

PMOC MONTHLY REPORT

Second Avenue Subway Phase 1 (MTACC-SAS) Project

Metropolitan Transportation Authority

New York, New York

Report Period February 1 to February 28, 2015



PMOC Contract No. DTFT60-09-D-00007

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

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

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THIRD PARTY DISCLAIMER

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

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

Therefore, the information in the monthly reports may change from month to month, based on relevant factors for the 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. DTFT60-09-D-00007. 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 February 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 impacting the final closeout of the contract.
- C-26010 (C2B) "96th Street Station Civil, Architectural, and MEP". Milestone 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 concrete incline slab work to the station is ongoing. The switchover to permanent power is scheduled for March 2, 2015.

- C-26007 (C4B) “72nd Street Station Cavern Mining and Lining” Substantial Completion was achieved on January 14, 2014. Contract closeout is underway.
- C-26011 (C4C) “72nd Street Station Architectural and MEP Systems”. Placement of the platform topping is underway. Ancillary Building #2 construction has completed the street level slab. Escalator installation between the mezzanine and platform will begin the first week of March 2015.
- C-26008 (C5B) “86th Street Station Cavern Mining and Lining”. Substantial Completion of all contract work was achieved on December 16, 2014.
- C-26012 (C5C) “86th Street Station Architectural and MEP”. Construction of the North and South Upper Mezzanines and Back of House Rooms is ongoing. Permanent power to the station continues to be forecast for December 2015.
- C-26009 (C6) “Track, Power, Signals and Communication Systems”. Installation of signals, traction power, communication equipment and cables is ongoing throughout the various work zones. Installation of equipment in the communication rooms in the 63rd and 96th Street Stations is ongoing.

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 February 28, 2014, 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.
- Submittal of contract closeout documentation is ongoing.
- Mitigation of water leaks is impacting the final closeout of the contract.

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

Near term Milestones

- Milestone #6 Communication Rooms for turn over to the C6 Systems Contractor
 - Rooms 2008, 2174, 3005, 3058, 3075, 3078, 3118, and 3148 were turned over to the C6 Contractor
 - Room 3119 on hold pending mitigation of water leak
- Milestone #7 Signal Rooms for turn over to the C6 Systems Contractor
 - Rooms 2002, 2003, 2126, 3001, 3003, and 3003 were turned over to the C6 Contractor
 - Room 2032 on hold pending redesign activity
- Milestone #8 Traction Power Substation Rooms for turn over to C6 Contractor
 - Rooms 2004, 2144, 2145, and 3007 were turned over to the C6 Contractor.

- Station Area 1 Grid Line (GL) 1-8 (91st to 93rd Street ongoing work)
 - Mezzanine GL 1-8
 - Electrical work GL 4-8
 - Installation of water mist piping
 - Insulating mechanical piping
 - Platform Level GL 1-8
 - Conduit routing GL 4-8
 - Installation of water mist piping
 - Insulating mechanical piping
- Station Area 2 GL 8-18 (93rd to 95th Street ongoing work)
 - Mezzanine Work
 - Conduit routing GL 8-12
 - Conduit routing GL 12-16
 - Installation of sprinkler piping
 - Installation of pump discharge lines
 - Platform Level
 - Conduit routing GL 8-12
 - Cable pulling GL 8-12
 - Escalator #200 installation
 - Escalator #220 installation
 - Platform service carrier installation
 - Installation of wall mockup
- Station Area 3 GL 18-36 (95th to 99th Street)
 - Mezzanine Work
 - Conduit routing GL 24-28
 - Cable pulling GL 24-28
 - Installation of duct system
 - Installation mechanical piping
 - Installation sprinkler piping
 - Installation water mist piping
 - Platform Level
 - Conduit routing GL 28-32
 - Cable pulling GL 28-32
 - Installation of sanitary/storm drains
 - Installation of duraduct
 - Installation of escalator#202

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

- Surveying of the Deformation Monitoring Points (DMPs) is ongoing and will continue throughout the project.
- The focus of the work effort remains Area 5 and the progress at Entrance #1.

- **Area 5 (Reconstruction consists of mezzanines and the deck plaza roof)**
 - Continued painting, doors, frames & CMU walls throughout.
 - Continued to complete CMU wall erection on the 6th Mezzanine.
 - Continued setting traction elevator equipment in the Elevator Machine Rooms and the Elevator Shafts and completed installation of the elevators moving platforms.
 - Continued installation of power & communication conduits throughout.
 - Began NYCT inspections on Mezzanines #1 through #5.
- **Ancillary #1**
 - Work is complete and awaiting energization and testing.
- **Entrance #1**
 - The breakthrough to the station is complete and concrete placement is ongoing on the entrance mezzanine slab and the escalator incline.
- **Entrance #3**
 - Continued rebuilding of the steps and other elements of the existing stair.
- **Platforms**
 - Completed the majority of platform paver installation and room bases on the G3 & G4 platforms.
 - Continued installation of porcelain track wall tiles and top stainless steel band on the inactive side of the G3 & G4 platforms.
 - Continued installation of ceiling panels and column cladding on the G3 & G4 inactive side platforms.

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.

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

- **Ancillary #2 and Entrance #2**
 - Completed placement of the street level concrete slab. Erection of the 1st Floor Walls began. Permanent concrete stair placement continues from the mezzanine up to street level.
 - Continued waterproofing and began placing rebar cages along the escalator incline and the arch in Entrance #2.
- **Ancillary #1**
 - Completed placement of the Sub-Basement walls.
- **Cavern Mezzanine (Public, North & South)**
 - Conduit installation continues throughout the North, South & Public Mezzanines.
 - CMU wall erection and HVAC ductwork continued in the Public Mezzanine.
 - MEP installation continues in the South Mezzanine Fan/Chiller Room.

- **Platform**

- Escalator truss installation & Machine Room work will begin the first week of March 2015.
- Continued installation of acoustical material under the outer platform deck and MEP in the remaining platform rooms.
- Platform deck topping is ongoing.

- **Entrance #1:**

- Rock excavation nears completion in the garage with 400 CY of muck remaining to be excavated as of February 28, 2015.
- Continued placing Support of Excavation (SOE) walls. Continued excavation and support of utilities at 2nd Ave. & E. 69th St.

- **Entrance #3 (Elevator Bank)**

- Continued with erection of walls to the street level.

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

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

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

- **Cavern (Public, North & South)**

- Continuing with the North Mezzanine Upper and 1st Upper Mezzanines structure and room construction.
- Continued erection of South Upper Mezzanine CMU walls.
- Continued with mechanical ductwork in the Public Mezzanine.

- **Ancillary #1**

- Ancillary #1 wall and slab placement continues with a forecast to complete the street deck May 1st, 2015.

- **Ancillary #2**

- Continued with waterproofing to the street level, slab placement and wall erection.

- **South Tunnels**

- Punchlist work is ongoing. NYCT inspections are being scheduled.

