contract for the most optimistic and pessimistic cases identified:

	63rd St. Station	72nd St. Station	86th St. Station	96th St. Station	Pre-Revenue Test
MTACC complete (Optimistic)	12/05/16	12/30/16	12/08/16	11/18/16	09/01/16
Schedule Float (RSD=12/30/16)	25	0	22	42	120
MTACC complete (Pessimistic)	12/05/16	01/21/17	02/15/17	11/18/16	12/01/16
Schedule Float (RSD=12/30/16)	25	-22	-47	42	29
ELPEP Threshold	07/03/17	07/03/17	07/03/17	07/03/17	07/03/17
Schedule Float (RSD=07/03/17)	210	163	138	227	214
FTA RSD	02/28/18	02/28/18	02/28/18	02/28/18	02/28/18
Schedule Float (RSD=02/28/18)	450	403	378	467	454

Only the 72nd and 86th Street Stations, under the pessimistic late schedule dates, indicate a potential delay to the RSD of December 30, 2016.

C2B – 96th Street Station

- Level 5 testing of several systems, including water mist, sprinkler, escalators, and chillers is dependent on LAN/WAN availability, which is assumed to be August 7, 2016 on the C2B fragnet schedules. C6 Milestone 20 (96th Street LAN/WAN Available to Station Contractors) indicates significant schedule variance, with completion as late as September 6, 2016.
- Delays to testing of water mist, sprinkler, and dry fire standpipe systems are forecast. Completion of all life safety systems (exclusive of delay due to unavailability of LAN/WAN) is forecast to be September 27, 2016.
- Delays to Level 3/4 (FIAT) testing of axial fans and dampers (TSSM) at Ancillary #2 have occurred. Start of corresponding testing of the TSSM at Ancillary #2 appears to also be experiencing a delay. Completion of TSSM testing (exclusive of delay due to unavailability of LAN/WAN) is forecast for August 29, 2016.
- Delays to completion of hydraulic elevators are forecast. Completion of hydraulic elevators is now forecast for September 6, 2016.
- Level 3/4 testing of escalators is in progress and waiting on LAN/WAN availability in order to complete. Based on LAN/WAN availability on August 7, 2016, escalator testing should be completed on September 20, 2016.
- Remaining HVAC systems are forecast to be complete and tested by September 3, 2016.
- Fragnet schedules do not include any architectural work in the station or any development of equipment test and acceptance procedures, O & M Manuals, submittal of test results, or final station acceptance activities.

C3 – 63rd Street Station

- Notations indicate this schedule was coordinated with the C6 schedule update DD=07/22/16.
- Completion of fire alarm and life safety systems, including Inergen, water mist, sprinkler, and dry fire standpipe systems as well as elevator/escalator tie-in is forecast for September 12, 2016.
- Contract HVAC work is complete. Level 5 and 6 testing can be completed when C6 connects the BMS to the fire alarm system and all fire alarm testing is complete. Completion of HVAC testing is forecast for September 21, 2016.
- Completion of communication room cooling has been delayed by several AWOs and currently forecast for August 31, 2016.
- Completion of TSSM testing has been delayed by an AWO for a redundant network connection. Testing is currently forecast to complete on September 7, 2016.
- Elevators and escalators are essentially complete through Level 3/4 testing. Testing will be completed when the fire alarm system is operational and tied in to elevator/escalator controls. Completion is forecast for September 21, 2016.
- Architectural work included on this schedule has experienced significant delay, generally attributed to the contractor. Some of this work will require weekend G.O.s. Completion of all work is forecast for September 27, 2016.

C4C – 72nd Street Station

- Schedule indicates delay resulting in LAN/WAN availability on August 26, 2016 and fire alarm availability on October 17, 2016. No delays to testing activities are indicated as a result of these delays. Note indicates that Level 5 testing will be simulated (similar to 63rd Street).
- Delays to Level 3/4 testing of TSSM at both ancillaries are indicated. TSSM completion forecast for September 30, 2016. The PMOC questions this completion date as it appears to predate completion of the fire alarm system.
- Entrance #1 installation work is forecast for a September 30, 2016 completion, with the exception of the canopy, which will not be completed until December 20, 2016.
- HVAC installation activities are complete. Level 3/4 testing activities are underway and completion of all testing is forecast for September 30, 2016. The PMOC questions this completion date as it appears to predate completion of the fire alarm system.
- Elevator cab delays are forecast. Level 6 testing is forecast to complete on October 14, 2016 (Mezzanine, Platform, Ancillary #2, and Entrance #2). Elevators at Entrance 3 are forecast to be complete on November 14, 2016. The PMOC questions these completion dates as they have no logical connection to fire alarm completion.
- Escalators 1, 3, 5 and 12 have been delayed due to installation of water mist and smoke detectors. Level 6 testing for elevators is forecast to be complete between

October 14, 2016 and November 16, 2016. The PMOC questions these completion dates as they have no logical connection to fire alarm completion.

- Fire sprinkler and Inergen systems have been delayed by the addition of work and systems coordination. Completion of FSIT is forecast for September 30, 2016.

