PMOC MONTHLY REPORT

Second Avenue Subway Phase 1 (MTACC-SAS) Project

Metropolitan Transportation Authority

New York, New York

Report Period April 1 to April 30, 2015

PMOC Contract No. DTFT60-09-D-00007

Task Order No. 7, Project No. DC-27-5235, Work Order No. 3

[Note: This is the Final Report for the East Side Access Project under this Contract & Task Order]

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

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THIRD PARTY DISCLAIMER

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

REPORT FORMAT AND FOCUS

This report is submitted in compliance with the terms of the Federal Transit Administration (FTA) Contract No. DTFT60-09-D-00007, Task Order No. 007 and will be the final report under this Contract and Task Order. Its purpose is to provide information and data to assist the FTA as it continually monitors the grantee's technical capability and capacity to execute a project efficiently and effectively, and hence, whether the grantee continues to be ready to receive federal funds for further project development.

This report covers the project management activities on the MTACC (Capital Construction) Second Avenue Subway (SAS) Mega-Project managed by MTACC and MTA as the grantee and financed by the FTA FFGA.

MONITORING REPORT

1.0 PROJECT STATUS

During March 2015, MTACC continued advancing SAS, Phase 1 to meet a Revenue Service Date (RSD) of December 30, 2016 within its Current Working Budget (CWB) of $4.451B (exclusive of financing). The overall project is approximately 74.63% complete. Substantial completion has been achieved on three of the eight active construction contracts. Progress this reporting period featured the following accomplishments:

- C-26005 (C2A) "96th Street Site Work and Heavy Civil" Substantial Completion was achieved on November 5, 2013. Mitigation of water leaks is ongoing with good results being noted from the grouting process. Delivery of "As-Built" documentation is pending final signal off by contractor.
- C-26010 (C2B) "96th Street Station Civil, Architectural, and MEP". Millestone 6, 7 and 8 were partially completed; select rooms were turned over to the C6 contractor.
- C-26006 (C3) "63rd Street Station Rehabilitation". The focus of the work effort continues to be Area 5 and Entrance #1. The C6 contractor continues work at the site. At

Entrance #1 installation of escalators has begun. The kiosk for the street elevator (Entrance #2) is in fabrication.

- G-26007 (C4B) "72nd Street Station Cavern Mining and Lining" Substantial Completion was achieved on January 14, 2014. Contract closeout is underway.
- G-26011 (C4C) "72nd Street Station Architectural and MEP Systems". Ancillary Building #2 above grade construction has reached the second floor. Street decking is being removed at Ancillary Building #1 and construction is *near street level. Lining of the Entrance #2 incline is complete to the street level.*
- G-26008 (C5B) "86th Street Station Cavern Mining and Lining". Substantial Completion of all contract work was achieved on December 16, 2014.
- G-26012 (C5C) "86th Street Station Architectural and MEP". Construction of CMU walls in the North and South Mezzanines to complete milestone rooms is ongoing. The contractor is working 2 shifts to complete the below grade structure of Ancillary #1.
- G-26009 (C6) "Track, Power, Signals and Communication Systems". Installation of signals, traction power, communication equipment and cables is ongoing throughout the various station and tunnel zones. Majority of equipment has been procured.

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 April 30, 2015, there are eight (8) active construction contracts on the SAS Phase 1 Project. Construction progress on the active contracts during this period includes:

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

- Substantial Completion was achieved on November 5, 2013.
- Submittal of contract closeout documentation is ongoing.
- Mitigation of water leaks is impacting the final closeout of the contract.

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

- Station Area 1 Grid Line (GL) 1-8 (91st to 93rd Street)

  CJTV continue to work on the OTE duct, installation of the Duct work in different rooms, fan coil units, miscellaneous plumping, lighting conduits and installation of conduits, flooring and painting and completion of rooms, Tunnel lighting and utility work in street level.

- Station Area 2 GL 8-18 (93rd to 95th Street)

  CJTV continues to work on OTE duct work at the track level and OTE duct support, installation of Acoustic Board (AMB), completion of concrete stairs and masonry walls at the platform and panel system and completion of rooms and installation of the electrical equipment.

- Station Area 3 GL 18-36 (95th to 99th Street)

  CJTV continues to work on installation of the platform overhang conduits, duct insulation in rooms, completion of masonry walls and installation of duct work completion of MS#6, 7 and 8 rooms.

- Ancillary 1 GL 8-9.5 (Northeast corner 2nd Ave. and 93rd St.)

  Ongoing work consisted of building slab and walls up to the lower roof level, duct insulation, concrete curbs and pads and rebuilding of (12x12x19) ECS manhole at 93rd St. ongoing.

- Ancillary 2 GL 28-29.5 (Southwest corner 2nd Ave. and 97th St.)

  Contractor continued working on the third floor level slab, walls and roof slab and installation of power and lighting conduit on the mezzanine level.

- Entrance 1 GL 13-14 (Southwest Corner 2nd Ave. and 94th St.)

  Continued working on building the masonry walls. Placement of stairs completed.

- Entrance 2 GL 13-14 (Northeast Corner 2nd Ave. and 94th St.)

  CIP wall installation, PVC waterproofing and placement of escalator invert is ongoing.

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

- Surveying of the Deformation Monitoring Points (DMPs) is ongoing and will continue throughout the project. There have been no instrument monitoring issues to date during the structural steel installation at Entrance #1.
- The focus of the work effort remains at Area 5 and the progress at Entrance #1.
- **Area 5 (Reconstruction consists of mezzanines and the deck plaza roof)**
  - In Area 5 rooms are being completed in Mezzanines 1 – 4. Inspections are ongoing.
  - Paver installation is near complete on the 6th Mezzanine. Paving in 6th Mezzanine toilets is ongoing.
  - Continued to complete CMU wall erection on the 6th Mezzanine.
  - Continuing work on the Elevator Entrances (Sills & Stainless Steel Frames).
  - Continued installation of power & communication conduits throughout.
  - Continuing with NYCT inspections on Mezzanines #1 through #5.
- **Entrances (#1, #2, #3 & #4)**
  - At Entrance #1 most of the temporary steel has been removed.
  - At Entrance #1 MEP work has begun.
  - At Entrance #1 escalator installation has begun.
  - At Entrance #2 the hydraulic elevator kiosk is in fabrication.
  - Granite cladding is being delivered for street Entrances #3 & #4. Framing installation is underway along with preparations for the interior entrance incline wall tiles.
- **Platforms**
  - Continued installation of porcelain track wall tiles and top stainless steel band on the inactive side of the C3 & C4 platforms.

- Continued installation of ceiling panels and column cladding on the G3 & G4 inactive side platforms.

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

- Substantial Completion was achieved on January 14, 2014
- Submittal of contract closeout documentation is ongoing.

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

- **Ancillary #2 and Entrance #2**
  - Continuing with construction of second floor walls and completing some first floor walls at Ancillary #2. Continued with conduit and electrical equipment in the sub-basement.
  - Formwork for the arch at Entrance #2 incline has been stripped. Completion of the full 1st Floor slab is forecast for June 1, 2015.
- **Ancillary #1**
  - 60% of the street deck has been removed at Ancillary #1. 100% of the deck will be completed by May 12, 2015. Continuing placement of Basement walls and continuing with duct work, conduit and CMU walls along the access passageway.
- **Cavern Mezzanine (Public, North & South)**
  - At the North & South Mezzanines continuing MEP installation in Fan/Chiller rooms.
  - Continuing installation of electric equipment & conduit in the North & South EDR rooms.
  - Completing CMU & MEP the South Upper Mezzanine rooms. Began installing the precast fascia panels in the North Mezzanine.
  - In the Public Mezzanine continued with conduit in the east and west service space and began installing ceiling acoustical panels.
- **Platform**
  - Fit-out in the Escalator Machine Rooms is ongoing on the Platform. Began installing horizontal framing for the track wall tiles.
  - Platform deck topping is complete.
- **Entrance #1:**
  - At Entrance #1 rock removal nears completion in the garage. Rebar installation for invert slab continues along the access from the mezzanine level. At the street sand walls are being placed.
- **Entrance #3 (Elevator Bank)**
  - At Entrance #3 Elevator Shaft there are 2 concrete placements left to reach street level.