- **Platform**

- Substantially completed the architectural precast panel installation at the Platform Level.
- Continued placing platform walls and forming for platform deck. Platform walls were approximately 60% complete through February 28, 2015.

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

- **Track:**

- Concrete placement of Track S3 at 63rd Street is on going

- Concrete placement for southbound Track S1 between 86th and 96th Street is ongoing
- Communication:
 - Work in progress in rooms 2008, 2174, 3005, 3058, 3075, 3078, 3118, and 3148 in the 96th Street Station
- Signal
 - Work in progress in rooms 2002, 2003, 2126, 3001, 3003, and 3003 in the 96th Street Station
- Power
 - Work in progress in traction power rooms 2004, 2144, 2145, and 3007 in the 96th Street Station
 - Cable tray installation und the platform at 63rd Street Station 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 February 2015, the Second Avenue Subway Quality Management team continued holding Quality Meetings and Quarterly Quality Oversight of the Contractor with CCM, MTACC, and PMOC participation. They participated in the job progress meetings, monitored quality matters in the field for each construction contract, reviewed and provided comments for Quality Work Plans, and participated in Preparatory Phase Sessions 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 QO 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. The SAS Quality Manager indicated that a Final Draft of Revision 3 will be sent to the PMOC in March 2015.

Inspection Daily Reports: At the end of February 2015, the C2B contractor was two weeks behind and the C4C contractor 6 weeks behind entering their Daily Inspection Reports into the Contractor Management System (CMS).

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

C2B Contractor: In the area of nonconformance reporting and in process inspection, the C2B Quality Manager is not following the approved Contractor's Quality Plan. Details are provided in the table below. At the request of the PMOC, Bi-Weekly Quality Management Meetings are being held instead of Monthly Quality Management Meetings.

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 two months.

C5C Contractor: No NCRs have been written since mid-December. The SAS C5C Quality Manager stated that eight NCRs were written but they are sitting on the contractor’s Project Manager’s desk and have not been entered into CMS. In addition to this concern, the PMOC is concerned that of the 16 non-concrete NCRs that are still open, 12 of them are four months or older. The PMOC recommends that the eight NCRs be entered into CMS immediately and that the contractor establish a schedule to close the 12 non-concrete NCRs. The contractor’s Quality Manager has stated that he cannot keep up with the workload. The PMOC will discuss its concerns at a meeting scheduled with MTACC Quality Management on March 9, 2015.

| Contract Package C2B | |
|--------------------------------------|--|
| Status: | Through February 28, 2015, a total of 82 NCRs have been issued. 35 have been closed and 47 NCRs are still open. In February 2015, 7 new NCRs were written and none were closed. |
| Observation: | Of the 47 open NCRs, 32 are for concrete that was out of specification. A concrete analysis is expected to be prepared by the end of the first quarter of 2015. Entry of Inspection Daily Reports into CMS is two weeks behind. |
| Concerns and Recommendations: | <p>The PMOC is concerned that in the area of nonconformance reporting and in process inspection, the C2B Quality Manager is not following the approved Contractor’s Quality Plan. The contractor’s Quality Manager does not have enough help or is unable to do the required job. Based on significant issues identified at the February 11, 2015 Monthly Quality Management Meeting, the PMOC recommended that a special meeting be held on February 25, 2015 and that the C2B contractor’s Project Manager attend. At the February 25th meeting, the C2B contractor’s Project Manager agreed that NCRs had to be documented in a timely manner and that Inspection daily Reports had to be entered into CMS promptly. He committed to provide their Quality Manager with additional help. The PMOC recommended that meetings to assess progress on closing action items be held every two weeks rather than monthly. Everyone agreed.</p> <p>Nonconformance Reports (NCRs) are not being generated in a timely manner – no NCRs have been written in the past month. The PMOC explained the difference between rework and repair and the C2B contractor agreed that NCRs dispositioned “repair” will be coordinated with the Designer of Record prior to the repair being made.</p> |
| Contract Package C3 | |
| Status: | Through February 28, 2015, a total of 97 NCRs have been issued. 88 have been closed and 9 NCRs are still open. In February 2015, three new NCRs were written and 10 were closed. |

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| Observation: | At the end of January 2015, there were four open NCRs that were written by the contractor on one of their subcontractors. All of these NCRs were open 4 to 13 months. Two of these NCRs were closed in February 2015 and the other two should be closed soon. Entry of Inspection Daily Reports into CMS is current. |
| Concerns and Recommendations: | The PMOC has no concerns. |
| Contract Package C4C | |
| Status: | Through February 28, 2015, a total of 102 NCRs have been issued. Sixteen have been closed and 86 NCRs are still open. In February 2015, one NCR was written and eight were closed. |
| Observation: | 82 of the 86 open NCRs are for concrete that was out of specification. The NCR generated in February was for concrete that failed. The contractor has performed two concrete analyses, one for each of its suppliers. The concrete analyses are awaiting approval from the Designer of Record. Submittal of Inspection Daily Reports is current. |
| Concerns and Recommendations: | The contractor's new Quality Manager has made a concerted effort to generate NCR's as the nonconformance occurs and to submit Inspection Daily Reports on time. In February 2015, he closed 8 of the 12 non-concrete NCRs that were open. NCR generation and submittal of Inspection Daily Reports are current and the PMOC has no concerns. |
| Contract Package C5B | |
| Status: | Through February 28, 2015, a total of 93 NCRs have been issued. Of the 93 that have been issued, 88 have been closed and 5 NCRs are still open. In February 2015, no new NCRs were written and none were closed. |
| Observation: | Entry of Inspection Daily Reports into CMS is current. The five open NCRs are awaiting a decision from the designer of record. Only punch list work is now being done. |
| Concerns and Recommendations: | The PMOC has no concerns. |
| Contract Package C5C | |
| Status: | Through February 28, 2015, 55 NCRs have been issued. Of the 55 that have been issued, 10 have been closed and 45 NCRs are still open. In February 2015, no new NCRs were written and seven were closed. |
| Observation: | Submittal of Inspection Daily is 6 weeks behind. No NCRs have been written since mid-December. |
| Concerns and Recommendations: | The SAS C5C Quality Manager stated that 14 NCRs were written but not issued. Five of these are waiting for the contractor's Project Manager's signature. The PMOC recommends that the fourteen NCRs |

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| | be entered into CMS immediately and that the contractor establish a schedule to close the other 16 non-concrete NCRs. The contractor's Quality Manager has stated that he cannot keep up with the workload. The PMOC recommended that MTACC Quality Management try to resolve this issue. |
| Contract Package C6 | |
| Status: | Through February 28, 2015, a total of 28 NCRs have been issued. Twelve have been closed and 18 NCRs are still open. In February 2015, no new NCRs were written and none were closed. Entry of Inspection Daily Reports into CMS is current. |
| Observation: | Eleven 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 is preparing an analysis of concrete strength and has indicated that these NCRs are closed. |
| 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 #103 was received on February 27, 2015 and is based on a Data Date of February 1, 2015. This update contains the “.XER” schedule files for the IPS and active construction contracts. The IPS forecasts the completion of all construction and NYCT Pre-Revenue Training & Testing activities on November 23, 2016, with approximately 38 calendar days (CD) or 27 work days (WD) of contingency, resulting in a forecast Revenue Service Date (RSD) of December 30, 2016.