C5C – 86th Street Station

- Schedule includes LAN Available on August 14, 2016 and WAN Available on September 4, 2016. Note states that C5C testing will utilize a temporary LAN, presumably until August 14, 2016.
- Fire alarm installation and Level 3/4 testing is forecast to be complete on October 31, 2016.
- Hydraulic and traction elevator testing has been delayed for review and approval of the Level 5 test plan. Level 6 testing is forecast to be complete on October 25, 2016. The PMOC questions these completion dates as they have no logical connection to fire alarm completion.
- Delays to life safety systems are forecast for a variety of reasons. Completion of Level 5 or Level 6 testing is forecast for November 4, 2016. The PMOC questions completion dates for sprinklers, water mist and dry fire standpipe as no logical connection to the completion of the fire alarm system is indicated.
- Escalator installation is forecast for completion by July 29, 2016. Subsequent testing may be delayed by the review and approval of the Level 5 test plan. Testing through Level 5B is forecast to be complete on October 5, 2016. Completion of the 48-hour test (Level 6) appears to be the only escalator testing constrained by the completion of fire alarm installation and testing. Level 6 escalator testing is forecast to be complete on November 21, 2016.
- TSSM testing has been delayed by air balancing and approval of Level 5 test procedures. Level 6 testing and turnover is forecast for completion on October 12, 2016 which is approximately two weeks before the forecast completion of the fire alarm system.
- Completion of facility power feeders and distribution is forecast for early August 2016.
- Ancillary #2 architectural construction is forecast to be complete by mid-October 2016. Schedule forecast does not indicate the delayed completion of this work affecting any M/E/P systems installation or testing.
- Turnover of HVAC systems is forecast for October 25, 2016, approximately one week before completion of the fire alarm system. Minor delays involving approval of Level 5 test procedures have been incurred.
- The 86th Street Revenue Service Summary Schedule indicates delay in starting Level 5 testing for vertical transportation, HVAC, fire and life safety, and TSSM systems until September 26, 2016. While not explicitly shown, completion of fire alarm and WAN appear responsible for these delays. Level 5 testing for these systems is forecast to be complete on October 30, 2016, resulting in a forecast start of NYCT pre-revenue service activities until November 1, 2016.

C6 – Systems:

- Traction power work continues at 72nd, 86th, and 96th Street Stations with forecast completion of this system on October 11, 2016.
- Signal system is forecast to be completed on September 27, 2016.
- Track work is complete; resolution of envelope encroachments is the only outstanding item, forecast for completion by August 28, 2016.
- All stations are experiencing delays involving the installation and testing of communications systems.
- This schedule forecasts the completion of all LAN/WAN installation by September 8, 2016.

Milestone Summary: As a part of the “Schedule Acceleration Agreements”, MTACC established revised milestones with each contractor for the work involved. These milestones are summarized and updated in the following table:

72nd Street					
MS	Description	Accel. Agreement	Update (05/01/16)	Update (06/01/16)	Update (07/01/16)
15	Contract C26009 Access. Turn over communication room 5012 and lube oil room 2006.	03/15/16	03/15/16A	03/15/16A	03/15/16A
16	Summit all preliminary O&M manuals, and all procedures for FIAT, SIST and FIST tests.	04/30/16	04/30/16A	04/30/16A	04/30/16A
17	Complete all work required for Con Edison to energize the Facility Power substations including.	04/30/16	04/30/16A	04/30/16A	04/30/16A
18	Complete all work and testing required for permanent power distribution.	05/31/16	06/01/16	05/31/16A	05/31/16A
19	Complete all installations, controls, pretests, finishes and environmental controls for the TSSM rooms at Ancillary #2 to start FIAT (Levels 3/4) testing of the TSSM system at Ancillary #2.	05/31/16	05/30/16	05/31/16A	05/31/16A
20	Complete all installations, controls, pretests, finishes and environmental controls for the TSSM rooms at Ancillary #1 to start FIAT (Levels 3/4) testing.	06/15/16	06/16/16	06/16/16	06/18/16A
21	Complete all installations and pretests for the HVAC rooms to start FIAT (Levels 3/4) testing (Ancillary #2)	05/31/16	05/31/16	06/10/16	06/10/16A
22	Complete all installations and pretests for the HVAC rooms to start FIAT (Levels 3/4) testing (Ancillary #1)	06/15/16	06/15/16	06/15/16	06/18/16A
23	Complete all work and pretests required to start FIAT (Levels 3/4) on the Fire and Life Safety systems.	07/01/16	05/31/16	05/31/16A	05/31/16A

72nd Street					
MS	Description	Accel. Agreement	Update (05/01/16)	Update (06/01/16)	Update (07/01/16)
24	Complete all work and pretests required to start FIAT (Levels 3/4) on the Water Mist Fire and Life Safety systems.	07/01/16	07/01/16	07/01/16	07/15/16A
25	Complete all work and testing through FSIT (Levels 5a/b), including 2 weeks dedicated to performing FSIT over the WAN in coordination with the C26009 Contractor (Level 5b).	09/30/16	09/30/16	09/30/16	10/30/16
26	Complete all work and testing through FSIT (Levels 5a/b) for Escalators at Entrance #1 and Elevators at Entrance #3.	11/01/16	11/01/16	11/01/15	11/30/16

86th Street					
MS	Description	Accel. Agreement	Update (04/01/16)	Update (05/01/16)	Update (07/01/16)
15	Complete all work required for Con Edison to complete energization to provide permanent Facility Power.	04/30/16	05/18/16	05/13/16A	05/13/16A
16	Complete Installation and Preparation for Level 3/4 Testing of HVAC Systems	05/31/16	05/31/16	06/17/16	08/15/16
17	Complete Installation and Preparation for Level 3/4 Testing of TSSM	05/25/16	05/31/16	06/17/16	06/17/16A
18	Complete Installation and Preparation for Level 3/4 Testing of Fire And Life Safety Systems	05/26/16	06/02/16	06/17/16	06/17/16A
19	Complete all installation and testing – elevators and escalators	09/01/16	08/30/16	06/17/16	09/23/16
20	Complete all work and testing through FSIT, including 2 weeks dedicated to performing FSIT via WAN in coordination with the C26009 (Level 5b).	08/31/16	10/9/16	10/9/16	10/30/16

96th Street					
MS	Description	Accel. Agreement	Update (04/01/16)	Update (05/01/16)	Update (07/01/16)
12	Complete all Work required for Con Edison to energize the South Facility Power Substation at 96th Street.	02/29/16	02/29/16A	02/29/16A	02/29/16A
13	Provide permanent power to the communication rooms for Milestone #6, the signal rooms for Milestone #7, the traction power rooms for Milestone #8, the station service center for Milestone #9 and the other rooms for Milestone #10.	03/31/16	04/30/16A	04/30/16A	04/30/16A