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

- Substantial Completion of all contract work was achieved on December 16, 2014.

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

- **General**
  - The 87th S. Shaft will remain open until the end of July 2015 to allow for continued deliveries by the C6 contractor.
  - HVAC equipment deliveries are continuing.
- **Cavern (Public, North & South)**
  - In the North Mezzanine concrete curbs are ongoing and ceiling installation is underway in the North Upper Mezzanine.
  - Completing CMU walls in the North & South Mezzanines.
  - Mechanical and conduit work is ongoing in the Public Cavern.
- **Entrance #1**
  - Continuing with conduit installation.
- **Entrance #2**
  - Kone continues installation of the trusses and treads for the "short run" escalators at Entrance #2. Trusses for the Platform to Mezzanine escalators have been delivered to the site.
- **Ancillary #1**
  - At Ancillary #1 wall and slab placement continues with a forecast to complete the street deck "roof" May 18th, 2015. The work has reached the 3rd level in the Open Cut area. The contractor is now working 6 days, 2 weekday shifts in this area.
- **Ancillary #2**
  - Continued with waterproofing to the street level, slab placement and wall erection.
- **South Tunnels**
  - Punchlist work is near complete in the East & West Tunnels. The contractor continues to grout to control the leaks in the tunnel(s).
- **Platform**
  - Completed construction of the platform deck and topping.

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

- Track:
  - A total of 8,400 LF out of 22,000 LF of track has been installed as of April 30, 2015. G4 track concrete placement at 63rd Street completed.
  - Rail required for special track work at 96th Street was delivered.
- Communication:
  - Fiber optic cable testing for 63rd Street Milestone 5A/5B. Wide Area Network (WAN) and Local Area Network (LAN) is ongoing.

- Cables required for inter-station communication room connectivity between 63rd and 72nd Streets have been installed.
- Emergency Alarm (EA) and sound power phones end devices with associated conduit between 63rd and 72nd Street station tunnels have been installed.

- Signal
  - Cable tray installation under the platform at 63rd Street Station is ongoing.
  - Installation of line and local cables, conduits and wayside signal equipment is ongoing.
  - Installation of racks and wall equipment in 147 Central Instrument Room at 63rd Street Station ongoing.
- Power
  - Rack, conduit and cable installation is in the traction power rooms is ongoing.
  - Installation of line and local cables, conduits and wayside signal equipment is ongoing.

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

Status:

During April 2015, the Second Avenue Subway Quality Management team continued holding Quality Meetings and Quarterly Quality Oversights of the Contractor with CCM, MTACC, and PMOC participation. They participated in the job progress meetings, monitored quality matters in the field for each construction contract, reviewed and provided comments for Quality Work Plans, and participated in Preparatory Phase Meetings for numerous construction processes.

Observations:

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

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

Contractor	Weeks Behind
2B	2
C3	2
C5C	4

No ESA contractor is more than several days behind in entering Daily Inspection Reports into the ESA System. The PMOC suggested that the SAS Quality Manager talk with the ESA Quality Manager for suggestions to submit Daily Inspection Reports more promptly.

Nonconformance Reports (NCRs): The C2B and C5C contractors are not following their approved nonconformance reporting systems. Details are provided in the table below.

C4C Contractor: The C4C contractor hired a new Quality Manager in November 2014. C4C Contractor Management stated that entry of Daily Inspection Reports and generation of NCRs in the required time frame would improve. Entry of Daily Inspection Reports and generation of NCRs have been current for the past four months.

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

- Work is being performed without approved Quality Work Plans (QWPs)
- Preparatory Phase Meetings are not held
- Mock-up work is proceeding without approval
- Mechanical/electrical/plumbing (MEP) hold point inspections are being bypassed
- The calibration log needs to be updated
- Audit reports are not submitted to CMS and
- The audit schedule is not being followed

SAS and MTACC Quality and Program Management has met with the contractor's management and based on the PMOC's concern, the MTACC Chief of Quality and System Certification has requested that he and the SAS Program Executive meet with the contractor's management in May 2015.

Contract Package C2B	
Status:	Through April 30, 2015, a total of 101 NCRs have been issued. 42 have been closed and 59 NCRs are still open. In April 2015, 7 new NCRs were written and 7 were closed.
Observation:	Of the 59 open NCRs, 42 are for concrete that was out of specification. A concrete analysis was expected to have been prepared by the end of April 2015, but this did not happen. Entry of Daily Inspection Reports into CMS is two weeks behind. Bi-weekly Quality Management Meetings, as suggested by the PMOC, are still being held.
Concerns and Recommendations:	The concrete analysis has still not been prepared. Many NCRs that have been written have been open for many months. Although the contractor's management has promised additional help to the contractor's Quality Manager, this has not occurred.
Contract Package C3	
Status:	Through April 30, 2015, a total of 103 NCRs have been issued. 94 have been closed and 9 NCRs are still open. In April 2015, 2 new NCRs were written and 4 were closed.
Observation:	At the end of April 2015, there was one open NCR that was written by the contractor on one of their subcontractors. Two others were closed

	in March and two more in April. Entry of Daily Inspection Reports into CMS is 2 weeks behind.
Concerns and Recommendations:	At the beginning of 2015, the PMOC had been concerned that there were seven NCRs written against one subcontractor that had been open for three to twelve months. The SAS C3 and the C3 contractor's Quality Manager have successfully closed six of them. The PMOC now has no concerns.
Contract Package C4C	
Status:	Through April 30, 2015, a total of 115 NCRs have been issued. 31 have been closed and 84 NCRs are still open. In April 2015, 9 NCRs were written and 21 were closed.
Observation:	78 of the 84 open NCRs are for concrete that was out of specification. 5 of the 9 NCRs generated in April were for concrete that failed. The contractor has performed two concrete analyses, one for each of its suppliers. One concrete analysis was approved by the Designer of Record and the next concrete analysis was submitted before the scheduled May 1, 2015 date. Submittal of Daily Inspection Reports is current.
Concerns and Recommendations:	None.
Contract Package C5C	
Status:	Through April 30, 2015, 59 NCRs have been written. Four of these have not been issued pending the signature of the contractor's Project Manager. There are another 29 NCRs that have been assigned a number but in the NCR Log is the phrase "not identified". Of the 55 that have been issued, 11 have been closed and 44 NCRs are still open. In April 2015, 2 new NCRs were written and one was closed.
Observation:	Submittal of Daily Inspection Reports is 4 weeks behind. When an NCR is written, it should be issued immediately and not wait for the Project Manager's signature. In fact, the Project Manager should not be signing NCRs when they are written. Bi-weekly Quality Management Meetings, as suggested by the PMOC, are still being held.
Concerns and Recommendations:	In February 2015, the PMOC recommended that all NCRs be issued and entered into CMS immediately and that the contractor establish a schedule to close the non-concrete NCRs. This has still not occurred. The contractor's Quality Manager has stated that he cannot keep up with the workload. The PMOC recommended that MTACC Quality Management resolve this issue. A meeting with the CMs Office and the contractor's Management was held in April 2015 but no improvement has been made. Additional PMOC concerns are listed in the front of this section.