Schedule contingency is summarized as follows:

| | <u>Dates</u> | <u>Contingency</u> <u>(CD)</u> | |
|------------------|--------------|-----------------------------------|---------------------------|
| MTACC Completion | 11/23/2016 | 38 | MTACC Contingency |
| MTACC RSD | 12/31/2016 | 184 | Additional Contingency |
| ELPEP Threshold | 7/3/2017 | 240 | Minimum ELPEP Contingency |
| FTA RSD | 2/28/2018 | 462 | TOTAL |

Observations

Project Critical Path:

MTACC's schedule narrative identifies four independent float paths as "critical". Each of these paths has no more than 12 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 begins with Zone 3 trackwork, followed by Zone 4 trackwork, forecast to complete on April 1, 2015. The path continues through the 3rd rail installation in Zones 4, 5, 6, 7, 8, 10 and 11 and is scheduled for completion on August 11, 2016 and is followed by traction power cable termination and testing at the 86th Street Station in August 17, 2016. This path then follows through 86th Street Substation FIST, In-Service and Operational Testing through September 14, 2016. NYCT Proof of Route Familiarization then proceeds until November 23, 2016, which is the scheduled completion of all construction and testing activities. The Critical Path then completes with 27 WD (39 CD) of Schedule Contingency resulting in an RSD of December 30, 2016.

2nd Critical Path (TF=1): This path begins with Zone 3 trackwork on the TF=0 path, and then branches to the TF=1 path and follows trackwork in Zones 5, 6 and 7, special trackwork installation in Zone 8 and Zones 10 and 11, all of which should be completed by July 6, 2016. After completion of this work, this path rejoins the TF=1 path and follows traction power installation and testing at the 86th Street Station.

MTACC has expressed doubt over the validity of the trackwork as the correct critical path for the project. This matter has been discussed at length with the Systems Contractor and future revisions to the schedule have been reported. The PMOC notes the following:

- The erosion of schedule contingency this period is a result of delays to trackwork in Zone 3.
- MTACC has not offered any specific challenges to the validity of the current critical path such as erroneous logic or excessive durations based on production observations.

3rd Critical Path (TF=12): 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 26, 2015. This work consists of installation of Epoxy Floors, Switchgear and Transformers, through July 22, 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 August 2, 2016 and is followed by FIAT, FIST, and IST for the traction power system and should complete by August 1, 2016. Facility Integrated Testing at 86th St station followed by Proof of Route Familiarization Training extends the path through November 23, 2016.

The PMOC notes this path experienced approximately 30 CD of delay this period and would have become “critical” but for the same delay experienced by the trackwork (TF=0 and TF=1 paths).

4th Critical Path (TF=12): This path is initiated by installation of conduit between signal equipment rooms within the 72nd Street Station. Forecast completion for the conduit work is June 19, 2015, after which wire is pulled, devices trimmed out FIAT, FSIT and FIST testing is completed and the 72nd Street signal installation is ready for Systemwide Operational and Train Tests on October 4, 2016. Successful completion of Operational Testing is followed by completion of all construction activity on November 23, 2016.

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

+48 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.

The improvement in schedule float this period (+22 WD) is the result of this work maintaining schedule and delays to critical paths noted elsewhere.

+27 WD: This path involves structural concrete masonry block wall and other architectural finish work in the 86th Street Station mezzanine area. This work is currently underway and forecast for completion on May 11, 2015. This significance of this work is that it controls the achievement of C5C Milestones # 7, 8, 9 and 11. Until this work is complete, the installation of signal and traction power systems will be constrained from fully starting. Currently, the signal and traction power work in these rooms is connected to their respective milestones via negative lags, allowing the systems installation work to start before the rooms are completed. To a certain extent this overlapping of work may be achievable, but it is unlikely the 1.5 to 2 month overlap currently modelled in the IPS can be fully achieved.

+44/45 WD: 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 September 29, 2015. From that date, the path follows mechanical installation of fans and ducts for tunnel ventilation, electrical power and lighting installation through October 4, 2016, which is the date of C2B Substantial Completion. C2B Substantial Completion ties directly to SAS Phase 1 Completion on October 24, 2016.

Several aspects of the 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.
- Last period, this work had approximately 11 WD of schedule float and was considered one of the four critical paths. MTACC reportedly negotiated the select acceleration of work in this area, gaining approximately 1 month of schedule float.
- This acceleration appears to have reduced the risk that completion of work at the 96th Street Station may ultimately delay the overall project RSD.

+54 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 8, 2015, this path merges with numerous other paths involving the testing and acceptance of equipment throughout the station.

+100 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 24, 2015, the path follows component and system testing of mechanical and electrical equipment throughout the station.

+140 WD: This path represents procurement, installation and testing of permanent power equipment at the 96th Street Station. Following the forecast “Permanent Power Available” date of November 5, 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 (12/31/14 to 01/31/15):

| Pkg. | MS | Description | UD #102 Forecast | Status | UD #103 Forecast |
|------|--------|--|------------------|----------------------|------------------|
| C2B | MS #2 | Shared site access @ 93rd Street shaft | 01/01/15 | Incomplete | 02/01/15 |
| C4C | MS #7 | Turnover of Communications Rooms to Systems Contractor | 01/16/15 | Complete 12/31/14 | |
| C4C | MS #8 | Turnover of Signal Rooms South of station to C6 | 01/16/15 | Complete 12/31/14 | |
| C4C | MS #9 | Complete all Signal Roms except M8 | 01/16/15 | Complete 12/31/14 | |
| C4C | MS #11 | Complete south power rooms | 01/16/15 | Complete 12/31/14 | |
| C4C | MS #14 | Complete all remaining Comm, Signal & Traction Power Rooms | 01/16/15 | Complete 12/31/14 | |
| C2B | MS #6A | Full access to Comms Rooms & Closets | 01/23/15 | Incomplete | 02/24/15 |

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|-----|--------|--------------------------------------|----------|------------|----------|
| C2B | MS #6B | Full access to Comms Rooms & Closets | 01/23/15 | Incomplete | 06/11/15 |
| C2B | MS #6C | Full access to Comms Rooms & Closets | 01/23/15 | Incomplete | 06/11/15 |
| C5C | MS #5 | Turnover of Comm. Rooms | 01/27/15 | Incomplete | 03/31/15 |
| C4C | MS #10 | Complete north power rooms | 01/30/15 | Incomplete | 03/10/15 |