96th Street					
MS	Description	Accel. Agreement	Update (04/01/16)	Update (05/01/16)	Update (07/01/16)
14	Complete Preparations and Installation of Electrical and Mechanical Systems to Start FIAT (Level 3,4) Testing	05/31/16	06/08/16	06/30/16	06/30/16A
15	Complete all work required to commence FIAT (Level 3,4) on the TSSM system	05/31/16	05/31/16	06/28/16	06/17/16A
16	Complete all work required to commence all FIAT (Level 3,4) on the Fire and Life Safety systems	05/31/16	05/31/16	06/24/16	06/30/16A
17	Complete Level 5a Testing for HVAC, and Fire and Life Safety	07/31/16	07/27/16	08/26/16	09/30/16
18	Complete all work required to commence FIAT on all escalators and elevators	07/31/16	08/10/16	08/29/16	08/24/16
19	Complete Level 5b Testing for All Systems; Complete ALL Work	08/31/16	09/08/16	10/05/16	09/30/16

Systems					
MS	Description	Accel. Agreement	Update (04/01/16)	Update (05/01/16)	Update (07/01/16)
6	72nd Street: Complete all installation and testing required for ConEd to inspect and start trip-checks.	05/02/16	03/14/16A	03/14/16A	03/14/16A
7	96th Street: Complete all installation and testing required for ConEd to inspect and start trip-checks.	04/04/16	03/22/16A	03/22/16A	03/22/16A
8	86th Street: Complete all installation and testing required for ConEd to inspect and start trip-checks.	05/09/16	06/03/16	06/22/16	08/30/16
9	Complete All Traction Power Installation and FIAT (Level 3/4) testing	06/27/16	07/06/16	06/30/16(N)	08/30/16
10	Complete installation of Trackwork and the Third Rail for Tracks S1 & S2 including submittal of complete scans demonstrating a contractually compliant installation.	05/30/16	06/09/16	08/21/16	08/30/16
11	Complete all Field Installation Acceptance Tests (FIAT) of the Signal System at 72nd Street.	05/23/16	05/15/16	06/29/16	07/11/16A
12	Complete all Field Installation Acceptance Tests (FIAT) of the Signal System at 96th Street.	05/23/16	06/13/16	08/08/16	07/11/16A
13	Complete all Field Installation Acceptance Tests (FIAT) of the Signal System at 86th Street.	07/18/16	08/08/16	04/20/16A	07/11/16A
14	Complete all Field Installation Acceptance Tests (FIAT) of the Signal System at 63rd Street and existing tie-in rooms at various locations.	05/30/16	05/21/16	05/30/16A	07/11/16A

Systems					
MS	Description	Accel. Agreement	Update (04/01/16)	Update (05/01/16)	Update (07/01/16)
15	Complete all remaining signal system work and testing required	05/23/16	05/29/16	04/20/16A	07/11/16A
16	63rd Comms. Systems: Complete all work and pre-testing required to perform Field Installation Acceptance Tests	05/31/16	07/02/16	08/16/16(N) 07/28/16(P)	09/30/16
17	72nd Comms. Systems: Complete all work and pre-testing required to perform Field Installation Acceptance Tests	06/13/16	07/13/16	07/19/16(N) 08/02/16(P)	09/30/16
18	86th Comms. Systems: Complete all work and pre-testing required to perform Field Installation Acceptance Tests	06/27/16	07/22/16	08/05/16(N) 08/18/16(P)	09/30/16
19	96th Comms. Systems: Complete all work and pre-testing required to perform Field Installation Acceptance Tests	06/20/16	07/21/16	08/04/16(N) 08/05/16(P)	09/30/16
20	The Contractor shall complete all work and testing through Final Systems Integrated Testing of all systems over the Local Area Network (LAN) and overall Wide Area Network (WAN), such that the LAN/ WAN is available for Final Systems Integrated Testing by the Station Contractors.	06/06/16	06/27/16	08/05/16(N) 07/15/16(P)	09/06/16
21	Complete all other work required to start Pre-Revenue Service Training	09/30/16	10/28/16	10/11/16	10/30/16

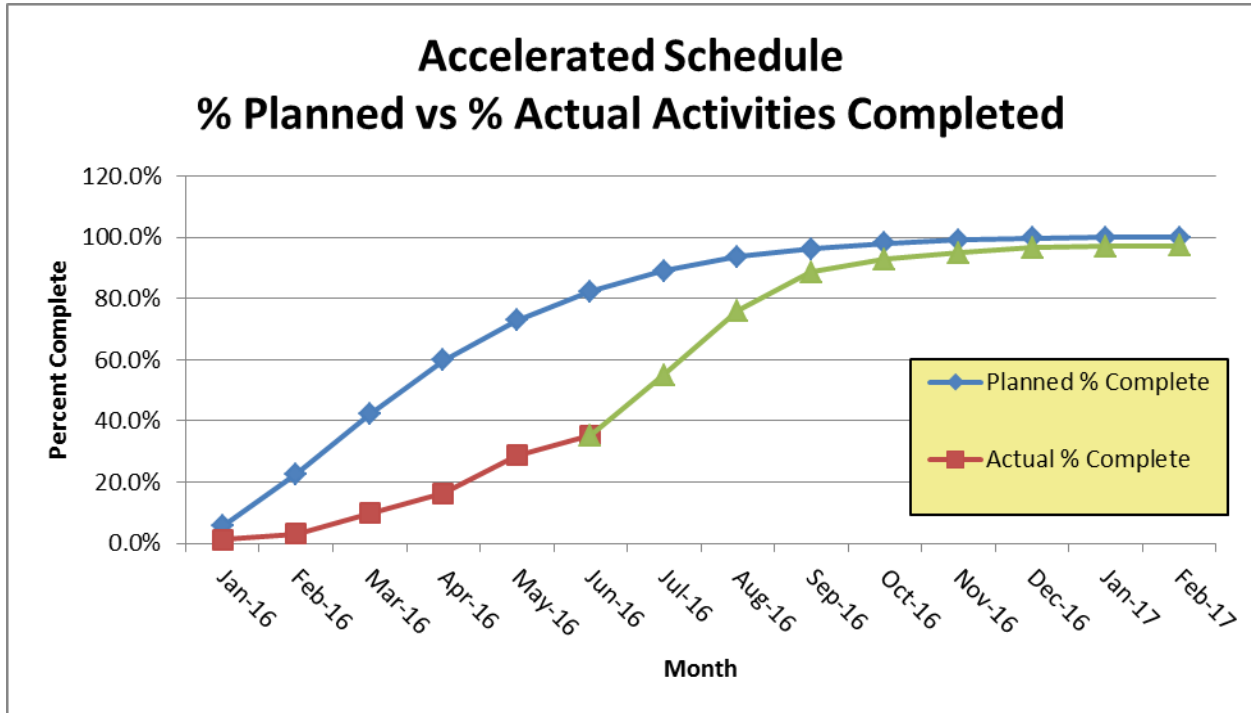
Activity Progress Monitoring:

Progress evaluation is a comparison of actual achievement versus planned achievement through a given time period. Using the acceleration schedules incorporated with each of the acceleration agreements, the PMOC has tabulated the number of activities forecast to be completed per month. Updated schedule provide actual activities achieved per month and revised forecasts for incomplete activities. Activity information is expressed in percent complete to account for incidental activity additions and deletions.

Tabular and graphic summaries of this information for data date = 07/01/16 follow:

Date	Planned % Complete	Actual % Complete	Forecast %
Jan-16	5.7%	1.3%	
Feb-16	22.7%	3.1%	
Mar-16	42.2%	9.9%	
Apr-16	59.9%	16.5%	
May-16	72.9%	28.7%	
Jun-16	82.2%	35.3%	
Jul-16	89.0%		54.9%
Aug-16	93.6%		76.0%
Sep-16	96.2%		88.7%

Date	Planned % Complete	Actual % Complete	Forecast %
Oct-16	97.9%		92.8%
Nov-16	99.0%		94.9%
Dec-16	99.8%		96.6%
Jan-17	100.0%		96.9%
Feb-17	100.0%		97.1%



This basic analysis indicates that, according to the updated contractor schedules, significantly fewer activities have been achieved by the four “accelerated” construction contracts than planned. The variance between work scheduled and work completed has increased each month. In order to recover this schedule, over 54% of all activities scheduled would have to be completed during the month of July 2016.

“Earned Value” Analysis:

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 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 the variance in planned vs. actual schedule performance. January 2016 is the latest month for which this information is available.

Value Earned June-16							
	Contract \$ (x100K)	Plan \$ Earned	Actual \$ Earned	Plan Month for Actual \$ Earned	Months Ahead (+) or Behind (-)	Const Comp Date	Est. Const. Complete Date
C2B	\$324	\$324	\$303	Jun-15	-12.2	9/1/16	1/1/17
C3	\$176	\$176	\$172	Oct-13	-32.5	9/1/16	12/22/16
C4C	\$258	\$256	\$238	Jul-15	-11.7	9/1/16	12/27/16
C5C	\$208	\$208	\$182	Nov-15	-7.1	9/1/16	11/11/16
C6	\$261	\$259	\$230	Oct-15	-8.2	9/1/16	11/22/16
TOTAL	\$1,227	\$1,223	\$1,125	Jul-15	-11.3	9/1/16	12/22/16

Cost Variance = Plan \$ Earned – Actual \$ Earned

$$= \$1,223\text{M} - \$1,125\text{M} = \$98\text{M}$$

This summary level analysis suggests the following:

1. Had the work progressed according to baseline “plans”, an additional \$98M worth of original contract work would have been performed on or before July 31, 2016.
2. MTACC’s acceleration plan requires that \$98M of baseline construction be completed over the next month. This does not include change order work or the value of the acceleration agreements.
3. Based on the data evaluated for the period ending July 31, 2016, only the C6 contract progressed at a satisfactory rate.
4. Based on the assumption that NYCT will require a minimum 2 months for pre-revenue testing after all operating systems are “substantially complete”, this analysis indicates an RSD 1st Quarter 2017.

ELPEP/SMP Compliance: MTACC is no longer using the IPS “master schedule” approach to manage time on the project. The “Netpoint fragnet” system being used provides individual summarized schedule fragnets for select work on four remaining construction contracts. This approach is not contained within the SAS Schedule Management Plan. It is the opinion of the PMOC that MTACC is not in compliance with its schedule management plan.

Concerns and Recommendations:

Review of schedule milestones developed to monitor the progress of the work indicates minor slippage at 72nd Street, 86th Street and 96th Street Stations. Significant slippage communications work performed by the Systems Contractor is noted.

Evaluation of the “most critical path” suggests all necessary systems work will be completed at 63rd Street and 96th Street Stations, but there is a significant risk that all work will not be complete at 72nd Street and 86th Street Stations.

PMOC's assessment of schedule progress based upon activities completed indicates a continuing negative variance between plan and actual progress.

The earned schedule analysis indicates that limited progress was made by the stations contractors while only the systems contractor continued on pace to achieve the goals of the accelerated schedule.

The PMOC and MTACC reviewed Volume 2 of the Facilities System Test Program wherein it identifies a System Acceptance Phase (SAP) after substantial completion (completion of FAT, FIAT, SIST and FSIT). This testing period has not been identified on previous project schedules. MTACC acknowledged this apparent inconsistency and is working to clarify the relevant procedures and documents.

3.0 COST DATA

Based upon financial expenditures reported by the MTACC through July 31, 2016, SAS Phase 1 is approximately 90.9% complete. The completion status of the individual construction contracts through July 31, 2016, also based upon reported expenditures through that date, is as follows:

- C26002 (Tunnel Boring) – 100.0%;
- C26005 (96th Street Station) – 100.0%;
- C26010 (96th Street Station) – 99.6%;
- C26013 (86th Street Station) – 100%;
- C26008 (86th Street Station) – 99.6%;
- C26012 (86th Street Station) – 96.8%;
- C26006 (63rd Street Station) – 97.9%;
- C26007 (72nd Street Station) – 99.9%;
- C26011 (72nd Street Station) – 93.37% ; and,
- C26009 (Systems) – 88.8%.

