PMOC MONTHLY REPORT

Second Avenue Subway Phase 1 (MTACC-SAS) Project

Metropolitan Transportation Authority

New York, New York

Report Period August 1 to August 31, 2016

PMOC Contract No. DTFT6014D00017

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

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

TABLE OF CONTENTS

APPENDICES

THIRD PARTY DISCLAIMER

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For projects funded through the FTA's Full Funding Grant Agreement (FFGA) program, the 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 August 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 91.4% 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 August 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.
- Closeout of the contract has been delayed once again due to DEP's ongoing inspection of the installed utilities to the "As-Built" drawings. Inspection is anticipated to be completed by September 30, 2016.

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

- **Fire Life Safety Systems**
  - Water Mist System – Equipment installed and Levels 3 and 4 Field Installation Acceptance Tests are scheduled to be completed on October 2, 2016. Level 5 (FIST) tests are scheduled to start October 3, 2016.
  - Sprinkler System – Fire suppression piping installed and Levels 3 and 4 tests completed.
  - Dry Fire Standpipe – Installation completed and Levels 3 and 4 tests are in progress and are scheduled to be completed September 10, 2016.
- **Tunnel Station Smoke Management System (Axial Fans)**
  - Ancillary #1 – Installation completed and Levels 3 and 4 tests are in progress and are scheduled to be completed September 16, 2016.
  - Ancillary #2 – Installation completed and Levels 3 and 4 tests are in progress with a schedule completion of September 22, 2016.
- **Elevators**
  - Platform Hydraulic Elevator (1 Elevator) – Installation in progress and scheduled to be completed September 7, 2016. Levels 3 and 4 tests will start on September 8, 2016, and be completed on September 9, 2016.
  - Street Level Hydraulic Elevator Entrance #3 (1 Elevator) – Installation completion has been delayed until September 18, 2016. Resources directed to completion of platform elevator.
- **Escalators**
  - Platform (3 Escalators) – Installation is in progress with selected Levels 3 and 4 tests being performed. All Level 3 and 4 tests are scheduled to be completed by September 16, 2016.
  - Entrance #1 (1 Escalator) – Installation is in progress with selected Levels 3 and 4 tests being performed. All Level 3 and 4 tests are scheduled to be completed by September 16, 2016.
  - Entrance #2 (3 Escalators) - Installation is in progress with selected Levels 3 and 4 tests being performed. All Level 3 and 4 tests are scheduled to be completed by September 16, 2016.
  - Entrance #3 (2 Escalators) – Installation is in progress with selected Levels 3 and 4 tests being performed. All Level 3 and 4 tests are scheduled to be completed by September 26, 2016.
- **Heating Ventilation Air Conditioning (HVAC)**
  - Sump Pump – Installation completed. Pumps are being tested with associated systems.

- Supply Fans – Installation in escalator and elevator machine rooms have been completed with balancing and Levels 3 and 4 functionality test scheduled for completion on September 30, 2016. Balancing of the air handling units is taking longer than expected.
- Cooling Tower – Installation completed.
- Chiller System Testing – Selected Levels 3 and 4 tests in progress. All Levels 3 and 4 tests are scheduled to be completed by September 30, 2016.

Inputs are based on 96th Street Station Fragnet Update #43 and information as of August 31, 2016.

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

- **Remaining Project Work**
  - The following, from the MTACC CCM Office, identifies the areas of work as of September 1, 2016, 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 63rd street	Completed	
Complete/replace Entrance One boarder ceilings	In progress	
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	In progress	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)	TBD	X
Other Levels& Systems		
Complete installation of communication and UPS cooling, test, and commission the equipment	In progress	X

Work Item	Forecast Completion	Req'd to Open
Test summer loop of HVAC	Planned for 9/2	
Perform remote shakedown of fans	In progress	
Complete Level 3 &4 Testing of elevators	Done	
Install elevator pit ladders (AWO)	In progress – 95% complete	X
Perform Lift Net test of escalators	TBD	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	In progress	X
Perform testing of UPS	9/1	X
Level 5 Test of Water Mist	Pending F.A. Testing	X
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		

Work Item	Forecast Completion	Req'd to Open
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

- **General**
  - The CCM office has provided the PMOC with a copy of the tabulations of the Observation Lists. These lists are a compilation of lists from NYCT, NYCT Code Compliance, the CCM and the Contractor. Through September 8, 2016, these lists had a total of 4,638 items, with 4,428 open.

- **Ancillary #2/Entrance #2**
  - At Ancillary #2, exterior granite building cladding continues.
  - Installation of terra cotta exterior cladding is 45% complete at the roof level Stair S80 walls.
  - Installation of light fixtures in the Mezzanine Access is complete.
  - At Ancillary #2, exterior granite cladding continues on the east side of the building.
  - At Entrance #2, the installation of the C2-1 ceiling is complete. Installation of the ceiling framing is complete at the street level over the escalators and ceiling finish installation began.