2. Milestones forecast to complete during previous update period (12/01/14 to 12/31/14)

| Pkg. | MS | Description | UD #101 Forecast | Status | UD #103 Forecast |
|------|--------|--------------------------------------|------------------|------------|------------------|
| C2B | MS #7B | Full access to Signals Rooms | 12/16/14 | Incomplete | 06/11/15 |
| C2B | MS #7C | Full access to Signals Rooms | 12/16/14 | Incomplete | 06/11/15 |
| C2B | MS #8B | Full access to Traction Power Rooms: | 12/16/14 | Incomplete | 06/11/15 |
| C2B | MS #8C | Full access to Traction Power Rooms: | 12/16/14 | Incomplete | 06/11/15 |

3. Milestones scheduled for completion during the next update period (02/01/15 to 02/28/15).

| Pkg. | MS | Description | UD #103 Forecast | Float |
|------|--------|--|------------------|-------|
| C2B | MS #2 | Shared site access @ 93rd Street shaft | 02/01/15 | 466 |
| C2B | MS #6A | Full access to Comms Rooms & Closets | 02/24/15 | 37 |
| C2B | MS #7A | Full access to Signals Rooms | 02/24/15 | 37 |
| C2B | MS #8A | Full access to Traction Power Rooms | 02/25/15 | 37 |
| C3 | MS #3D | Mezz 6 & Platform Level Conduit & Station Fare Array | 02/20/15 | 279 |
| C5C | MS #5 | Turnover of Comm. Rooms | 02/25/15 | 57 |
| C4C | MS #7B | Complete Work Ancillary #1 (New MS) | 02/02/15 | 52 |

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 #102 | UD #103 | Variance |
|------------|-----------|--|----------------|-----------------|-----------------|
| C2B | 6B | Full access to Comms Rooms & Closets | 01/23/15 | 06/11/15 | 139 |
| C2B | 6C | Full access to Comms Rooms & Closets | 01/23/15 | 06/11/15 | 139 |
| C2B | 7B | Full access to Signals Rooms | 02/04/15 | 06/11/15 | 127 |
| C2B | 7C | Full access to Signals Rooms | 02/04/15 | 06/11/15 | 127 |
| C2B | 8B | Full access to Traction Power Rooms: | 02/04/15 | 06/11/15 | 127 |
| C2B | 8C | Full access to Traction Power Rooms: | 02/04/15 | 06/11/15 | 127 |
| C5C | SS | Substantial Completion | 08/25/16 | 10/18/16 | 54 |
| C4C | 10 | Complete north power rooms | 01/30/15 | 03/10/15 | 39 |
| C5C | 4 | Shared Access; Sta. 1198+00- >1172+00 | 02/06/15 | 03/13/15 | 35 |
| C2B | 6A | Full access to Comms Rooms & Closets | 01/23/15 | 02/24/15 | 32 |
| C5C | 9 | Turnover Traction Power Rooms | 04/24/15 | 05/26/15 | 32 |
| C6 | 5A | Complete LAN - 63rd St. Station | 03/20/15 | 04/21/15 | 32 |
| C6 | 5B | Complete WAN - 63rd St. Station | 03/20/15 | 04/21/15 | 32 |
| C2B | 2 | Shared site access @ 93rd Street shaft | 01/01/15 | 02/01/15 | 31 |
| C4C | 12 | Full access @ Station Service Center(s) | 02/23/15 | 03/26/15 | 31 |
| C6 | SS | Substantial Completion | 09/19/16 | 10/19/16 | 30 |
| C5C | 5 | Turnover of Comm. Rooms | 01/27/15 | 02/25/15 | 29 |
| C6 | 5C | Complete all 63rd St. Station work | 01/08/16 | 12/04/15 | -35 |
| C5C | 6A | Room-to-Room Conduit Ready | 08/20/15 | 07/09/15 | -42 |

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 #102 | UD #103 | Variance |
|------------|-----------|------------------------------|----------------|-----------------|-----------------|
| C2B | 7B | Full access to Signals Rooms | 02/04/15 | 06/11/15 | -393 |
| C2B | 7C | Full access to Signals Rooms | 02/04/15 | 06/11/15 | -393 |
| C5C | 7A | Room-to-Room Conduit Ready | 04/17/15 | 03/31/15 | -351 |

| Pkg | MS | Description | UD #102 | UD #103 | Variance |
|------------|-----------|--|-----------------|-----------------|-----------------|
| C5C | 8A | Room-to-Room Conduit Ready | 04/17/15 | 03/31/15 | -351 |
| C5C | 6A | Room-to-Room Conduit Ready | 08/20/15 | 07/09/15 | -284 |
| C5C | 9A | Room-to-Room Conduit Ready | 05/27/15 | 05/26/15 | -277 |
| C5C | 10A | Room-to-Room Conduit Ready | 07/01/15 | 06/17/15 | -269 |
| C2B | 8B | Full access to Traction Power Rooms: | 02/04/15 | 06/11/15 | -220 |
| C2B | 8C | Full access to Traction Power Rooms: | 02/04/15 | 06/11/15 | -220 |
| C4C | 12 | Full access @ Station Service Center(s) | 02/23/15 | 03/26/15 | -188 |
| C6 | 2A | Complete LAN - 96th St. Station | 01/08/16 | 01/08/16 | -113 |
| C5C | 10 | Turnover Traction Power Rooms | 06/03/15 | 06/17/15 | -109 |
| C5C | 6 | Turnover of Comm. Rooms | 07/21/15 | 07/09/15 | -65 |
| C4C | 10 | Complete north power rooms | 01/30/15 | 03/10/15 | -55 |
| C6 | 5C | Complete all 63rd St. Station work | 01/08/16 | 12/04/15 | 153 |
| C5C | 15 | Comp. Permanent Power | 12/18/15 | 12/24/15 | 102 |
| C2B | 6B | Full access to Comms Rooms & Closets | 01/23/15 | 06/11/15 | 74 |
| C2B | 6C | Full access to Comms Rooms & Closets | 01/23/15 | 06/11/15 | 74 |
| C2B | 4 | Shared access in East & West track-ways thru Sta (1238+50 ->1225+25); 97th -> 99th St Tunnel in 99th to 105th St Tunnels | 02/06/15 | 02/02/15 | 31 |
| <i>C4C</i> | <i>SS</i> | <i>Substantial Completion w/o Ent. #1</i> | <i>09/16/16</i> | <i>09/16/16</i> | 30 |
| C2B | 9 | Full access to Station Service Centers | 09/08/15 | 09/08/15 | 26 |
| C2B | 10 | Complete all remaining Comms, Signal , & Traction Power work | 04/21/15 | 04/21/15 | 26 |
| C6 | 5C | Complete all 63rd St. Station work | 01/08/16 | 12/04/15 | 153 |