Contract Package C6	
Status:	Through April 30, 2015, a total of 34 NCRs have been issued. 17 have been closed and 17 NCRs are still open. In April 2015, three new NCRs were written and one was closed. Entry of Daily Inspection Reports into CMS is current.
Observation:	16 of the open NCRs are for concrete placement that is out of specification. The contractor submitted Waiver #23 to extend the time of concrete placement from 90 minutes to 120 minutes. The Designer of Record will not approve this waiver. The contractor has prepared an analysis of concrete strength, was requested to provide additional information, and is in the process of updating the analysis.
Concerns and Recommendations:	The PMOC has no concerns.

Concerns and Recommendations:

Refer to previous section.

2.0 SCHEDULE DATA

Status:

The Integrated Project Schedule (IPS) is a management level schedule that integrates all ten construction packages along with design, procurement, startup and other support activities. IPS Update #105 was received on May 1, 2015 and is based on a Data Date of April 1, 2015. This update contains the ".XER" schedule files for the IPS and active construction contracts as well as a narrative report.

There are several significant changes included within Update #105:

- This period SAS Primary Schedule Contingency increased from 27 WD (38 CD) to 35 WD (49 CD). This increase is attributable to a collaborative effort by MTACC and the C6 Contactor to resequence track work installation and adjustments to schedule logic for remaining communications, signals, and traction power work. As a result of these revisions, track work installation is no longer the primary critical path.
- MTACC and the 96th Street Station Contractor (C2B) have agreed to a plan that will recover 53 CD of delay. This plan has been included in IPS Upgrade #105; however it has yet to be fully implemented.

IPS Update #105 forecasts the completion of all construction and NYCT Pre-Revenue Training & Testing activities on November 11, 2016, with approximately 49 calendar days (CD) or 35 work days (WD) of contingency, resulting in a forecast Revenue Service Date (RSD) of December 30, 2016.

Schedule contingency based on IPS Update #105 is summarized as follows:

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

Observations:

Project Critical Path:

MTACC's schedule narrative identifies five independent float paths as "critical". Each of these paths has no more than 15 WD of schedule float. The PMOC concurs with MTACC's evaluation of the relative importance of these paths and for consistency, will follow the same reporting format.

1st Critical Path (TF=0): The longest continuous path involves electric conduit installation between signal rooms at the 72nd Street Station. This work is forecast to complete on June 25, 2015 and will allow the start of wire pulling and device installation. This is followed by the installation and testing of panels and relays which are forecast to complete on January 1, 2016. The path then follows Signal Rooms Field Installation Acceptance Test (FIAT), Facility Integrated Systems Test (FIST) and Final Systems Integrated Test (FSIT) at 72nd St Station through October 18, 2016. System Wide Operational & Train Tests then proceeds until November 11, 2016. The Critical Path then completes with 35 WDs *(49 CDs)* of Schedule Contingency leading to a RSD date of December 30, 2016.

2nd Critical Path (TF=0): This path is initiated by the construction of interior spaces within Ancillary 1 at the 86th Street Station which control the turnover (C5C MS #9) and start of traction power substation work by the Systems Contractor (C6) on May 28, 2015. This work consists of installation of Epoxy Floors, Switchgear and Transformers, through July 24, 2015 and then continues through the grounding, installation of supports, Bus Duct and Installation and Termination of HT cables. Installation work is forecast for completion on March 3, 2016 and is followed by FIAT, FIST, and IST for the traction power system and should complete by August 4, 2016. Facility Integrated Testing at 86th St station followed by Proof of Route Familiarization Training extends the path through November 9, 2016. Two WD of schedule float and 35 WD of contingency result in the RSD date of December 30, 2016.

3rd Critical Path (TF=10): The majority of the work on this path involves signal system installation within the 86th Street Station. This work will be performed by the C6 (Systems) Contractor, and is initiated via the achievement of C5C Milestone #7 by the C5C (Station) Contractor. IPS logic indicates there are several activities that must be accomplished before C5C MS#7 can be achieved:

- C5G-11668: Conduit Installation below platform (TF=10)

- C5G-AA2301-1950: Install Block Walls Mezzanine Level Rooms 3011-3045 (TF=23)
- C5G-SS2100-1230: Install block walls south area of platform IPS (TF=38)

For each of these MS #7 predecessor activities, negative lag relationships to the Milestone are approximately equal to the float value. Without these negative lag relationships, this would be the "most critical" path on the project. It is possible that room turnover may be accomplished prior to complete achievement of MS #7, although, based on experience, the PMOC considers this unlikely.

After gaining access to the work areas, currently forecast for May 7, 2015, work involves installation of signal system relays through January 5, 2016. The path then follows signal room and system testing (FIAT, FIST and FSIT) through September 30, 2016 and ties to System Wide Operational & Train Tests with 10 WDs (14 CDs) of float. The Critical Path then completes with the same 35 WDs *(49 CDs)* of Schedule Contingency leading to a RSD date of December 30, 2016.

4th Critical Path (TF=12/15): This path extends through construction of Ancillary #2 at the 96th Street Station. The path is initiated by structural construction of the street level slab and through 4th level parapet walls, forecast to complete on October 14, 2015. From that date, the path follows mechanical installation of fans and ducts for tunnel ventilation, electrical power and lighting installation through October 21, 2016, which is the forecast date of C2B Substantial Completion. C2B Substantial Completion ties directly to SAS Phase 1 Completion on November 11, 2016.

Several aspects of this work at 96th Street Station are significant:

- This path is unique in that it is solely controlled by the C2B Contractor, with no component of this work performed by the Systems (C6) Contractor.
- Float values for this path have varied significantly during 2015.
    - IPS Update #102 DD=1/1/2015: +11
    - IPS Update #103, DD=2/1/2015: +44
    - IPS Update #104 DD=3/1/2015: +26
    - IPS Update #105 DD=4/1/2015: +12

On February 18, 2015, MTACC reported work at 96th Street Ancillary #2 had recovered float through an accelerated construction schedule. Subsequent updates indicate this schedule acceleration was not achieved.

5th Critical Path (TF=15): Similar to the TF=10) path, this path involves signal system installation at 96th Street Station and is triggered by the C2B Contractor's achievement of C2B Milestones #7 and #8. Both of these Milestones are forecast for completion on April 8, 2015 and are preceded by the following station construction activity:

- C2B-floor: Concrete curbs and pads, ceramic tiles, floor finishes (TF=16)

The negative lag relationship to the Milestone significantly exceeds the float value. Without these negative lag relationships, this would be the "most critical" path on the project. It is possible that this work is part of the acceleration initiative agreed to by MTACC and the C2B Contractor or, room turnover may be accomplished prior to complete achievement these

milestones. However, based on experience, the PMOC is concerned about the project team's ability to realize these milestone turnover dates.

After gaining access to the work area, the Systems Contractor will install, connect and test signal cables through December 7, 2015. The path then follows FIAT, FIST and FSIT testing through September 26, 2016 and ties to Revenue Service with 15 WDs (21 CDs) of float. The Critical Path then completes with the same 35 WDs *(49 CDs)* of Schedule Contingency leading to a RSD date of December 30, 2016.