- **Ancillary #1**
  - The glazing was completed at the southeast corner curtainwall, however, the glass must be replaced because the installed material is tinted clear glass and the specified product is opaque glass. There has been no explanation as to how the incorrect material was allowed to be purchased and installed.
  - All terra cotta exterior wall tiles are complete on the east and south faces of the building.
  - Granite cladding of the exterior columns neared completion.
- **Mezzanine**
  - In the Public Mezzanine, glazing above the Service Carrier is complete.
  - In the Public Mezzanine, permanent light fixtures at the service carrier and walkway cove lighting are installed, and illuminated.
  - In the north and south back of house areas, Levels 3 and 4 testing continues.
  - Installation of the stainless steel fare separation fencing was completed and installation of the fare turnstiles and wiring continued.
- **Entrance #3 Elevator Bank**
  - Installation of porcelain wall tiles at the interior of the elevator shaft is near completion.
  - Three of the five elevator cabs have been installed and fit-out continues. The remaining two cabs have been delivered.
  - Glazing of the exterior elevator wall is complete,
  - Installation of terra cotta tile cladding continues with the north face 90% and the west face 30% complete.
  - Installation of the Inergen Systems is complete in the Communication Rooms.
- **Entrance #1**
  - At the Entrance #1, incline work continues at the three escalators to the mezzanine. Conduit along the incline is complete.
  - Installation of porcelain wall tiles at the street level entrance and mezzanine is 80% complete.
- **Platform Level**
  - Installation of the stainless steel perforated riser architectural stairs continues.
  - Platform service carrier light fixtures are installed and illuminated.
- **Sitework**
  - Sitework restoration is complete between E. 69th St. and E. 71st St.

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**
  - Closure of the north Shaft began during August 2016.
  - The CCM office has provided the PMOC with a copy of the tabulations of the Observation Lists. These lists are a compilation of lists from NYCT, NYCT Code Compliance, the CCM, and the Contractor. Through September 8, 2016, the lists had a total of 3,752 items, with 3,451 open.
- **Ancillary #1**
  - The upper portion of the stair has been completed.
- **Ancillary #2**
  - Material deliveries to this area are made through the permanent air shaft.
- **Mezzanine**
  - In the Public Mezzanine, the north and south stainless steel paid/unpaid fence installation was completed. The fare turnstiles installations by NYCT are complete.
  - Distribution of permanent power is complete throughout the Mezzanine. Permanent lights are operating.
  - In the Public Mezzanine W30, wall tile installation is continuing in the Entrance #1 Access.
  - In the Public Mezzanine, granite tile installation is approximately 85% complete.
  - The glazing above the Public Mezzanine Service Carrier is approximately 98% complete.
- **Entrance #1**
  - Ceiling finish work in Entrance #1 is ongoing on work platforms up the escalator incline.
  - Wall framing for porcelain tile in the Entrance #1 Access Tunnel nears completion. Arch light fixture installation continued.
- **Entrance #2**
  - Finish work continues at the Entrance #2 Mid-Level Mezzanine with installation of granite bases and porcelain tile wall cladding.
  - The traction elevator (street to mezzanine) glazing is complete and the cab has been installed.
  - Mid-Rise escalator tests are complete in Entrance #2.
- **Platform Level**
  - Installation of hydraulic elevator framing is complete. Installation of glazing is complete.
  - The granite installation is complete for the platform wall finishes at stair and escalator walls.

- Weight tests have been completed for the 3 platform to mezzanine escalators.
- Concession Stands fit out continues.

- **Site**
  - Sitework construction continues, including utility work along Ancillary #2 at E. 86th St and 2nd Ave.

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

- **Test Procedure documents status**
  - Systems Test Plan Vol. 3 which includes the new Matrix for test procedure tracking and the Training Matrix for all training document tracking was submitted July 31, 2016 and will continue to be updated and submitted at the end of each month. A mid-month update of the matrix was submitted on August 12, 2016.
- **Testing**
  - 63rd St Fire Alarm System Levels 4 and 5 (FIAT/FIST) tests are still in progress.
  - 63rd St Intrusion Access Control Level 4 test is in progress.
  - 63rd St Closed Circuit Television FIAT Level 4 test is in progress.
  - 96th St Network Level 6 (SIT) is nearing completion.
  - 86th St Network Level 4 is in progress.
  - 72nd St Network Level 4 has been completed and Level 5 is in nearing completion.
- **Signal Work**
  - All wayside signal equipment project wide has been broken down and is now complete.
  - 147 Central Instrument Room (CIR) Wayside and Lexington Ave (Upper and Lower levels) Wayside equipment is complete.
  - Completed room breakdown testing Lexington Avenue 147 CIR.
  - Completed room breakdown testing Lexington Avenue Upper and Lower Level relay rooms.
  - Completed room breakdown testing 72nd Street relay room.
  - Completed room breakdown testing 86nd Street 1200 CIR.
  - Completed room breakdown testing 96th Street relay room.
  - Installation of track station signs to be completed September 2, 2016.
- **Track Work**
  - All major trackwork is complete.
- **Traction Power**
  - Substations at 72nd, 86th and 96th Street Stations have completed Levels 4 and 5 test.
  - 96 Street - ready for CON Edison Energization
  - 86 Street - ready for CON Edison Energization
  - 72 Street - ready for CON Edison Energization
  - TPSS cable to attach to third rail and subsequent megger testing of the cables has been completed.

- **Local Area Network / Wide Area Network**
  - 63rd St. Station –Level 5 testing completed. Level 6 testing to be completed on October 2, 2016.
  - 72nd St. Station – Networks will be available on with completion of Level 6 testing on September 15, 2016.
  - 86th St. Station –Networks will be available on with completion of Level 6 testing on September 4, 2016.
  - 96th St. Station –Level 6 test was completed.

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

Quality Assurance and Quality Control (QA/QC)

Status:

During August 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, 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:

- Inspection Checklists not submitted for Mechanical & Electrical work, e.g., Dry Fire Stand Pipe & Wet Stand Pipe, Through Penetration Firestopping, Pumps, and Fan Coil Unit.
- Submittals of Quality Work Plans for approvals are delayed.
- Material receiving inspection must be available for review.
- Electrical and Mechanical issues are not documented and resolved. Some nonconformance reports (NCRs) are not written for nonconforming electrical and mechanical work.
- Non-concrete NCRs are not resolved within a reasonable time. Five have been open more than nine months.
- There are water leaks in multiple locations. A total of 40 active leaks were reported on August 15, 2016.
- Poor quality welds were performed on site by a subcontractor during assembly of the stainless steel members of the canopies at Entrances 2 and 3. The contractor has been requested to initiate an NCR.