Aggregate Construction percentage complete:

- 100% of all construction has been bid;
- 100% of all construction is under contract;
- 96.1% of base contract construction (excluding AWOs) is complete; and,
- 96.4% of all construction is complete.

Based upon cost data received from the MTACC for the period through July 31, 2016:

- Value of construction reported in place this period = \$18,563,332;
- Estimated value of construction remaining = \$105,277,640 (base contract only);
- Target construction completion = September 1, 2016;
- Number of months remaining = 1.0; and,
- Avg. required construction expenditure to achieve target date = \$96,983,038/MO.

Soft Cost expenditures (not including real estate, OCIP, etc.) reported this period by the MTACC totaled \$7.0M; expenditures were spread through all of the project management and technical support categories. At forecast expenditure levels, the available budget should be sufficient through 2016. Significant expenditure beyond 2016, however, may require the transfer of additional funds from contingency. Any significant construction delays beyond December 2016 may also require additional contingency transfer.

Cost Growth: The value of AWOs reported by the MTACC/NYCT in July 2016 is summarized as follows:

	<u>Executed AWOs</u>	<u>AWO Exposure</u>
Jul-16	\$294,717,166	\$362,996,541
Jun-16	\$292,744,121	\$358,992,663
Δ	\$1,973,045	\$4,003,878
Δ	0.67%	1.12%

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

Pkg.	AWO Exposure			
	Jul-16	Jun-16	Period Δ	Changes this Period
Complete 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	\$61,511,195	\$61,471,762	\$39,433	Net increase is based on revised estimates for AWO #s 137, 218, and 229, and initial estimates for AWO #s 247, 250, 251, 253, and 254.
C3	\$41,582,390	\$40,632,942	\$949,448	Net increase is based on revised estimates for AWO #s 223, 270, 276, 287, 294, 296, 303, 305, 306, 307, 308, 309, 310, and 313, and initial estimates for AWO #s 316 through 323.
C4B	\$1,325,639	\$1,325,639	\$0	No change reported this period.
C4C	\$67,516,366	\$68,204,132	-\$687,766	Net decrease is based on revised estimates for AWO #s 80, 159, 231, 235, 245, 246, 250, and 251, and initial estimates for AWO #s 255, and 263.
C5B	\$26,280,122	\$26,280,122	\$0	No change reported this period.
C5C	\$35,317,144	\$31,614,934	\$3,702,210	Net increase is based on revised estimates for AWO #s 4, 102, 158, 161, 162, and 163, and initial estimates for AWO #s 121, 128, 141, 152, 159, 166, 172, 173, 174, 175, 177, 179, 180, 181, 186, and 196.
C6	\$34,236,158	\$34,235,605	\$553	Net increase is based on revised estimates for AWO #s 177, 219, and an initial estimate for AWO # 220.
TOTAL	\$362,996,541	\$358,992,663	\$4,003,878	

The changes in Executed AWO Value are summarized as follows:

Pkg.	Executed AWOs			
	Jul-16	Jun-16	Period Δ	Changes this Period
Complete Packages	\$47,612,118	\$47,612,118	\$0	Final values for Packages C1 and C5A as reported by MTACC.
C2A	\$47,612,118	\$47,612,118	\$0	No change reported this period.
C2B	\$56,865,650	\$56,335,250	\$530,400	Increase is based on execution of AWO #s 121, 218, 242, and 254.
C3	\$28,980,388	\$28,815,088	\$165,300	Increase is based on execution of AWO #s 275, 283, and 301.
C4B	\$1,325,639	\$1,325,639	\$0	No change reported this period.
C4C	\$36,806,504	\$36,337,584	\$468,920	Increase is based on execution of AWO #s 7, 219, 228, 246, and 260.
C5B	\$21,586,813	\$21,586,813	\$0	No change reported this period.
C5C	\$28,381,526	\$27,597,426	\$784,100	Increase is based on execution of AWO #s 17, 30, 46, 47, 52, 84, 124, 133, 153, 164, 170, and 178.
C6	\$25,546,410	\$25,522,085	\$24,325	Increase is based on execution of AWO #s 177, 219, and 220.
TOTAL	\$294,717,166	\$292,744,121	\$1,973,045	

A summary of AWOs initiated this period includes the following:

Contract	Description
C2B	A total of six (6) AWOs were added this period. Cursory inspection indicates these AWOs appear necessary to support start of revenue operations. MTACC has not published an estimated value for these AWOs.
C3	A total of seven (7) AWOs were added this period. Cursory inspection indicates these AWOs appear necessary to support start of revenue operations. Preliminary estimate of the value of this work is less than \$0.5 million.
C4C	A total of six (6) AWOs were added this period. Cursory inspection indicates all AWOs appear necessary to support start of revenue operations. MTACC has not published an estimated value for these AWOs.
C5C	A total of ten (10) AWOs were added this period. Cursory inspection indicates nine (9) of these AWOs appear necessary to support start of revenue operations. One AWO may be questioned. MTACC has not published an estimated value for these AWOs.

Contract	Description
C6	A total of six (6) AWOs were added this period. Cursory inspection indicates these AWOs appear necessary to support start of revenue operations. MTACC has not published an estimated value for these AWOs.

As of July 31, 2016, the status of Additional Work Orders (AWOs) for each construction contract on Phase 1 of the Second Avenue Subway Project is summarized as follows:

Contract / (Package)	% Complete	Award	Exposure		Executed	
			\$	% of Award	\$	% of Award
C26002 (1)	100.00%	\$337,025,000	\$41,086,647	12.19%	\$41,086,647	12.19%
C26005 (2A)	100.00%	\$325,000,000	\$47,615,409	14.65%	\$47,612,118	14.65%
C26010 (2B)	85.04%	\$324,600,000	\$61,511,195	18.95%	\$56,865,650	17.52%
C26006 (3)	94.71%	\$176,450,000	\$41,582,390	23.57%	\$28,980,388	16.42%
C26007 (4B)	99.93%	\$447,180,260	\$1,325,639	0.30%	\$1,325,639	0.30%
C26011 (4C)	73.36%	\$258,353,000	\$67,516,366	26.13%	\$36,806,504	14.25%
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	\$35,317,144	16.95%	\$28,381,526	13.62%
C26009(6)	69.51%	\$261,900,000	\$34,236,158	13.07%	\$25,546,410	9.75%
TOTAL TO DATE		\$2,674,814,299	\$362,996,541	13.57%	\$294,717,166	11.02%

To date, \$2,569,536,659 (96.1%) worth of all base contract construction work has been completed. As a percentage of work completed, the AWO exposure for these contracts is 13.6% and the executed AWO percentage is 11.025%.