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

+15 WD: This path is initiated by FAT testing of five (5) escalators to be installed at the 96th Street station. Following the completion of FAT testing on June 12, 2015, installation of these escalators and accessories is forecast to extend through April 22, 2016. Individual and system level testing of the escalators will then proceed through October 21, 2016. Completion of this work ties directly to C2B Substantial Completion on October 21, 2016 and then to SAS Phase 1 Completion on November 11, 2016.

+25 WD: This path represents procurement, installation and testing of permanent power equipment at the 86th Street Station. Following the forecast "Permanent Power Available" date of December 28, 2015, the path follows component and system testing of mechanical and electrical equipment throughout the station.

+31 WD: This path represents delivery and installation of equipment required for permanent power at the 72nd Street Station. Following the "Permanent Power Available" date of December 31, 2015, this path merges with numerous other paths involving the testing and acceptance of equipment throughout the station.

+40 WD: This path represents the construction of Entrance #1 at the 72nd St. Station. Structural excavation and underpinning is forecast to complete on April 7, 2016. The path then follows finish construction, which is concurrent with escalator installation through testing and commissioning. All work at Entrance #1 is forecast to be complete by September 16, 2016.

+105 WD: This path represents procurement, installation and testing of permanent power equipment at the 96th Street Station. Following the forecast "Permanent Power Available" date of December 14, 2015, the path follows component and system testing of mechanical and electrical equipment throughout the station.

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

1. Status of Milestones forecast to complete this update period (03/01/15 to 03/31/15):

Pkg.	MS	Description	UD #104 Forecast	Status	UD #105 Forecast
C2B	4	Shared access in East & West track-ways thru Sta (1238+50 - >1225+25); 97th -> 99th St Tunnel	03/02/15	Complete	-

		in 99th to 105th St Tunnels			
C4C	7B	Complete Work Ancillary #1	03/02/15	Incomplete	05/14/15
C2B	6A	Full access to Comms Rooms & Closets	03/09/15	Complete	-
C2B	8A	Full access to Traction Power Rooms:	03/09/15	Incomplete	04/08/15
C5C	5	Turnover of Comm. Rooms	03/18/15	Incomplete	04/17/15
C4C	12	Full access @Station Service Center(s)	03/31/15	Incomplete	04/24/15

2. Milestones forecast to complete during previous update period (01/31/15 to 02/28/15)

Pkg.	MS	Description	UD #103 Forecast	Status	UD #105 Forecast
C2B	MS #6A	Full access to Comms Rooms & Closets	02/24/15	Complete	
C2B	MS #7A	Full access to Signals Rooms	02/24/15	Incomplete	04/08/15
C2B	MS #8A	Full access to Traction Power Rooms	02/25/15	Incomplete	04/08/05
C5C	MS #5	Turnover of Comm. Rooms	02/25/15	Incomplete	04/17/15
C4C	MS #7B	Complete Work Ancillary #1 (New MS)	02/02/15	Incomplete	05/14/15

3. Milestones scheduled for completion during the next update period (05/01/15 to 05/31/15).

Pkg.	MS	Description	UD #105 Forecast	Float
C2B	7A	Full access to Signals Rooms	**04/08/15**	15
C2B	8A	Full access to Traction Power Rooms:	**04/08/15**	15
C5C	2	Limited Access; Sta. 1209+00->1198+00	**04/14/15**	110
C5C	5	Turnover of Comm. Rooms	**04/17/15**	17
C4C	12	Full access @Station Service Center(s)	**04/24/15**	43
C5C	14b	Limited Access all locations	**04/30/15**	392

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

Pkg	MS	Description	UD #104	UD #105	Variance
C6	5C	Complete all 63rd St. Station work	01/21/16	**04/08/16**	78
C4C	7B	Complete Work Ancillary #1	03/02/15	**05/14/15**	73
C6	5A	Complete LAN - 63rd St. Station	04/24/15	**06/16/15**	53
C6	5B	Complete WAN - 63rd St. Station	04/24/15	**06/16/15**	53
C4C	10	Complete north power rooms	04/23/15	**05/28/15**	35
C2B	9	Full access to Station Service Centers	09/11/15	**10/14/15**	33
C6	4A	Complete LAN - 72nd St. Station	02/05/16	**03/08/16**	32
C6	4B	Complete WAN - 72nd St. Station	02/05/16	**03/08/16**	32
C2B	8A	Full access to Traction Power Rooms:	03/09/15	**04/08/15**	30
C5C	5	Turnover of Comm. Rooms	03/18/15	**04/17/15**	30
C3	SS	Substantial Completion	03/24/16	**02/16/16**	-37

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

Pkg	MS	Description	UD #104	UD #105	Variance
C5C	11	Full access @Station Service Center(s)	04/30/15	**05/26/15**	**-90**
C5C	9A	Room-to-Room Conduit Ready	05/06/15	**05/28/15**	**-77**
C6	5C	Complete all 63rd St. Station work	01/21/16	**04/08/16**	**-75**
C2B	6B	Full access to Comms Rooms & Closets	06/24/15	**06/24/15**	**-55**
C2B	6C	Full access to Comms Rooms & Closets	06/24/15	**06/24/15**	**-55**

Pkg	MS	Description	UD #104	UD #105	Variance
C5C	6A	Room-to-Room Conduit Ready	07/20/15	**07/06/15**	**-45**
C5C	5	Turnover of Comm. Rooms	03/18/15	**04/17/15**	**-40**
C6	5A	Complete LAN - 63rd St. Station	04/24/15	**06/16/15**	**-39**
C6	5B	Complete WAN - 63rd St. Station	04/24/15	**06/16/15**	**-39**
C3	4c	Compl Lwr/Uppr Platforms & Signal Rms	04/23/15	**05/20/15**	**-38**
C4C	10	Complete north power rooms	04/23/15	**05/28/15**	**-31**
C2B	9	Full access to Station Service Centers	09/11/15	**10/14/15**	**-30**
C6	4A	Complete LAN - 72nd St. Station	02/05/16	**03/08/16**	**-30**
C6	4B	Complete WAN - 72nd St. Station	02/05/16	**03/08/16**	**-30**

6. Milestones with excessive float values are listed in the following table.

			UD# 105	
Pkg	**MS**	**Description**	**Date**	**Float**
C5C	14b	Limited Access all locations	**04/30/15**	392
C3	4c	Compl Lwr/Uppr Platforms & Signal Rms	**05/20/15**	259
C5C	11	Full access @Station Service Center(s)	**05/26/15**	247
C2B	8B	Full access to Traction Power Rooms:	**06/24/15**	210
C2B	8C	Full access to Traction Power Rooms:	**06/24/15**	210
C6	5A	Complete LAN - 63rd St. Station	**06/16/15**	201
C6	5B	Complete WAN - 63rd St. Station	**06/16/15**	201
C2B	10	Complete all remaining Comms, Signal, & Traction Power work	**05/14/15**	198
C3	SS	Substantial Completion	**02/16/16**	183
C4C	7A	Complete Work in all Comm Rooms	**03/01/16**	176

Example: Based on this information, C2B, MS#8B & 8C can be achieved as late as 4/25/16 (210 WD later than the currently scheduled date of 06/15/15.

Schedule Contingency: As of IPS Update #105 there are 49 CD (35 WD) contingency between the calculated completion of all work on November 11, 2016 and MTACC target RSD of December 30, 2016. The project schedule gained 11 CD of contingency over this latest reporting period.

ELPEP/SMP Compliance: MTACC considers the IPS and the associated schedule management procedures to be in compliance with the ELPEP and Schedule Management Plan. Elsewhere in this report, the PMOC has identified those areas where it believes current SAS schedule practices compromise the accuracy and usefulness of the IPS.