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

- Revise and Resubmit (R&R) submittals are delinquent (currently 127).
- Lack of field supervision for many activities.
- Special Inspections for electrical and mechanical seismic installations are being delayed.

- Many nonconformance reports (NCRs) have been open for more than 90 days.
- Record drawings at 50 % completion, have been delayed.
- As-built drawings are not being submitted, as per milestone**s.**

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

- High Humidity/Temperature in rooms and equipment at C3.
- Incomplete conduit runs for installation CCTV at C2B.
- Lack of permanent power creating shortage of ventilation and buildup of humidity.
- 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 August 31, 2016, a total of 175 NCRs have been issued. One hundred forty-one (141) have been closed and 34 NCRs are open. In August 2016, seven new NCR's were written and one was closed. The NCR closed in August was not for concrete that was out-of-specification. Twenty-seven (27) of the 34 open NCRs are for concrete that was out-of-specification. A statistical concrete analysis for 20 of these 27 NCRs was supposed to have been prepared by the contractor in August 2016 but that date has slipped. The contractor has committed to submit their analysis by September 9, 2016. It is anticipated that at least 15 of these NCRs will be closed in September 2016.
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:	Five of the seven open non-concrete NCRs are more than nine 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 September 2016. At the last Quality Management Meeting, the PMOC recommended that one or more meetings be convened with whatever personnel are necessary to take the required action to close these NCRs. The PMOC also recommends that the contractor devote the necessary effort to resolving the issues listed in the beginning of this section.

Contract Package C3	
Status:	Through August 31, 2016, a total of 129 NCRs have been issued. One hundred twenty (120) have been closed and nine are still open. In August 2016, no new NCR's were written and none were closed.
Observation:	Submittal of Daily Inspection Reports is six weeks behind.
Concerns and Recommendations:	In the beginning of August 2016, the contractor's Quality Manager suddenly resigned. The contractor assigned an individual who had previously served as the Quality Manger on this contract to be his replacement. Although this individual is capable, no Daily Inspection Reports have been entered into the CM System since July 22, 2016. The PMOC recommends that this be situation be resolved immediately.
Contract Package C4C	
Status:	Through August 31, 2016, a total of 243 NCRs have been issued. One hundred seventy-two (172) have been closed and 71 NCRs are still open. In August 2016, three NCRs were written and nine were closed.
Observation:	One hundred ninety-nine (199) of the 243 NCRs are for concrete that was out of specification. Two of the three NCRs generated in August 2016 were for concrete. Fifty-six (56) of the remaining 71 open NCRs are for concrete that was out of specification. The contractor prepared a statistical concrete analysis and the nine NCRs that were closed in August 2016 were some of these concrete NCRs.
Concerns and Recommendations:	The PMOC is concerned that both the CM and the contractors are not devoting enough effort to resolving and closing these observations and missing an opportunity to complete all work in a timely manner.
Contract Package C5C	
Status:	Through August 31, 2016, 223 NCRs have been issued. One Hundred fifty-four (154) have been closed and 69 NCRs are still open. In August 2016, eight new NCRs were written and 10 were closed.
Observation:	Thirty-five (35) of the 69 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 August 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 34 non-concrete NCRs and devote the necessary effort to resolving the issues listed in the beginning of this section.
Contract Package C6	
Status:	Through August 31, 2016, a total of 72 NCRs have been issued. Fifty

	(50) NCRs have been closed and 22 are still open. In August 2016, six new NCRs were written and two were closed.
Observation:	Seven 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 September 2016 for the open concrete NCRs. Submittal of Daily Inspection Reports is current.
Concerns and Recommendations:	The PMOC is concerned that both the CM and the contractors are not devoting enough effort to resolving and closing these observations and missing an opportunity to complete all work in a timely manner.

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 was 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 work on the OP54 Review in early May 2015. The PMOC's draft report for review by FTA and MTA was transmitted to FTA in mid-July 2016. On August 18, 2106, the PMOC received MTACC comments to this draft report. Reconciliation of comments and issuance of a final report is anticipated to occur in September 2016.

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 August 19, 2016, were also reviewed. Subsequent discussions will be based on the PMOC's review of both schedules.

Observations:

C2B – 96th Street Station

- Fire & Life Safety Systems:
  - Watermist System: Heads to be installed subsequent to pressure testing.

- Sprinkler System: Punchlist forecast to be complete on August 22, 2016.
- Dry Fire Standpipe: Rework supports and complete Levels 3 and 4 testing forecast for September 3, 2016. Communication interface to be installed by C6.
- Inergen System: C6 to seal rooms for integrity testing (by C2B).

- TSSM: Levels 3 and 4 testing at Ancillaries #1 and #2 forecast for August 26, 2016 completion. Delays to subsequent testing indicated due to test procedure development.
- Vertical Transportation
  - Hydraulic Elevators: Glazing (delay) forecast for September 2, 2016 completion. Levels 3 and 4 ASME and controller testing forecast for September 3, 2016 completion.
  - Escalators: All Levels 3 and 4 ASME/Controller/Skirt Index testing forecast to complete on September 22, 2016.
- Other: Supply fan balancing forecast for September 2, 2016 completion. Chiller balancing (Levels 3 and 4) forecast for August 17, 2016 completion.
- LAN/WAN forecast to be available on August 29, 2016.
- Start of Fire Alarm Testing (Level 5) forecast to start on October 3, 2016 and complete by November 4, 2016.