The PMOC notes that total AWOs currently exceed the original AWO budget. The PMOC also notes that exposure values are not included in a significant number of logged AWOs. Based on current AWO trends, the final AWO value is estimated at approximately \$340 million. MTACC maintains an AWO forecast at completion that includes input from its Risk Registers. The MTACC AWO EAC Forecast through June 2016, is \$371,530,583. This value is somewhat greater than the PMOC's AWO forecast and will be used as part of the overall contingency/EAC analysis.

Cost Contingency: Based upon the MTACC Current Working Budget, expenditures as of May 30, 2016, reported by the MTACC and the current AWO Exposure analyses, the PMOC has developed the following contingency analysis:

<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	\$1,199,236,765	\$1,199,236,765
Soft Cost Forecast to Complete	\$177,418,000	\$177,418,000
Add'l Soft Cost - Schedule Acceleration (Est.)		\$10,000,000
AWO	\$294,717,166	\$371,530,583
Total Contingency	\$104,813,770	\$18,000,353
Reserved Contingency	\$104,813,770	\$18,000,353

Notes:

- (1) AWO Exposure @ Completion incorporates MTACC's latest "risk-informed" forecast through June 2016
- (2) Total Contingency = Reserved Contingency = total budget balance after forecast expenditures;
- (3) Minimum Available Contingency required by ELPEP is approximately \$45,000,000 (100% Construction Bid, 85% Construction Complete).
- (4) Forecast soft costs to support MTACC's schedule acceleration have not been included in the CWB. Preliminary estimate of these costs reduced to \$10M this period.

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

4.0 RISK MANAGEMENT

Status

The major risk challenging the SAS Project Team at this time is schedule; senior MTA management has advised that the current goal for construction completion and the start of Revenue Service is December 30, 2016. Secondary risk involves the possibility that additional schedule acceleration (or delay mitigation) costs could threaten the completion of the project within MTACC’s Current Working Budget of \$4.451B.

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.

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.	The accelerated schedules for four (4) construction contracts have been fully implemented and the work is in progress.
2.	Design and scope changes requested by 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.	Based on the number and nature of AWOs initiated this period, MTACC continues to manage and mitigate this risk. That said, the number of AWOs initiated has been significant and delays involving several major systems have been claimed. This risk remains a concern.
3.	Availability of NYCT staff to support testing, commissioning, and final acceptance of work performed by SAS contractors	Additional NYCT staff to support testing and acceptance of the work have been and will be made available to support project needs. Management of this risk appears to have been successful to date.
4.	MTA code compliance reviews. Past experience suggests that risks involve delayed inspections, unrealistic code interpretation, and disregard for project operational goals.	<p>The Code compliance staff has been supplemented via consultant and inspections are ongoing. Thousands of “observations” have been recorded in a database available to MTA and contractor personnel. Contractors have raised several complaints regarding this system. MTACC needs to make sure this work is coordinated with the ongoing CM activities and that “observations” reference contract requirements or specific code sections.</p> <p>Code compliance inspections have progressed and approximately 75% of all rooms have been inspected. However, certain elements of the code compliance inspection process (specifically ADA) show minimal progress. MTACC explained this is because ADA elements (i.e. handrails) are still being installed at all stations.</p>

Management and Organizational Risks		
	Risk	Status
5.	MTACC's ability to manage the change order process in a timely manner to avoid contractor delay.	Additional personnel have been assigned to each active contract to expedite and support the management of technical risk and any associated contract modifications. To date, management of this risk has been successful.
6.	NYCT's ability to conduct its pre-revenue familiarization and testing activities within the time period provided by MTACC.	<ul style="list-style-type: none"> • MTACC has stated that NYCT is being provided 90 days within which to complete 60 days of work. The PMOC understands NYCT does not concur. • The PMOC has learned that NYCT does not have a defined schedule, flow chart or any other tool with which to plan and monitor its pre-revenue activities. • Coordination of NYCT activities with the increasing volume of construction still in progress is becoming a concern.

Technical and Coordination Risks		
	Risk	Status
1.	Critical communication systems: fire alarm system, police radio installation, LAN/WAN installation, and startup at all stations.	<p>Communication system installation by the C6 contractor has been delayed due to failure of station contractors to install conduit for these systems. MTACC is attempting to mitigate by directing the C6 Contractor to install the conduits.</p> <p>Delays to Level 5 testing are indicated in all station schedules, based on an assumed LAN/WAN availability date of August 7, 2016.</p>
2.	Network (LAN/WAN)	<p>The maximum allowable length for CAT 6 Ethernet cable is 300 LF. Runs exceeding 300 LF have been identified in all SAS stations. Resolution of this problem is fundamental to complete LAN/WAN function. Equipment necessary to correct the issue is not forecast to arrive on site until late September/early October 2016.</p> <p>Testing of equipment and systems is likely to be impacted until this is resolved. Mitigation efforts may involve simulated testing.</p>
3.	Permanent facility power – all stations	Work has been completed at all stations to the extent that testing of equipment and systems can proceed.
4.	Traction Power – all stations	Completion of all work (at 72nd Street Station) is forecast for October 6, 2016.
5.	Installation, testing, commissioning, and acceptance of elevators and escalators.	Forecast Level 6 (24 HR test) completion dates: C2B – September 20, 2016

Technical and Coordination Risks		
Risk		Status
		C3 – September 21, 2016 C4C – November 1, 2016 C5C – October 25, 2016
6.	Watermist system.	Forecast Level 5 test completion dates: C2B – September 16, 2016 C3 – August 10, 2016 C4C – October 17, 2016 C5C – October 30, 2016
7.	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.	Delays to development of Level 5 test procedures are identified in several station schedules. To date, none of these delays have been “critical” to station or project completion.