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

| | | | UD# 103 | |
|--|-----|---|----------|-------|
| Pkg | MS | Description | Date | Float |
| C2B | 2 | Shared site access @ 93rd Street shaft | 02/01/15 | 466 |
| C5C | 14b | Limited Access all locations | 06/04/15 | 375 |
| C5C | 11 | Full access @ Station Service Center(s) | 04/27/15 | 375 |
| C2B | 4 | Shared access in East & West track-ways thru Sta (1238+50 - >1225+25); 97th -> 99th St Tunnel in 99th to 105th St Tunnels | 02/02/15 | 333 |
| C3 | 4c | Compl Lwr/Uppr Platforms & Signal Rms | 04/20/15 | 301 |
| C3 | 3d | Mezz 6 & Platform Level Conduit & Station Fare Array | 02/20/15 | 279 |
| C6 | 5A | Complete LAN - 63rd St. Station | 04/21/15 | 271 |
| C6 | 5B | Complete WAN - 63rd St. Station | 04/21/15 | 271 |
| C6 | 5C | Complete all 63rd St. Station work | 12/04/15 | 253 |
| C2B | 8B | Full access to Traction Power Rooms: | 06/11/15 | 228 |
| C2B | 8C | Full access to Traction Power Rooms: | 06/11/15 | 228 |
| C2B | 10 | Complete all remaining Comms, Signal , & Traction Power work | 04/21/15 | 222 |
| C3 | SS | Substantial Completion | 02/04/16 | 209 |
| C5C | 2 | Limited Access; Sta. 1209+00->1198+00 | 03/12/15 | 202 |
| <p>Example: Based on this information, C2B, MS#2 can be achieved as late as 11/14/16 (466 WD later than the currently scheduled date of 02/01/15 and 9 days before completion of all construction and testing activities) with no adverse impact to the schedule.</p> | | | | |

Schedule Contingency: As of IPS Update #103 there are 38 CD (27 WD) contingency between the calculated completion of all work on November 23, 2016 and MTACC target RSD of December 30, 2016. The project schedule lost 31 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.
 - Secondary float paths with Total Float (TF) =1, 12 (2), with 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 #103:

- Five of eleven (45%) of milestones scheduled for completion this reporting period were actually completed.
- Of the 21 active schedule milestones experiencing significant schedule variance, 19 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.
- In general, C4C appears to be achieving reasonable conformance with schedule goals while C2B and C5C are not achieving established schedule goals.
- Seven of the 51 active milestones are forecast for completion during the next update period (February 2015). One milestone was added this period.
- In its November 2014, the PMOC expressed concern over the extremely high float values associated with several milestones. MTACC has addressed this concern with respect to completion of room-to-room conduit installation at the 86th Street Station. The PMOC notes that significant float values remain for milestones for several milestones involving turnover of spaces to the Systems Contractor. The PMOC recommends the downstream logic from these milestones be reviewed to ensure reasonableness and completeness.

3.0 COST DATA

Based upon financial expenditures reported by the MTACC through February 28, 2015 SAS Phase 1 is approximately 74.6% complete. The completion status of the individual construction contracts through February 28, 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) – 62.1%
- C26013 (86th Street Station) – 100%
- C26008 (86th Street Station) – 99.2%
- C26012 (86th Street Station) – 30.2%
- C26006 (63rd Street Station) – 86.8%
- C26007 (72nd Street Station) – 99.9%
- C26011 (72nd Street Station) – 44.0%
- C26009 (Systems) – 49.3%

Aggregate Construction % Completion:

- 100% of all construction has been bid.
- 100% of all construction is under contract
- 78.2% of base contract construction (excluding AWOs) is complete
- 75.5% of all construction is complete

Based upon cost data received from MTACC for the period through November 30, 2014:

- Value of construction in place this period = \$49,188,926
- Estimated value of construction remaining = \$441,085,872 (base contract only)
- Target construction completion = November 23, 2016
- Number of months remaining = 20.9

The estimated average rate of construction required to achieve target completion date is \$24,468,213 per month. The average progress (payments) achieved over the most recent six month period is \$36,338,191 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 A/E and CM 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:

| | <u>Executed AWOs</u> | <u>AWO Exposure</u> |
|-------------|----------------------|---------------------|
| February-15 | \$174,659,624 | \$209,427,796 |
| January-15 | \$154,131,441 | \$215,612,332 |

| | | |
|---|--------------|---------------|
| Δ | \$20,528,183 | (\$6,184,536) |
| Δ | 13.32% | -2.87% |

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

| Const. Pkg. | AWO Exposure | | | |
|--------------------|---------------|---------------|--------------|--|
| | Feb-15 | Jan-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 | \$35,528,294 | \$42,781,884 | -\$7,253,590 | Net reduction is based on revised estimates for AWO # 79, 105, 119, 120, 128 and initial estimates for AWO # 79, 84, 108, 126, 129, 130, 140 and 143. |
| C3 | \$17,735,037 | \$16,554,513 | \$1,180,524 | New increase is based on revised estimates for AWO # 102, 137, 148, 157, 160, 161, 162, 163, 164, 165, 174, 182, 187 and initial estimates for AWO # 193, 194, 195, 196, 197, 199. |
| C4B | \$1,325,629 | \$1,325,639 | -\$10 | No change reported this period. |
| C4C | \$26,438,264 | \$24,778,862 | \$1,659,402 | Net increase is based on revised estimates for AWO # 6, 49, 76, 82, 100, 125, 126 and initial estimates for AWO # 84, 101, 108, 110, 113, 120, 123, 126, and 129. |
| C5B | \$21,728,731 | \$21,971,055 | -\$242,324 | Net decrease is based on revised estimates for AWO # 45, 80, 92 and an initial estimate for AWO # 98. |
| C5C | \$4,401,871 | \$5,856,758 | -\$1,454,887 | Net decrease is based on revised estimates for AWO # 2, 7, 13, 64 and initial estimates for AWO # 63, 65, 74, 76. |
| C6 | \$7,042,443 | \$7,116,094 | -\$73,651 | Net decrease is based on revised estimates for AWO # 39, 55, 66, 68 and initial estimates for AWO # 64 and 73. |
| | \$209,427,796 | \$215,612,332 | -\$6,184,536 | |

The changes in Executed AWO Value are summarized as follows:

| Const. Pkg. | Executed AWOs | | | |
|--------------------|---------------|---------------|--------------|---|
| | Feb-15 | Jan-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 | \$47,065,746 | \$47,065,746 | \$0 | No change reported this period. |
| C2B | \$20,881,922 | \$16,631,850 | \$4,250,072 | Increase is based on execution of AWO # 52, 86, 143. |
| C3 | \$11,759,069 | \$11,259,485 | \$499,584 | Increase is based on execution of AWO # 101, 118, 154, 173, 191. |
| C4B | \$1,325,639 | \$1,325,639 | \$0 | No change reported this period. |
| C4C | \$21,265,192 | \$6,075,752 | \$15,189,440 | Increase is based on execution of AWO # 10, 17, 40, 51, 104, 107, 121 |
| C5B | \$17,712,109 | \$17,453,722 | \$258,387 | Increase is based on execution of AWO # 42, 45, 62, 106, 122. |
| C5C | \$812,500 | \$812,500 | \$0 | No change reported this period. |
| C6 | \$6,225,329 | \$5,894,629 | \$330,700 | Increase is based on execution of AWO # 3, 66, 68 and 73. |
| | \$174,659,624 | \$154,131,441 | \$20,528,183 | |