C3 – 63rd Street Station

- Schedule assumes completion of fire alarm Levels 3 and 4 testing (by C6) by September 4, 2016.
- HVAC: Testing of the HVAC systems in "summer mode" is forecast for September 23, 2016.
- TSSM: Turnover and acceptance forecast for September 19, 2016.
- Vertical Transportation
  - Elevators: Turnover and acceptance forecast for September 6, 2016.
  - Escalators: Level 5 testing forecast to be complete on September 11, 2016.
- UPS retest is forecast to complete on September 19, 2016.
- Remaining architectural construction is forecast to be complete in late September 2016.
- Fire & Life Safety Systems:
  - Watermist System: Combined C3/C6 testing forecast to be complete by September 17, 2016 followed by acceptance and turnover on September 21, 2016.
  - Sprinkler System: Combined C3/C6 testing forecast to be complete by September 17, 2016 followed by acceptance and turnover on September 21, 2016.
  - Dry Fire Standpipe: Acceptance and turnover forecast for September 7, 2016.

- Inergen System: Combined C3/C6 testing forecast to be complete by September 13, 2016 followed by acceptance and turnover on September 14, 2016.

C4C – 72nd Street Station

- Schedule indicates delay resulting in LAN/WAN availability on September 2, 2016 and fire alarm availability on October 16, 2016. No delays to testing activities are indicated. Note indicates that Level 5 testing will be simulated (similar to 63rd Street). There are no activities indicating the submittal, review,. or approval of any equipment or procedures involving simulated testing.
- TSSM: The 100 HR vibration testing at both ancillaries is forecast for completion on September 25, 2016. Punchlist and inspection follows with final acceptance forecast for September 30, 2016.
- Entrance #1: Remaining architectural construction is forecast for October 19, 2016 completion. Completion of the canopy is not forecast for completion until December 7, 2016.
- HVAC: Levels 3 and 4 testing is forecast for completion on September 14, 2016, at which time Level 5 testing is forecast to start. Level 5 testing is forecast for completion on September 30, 2016.
- Vertical Transportation
  - Elevators: Levels 3 and 4 testing for hydraulic elevators is forecast to complete on September 7, 2016. Traction elevator installation is forecast to complete on September 15, 2016, with Levels 3 and 4 testing completing on October 6, 2016. For all elevators, Level 5 testing immediately follows completion of Levels 3 and 4 testing as Level 6 testing immediately follows Level 5 testing. All elevators are forecast to complete operational (Level 6) testing by November 14, 2016.
  - Escalators: Levels 3 and 4 testing for all escalators is forecast to be complete on September 7, 2016. Following punchlist and final inspection, Level 5 testing is forecast to be completed on all escalators during the period starting on September 15, 2016 and finishing on October 31, 2016. Level 6 testing for all escalators is forecast to be complete on November 16, 2016.
- Fire & Life Safety Systems:
  - Fire Alarm: Integration testing is scheduled for the period between September 19, 2016 and October 16, 2016. The fire alarm is forecast to be complete on October 16, 2016.
  - Watermist System: Levels 3 and 4 testing is forecast to complete on September 5, 2016. After the fire alarm integration testing noted above, turnover of the system is forecast for October 21, 2016.
  - Sprinkler System: Testing Levels 3 and 4 and 5 are forecast for completion on September 29, 2016. After the fire alarm integration testing noted above, completion of all punchlist items and turnover is forecast to be complete by October 21, 2016.

- Inergen System: Discharge testing is forecast to complete by September 8, 2016. Room integrity testing will now be considered a Level 5 test, which is scheduled to complete by September 29, 2016. After the fire alarm integration testing noted above, completion of all punchlist items and turnover is forecast to be complete by October 21, 2016.

C5C – 86th Street Station

- This schedule includes the assumptions that LAN/WAN is available on September 4, 2016 and that Fire Alarm Nodes 2, 4, 5 and 6 are available for testing on September 25, 2016, October 9, 2016, September 27, 2016 and October 16, 2016 respectively.
- TSSM: Completion of damper wiring and air balancing is forecast for October 1, 2016, after which the completion of Levels 3 and 4 as well as Level 5 and 6 testing will commence. Acceptance and turnover is forecast to be complete on October 25, 2016. Notes indicate the Level 5 test plan is still under review.
- HVAC: Completion of water & air balancing as well as other remaining Levels 3 and 4 testing is forecast to complete on September 12, 2016, followed by Level 5 and Level 6 testing, leading to a November 8, 2016 completion and turnover.
- Vertical Transportation:
  - Escalators: Completion of Levels 3 and 4 testing is forecast for October 7, 2016. Level 5 and Level 6 testing follow, resulting in a forecast acceptance and turnover on October 28, 2016.
  - Elevators: Completion of Levels 3 and 4 testing is forecast for September 16, 2016. Level 5 and Level 6 testing follow, resulting in a forecast acceptance and turnover on October 25, 2016.
- Fire & Life Safety Systems:
  - Watermist System: Remaining Level 5 (Fire Alarm Integration) and Level 6 (Verification and Acceptance) testing are forecast to occur between September 26, 2016 and November 8, 2016.
  - Sprinkler System: Remaining Level 5 and Level 6 testing are forecast to occur between September 26, 2016 and November 8, 2016.
  - Dry Fire Standpipe: Remaining Level 5 and Level 6 testing are forecast to occur between September 20, 2016 and November 1, 2016.
  - Inergen System: Remaining Level 5 (Functional Discharge & Fire Alarm Integration) and Level 6 (Verification and Acceptance) testing are forecast to occur between September 26, 2016 and November 8, 2016.
- Note states that completion of non-critical civil work is being delayed due to focus on other areas.