- Forecast Revenue Service Date (RSD) and minimum schedule contingency:
  - ELPEP Requirement: February 28, 2018 (RSD)
  - ELPEP Requirement: 240 CD (measured against February 28, 2018)
- Minimum Allowable Float; Real Estate Acquisition
  - ELPEP Requirement: 60 CD
    - Current Forecast: All Real Estate takings are complete as of November 1, 2011 with the last "Title Vesting" occurring on October 25, 2011.
- Minimum Allowable Secondary Float Path
  - ELPEP Requirement: Minimum 25 Calendar Days (approximately 18 WD) of schedule float for all secondary "near-critical" paths.
  - Numerous secondary float paths with Total Float (TF) <= 25 CD. Many of these paths have multiple subsidiary paths branching off the independent paths.
  - Compliance with this requirement is not consistent with maintaining the project budget.
- Secondary Schedule Mitigation (critical path compression)
  - ELPEP Requirement: 125 CD
  - Mitigation opportunities will be pursued as they are identified.

Concerns and Recommendations:

Based on the PMOC's review of IPS Update #105:

- The acceleration initiative that removed the trackwork from the critical path has the effect of creating a discontinuous work program where track installation is concurrently underway at three separate locations. Float values for trackwork now range between +24 and +79 WD.
- In addition to the critical and near-critical paths previously described, the PMOC notes that there are numerous paths with less than 40 WD of float involving almost all trades and all locations at the 96th Street Station. Concern over the risk of project-level delay due to delay at this station is increasing.
- Decreases in available schedule float for all permanent power activities at each of the new stations are noted.

- Two of six (33%) of milestones scheduled for completion this reporting period were actually completed.
- Of the 11 active schedule milestones experiencing significant schedule variance, 10 of these variances delayed the milestone completion. This continues a general trend wherein construction generally takes longer than forecast by the IPS and respective project schedules.
- Of the 46 active milestones, six are forecast for completion during the next update period (May 2015).

3.0 COST DATA

Based upon financial expenditures reported by the MTACC through April 30, 2015 SAS Phase 1 is approximately 76.3% complete. The completion status of the individual construction contracts through April 30, 2015, also based upon reported expenditures through that date, is as follows:

- C26002 (Tunnel Boring) – 100.0%
- C26005 (96th Street Station) – 99.8%
- C26010 (96th Street Station) –66.2%
- C26013 (86th Street Station) – 100%
- C26008 (86th Street Station) – 99.2%
- C26012 (86th Street Station) – 35.2%
- C26006 (63rd Street Station) – 88.4%
- C26007 (72nd Street Station) – 99.9%
- C26011 (72nd Street Station) – 50.2%
- C26009 (Systems) – 54.6%

Aggregate Construction % Completion:

- 100% of all construction has been bid.
- 100% of all construction is under contract
- 80.2% of base contract construction (excluding AWOs) is complete
- 81.3% of all construction is complete

Based upon cost data received from MTACC for the period through April 30, 2015:

- Value of construction in place this period = $36,246,835
- Estimated value of construction remaining = $377,976,297 (base contract only)
- Target construction completion = November 11, 2016
- Number of months remaining = 18.5

The estimated average rate of construction required to achieve target completion date is $22,551,696 per month. The average progress (payments) achieved over the most recent six month period is $35,697,549 per month. This gross evaluation of construction progress continues to indicate that adequate progress is being made on the project to achieve the RSD of December

30, 2016. It is noted that the forecast volume of work going forward is based on base contract (excluding AWOs) work only. Significant additional work may alter this forecast.

Soft Cost expenditures (not including real estate, OCIP, etc.) reported this period by MTACC totaled $7.9M. This expenditure is somewhat higher than anticipated by the CWB. The majority of this expenditure was for CM and Engineering Force Account services. Proposed CWB increases for both categories should be sufficient through the construction and post-construction periods.

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

	Executed AWOs	AWO Exposure
Apr-15	$182,513,498	$216,577,769
March-15	$178,994,307	$209,427,806
Δ	$3,519,191	$7,149,963
Δ	1.97%	3.41%

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

Const. Pkg.		AWO Exposure		
	Apr-15	Mar-15	Period Δ	Changes this Period
Completed Packages	$47,612,118	$47,612,118	$0	Final values for Packages C1 and C5A as reported by MTACC.
C2A	$47,615,409	$47,615,409	$0	No change reported this period.
C2B	$32,464,935	$32,099,910	$365,025	Net increase is based on revised estimates for AWO # 47, 76, 107, 108, 110, 112, 124, 127, 137, 140, 143, 151, 152 and initial estimates for AWO # 131, 132, 136, 146 and 153.
C3	$23,173,151	$18,600,179	$4,572,972	Net increase is based on revised estimates for AWO # 93, 102, 142, 150, 160, 165, 169, 170, 175, 177, 178, 180, 182, 183, 184, 186, 188, 192, 193, 197, 200, 202, 205 and initial estimates for AWO # 208 through 213.
C4B	$1,325,639	$1,325,639	$0	No change reported this period.
C4C	$27,449,961	$26,681,228	$768,733	Net increase is based on revised estimates for AWO # 7, 68, 75, 101, 119, 128 and initial estimates for AWO # 136, 138, 141, 142, 145 and 146.

Const. Pkg.		AWO Exposure		
	Apr-15	Mar-15	Period Δ	Changes this Period
C5B	$21,633,017	$21,714,203	-$81,186	Decrease is based on revised estimates for AWO # 59, 94, 103 and 104.
C5C	$7,780,905	$6,510,466	$1,270,439	Net increase is based on initial estimates for AWO # 6, 46, 62, 68, 72, 89, 93 and revised estimates for AWO # 18, 31, 34 and 66.
C6	$7,522,634	$7,046,647	$475,987	Net increase is based on initial estimates for AWO # 72, 75, 81, 84, 86 and a revised estimate for AWO # 80.
	$216,577,769	$209,205,799	$7,371,970	

The changes in Executed AWO Value are summarized as follows:

Const. Pkg.	Executed AWOs			
	Apr-15	Mar-15	Period Δ	Changes this Period
Completed Packages	$47,612,118	$47,612,118	$0	Final values for Packages C1 and C5A as reported by MTACC.
C2A	$47,615,409	$47,615,409	$0	No change reported this period.
C2B	$24,263,073	$22,411,573	$1,851,500	Increase is based on execution of AWO # 85, 107, 110, 112, 120, 124, 127and 128.
C3	$13,474,549	$12,437,769	$1,036,780	Increase is based on execution of AWO # 46, 132, 140, 158, 162, 163, 167, 169, 182, 187, 195, 205 and 208.
C4B	$1,325,639	$1,325,639	$0	No change reported this period.
C4C	$22,814,212	$22,588,995	$225,217	Net increase is based on execution of AWO # 69, 93, 100, 102, 111, 127, 138, 139 and 145.
C5B	$17,820,303	$17,772,109	$48,194	Net increase is based on execution of AWO # 93 and 97.
C5C	$1,249,300	$940,300	$309,000	Increase is based on the execution of AWO # 7 and 37.
C6	$6,338,895	$6,290,395	$48,500	Increase is based on execution of AWO # 75 and 81.
	$182,513,498	$178,994,307	$3,519,191	