As of February 31, 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% | \$47,065,746 | 14.48% |
| C26010 (2B) | 62.07% | \$324,600,000 | \$35,528,294 | 10.95% | \$20,881,922 | 6.43% |
| C26006 (3) | 86.83% | \$176,450,000 | \$17,735,037 | 10.05% | \$11,759,069 | 6.66% |
| C26007 (4B) | 99.94% | \$447,180,260 | \$1,325,629 | 0.30% | \$1,325,639 | 0.30% |
| C26011 (4C) | 44.01% | \$258,353,000 | \$26,438,264 | 10.23% | \$21,265,192 | 8.23% |
| C26013 (5A) | 100.00% | \$34,070,039 | \$6,525,471 | 19.15% | \$6,525,471 | 19.15% |
| C26008 (5B) | 99.16% | \$301,860,000 | \$21,728,731 | 7.20% | \$17,712,109 | 5.87% |
| C26012 (5C) | 30.19% | \$208,376,000 | \$4,401,871 | 2.11% | \$812,500 | 0.39% |
| C26009(6) | 49.28% | \$261,900,000 | \$7,042,443 | 2.69% | \$6,225,329 | 2.38% |
| TOTAL TO DATE | | \$2,674,814,299 | \$209,427,796 | 7.83% | \$174,659,624 | 6.53% |

To date, approximately \$2,092,090,537 (78.2%) worth of all base contract construction work has been completed. As a % of work completed, the AWO exposure for these contracts = 10.01% and the executed AWO % = 8.35%.

The PMOC notes an extremely 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 \$267M, which is significantly above the \$229M 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 January 31, 2015 is \$301,221,883. 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 February 28, 2015 reported by MTACC and the current AWO Exposure analyses; the PMOC has developed the following contingency analysis:

Contingency Analysis

| | <u>Current</u> | <u>@ Completion</u> | |
|--------------------------------|------------------------|----------------------------|-----|
| Phase 1 Budget | \$4,451,000,000 | \$4,451,000,000 | |
| Construction Awards | \$2,674,814,299 | \$2,674,814,299 | |
| Soft Cost Expended | \$1,086,236,070 | \$1,086,236,070 | |
| Soft Cost Forecast to Complete | \$221,872,015 | \$292,897,132 | (1) |
| AWO Exposure | \$209,427,796 | \$301,221,833 | (2) |
| Total Contingency | \$258,649,820 | \$95,830,666 | (3) |
| Reserved Contingency | \$160,000,000 | \$95,830,666 | (4) |
| Available Contingency | \$98,649,820 | | |

Transfer from Contingency = \$64,169,334

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 January 2015.
- (3) Total Contingency = budget balance after forecast expenditures.
- (4) Reflects current forecast transfer of \$64,169,334 from “Reserved Contingency

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.

- A/E and CM Service increases include continuation past December 2016. MTACC costs beyond this date may be understated.

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

The monthly risk management meetings have been combined with the Cost and Schedule Meetings; the first combined meeting was held on February 18, 2015.

Observation and Analysis:

Incorporating Risk into the Cost and Schedule Meeting is considered logical and appropriate at this time. At this time, all identified risks are essentially schedule risks.

The most significant risks identified and discussed at this meeting are:

- **Delays in Testing & Commissioning.** MTACC's track record on other mega-projects suggests this is a significant schedule risk. Meetings with NYCT regarding staff support and coordination of effort have started.
- **Permanent Power Delays.** IPS Update #103 indicates that permanent power will be available in each of the new stations in time to support system testing and commissioning follow-on activities. There is concern that one or more of the contractors will not be able to support the current schedule.
- **Delays in Track Work.** Installation of track and wayside facilities currently defines the critical path of the project. Delays in resolving alignment issues during this reporting period resulted in delay approximately equal to the entire reporting period. MTACC has stated it believes track installation to be a "false" critical path but has not produced any information or analysis that refutes activity duration or schedule logic contained within the contractor's schedule. MTACC has noted it expects significant schedule improvement over the next update period.
- **Delays in Installation due to Interface Issues.** This remains a significant risk due to delayed turnover of some rooms within 96th Street Station and pending turnovers at 86th Street Station. Delays to room turnovers have not directly impacted the schedule critical path to date.

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 December 11, 2014. The next ELPEP Quarterly Review Meeting with MTACC, FTA-RII, SAS and ESA projects and the PMOC is scheduled for March 12, 2015. With respect to SAS, the current status of each of the main ELPEP components is summarized as follows:

- **Technical Capacity and Capability (TCC):** Resolution of FTA/PMOC comments to MTACC's PMP Rev. 10 submittal are ongoing.
- **Schedule Management Plan (SMP):** Based on its 4th Quarter 2014 checklists, it is MTACC's position that SAS is ELPEP compliant.
- **Cost Management Plan (CMP):** Based on its 4th Quarter 2014 checklists, it is MTACC's position that SAS is ELPEP compliant. MTACC has started revising the ESA/SAS Cost Management Plan (CMP) and that the proposed draft is nearing completion. MTACC is targeting a Q1-2015 release for review.
- **Risk Mitigation Capacity Plan (RMCP) and Risk Management Plan (RMP):** Based on its 4th Quarter 2014 checklists, it is MTACC's position that SAS is 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 February 28, 2015 a total of 10,114,359 construction hours have been logged on the project with 90 lost time and 250 recordable incidents documented. The total hours and incidents equates to a Lost Time Rate (LTR) of 1.78 and a Recordable Rate (REC) of 4.94. 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.

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. This update period, the project experienced delay approximately equal to the entire update period. This delay masked the fact that other “near-critical” work also experienced significant delays. Without improvements in actual construction schedule execution to offset some of the delay, there is a significant risk of delay to the project RSD.

Testing and Commissioning Planning: During this reporting period MTACC started resource planning with NYCT to assure availability of personnel to support testing, commissioning and turnover of SAS facilities.

Safety and Security Certification: MTACC/SAS continues to conduct monthly overall SSC update meetings and individual contract monthly SSC meetings. During February 2015 at the monthly update meeting for the C3 (63rd St Station) contract, the contractor’s Quality Manager challenged the previously agreed procedure for creating, verifying and updating the SSC Checklist. Specifically citing that Section 01 17 12 did not provide requirements for the contractor to assign personnel to maintain the checklist, update the checklist monthly, or attend monthly update meetings.

The PMOC is concerned that performance of this task is lagging, primarily because MTACC has attempted to delegate excessive responsibility to the construction contractors for its execution.