C6 – Systems:

- Signal System: In-Service testing throughout the project is forecast to be complete on October 21, 2016.

- Traction Power: Con-Ed energization of Feeders at 72nd Street (1st and 2nd Feeders) is forecast to complete on October 19, 2016 and at 86th Street (2nd Feeder) on September 23, 2016.
- The Level 6 - 30 Day Fire Alarm Test is the last scheduled activity to be performed by 3rd party contractors prior to RSD. Forecast completion dates for this test are:
  - 63rd Street: October 26, 2016
  - 72nd Street: December 29, 2016
  - 86th Street: November 29, 2016
  - 96th Street: November 1, 2016

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

MS	Description	Accel. Agreement	Update (07/01/16)	Update (08/01/16)
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	10/30/16	9/30/16
26	Complete all work and testing through FSIT (Levels 5a/b) for Escalators at Entrance #1 and Elevators at Entrance #3.	11/01/16	11/30/16	11/1/16

MS	Description	Accel. Agreement	Update (07/01/16)	Update (08/01/16)
19	Complete all installation and testing – elevators and escalators	09/01/16	09/01/16	10/31/16
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	10/30/16	11/8/16

96th Street				
MS	**Description**	**Accel. Agreement**	**Update (07/01/16)**	**Update (08/01/16)**
17	Complete Level 5a Testing for HVAC, and Fire and Life Safety	07/31/16	09/30/16	08/31/16
18	Complete all work required to commence FIAT on all escalators and elevators	07/31/16	08/24/16	08/31/16
19	Complete Level 5b Testing for All Systems; Complete ALL Work	08/31/16	09/30/16	10/17/16

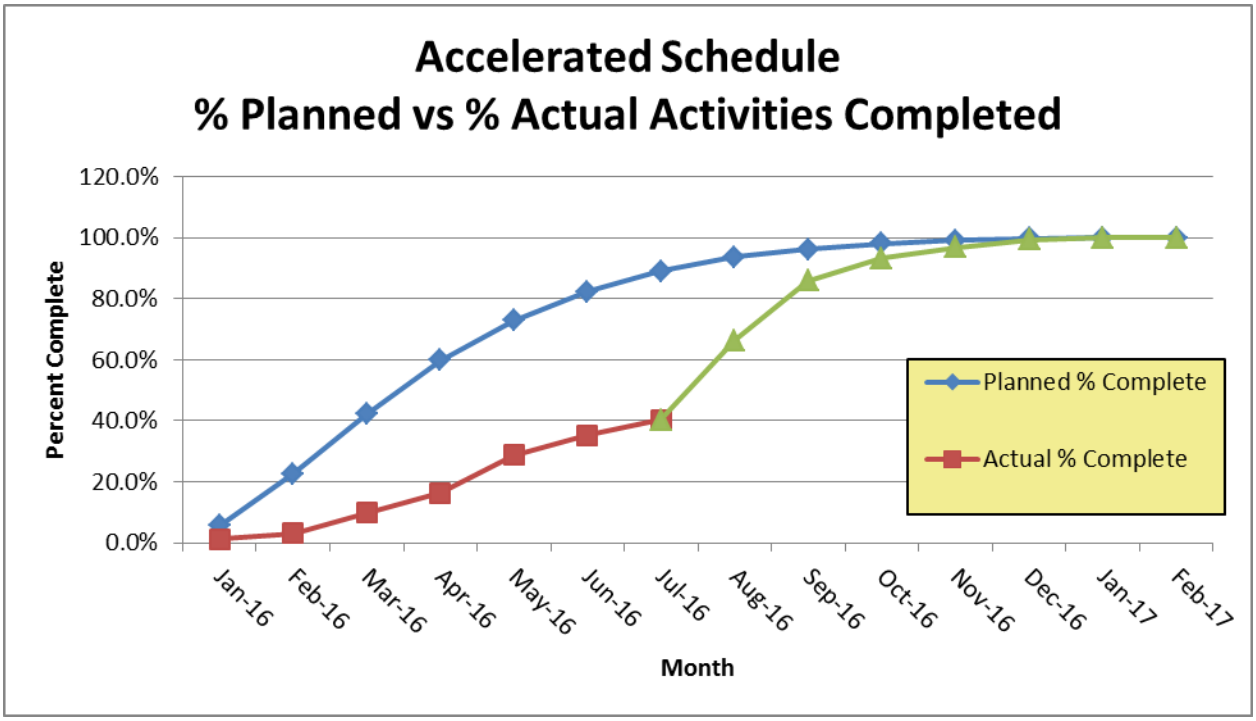
Systems				
MS	**Description**	**Accel. Agreement**	**Update (07/01/16)**	**Update (07/01/16)**
16	63rd Comms. Systems: Complete all work and pre-testing required to perform Field Installation Acceptance Tests	05/31/16	09/30/16	09/22/16
17	72nd Comms. Systems: Complete all work and pre-testing required to perform Field Installation Acceptance Tests	06/13/16	09/30/16	12/6/16
18	86th Comms. Systems: Complete all work and pre-testing required to perform Field Installation Acceptance Tests	06/27/16	09/30/16	12/15/16
19	96th Comms. Systems: Complete all work and pre-testing required to perform Field Installation Acceptance Tests	06/20/16	09/30/16	12/1/16
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	09/06/16	09/30/16
21	Complete all other work required to start Pre-Revenue Service Training	09/30/16	10/30/16	01/03/16

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 = 08/01/16 follow:

Date	Planned % Complete	Actual % Complete	Forecast % Complete
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%	40.3%	40.3%
Aug-16	93.6%		66.4%
Sep-16	96.2%		85.8%
Oct-16	97.9%		93.3%
Nov-16	99.0%		96.9%
Dec-16	99.8%		99.3%
Jan-17	100.0%		99.9%



This basic analysis indicates that, according to the updated contractor P6 schedules, significantly fewer activities have been achieved by the four "accelerated" construction contracts than planned.