As of April 30, 2015, 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)	*99.84%*	$325,000,000	*$47,615,409*	*14.65%*	$47,615,409	14.65%
C26010 (2B)	*66.24%*	$324,600,000	*$32,464,935*	*10.00%*	$24,263,073	7.47%
C26006 (3)	*88.40%*	$176,450,000	*$23,173,151*	*13.13%*	*$13,474,549*	*7.64%*
C26007 (4B)	*99.93%*	$447,180,260	*$1,325,639*	*0.30%*	*$1,325,639*	*0.30%*
C26011 (4C)	*50.23%*	$258,353,000	*$27,449,961*	*10.62%*	*$22,814,212*	*8.83%*
C26013 (5A)	***100.00%***	**$34,070,039**	***$6,525,471***	**19.15 %**	**$6,525,471**	**19.15 %**
C26008 (5B)	*99.20%*	$301,860,000	*$21,633,017*	7.17%	*$17,820,303*	*5.90%*
C26012 (5C)	*35.18%*	$208,376,000	*$7,780,905*	3.73%	*$1,249,300*	*0.60%*
C26009(6)	*54.57%*	$261,900,000	$7,522,634	*2.87%*	$6,338,895	2.42%
TOTAL TO DATE		$2,674,814,299	*$216,577,769*	*8.10%*	*$182,513,498*	*6.82%*

To date, approximately $2,145,298,929 (80.2%) worth of all base contract construction work has been completed. As a %of work completed, the AWO exposure for these contracts = 10.10% and the executed AWO % = 8.51%

The PMOC notes a high correlation between AWO exposure estimates and the final negotiated AWO value. Consequently, forecasting total AWO expenditures at completion based on the current AWO exposure values appear justified and reasonable. This forecast suggests the final AWO value will be approximately $270 M, which is significantly above the $229 M AWO contingency contained in the MTACC CWB.

MTACC maintains an AWO forecast which includes input from its Risk Registers. The MTACC AWO EAC Forecast through March 31, 2015 is $307,539,324. This value is somewhat greater than the PMOCs 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 April 30, 2015 reported by MTACC and the current AWO Exposure analyses; the PMOC has developed the following contingency analysis:

	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	$1,097,129,856	$1,097,129,856
Soft Cost Forecast to Complete	$210,978,229	$282,003,346
AWO Exposure	$216,577,769	$307,539,324
Total Contingency	$251,499,847	$89,513,175
Reserved Contingency	$160,000,000	$89,513,175
Available Contingency	$91,499,847	
Transfer from Reserved Contingency =		$70,486,825

Notes:

(1) Forecast to complete includes increases in OCIP, A/E & CM Services, Engineering Testing and FOC installation.

(2) AWO Exposure incorporates MTACC "risk-informed" forecast through March 2015.

(3) Total Contingency = budget balance after forecast expenditures.

(4) Reflects current forecast transfer of $70,486,825 from "Reserved Contingency

(5) Minimum Available Contingency required by ELPEP is approximately $143,076,923.

Conclusions based upon this analysis include:

- The project can be completed within the current MTACC CWB of $4.451B.
- Current forecast indicates it will be necessary to transfer funds from the "Executive" or "Reserved" Contingency in order to cover forecast project costs.
- Current available contingency of approximately $$251.5M is greater than ELPEP-required minimum.

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

4.0 RISK MANAGEMENT

Status

Major risks challenging the SAS Project Team at this time are all primarily schedule related. The Project maintains individual Risk Registers for each active contract. The resulting cost and schedule contingency curves are consistent with the previous discussions contained within this report.

Observation and Analysis:

The Project's major schedule/risk items are presented below along with the management efforts to manage and mitigate each risk:

Track Installation Delay: Track installation has been delayed due to the slow progress in approval of technical submissions. Resolution of conflicting survey data has delayed the review and approval of final alignment submittals. Installation of track work has been on the SAS Primary Critical Path (CP); delays to track work submittals has consumed project-level schedule contingency although the forecast RSD has been maintained. Several mitigation measures have been identified and are being implemented:

- MTACC is working all involved parties to expedite approval of remaining track work alignment submittals. This is expected to correct the previous issue with submittal delays. The next track zones to be completed are zones 5 and 6; submittals for these zones are approved.

- MTACC and the Systems Contractor have agreed on a re-sequenced track work plan. This plan shows all track work completed in March 2016 with Third Rail completed in May 2016. This re-sequenced installation plan removes track installation from the current project critical path.
- MTACC and the Systems Contractor have held bi-weekly meetings to resolve track work issues and will continue to hold them until it is clear that track work installation is consistently performing as planned. Predecessor activities that must be completed in order to allow track work to be executed in accordance with the re-sequenced plan are being monitored; there are no constraints at this time.
- Schedules "fragnets" of track installation work have proven to be an effective means to focus attention on critical schedule activities and logic. Track installation "fragnets" extracted from the Contractor's construction schedule is utilized in all track work meetings.

72nd Street Station Entrance 1: In December 2014, MTACC and the 72nd Street Station Contractor executed a change order to accelerate construction at 72nd Street Station Entrance 1 from January 27, 2017 to September 16, 2016. Subsequent to this change order, the Contractor encountered problems with removal of rock on the escalator incline. Associated delay has become a risk to achieving the September 16 date. Entrance 1 at the 72nd Street Station needs to be completed by work by September 16, 2016 in order to maintain Project RSD. Schedule revisions to overcome this delay include:

- Street entrance excavation was completed 4/14/15. The balance of street work is on schedule.
- Incline rock excavation is scheduled for completion on 5/15/15. Incline transition to be poured by 5/8/15.
- Rebar is being placed in the incline ahead of schedule in order to expedite this area while rock excavation is being completed.
- Escalators (6, 7, 8) have been released for fabrication.
- The Project is continuously monitoring the progress of rock excavation, concrete lining installation and street work. The project receives bi-monthly updates on progress and places in schedule fragnets for review and status.

Facility Power: There is the risk that Facility Power at the new stations may not be available in time to support planned Testing and Commissioning activities. Delay in the availability of Facility Power will have a direct impact on project contingency and could impact the project RSD.

- MTACC is conducting bi-weekly meetings to status and address facility power issues. Action items resulting from meetings are being developed and implemented.
- MTACC is committed to identify delays and implement plans to recover any delays so that Facility Power is available at all three stations no later than December 31, 2015.
- Schedule fragnets of Facility Power have been an effective way to focus attention on critical schedule activities and logic. Fragnets have been completed, are continuously updated, and are used at meetings.

- 72nd Street Station: Delays completing Ancillary 1 Sub-basement and Basement rooms and Ancillary 2 Sub-basement rooms are problems at 72nd Street Station currently impacting delivery of permanent power. In an effort to maintain schedule, MTACC is working with the Contractor as follows:
  - Develop a schedule that completes Facility Power rooms prior to December 2015
  - Closely monitoring progress of the latest schedules for the Facility Power installation
  - Accelerate select activities if required to maintain schedule.
  - Regular meetings are being held with Con Edison to assure that feeders are ready to be energized to support the December 2015 date.
- 86th Street Station: Equipment delivery has slipped slightly due to fabrication changes to low voltage equipment; however, equipment delivery is still forecast to be on time. The contractor needs to complete rooms and room-to room conduit runs in order to accommodate equipment delivery. The Project continues to work with the contractor to identify measures to expedite room completion and room-to-room conduit installation. The contractor has started to accelerate Ancillary 1 Roof Structure and has been directed to accelerate completion of north facility power rooms.
- 96th Street Facility Power: Water leakage at this station initially generated concerns that equipment installation might be delayed until leak issue is resolved. The Project employed the services of an experienced grouting firm, to resolve the leak issue. At this time, water leakage appears to have been reduced to the point that the subsequent construction activities will not be further delayed. All equipment has been delivered to the station. The contractor has been requested to accelerate activities to achieve a Facility Power ready date of 11/6/15.