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 | Forecast Completion | |
|-----------------------|-------------------|---------------------|---------------|
| | | Grantee | PMOC |
| Begin Construction | January 1, 2007 | 03/20/2007A | 03/20/2007A |
| Construction Complete | December 31, 2013 | November 23, 2016 | October 2017 |
| Revenue Service | June 30, 2014 | December 30, 2016 | February 2018 |

A = Actual

Table 2 - Schedule Contingency

| IPS Update # | 98 | 99 | 100 | 101 | 102 | 103 |
|----------------|------------------|---------|---------|---------|--------|--------|
| Data Date | 9/1/14 | 10/1/14 | 11/1/14 | 12/1/14 | 1/1/15 | 2/1/15 |
| | Contingency (CD) | | | | | |
| RSD=12/31/2016 | | | | | | |
| Risk Mitigated | 85 | 81 | 84 | 87 | 69 | 38 |
| Risk Realized | 85 | 81 | 84 | 87 | 69 | 38 |
| RSD=02/28/2018 | | | | | | |
| Risk Mitigated | 509 | 505 | 508 | 511 | 492 | 461 |
| Risk Realized | 509 | 505 | 508 | 511 | 492 | 461 |

Table 3 – Schedule Milestone Comparison

| Pkg | MS | Description | Dates | | | Variance | | Sch. Float 103 |
|-----|----|---|----------|----------|-----------------|----------|-------|----------------|
| | | | Adjusted | UD #102 | UD #103 | Contract | Month | |
| C2B | 2 | Shared site access @ 93rd Street shaft | 03/22/14 | 01/01/15 | 02/01/15 | -316 | 31 | 466 |
| C2B | 4 | Shared access in East & West track-ways thru Sta (1238+50 - >1225+25); 97th -> 99th St Tunnel in 99th to 105th St Tunnels | 09/21/14 | 02/06/15 | 02/02/15 | -134 | -4 | 333 |
| C2B | 6A | Full access to Comms Rooms & Closets | 08/21/14 | 01/23/15 | 02/24/15 | -187 | 32 | 37 |
| C2B | 6B | Full access to Comms Rooms & Closets | 08/21/14 | 01/23/15 | 06/11/15 | -294 | 139 | 110 |
| C2B | 6C | Full access to Comms Rooms & Closets | 08/21/14 | 01/23/15 | 06/11/15 | -294 | 139 | 110 |
| C2B | 7A | Full access to Signals Rooms | 08/21/14 | 02/04/15 | 02/24/15 | -187 | 20 | 37 |
| C2B | 7B | Full access to Signals Rooms | 08/21/14 | 02/04/15 | 06/11/15 | -294 | 127 | 55 |
| C2B | 7C | Full access to Signals Rooms | 08/21/14 | 02/04/15 | 06/11/15 | -294 | 127 | 55 |
| C2B | 8A | Full access to Traction Power Rooms: | 08/21/14 | 02/04/15 | 02/24/15 | -187 | 20 | 37 |
| C2B | 8B | Full access to Traction Power Rooms: | 08/21/14 | 02/04/15 | 06/11/15 | -294 | 127 | 228 |
| C2B | 8C | Full access to Traction Power Rooms: | 08/21/14 | 02/04/15 | 06/11/15 | -294 | 127 | 228 |
| C2B | 9 | Full access to Station Service Centers | 11/21/14 | 09/08/15 | 09/08/15 | -291 | 0 | 176 |
| C2B | 10 | Complete all remaining Comms, Signal , & Traction Power work | 09/21/14 | 04/21/15 | 04/21/15 | -212 | 0 | 222 |
| C2B | SS | Substantial Completion | 12/21/15 | 10/04/16 | 10/04/16 | -288 | 0 | 36 |
| C3 | 3d | Mezz 6 & Platform Level Conduit & Station Fare Array | 04/15/13 | 02/20/15 | 02/20/15 | -676 | 0 | 279 |
| C3 | 4c | Compl Lwr/Uppr Platforms & Signal Rms | 10/14/13 | 04/17/15 | 04/20/15 | -553 | 3 | 301 |
| C3 | SS | Substantial Completion | 05/13/14 | 01/08/16 | 02/04/16 | -632 | 27 | 209 |
| C4C | 7A | Complete Work in all Comm Rooms | | 03/31/16 | 03/30/16 | -42459 | -1 | 166 |
| C4C | 7B | Complete Work Ancillary #1 | | | 02/02/15 | | | 52 |
| C4C | 10 | Complete north power rooms | 2/25/15 | 01/30/15 | 03/10/15 | -13 | 39 | 83 |
| C4C | 12 | Full access @ Station Service Center(s) | 08/28/14 | 02/23/15 | 03/26/15 | -210 | 31 | 71 |

| Pkg | MS | Description | Dates | | | Variance | | Sch. Float 103 |
|-----|-----|---|----------|----------|-----------------|----------|-------|----------------|
| | | | Adjusted | UD #102 | UD #103 | Contract | Month | |
| C4C | SS | Substantial Completion w/o Ent. #1 | 11/13/15 | 09/16/16 | 09/16/16 | -308 | 0 | 69 |
| C4C | SS | Substantial Completion - Ent. #1 | 10/07/16 | 09/16/16 | 09/16/16 | 21 | 0 | 48 |
| C5C | 2 | Limited Access; Sta. 1209+00->1198+00 | 01/22/15 | 03/02/15 | 03/12/15 | -49 | 10 | 202 |
| C5C | 3 | Shared Access; Sta. 1209+00->1198+00 | 05/22/15 | 04/21/15 | 05/18/15 | 4 | 27 | 155 |
| C5C | 4 | Shared Access; Sta. 1198+00->1172+00 | 10/23/14 | 02/06/15 | 03/13/15 | -141 | 35 | 54 |
| C5C | 5 | Turnover of Comm. Rooms | 09/23/14 | 01/27/15 | 02/25/15 | -155 | 29 | 57 |
| C5C | 6 | Turnover of Comm. Rooms | 03/24/15 | 07/21/15 | 07/09/15 | -107 | -12 | 23 |
| C5C | 6A | Room-to-Room Conduit Ready | 03/24/15 | 08/20/15 | 07/09/15 | -107 | -42 | 23 |
| C5C | 7 | Turnover of Signal Rooms | 02/25/15 | 03/19/15 | 03/31/15 | -34 | 12 | 44 |
| C5C | 7A | Room-to-Room Conduit Ready | | 04/17/15 | 03/31/15 | -42094 | -17 | 45 |
| C5C | 8 | Turnover of Signal Rooms | 02/25/15 | 03/19/15 | 03/31/15 | -34 | 12 | 44 |
| C5C | 8A | Room-to-Room Conduit Ready | 02/25/15 | 04/17/15 | 03/31/15 | -34 | -17 | 45 |
| C5C | 9 | Turnover Traction Power Rooms | 02/26/15 | 04/24/15 | 05/26/15 | -89 | 32 | 25 |
| C5C | 9A | Room-to-Room Conduit Ready | 02/26/15 | 05/27/15 | 05/26/15 | -89 | -1 | 91 |
| C5C | 10 | Turnover Traction Power Rooms | 02/25/15 | 06/03/15 | 06/17/15 | -112 | 14 | 72 |
| C5C | 10A | Room-to-Room Conduit Ready | 02/25/15 | 07/01/15 | 06/17/15 | -112 | -14 | 74 |
| C5C | 11 | Full access @ Station Service Center(s) | 03/24/15 | 04/03/15 | 04/27/15 | -34 | 24 | 375 |
| C5C | 14b | Limited Access all locations | 09/23/14 | 05/08/15 | 06/04/15 | -254 | 27 | 375 |
| C5C | 15 | Comp. Permanent Power | | 12/18/15 | 12/24/15 | -42362 | 6 | 120 |
| C5C | SS | Substantial Completion | 05/31/16 | 08/25/16 | 10/18/16 | -140 | 54 | 26 |
| C6 | 2A | Complete LAN - 96th St. Station | 05/18/15 | 01/08/16 | 01/08/16 | -235 | 0 | 5 |
| C6 | 2B | Complete WAN - 96th St. Station | 05/18/15 | 01/08/16 | 01/08/16 | -235 | 0 | 140 |
| C6 | 3A | Complete LAN - 86th St. Station | 07/18/15 | 02/22/16 | 02/26/16 | -223 | 4 | 114 |
| C6 | 3B | Complete WAN - 86th St. Station | 07/18/15 | 02/22/16 | 02/26/16 | -223 | 4 | 114 |
| C6 | 4A | Complete LAN - 72nd St. Station | 02/18/15 | 01/28/16 | 02/12/16 | -359 | 15 | 112 |
| C6 | 4B | Complete WAN - 72nd St. Station | 02/18/15 | 01/28/16 | 02/12/16 | -359 | 15 | 112 |
| C6 | 5A | Complete LAN - 63rd St. Station | 04/18/14 | 03/20/15 | 04/21/15 | -368 | 32 | 271 |