This data seems inconsistent with the level of progress achieved on the project.

"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			July-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	$308	Jun-15	-12.2	9/1/16	1/1/17
C3	$176	$176	$173	Dec-13	-30.4	9/1/16	1/1/17
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	$261	$230	Oct-15	-8.2	9/1/16	11/22/16
TOTAL	**$1,227**	**$1,225**	**$1,131**	**Jul-15**	-11.3	9/1/16	12/22/16

Cost Variance = Plan $ Earned – Actual $ Earned

= $1,225M - $1,131M = $94M

This summary level analysis suggests the following:

1. Had the work progressed according to baseline "plans", an additional $94M 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 reporting period (thru 9/1/16) in order to achieve their accelerated schedule goals.
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.

Concerns and Recommendations:

Review of schedule milestones developed to monitor the progress of the work indicates slippage of Level 5 (and subsequent Level 6) system testing at all stations. Problems with the interconnection of multiple fire suppression systems to the alarm system have been reported.

Level 6 testing will not be complete at 72nd Street until December 29, 2016 and at 86th Street until November 29, 2016. Completion of work at these stations is considered the "most critical path".

PMOC's assessment of schedule progress based upon activities completed indicates an ongoing and increasing negative variance between plan and actual progress.

The earned schedule analysis indicates that limited progress was made by contractors this period.

At the August 24, 2016 Cost and Schedule Meeting, MTACC noted that there is a renewed emphasis on station architectural and non-systems construction in an effort to ensure completion of this work by the forecast RSD.

PMOC observations indicate limited progress on the resolution of outstanding issues currently delaying the completion of the fire alarm system. It may be necessary for MTACC to intervene in this process to expedite its resolution.

Last month, the PMOC reported MTACC's intent to revise and clarify 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). To date, this task remains incomplete.

At the August 24, 2016 Cost and Schedule Meeting, MTACC presented summary reports indicating Levels 3 and 4 testing for the entire project to be approximately 41% complete. Data date for these reports appears to be August 12, 2016. Netpoint schedules, with data date of August 19, 2016 do not seem to correlate the conclusion that 59% of Levels 3 and 4 testing remains to be accomplished. Correlating a tabular report and graphic schedule is obviously very inexact, and there are many explanations (reports in progress, testing in progress) to support the position that 41% complete was an excessively conservative result. However, the PMOC is concerned that Levels 3 and 4 testing is somewhat under represented on the schedule reports and that significantly more time than shown may be required for this work.

MTACC has identified the fire alarm system as the largest challenge remaining on the project. Fragnet schedule reviewed by PMOC indicate 3 different approaches to systems testing involving the fire alarm system for four stations.

Milestone update information for C6 milestones #17, 18, 19 (obtained from P6 update) vary significantly from the update information contained in the Netpoint fragnets. If this information is correct, the Level 6 – 30 Day Fire Alarm testing at 72nd, 86th, and 96th Street Stations will extend beyond the forecast RSD.

3.0 COST DATA

Based upon financial expenditures reported by the MTACC through August 31, 2016, SAS Phase 1 is approximately 91.4% complete. The completion status of the individual construction contracts through August 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) – 90.0%;
- C26006 (63rd Street Station) – 97.9%;
- C26007 (72nd Street Station) – 99.9%;
- C26011 (72nd Street Station) – 92.2% ; and,
- C26009 (Systems) – 90.3%.

Aggregate Construction percentage complete:

- 100% of all construction has been bid;
- 100% of all construction is under contract;
- 96.4% of base contract construction (excluding AWOs) is complete; and,
- 96.7% of all construction is complete.

Based upon cost data received from the MTACC for the period through August 31, 2016.

- Value of construction reported in place this period = $13,684,361;
- Estimated value of construction remaining = $96,164,588 (base contract only);
- Target construction completion = September 1, 2016;
- Number of months remaining = 0.0; 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 $8.2M; 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 August 2016 is summarized as follows:

	Executed AWOs	AWO Exposure
Aug-16	$296,651,203	$367,440,496

	Executed AWOs	AWO Exposure
Jul-16	$294,717,166	$362,996,541
Δ	$1,934,037	$4,443,955
Δ	0.66%	1.22%

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

Const. Pkg.	**AWO Exposure**			
	Aug-16	**Jul-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	$ 63,021,985	$61,511,195	$1,510,790	Net increase is based on revised estimates for AWO #s 251, and 253 and initial estimates for AWO #s 236, 244, 255, and 256.
C3	$ 42,623,564	$41,582,390	$1,041,174	Net increase is based on revised estimates for AWO #s 271, 287, 306, 307, 312, 313, 315, 321, and 322 and initial estimates for AWO #s 323 through 330.
C4B	$ 1,325,639	$1,325,639	$0	No change reported this period.
C4C	$ 67,692,096	$67,516,366	$175,730	Net increase is based on revised estimates for AWO #s 80, 164, 192, 234, 236, 237, 243, 244, 247, 254, 256, and 263, and initial estimates for AWO #s 252, 253, 257, 259, 264, 269, 270, 271, 272, 274, 275, and 277.
C5B	$ 26,280,122	$26,280,122	$0	No change reported this period.
C5C	$ 35,469,635	$35,317,144	$152,491	Net increase is based on revised estimates for AWO #s 121, 128, 166, 172, 173, 174, 177, 179, and 181 and initial estimates for AWO #s 99, and 195.
C6	$ 35,799,928	$34,236,158	$1,563,770	Net increase is based on revised estimates for AWO #s 29, 137, 145, 146, 150, 157, 160, 165, 187, 192, 207, 208, and 217 and initial estimates for AWO #s 159, 190, 201, 222, 223, 224, 227, 228, and 229.
TOTAL	$367,440,496	$362,996,541	$4,443,955	