Conclusions

The MTACC has used the risk management process to assist in identifying potential cost/schedule risks to the project and develop mitigation strategies in a timely and effective manner.

At this time in the project lifecycle, the PMOC believes it necessary to refine the manner by which risks are identified based upon specific experiences from other MTACC projects.

5.0 ELPEP

The most recent ELPEP Quarterly Review Meeting was held on April 6, 2015. The next ELPEP Quarterly Review Meeting, with MTACC, FTA-RII, SAS and ESA projects and the PMOC is scheduled for June 11, 2015. With respect to SAS, the current status of each of the main ELPEP components is summarized as follows:

- **Technical Capacity and Capability (TCC):** PMOC comments for both SAS and ESA have been consolidated and forwarded to FTA.
- **Schedule Management Plan (SMP)**: MTACC's position it that the SAS management processes remain ELPEP compliant.

- **Cost Management Plan (CMP)**: PMOC comments for both SAS and ESA have been consolidated and forwarded to the FTA. MTACC's position it that the SAS management processes remain ELPEP compliant.
- **Risk Mitigation Capacity Plan (RMCP) and Risk Management Plan (RMP)**: MTACC's position is that the SAS management processes remain ELPEP compliant.

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

6.0 SAFETY AND SECURITY

Implementation of the Safety Requirements as specified in Section 01 11 50 of the General Requirements for each construction contract is ongoing. The contractors' safety management held tool box meetings, trained new employees, monitored the work areas individually and with the CCM Safety and OCIP representatives, and promptly investigated safety incidents. Safety Oversight by the CCM continued with Quarterly Assessments of selected contractors and sharing of Lessons Learned during the project wide monthly Safety Meeting. Site visits by MTA's office of Risk Management, MTA's IEC and FTA's PMOC is ongoing.

As of March 31, 2015 a total of 10,437,112 construction hours have been logged on the project with 90 lost time and 255 recordable incidents documented. The total hours and incidents equates to a Lost Time Rate (LTR) of 1.72 and a Recordable Rate (REC) of 4.89. The rates are a slight improvement from the previous month of 1.79 (LTR) and 4.99 (REC). The US Bureau of Labor Statistics (BLS) national rate (Heavy & Civil construction) for Lost Time and Recordable incidents are 1.7 and 3.2 respectively.

Safety and Security Certification: Implementation of the Safety and Security Certification Requirements as specified in Section 01 77 12 of the General Requirements for each Station Contract and the System Contract is ongoing. The checklists of the certifiable items associated with each certifiable element have been finalized and a formal submission has been made. A total of 1,234 certifiable items have been identified. An electronic data management system is being utilized as a depository for the objective evidence documenting the inspection/testing of a certifiable item. A monthly certification meeting for each station and system contractor is being held to review the status of the process.

7.0 ISSUES AND RECOMMENDATIONS

Schedule Erosion: As noted in Section 2 of this report and in previous PMOC Monthly Reports, milestones experiencing delay over recent periods significantly outnumber milestones where schedule forecasts are holding constant or improving. MTACC has managed to maintain its schedule to date by selective acceleration of delayed work and creative resequencing of downstream work activities. The PMOC notes at least one instance where the accelerated schedule reflected in the January IPS has already regressed to its pre-acceleration status by April. Without improvements in actual construction schedule execution to offset some of the delay, there is a significant risk of delay to the project RSD.

Quality Management: The PMOC is concerned that numerous, significant quality management process deficiencies involving the construction at 86th Street Station will ultimately result in delays that will affect the timely completion of the work. The PMOC recommends project

executive-level action that restores a fully-functioning quality management system for this project.

Safety and Security Certification: MTACC/SAS continues to conduct monthly overall SSC update meetings and individual contract monthly SSC meetings. The PMOC is concerned about the timely submission of the "Body of Evidence" associated with the certifiable items. The PMOC will continue to monitor the process during the monthly meetings.

APPENDIX A - ACRONYMS

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

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

APPENDIX B – TABLES

Table 1 - Summary of Schedule Dates

	FFGA (March 2015)	Forecast Completion	
		Grantee	PMOC
Begin Construction	January 1, 2007	March 20, 2007 A	March 20, 2007 A
Construction Complete	August, 2016	November 23, 2016	October 2017
Revenue Service	February 28, 2018	December 30, 2016	February 2018

A = Actual

Table 2 - Schedule Contingency

IPS Update #	100	101	102	103	104	105
Data Date	11/1/14	12/1/14	1/1/15	2/1/15	3/1/15	4/1/15
	Contingency (CD					
RSD=12/31/2016						
Risk Mitigated	84	87	69	38	38	49
Risk Realized	84	87	69	38	38	49
RSD=02/28/2018						
Risk Mitigated	508	511	492	461	461	473
Risk Realized	508	511	492	461	461	473

Table 3 - Schedule Milestone Comparison

			Dates			Variance		Sch.	
Pkg	MS	Description	Adjusted	UD #104	**UD #105**	Contract	Month	Float 105	Float Δ
C2B	6B	Full access to Comms Rooms & Closets	08/21/14	06/24/15	**06/24/15**	-307	0	99	**-55**
C2B	6C	Full access to Comms Rooms & Closets	08/21/14	06/24/15	**06/24/15**	-307	0	99	**-55**
C2B	7A	Full access to Signals Rooms	08/21/14	04/03/15	**04/08/15**	-230	5	15	**3**
C2B	7B	Full access to Signals Rooms	08/21/14	07/20/15	**07/24/15**	-337	4	16	**-12**
C2B	7C	Full access to Signals Rooms	08/21/14	07/20/15	**07/24/15**	-337	4	16	**-12**
C2B	8A	Full access to Traction Power Rooms:	08/21/14	03/09/15	**04/08/15**	-230	30	15	**-15**
C2B	8B	Full access to Traction Power Rooms:	08/21/14	06/24/15	**06/24/15**	-307	0	210	**-9**
C2B	8C	Full access to Traction Power Rooms:	08/21/14	06/24/15	**06/24/15**	-307	0	210	**-9**
C2B	9	Full access to Station Service Centers	11/21/14	09/11/15	**10/14/15**	-327	33	143	**-30**
C2B	10	Complete all remaining Comms, Signal, & Traction Power work	09/21/14	05/04/15	**05/14/15**	-235	10	198	**-15**
C2B	SS	Substantial Completion	12/21/15	10/11/16	**10/21/16**	-305	10	15	**-16**
C3	4c	Compl Lwr/Uppr Platforms & Signal Rms	*10/14/13*	04/23/15	**05/20/15**	-583	27	259	**-38**
C3	SS	Substantial Completion	05/13/14	03/24/16	**02/16/16**	-644	-37	183	**9**
C4C	7A	Complete Work in all Comm Rooms		03/17/16	**03/01/16**	-42430	-16	176	**2**
C4C	7B	Complete Work Ancillary #1		03/02/15	**05/14/15**	-42138	73	30	**-2**
C4C	10	Complete north power rooms	2/25/15	04/23/15	**05/28/15**	-92	35	20	**-31**
C4C	12	Full access @Station Service Center(s)	08/28/14	03/31/15	**04/24/15**	-239	24	43	**-25**
C4C	*SS*	*Substantial Completion w/o Ent. #1*	*11/13/15*	*09/17/16*	***09/16/16***	-308	-1	57	**-11**
C4C	*SS*	*Substantial Completion - Ent. #1*	*10/07/16*	*09/15/16*	***09/16/16***	21	1	40	**-9**
C5C	2	Limited Access; Sta. 1209+00->1198+00	01/22/15	04/07/15	**04/14/15**	-82	7	110	**-12**
C5C	3	Shared Access; Sta. 1209+00->1198+00	05/22/15	04/28/15	**05/27/15**	-5	29	79	**-29**
C5C	5	Turnover of Comm. Rooms	09/23/14	03/18/15	**04/17/15**	-206	30	17	**-40**
C5C	6	Turnover of Comm. Rooms	03/24/15	07/20/15	**07/06/15**	-104	-14	34	**-17**
C5C	6A	Room-to-Room Conduit Ready	03/24/15	07/20/15	**07/06/15**	-104	-14	34	**-45**