| Pkg | MS | Description | Dates | | | Variance | | Sch. Float 103 |
|-----|----|------------------------------------|----------|----------|-----------------|----------|-------|----------------|
| | | | Adjusted | UD #102 | UD #103 | Contract | Month | |
| C6 | 5B | Complete WAN - 63rd St. Station | 04/18/14 | 03/20/15 | 04/21/15 | -368 | 32 | 271 |
| C6 | 5C | Complete all 63rd St. Station work | 04/18/14 | 01/08/16 | 12/04/15 | -595 | -35 | 253 |
| C6 | SS | Substantial Completion | 08/18/16 | 09/19/16 | 10/19/16 | -62 | 30 | 14 |

Table 4 - Project Budget/Cost 

| | FFGA | | | FFGA Amend | MTA Current Working Budget (CWB) | | Expenditures as of February 28, 2015 | |
|-------------------------------|-------------|------------|-------------------------|------------|----------------------------------|------------|--------------------------------------|--------------|
| | \$ Millions | % of Total | Obligated (\$ Millions) | TBD | \$ Millions | % of Total | \$ Millions | % of Total |
| Grand Total Cost: | 4,866.614 | 100 | 4,572.942 | | 5,267.614 | 100 | 3,319.964 | 63.03 |
| Financing Cost | 816.614 | 16.78 | | | 816.614 | 15.50 | | |
| Total Project Cost: | 4,050.000 | 83.22 | 4,572.942 | | 4,451.00 | 84.50 | 3,319.964 | 63.03 |
| Total Federal: | 1,350.693 | 27.75 | 1,250.508 | | 1,350.693 | 24.60 | 958.085 | 18.19 |
| Total FTA share: | 1,300.000 | 96.25 | 1,176.615 | | 1,300.000 | 23.68 | 884.192 | 16.78 |
| 5309 New Starts share | 1,300.000 | 100 | 1,176.615 | | 1,300.000 | 23.68 | 884.192 | 16.78 |
| Total FHWA share: | 50.693 | 3.75 | 73.893 | | 50.693 | 0.96 | 73.893 | 1.40 |
| CMAQ | 48.233 | 95.15 | 71.433 | | 48.233 | 0.88 | 71.433 | 1.35 |
| Special Highway Appropriation | 2.460 | 4.85 | 2.460 | | 2.460 | 0.04 | 2.460 | 0.05 |
| Total Local share: | 2,699.307 | 55.47 | 3,509.000** | | 3,509.000** | 63.92 | 2,361.879 | 44.84 |
| 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 | \$2,976,036,132.00 |
| 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 | | \$4,355,169,334 |

Table 6 - Allocation of Current Working Budget to Standard Cost Categories

| Std. Cost Category (SCC) | Description | FFGA | MTA's Current Working Budget (Dec. 31,, 2014) |
|---------------------------------|--|------------------------|--|
| 10 | Guideway & Track Elements | \$612,404,000 | \$622,478,000 |
| 20 | Stations, Stops, Terminals, Intermodal | \$1,092,836,000 | \$1,277,642,000 |
| 30 | Support Facilities | 0 | \$0 |
| 40 | Site Work & Special Conditions | \$276,229,000 | \$524,561,000 |
| 50 | Systems | \$322,707,000 | \$250,134,000 |
| 60 | ROW, Land, Existing Improvements | \$240,960,000 | \$281,500,000 |
| 70 | Vehicles | \$152,999,000 | 0 |
| 80 | Professional Services | \$796,311,000 | \$1,185,742,929 |
| 90 | Unallocated Contingency | \$555,554,000 | \$308,942,010 |
| Subtotal | | \$4,050,000,000 | \$4,451,000,000 |
| Financing Cost | | \$816,614,000 | \$816,614,000 |
| Total Project | | \$4,866,614,000 | \$5,267,614,000 |

Table 7 -- Core Accountability Items

| Project Status: | | Original at FFGA | Current* | ELPEP** |
|--|--|--|--------------------------|-------------------|
| Cost | Cost Estimate | \$4,050M | \$4,451M | \$4,980M |
| Contingency | Unallocated Contingency | \$555.554M | \$258.6M | \$152.3M |
| | Total Contingency (Allocated plus Unallocated) | \$555.554M | \$258.6M (February 2015) | \$152.3M |
| Schedule | Revenue Service Date | June 30, 2014 | December 30, 2016 | February 28, 2018 |
| Total Project Percent Complete | Based on Expenditures | 74.6% | | |
| | Based on Earned Value | N/A | | |
| Major Issue | Status | Comments | | |
| Design Changes Requested by NYCT Operations | Open | A significant number of changes to the design have been "requested" by NYCT Operations long after the formal completion of the project design. To date, the SAS Project Team's ability to resist the incorporation of these requests appears limited. Procedures have been established requiring Operating Departments to justify design changes. This issue is currently being managed adequately but continued monitoring is required. | | |
| Construction Contract Management and Coordination | Open | Coordination of turnovers between independent prime construction contractors has deteriorated somewhat over recent periods. Numerous turnovers remain. Successful management | | |

| | | |
|--|------|---|
| | | of inter-contractual interfaces remains a critical issue for timely completion of this project. |
| Project Schedule Erosion | Open | The PMOC is concerned about the general inability of most construction contracts to maintain planned 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 #103; Data Date = 02/1/2015

Financial data based upon MTACC reporting through 02/28/2015