The changes in Executed AWO Value are summarized as follows:

Const. Pkg.	Executed AWOs			
	Aug-16	Jul-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	$ 47,612,118	$47,612,118	$0	No change reported this period.
C2B	$ 56,960,587	$56,865,650	$94,937	Increase is based on execution of AWO #s 134, 137, 239, 250, and 251.
C3	$ 29,165,888	$28,980,388	$185,500	Increase is based on execution of AWO #s 266, 290, 291, and 292.
C4B	$ 1,325,639	$1,325,639	$0	No change reported this period.
C4C	$ 37,315,004	$36,806,504	$508,500	Increase is based on execution of AWO #s 206, 235, 238, 243, 255, and 271.
C5B	$ 21,586,813	$21,586,813	$0	No change reported this period.
C5C	$ 28,921,826	$28,381,526	$540,300	Increase is based on execution of AWO #s 123, 143, 172, 179, and 181,
C6	$ 26,151,210	$25,546,410	$604,800	Increase is based on execution of AWO #s 137, 145, 150, 157, 160, 165, 192, 222, 223, 227, 228, and 229.
TOTAL	$296,651,203	$294,717,166	$1,934,037	

A summary of AWOs initiated this period includes the following:

Contract	Description
C2B	A total of four (4) AWOs were added this period. Cursory inspection indicates one of these AWOs may not be 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 one of these AWOs may not be necessary to support start of revenue operations. Preliminary estimate of the value of this work is in excess of $1.0 million.
C4C	A total of eight (8) AWOs were added this period. Cursory inspection indicates one of these AWOs may not be necessary to support start of revenue operations. MTACC has not published an estimated value for these AWOs.
C5C	A total of two (2) AWOs were added this period. Two of the ten AWOs added last period were cancelled. Cursory inspection indicates these AWOs appear necessary to support start of revenue

Contract	Description
	operations. MTACC has not published an estimated value for these AWOs.
C6	No AWOs were added to this contract this period.

As of August 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	*$63,021,985*	*19.42%*	$56,960,587	17.55%
C26006 (3)	*94.71%*	$176,450,000	*$42,623,564*	*24.16%*	*$29,165,888*	*16.53%*
C26007 (4B)	*99.93%*	$447,180,260	*$1,325,639*	*0.30%*	*$1,325,639*	*0.30%*
C26011 (4C)	*73.36%*	$258,353,000	*$67,692,096*	*26.20%*	*$37,315,004*	*14.44%*
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	*$35,469,635*	17.02%	*$28,921,826*	*13.88%*
C26009(6)	*69.51%*	$261,900,000	$35,799,928	*13.67%*	$26,151,210	9.99%
TOTAL TO DATE		$2,674,814,299	*$367,440,496*	*13.74%*	*$296,651,203*	*11.09%*

To date, $2,578,649,711 (96.4%) worth of all base contract construction work has been completed. As a percentage of work completed, the current AWO exposure for these contracts is 14.25% and the executed AWO percentage is 11.5%.

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 July 2016 is $375,251,428. This value is somewhat greater than the current AWO Exposure and will be used as part of the overall contingency/EAC analysis.

Cost Contingency: Based upon the MTACC Current Working Budget, expenditures as of August 31, 2016, reported by the MTACC and the current AWO EAC forecast as of July 31, 2016, the PMOC contingency analysis is as follows:

	Contingency Analysis	
	Current	**@ Completion**
Phase 1 Budget	$4,451,000,000	$4,451,000,000
Construction Awards	$2,674,814,299	$2,674,814,299
Soft Cost Expended	$1,207,669,341	$1,207,669,341
Soft Cost Forecast to Complete	$180,453,659	$180,453,659
Add'l Soft Cost - Schedule Acceleration		$0
AWO	$296,651,203	$375,251,428
Total Contingency	$91,411,498	$12,811,273
Reserved Contingency	$91,411,498	$12,811,273

Notes:

(1) AWO Exposure @ Completion incorporates MTACC's latest "risk-informed" forecast through July 2016.

(2) Based on expenditures-to-date, approximately $91M remains in contingency, however based on MTACC's forecasts, only $12.8M will remain in contingency at project completion.

(3) Changes to Soft Cost this period include:

   a. Reduced Cost-To-Cure EAC to $31M

   b. Increased construction support by $8.9M

   c. Increased T/A Labor to include additional support costs due to schedule acceleration.

(4) An increase to the CCM EAC is anticipated. PMOC has included $10M in the "@ Completion" estimate to address this anticipated increase.

(5) Total Contingency = Reserved Contingency = total budget balance after forecast expenditures;

(6) Minimum Available Contingency required by ELPEP is approximately $45,000,000 (100% Construction Bid, 85% Construction Complete).

(7) MTACC states it anticipates further soft cost EAC reductions as well as significant credit from the design engineer due to E&O issues.

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. NO CHANGE.
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. Those few AWOs not directly related to achieving the RSD appear well within the contractors' current capability to execute without schedule impact.
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. NO CHANGE.
4.	MTA code compliance reviews. Past experience suggests that risks involve delayed inspections, unrealistic code interpretation, and disregard for project operational goals.	Compliance reviews are discussed in greater detail below.
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. NO CHANGE.
6.	NYCT's ability to conduct its pre-revenue familiarization and testing activities within the time period provided by MTACC.	A summary level schedule has been developed.