Testing and commissioning of mechanical and electrical systems will be the major focus of the work effort over the upcoming months. The following table summarizes the SAS Project Team’s progress during June and July 2016 in developing test procedures and acceptance criteria necessary for the performance of the actual equipment testing and acceptance.

		Level 3/4 (FIAT)			Level 5 (FIST)			Level 6 (FSIT/SIT)		
		Jun-16	Jul-16	Δ	Jun-16	Jul-16	Δ	Jun-16	Jul-16	Δ
63rd Street	Required	65	65	0	30	30	0	9	9	0
	Submitted	65	65	0	28	28	0	9	9	0
	Approved	65	65	0	27	27	0	8	8	0
	% Complete	100%			90%			89%		
72nd Street	Required	55	55	0	26	26	0	13	13	0
	Submitted	52	54	2	7	7	0	7	7	0
	Approved	50	52	2	6	7	1	6	7	1
	% Complete	95%			27%			54%		
86th Street	Required	62	62	0	14	14	0	9	9	0
	Submitted	56	56	0	8	14	6	1	1	0
	Approved	23	23	0	0	0	0	0	0	0
	% Complete	37%			0%			0%		
96th Street	Required	61	61	0	9	9	0	8	8	0
	Submitted	58	61	3	7	9	2	0	0	0
	Approved	55	58	3	7	7	0	0	0	0
	% Complete	95%			78%			0%		

This tabulation raises the following concerns:

- Except for 86th Street, development and approval of Level 3/4 test procedures appears satisfactory.
- Development and approval of Level 5 & 6 procedures was very limited during July 2016.

Conclusions

Significant risks remain for both the successful execution of MTACC's accelerated construction schedule as well as overall achievement of Revenue Service on December 30, 2016. The PMOC is concerned over the apparent problems in developing system-level tests (Level 5 & 6), particularly at 72nd and 86th Street Stations.

5.0 ELPEP

The most recent ELPEP Quarterly Review Meeting was held on March 3, 2016. The next ELPEP Quarterly Review Meeting with MTACC, FTA-RII, SAS, ESA, and the PMOC had been scheduled for June 16, 2016 but was postponed. 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 schedule management process is ELPEP compliant. The PMOC does not concur. The PMOC notes the ELPEP Conformance/Compliance checklist indicates the IPS is updated on a monthly basis. As noted at the March, April, May, and June 2016 Cost & Schedule Meetings, the SAS Project Team is no longer maintaining the IPS. Refer to Section 2.0 of this report for further discussion.
- **Cost Management Plan (CMP):** The SAS FFGA was amended in March 2015. The PMOC has requested MTACC to update its CWB to reflect the adjusted value. To date, MTACC has declined to do so. MTACC's position is that the SAS cost management process is ELPEP compliant.
- **Risk Mitigation Capacity Plan (RMCP) and Risk Management Plan (RMP):** MTACC's position is that the SAS management processes remain ELPEP compliant.

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

6.0 SAFETY AND SECURITY

Each construction contractor continued implementation of the Safety Requirements as specified in Section 01 11 50 of the General Requirements.

As of June 30, 2016, a total of 13,461,818 construction hours have been logged on the project with 103 lost time and 183 recordable incidents documented. The total hours and incidents equates to a Lost Time Rate (LTR) of 1.53 and a Recordable Rate (REC) of 4.25. The LTR is below and the REC is above the US Bureau of Labor Statistics (BLS) national rates (Heavy & Civil construction) of 1.8 and 3.2 respectively. Although the REC is above the BLS national rate, it has been trending downward over the last six months.

Safety and Security Certification: Safety and Security Certification Requirements are specified in Section 01 77 12 of the General Requirements for each station and system contract. The certifiable elements of the SAS project have been identified and the subsequent breakdown of the certifiable elements into a list of certifiable items (CIL) has been completed. Technical Working Group (TWG) meetings are ongoing with each station contractor and the system contractor to review the test status of the certifiable items. Documentation supporting verification (Body of Evidences) of a certifiable item is being accumulated and entered into the database. Status meetings are held quarterly with the FTA and the PMOC in order to provide updates. Status meetings are held monthly with the PMOC in attendance and the FTA is briefed quarterly.

7.0 ISSUES AND RECOMMENDATIONS

Schedule Acceleration Initiative: MTACC is clearly advancing the final elements of SAS construction and testing at a faster rate than would otherwise have been achieved through its schedule acceleration effort. However, all the work is not advancing at the same rate, and some problem issues are evident.

- **Schedule:** Analysis of schedule data presented by MTACC indicates schedule slippage in select areas, specifically communications system installation and equipment installation, and system (Levels 3, 4 and 5) testing. At this time in the project, options and work-arounds are limited. Significant delay to the proposed acceleration plan appears likely; however, the ultimate impact on RSD is not known at this time.
- **Contractor Coordination:** This issue was not addressed in the acceleration agreements or accompanying schedule milestone commitments. Delayed room turnover and delayed conduit installation by station contractors are two examples of delays encountered by the Systems Contractor that appear to have had a material impact on its schedule progress.
- **Technical Issues:** MTACC has adhered to its commitment to limit AWOs to those necessary issues involving operations or revenue service. Nevertheless, the number of AWOs initiated since February 2016 has been quite significant. Certain systematic design flaws have become apparent. The recent identification of a layout flaw (length restriction) in the CAT 6 Ethernet cable may significantly impact the project schedule.
- **Compliance Inspections:** MTACC committed to expedite this process and has made significant progress in doing so. Progress has been limited in certain areas (specifically ADA inspections) due to the volume of incomplete work. These inspections should be expedited to the extent possible.
- **Non-Systems Work Completion:** Section 1 of this Report includes a summary of work required at 63rd Street Station to allow a partial opening. The PMOC notes the majority of tasks required for opening are non-systems based general construction activities. The PMOC has previously noted that the progress of the non-Systems work must also be managed to ensure the stations are ready to open when operating systems are available.
- **Systems Testing:** In general, PMOC observations and discussions indicate MTACC is executing the acceptance testing phase of the project in a diligent and capable manner. However, some testing delays (Level 3/4) and delays to developing test procedures (Level 5) have been noted.