			Dates			Variance		Sch.	
Pkg	MS	Description	Adjusted	UD #104	**UD #105**	Contract	Month	Float 105	Float Δ
C5C	7	Turnover of Signal Rooms	02/25/15	04/09/15	**05/07/15**	-71	28	10	**-27**
C5C	7A	Room-to-Room Conduit Ready		04/09/15	**05/07/15**	-42131	28	10	**-28**
C5C	8	Turnover of Signal Rooms	02/25/15	04/09/15	**05/07/15**	-71	28	10	**-27**
C5C	8A	Room-to-Room Conduit Ready	02/25/15	04/09/15	**05/07/15**	-71	28	10	**-28**
C5C	9	Turnover Traction Power Rooms	02/26/15	05/06/15	**05/28/15**	-91	22	0	**-25**
C5C	9A	Room-to-Room Conduit Ready	02/26/15	05/06/15	**05/28/15**	-91	22	28	**-77**
C5C	10	Turnover Traction Power Rooms	02/25/15	05/15/15	**05/15/15**	-79	0	87	**-8**
C5C	10A	Room-to-Room Conduit Ready	02/25/15	05/15/15	**05/15/15**	-79	0	90	**-8**
C5C	11	Full access @Station Service Center(s)	03/24/15	04/30/15	**05/26/15**	-63	26	247	**-90**
C5C	14b	Limited Access all locations	09/23/14	04/24/15	**04/30/15**	-219	6	392	**-12**
C5C	15	Comp. Permanent Power		12/24/15	**12/28/15**	-42366	4	101	**-19**
C5C	SS	Substantial Completion	05/31/16	08/24/16	**08/24/16**	-85	0	56	**-8**
C6	2A	Complete LAN - 96th St. Station	05/18/15	01/22/16	**02/16/16**	-274	25	105	**-25**
C6	2B	Complete WAN - 96th St. Station	05/18/15	01/22/16	**02/16/16**	-274	25	105	**-25**
C6	3A	Complete LAN - 86th St. Station	07/18/15	02/26/16	**03/01/16**	-227	4	100	**-14**
C6	3B	Complete WAN - 86th St. Station	07/18/15	02/26/16	**03/01/16**	-227	4	100	**-14**
C6	4A	Complete LAN - 72nd St. Station	02/18/15	02/05/16	**03/08/16**	-384	32	86	**-30**
C6	4B	Complete WAN - 72nd St. Station	02/18/15	02/05/16	**03/08/16**	-384	32	86	**-30**
C6	5A	Complete LAN - 63rd St. Station	04/18/14	04/24/15	**06/16/15**	-424	53	201	**-39**
C6	5B	Complete WAN - 63rd St. Station	04/18/14	04/24/15	**06/16/15**	-424	53	201	**-39**
C6	5C	Complete all 63rd St. Station work	04/18/14	01/21/16	**04/08/16**	-721	78	144	**-75**
C6	SS	Substantial Completion	08/18/16	10/19/16	**10/27/16**	-70	8	***0***	**-25**

Table 4 - Project Budget/ Cost

	FFGA			FFGA Amend	MTA Current Working Budget (CWB)		Expenditures as of April 30, 2015	
	$ Millions	% of Total	Obligated ($ Millions)	3/17/2015	$ Millions	% of Total	$ Millions	% of Total
Grand Total Cost:	4,866.614	100	4,572.942	5,574.614	5,267.614	100	3,394.245	64.44
Financing Cost	816.614	16.78		816.614	816.614	15.50		
Total Project Cost:	4,050.000	83.22	4,572.942	4,758.000	4,451.00	84.50	3,394.245	64.44
Total Federal:	1,350.693	27.75	1,063.942*	1,373.893*	1,350.693	24.60	1,077.218*	20.45
Total FTA share:	1,300.000	96.25	990.049	1,3000.000	1,300.000	23.68	1,003.325	19.05
5309 New Starts share	1,300.000	100	990.049	1,3000.000	1,300.000	23.68	1,003.325	19.05
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	2,317.027	43.99
State share	450.000	16.67	100.000		450.000	8.20		
Agency share	2,249.307	83.33	1,145.782		3,059.000	55.72		
City share	0	0			0	0		

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

** Current MTA Board approved budget.

Table 5 - Estimate at Completion

Category	Current Working Budget	EAC Forecast
Total Construction	$2,674,814,299	$2,982,353,623.00
Engineering Services Subtotal	$622,862,000	$684,157,000.00
Third Party Expenses	$554,086,273	$562,086,000.00
TA Expenses	$131,160,085	$132,890,202.00
Contingency	$308,077,343	
Total		$4,361,486,825

Table 6 - 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 (December, 2014)
10	Guideway & Track Elements	$612,404,000	$195,346,781	$622,478,000
20	Stations, Stops, Terminals, Intermodal	$1,092,836,000	$1,666,605,679	$1,277,642,000
30	Support Facilities	$0	$0	$0
40	Site Work & Special Conditions	$276,229,000	$793,118,232	$524,561,000
50	Systems	$322,707,000	$250,379,966	$250,134,000
60	ROW, Land, Existing Improvements	$240,960,000	$281,500,000	$281,500,000
70	Vehicles	$152,999,000	$0	$0
80	Professional Services	$796,311,000	$1,026,608,168	$1,185,742,929
90	Unallocated Contingency	$555,554,000	$544,441,174	$308,942,010
Subtotal		$4,050,000,000	$4,758,000,000	$4,451,000,000
Financing Cost		$816,614,000	$816,614,000	$816,614,000
Total Project		**$4,866,614,000**	**$5,574,614,000**	**$5,267,614,000**

Table 7 -- Core Accountability Items				
Project Status:		**Original at FFGA**	**Current***	**ELPEP****
Cost	Cost Estimate	$4,050 M	$4,451 M	$4,980 M
Contingency	Unallocated Contingency	$555.554 M	$251.5 M	$143 M
	Total Contingency (Allocated plus Unallocated)	$555.554 M	$251.5 M (April 2015)	$143 M
Schedule	Revenue Service Date	June 30, 2014	December 30, 2016	February 28, 2018

Total Project Percent Complete	Based on Expenditures	76.3%
	Based on Earned Value	N/A

Major Issue	Status	Comments
Construction Schedule Delay	Open	Achieving the current RSD of December 31, 2016 is the major risk issue on the project. Over recent periods, there has been a general inability to maintain planned construction schedule progress. Consistently delayed achievement of milestone dates and other schedule commitments may ultimately impact the project RSD.

Date of Next Quarterly Meeting:	TBD

* MTACC's Current Working Budget

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

Schedule data based upon IPS Update #105; Data Date = 04/1/2015

Financial data based upon MTACC reporting through 04/30/2015