Technical and Coordination Risks		
Risk		**Status**
1.	Critical communication systems: fire alarm system, police radio installation, LAN/WAN installation, and startup at all stations.	MTACC considers completion and testing of the fire alarm system to be the biggest technical risk remaining on the project.
2.	Network (LAN/WAN)	LAN/WAN "Live" forecast dates: C2B – August 12, 2016 C5C – September 4, 2016 C4C – September 15, 2016
3.	Permanent facility power – all stations	Remaining distribution work at 86th Street forecast to complete by August 30, 2016.
4.	Traction Power – all stations	63rd to 96th Street In-Service Testing forecast to start October 1, 2016.
5.	Installation, testing, commissioning, and acceptance of elevators and escalators.	Forecast Level 6 (48 HR test) completion dates: C2B – September 20, 2016 C3 – September 21, 2016 C4C – November 16, 2016 C5C – October 28, 2016
6.	Watermist system.	Installation complete, testing in progress at all stations.
7.	Delays in the development and approval of test procedures.	Delays to development of Level 5 test procedures have been identified. MTACC need to continue to attempt to complete these tasks expeditiously.

Compliance Reviews:

Compliance reviews are actually conducted by four (4) separate NYCT units, Stations, System Safety, Code Compliance and Maintenance of Way. "Observations" resulting from these inspections are compiled electronically and made available to all parties almost immediately. As of mid-August, 2016 approximately 83% of all spaces on the project had been inspected. A top-level status report of open and closed observations is shown in the following table.

Contract	Open	Closed	Total
C2B	4,184	393	4,577
C3	5,611	3,395	9,006
C4C	4,428	210	4,638
C5C	3,451	301	3,752
C6	727	31	758
TOTAL	18,401	4,330	22,731

With respect to the "Observation" lists, the PMOC has the following observations:

1. MTACC has repeatedly stated that this list contains numerous duplications. Firestopping is the specific example usually referenced.
2. Monthly monitoring indicates the number of new Observations each month continues to exceed the number being closed.
3. MTACC has identified approximately 319 as "show stoppers", which indicates they have the potential to impact the RSD.
4. Contractors have chosen not to take full advantage of the early notification of incomplete or deficient work. PMOC estimates at least 50% of the work on these lists was performed by subcontractors, which minimizes the General Contractor's effort in completing the work.
5. Closing the Observation Lists represents a significant amount of work. While much of the work may be completed after RSD, the ongoing contractor presence will be a potential nuisance to both MTA operations and riders.

Concerns and Recommendations: The PMOC is concerned that both the CM and the contractors are not devoting enough effort to resolving and closing these observations. The PMOC recommends that both the CM and contractor evaluate the need for additional resources to significantly reduce the number of open Observations.

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 (Levels 5 and 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 and had not been rescheduled as of the end of August 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 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. PMOC does not agree. The contingency EAC has fallen below the ELPEP-specified $45M. As such, it is the PMOC's opinion that MTACC is not ELPEP compliant. Refer to Section 3.0 of this report for further discussion.
- **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 July 31, 2016, a total of 13,723,027 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 1.50 and a Recordable Rate (REC) of 4.17. 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 seven 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. Monthly Technical Working Group (TWG) meetings are ongoing with each station contractor and the system contractor reviewing 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 has clearly advanced 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. MTACC has indicated significant work remains to complete and activate the fire alarm system.
- **Compliance Inspections:** MTACC committed to expedite this process and has made significant progress in doing so. Contractors do not appear to be taking advantage of this early notification of work remaining to be complete. Completion of work identified by these inspections may extend significantly beyond the planned RSD.
- **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:** As of mid-August 2016, MTACC's tracking systems indicate approximately 41% of all required Levels 3 and 4 testing has been completed. This is based on a two month work period to date. Virtually all Levels 3 and 4 testing must be complete before the start of Level 5 testing. In broad terms, significant Level 5 testing is unlikely to start prior to mid-October 2016.
- **Financial**: The PMOC recommends that MTACC review the AWO percentages calculated for SAS and consider an average of approximately 12% construction cost growth for similar future projects. Higher percentages for projects involving extensive utility relocation or renovation of existing facilities should also be considered.

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 Test Program
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 August 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	4,069.355	77.25
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	4,069.355	77.25
Total Federal	1,350.693	27.75	1,063.942	1,373.893*	1,350.693	24.60	1,200.669	22.79
Total FTA share	1,300.000	96.25	990.049	1,3000.000	1,300.000	23.68	1,200.669	22.79
5309 New Starts share	1,300.000	100	990.049	1,3000.000	1,300.000	23.68	1,126.776	21.39
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	2,868.689	54.46
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 t the FTA's Transit Award Management System (TrAMS) 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	$3,050,065,727.00
Engineering Services Subtotal	$622,862,000	$690,022,317.00
Third Party Expenses	$554,086,273	$556,586,000.00
TA Expenses	$131,160,085	$141,514,683.00
Contingency	$468,077,343	
Total	$4,451,000,000	$4,438,188,727

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

Std. Cost Category (SCC)	Description	FFGA (January 2008)	FFGA Amended (March, 2015)	MTA's Current Working Budget (June, 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	$91 million	$45 million
	Total Contingency (Allocated plus Unallocated)	$555.554 million	$91 million (August 2016)	$45 million
Schedule	Revenue Service Date	June 30, 2014	December 30, 2016	February 28, 2018

Total Project Percent Complete	Based on Expenditures	91.4%
	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 8/31/2016