APPENDIX A – ACRONYMS

ARRA	American Recovery and Reinvestment Act
AWO	Additional Work Orders
BLS	Bureau of Labor Statistics
CBH	Circuit Breaker House
CCM	Consultant Construction Manager
CD	Calendar Days
CIL	Certifiable Items List
CMP	Cost Management Plan
CSSR	Contact Status Summary Report
CPRB	Capital Program Review Board
CWB	Current Working Budget
CY	Cubic Yards
DCB	Detailed Cost Breakdown
EAC	Estimate at Completion
ELPEP	Enterprise Level Project Execution Plan
FIAT	Field Installation Acceptance Test
FFGA	Full Funding Grant Agreement
FSIT	Final Systems Integrated Testing
FSTP	Facilities System Integrated Testing
FTA	Federal Transit Administration
GO	General Outage
IPS	Integrated Project Schedule
LAN	Local Area Network
LTR	Lost Time Rate
MO	Month
MPT	Maintenance and Protection of Traffic
MTA	Metropolitan Transportation Authority
MTACC	Metropolitan Transportation Authority – Capital Construction
N/A	Not Applicable
NYCT	New York City Transit
NYSPTSB	New York State Public Transportation Safety Board

OSS	NYCT Office of System Safety
PEP	Project Execution Plan
PMOC	Project Management Oversight Contractor (Urban Engineers)
PMP	Project Management Plan
PQM	Project Quality Manual
QA	Quality Assurance
RAMP	Real Estate Acquisition Management Plan
REC	Recordable Rate
RMCP	Risk Mitigation Capacity Plan
RMP	Risk Management Plan
ROD	Revenue Operations Date
ROW	Right of Way
RSD	Revenue Service Date
SAS	Second Avenue Subway
SCC	Standard Cost Category
SIST	Simulated Integrated System Testing
SMP	Schedule Management Plan
SSCC	Safety and Security Certification Committee
SSOA	State Safety Oversight Agency
SSPP	System Safety Program Plan
TBD	To Be Determined
TCC	Technical Capacity and Capability
TPSS	Traction Power Substation
TWG	Technical Working Group
WAN	Wide Area Network (WAN)
WBS	Work Breakdown Structure
WD	Work Days

APPENDIX B – TABLES

Table 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 1, 2016	October 2017
Revenue Service	February 28, 2018	December 30, 2016	February 2018

A = Actual

Table 2 - Project Budget/Cost 

	FFGA			FFGA Amend	MTA Current Working Budget (CWB)		Expenditures as of July 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	4,047.238	76.83
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	4,047.238	76.83
Total Federal	1,350.693	27.75	1,063.942	1,373.893*	1,350.693	24.60	1,195.486	22.70
Total FTA share	1,300.000	96.25	990.049	1,300.000	1,300.000	23.68	1,195.486	22.70
5309 New Starts share	1,300.000	100	990.049	1,300.000	1,300.000	23.68	1,121.593	21.30
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	2,851.752	54.13
State share	450.000	16.67	100.000		450.000	8.20		
Agency share	2,249.307	83.33	1,145.782		3,059.000	55.72		
City share	0	0			0	0		

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

** Current MTA Board approved budget.

Table 3 - Estimate at Completion

Category	Current Working Budget	EAC Forecast
Total Construction	\$2,674,814,299	\$3,046,344,882.00
Engineering Services Subtotal	\$622,862,000	\$681,088,115.00
Third Party Expenses	\$554,086,273	\$562,086,000.00
TA Expenses	\$131,160,085	\$148,480,650.00
Contingency	\$468,077,343	
Total	\$4,451,000,000	\$4,437,999,647

Table 4 - Allocation of Current Working Budget to Standard Cost Categories

Std. Cost Category (SCC)	Description	FFGA	FFGA Amended	MTA's Current Working Budget
		(January 2008)	(March, 2015)	(March, 2016)
10	Guideway & Track Elements	\$612,404,000	\$195,346,781	\$189,310,484
20	Stations, Stops, Terminals, Intermodal	\$1,092,836,000	\$1,666,605,679	\$1,647,638,432
30	Support Facilities	\$0	\$0	\$0
40	Site Work & Special Conditions	\$276,229,000	\$793,118,232	\$876,979,834
50	Systems	\$322,707,000	\$250,379,966	\$212,867,395
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	\$1,186,897,730
90	Unallocated Contingency	\$555,554,000	\$544,441,174	\$55,806,125
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 5 - Core Accountability Items

Project Status:		Original at FFGA	Current*	ELPEP**
Cost	Cost Estimate	\$4,050 million	\$4,451 million	\$4,980 million
Contingency	Unallocated Contingency	\$555.554 million	\$104 million	\$104 million
	Total Contingency (Allocated plus Unallocated)	\$555.554 million	\$30 million (July 2016)	\$45 million
Schedule	Revenue Service Date	June 30, 2014	December 30, 2016	February 28, 2018
Total Project Percent Complete	Based on Expenditures	90.9%		
	Based on Earned Value	N/A		
Major Issue		Status	Comments	
Construction Schedule Acceleration		Open	MTACC's decision to accelerate the construction schedule to allow NYCT pre-Revenue Testing to commence on 09/01/16 results in concerns over additional cost and the ultimate ability to achieve this goal.	
Construction Quality and Operational Readiness		Open	MTACC has deviated from established organizational and project procedures as part of its schedule acceleration effort. PMOC is concerned that these deviations may result in reduced construction quality and incomplete systems testing.	
Date of Next Quarterly Meeting:		(Planned for July 21, 2106 but was postponed)		

* MTACC's Current Working Budget

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

Financial data based upon MTACC reporting through 7/30/2016