

PMOC MONTHLY REPORT

Second Avenue Subway Phase 1 (MTACC-SAS) Project

Metropolitan Transportation Authority

New York, New York

Report Period July 1 to July 31, 2012



PMOC Contract No. DTFT60-09-D-00007

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

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THIRD PARTY DISCLAIMER

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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, Task Order No. 002. Its purpose is to provide information and data to assist the FTA as it continually monitors the grantee's technical capability and capacity to execute a project efficiently and effectively, and hence, whether the grantee continues to be ready to receive federal funds for further project development.

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

MONITORING REPORT

1.0 PROJECT STATUS

During July 2012, MTACC continued advancing the project to meet a Revenue Service Date (RSD) of December 30, 2016 and within its Current Working Budget (CWB) of \$4.451B (exclusive of financing). Contract close-out is ongoing for construction contracts C-26002 (C1) "TBM Tunneling Boring" and C-26013 (C5A) "86th Street Excavation, Utility, Relocation and Road Decking". Progress continued on the six (6) active construction contracts; C-26005 (C2A) "96th Street Site Work and Heavy Civil"; C-26010 (C2B) "96th Street Station Civil, Architectural, and MEP"; C-26006 (C3) "63rd Street Station Rehabilitation"; C-26007 (C4B) "72nd Street Station Cavern Mining and Lining"; C-26008 (C5B) "86th Street Station Cavern Mining and Lining"; and C-26009 (C6) "Track, Power, Signals and Communication Systems". The overall project reached 41.4% complete. The designer completed the update of the C-26011 (C4C) "72nd Street Station Architectural, MEP and Finishes" bid package. The C4C package will be advertised on August 6, 2012 which will leave only the C-26012 (C5C) "86th Street Station Architectural, MEP and Finishes" package to be advertised.

a. Procurement

Future Procurements: Advertisement of the C-26011 (C4C) “72nd Street Station Architectural, MEP and Finishes Package” was re-scheduled from July 31, 2012 to August 6, 2012. The 86th Street Station Architectural, MEP and Finishes Package, C26012 (C5C) is scheduled for advertisement on December 12, 2012.

b. Construction

As of July 31, 2012, there are six (6) active construction contracts on the SAS Phase 1 Project. Contracts C1 and C5A are still in the close out process. Construction progress on the active contracts during this period includes:

- **Contract C-26005 (C2A) 96th Street Site Work and Heavy Civil**
 - **Entrance 1 Slurry Wall and Secant Pile Work (94th Street and West Side of 2nd Avenue)**
 - *Slurry Wall: All seven (7) panels have now been installed. Because of the difficulty in removing the left behind end stop at panel 107 by the C1 contractor, the forecasted completion was delayed approximately seven days.*
 - **Entrance 2 Slurry Wall Work (East Side of 2nd Avenue)**
 - *Mass Excavation: With the installation of all seven (7) slurry wall panels, mass excavation is scheduled to start on August 6, 2012.*
 - **East side of 2nd Avenue**
 - *Slurry Wall: Utilizing two rigs, 19 panels were installed during July 2012 which completed the 47 required.*
 - *Secant Pile: All thirty-four (34) piles have been installed (between 98th and 99th Streets).*
 - **Ancillary 1 Utility Conflict and Secant Pile Work**
 - *Con Ed: Cable pulling at the South secant pile wall was completed.*
 - *Guide wall: Installation was completed.*
 - *Secant Pile: One hundred-eleven (111) out of one hundred-twenty (120) piles have now been installed. Completion is forecasted for August 9, 2012.*
 - **Turnover of Launch (S3 to CTJV)**
 - *CTJV is still maintaining the dewatering system for the launch box and tunnels. The system will be maintained for approximately 6 months then turned over to the C5B contractor.*
- **Contract C-26010 (C2B) 96th Street Station Civil, Architectural, and MEP**
 - *Notice of award issued to Cruz/Tully JV on June 22, 2012.*
 - *Construction Kick-Off Meeting held on July 16, 2012.*

- **Contract C-26006 (C3) 63rd Street Station Rehabilitation**
 - *Surveying of the deformation monitoring points (DMPs) is ongoing and will continue throughout the project.*
 - *Continued with constructing concrete masonry unit (CMU) walls, setting floor drains to final grade, and scraping and priming walls in the East Fan Plant.*
 - *Continued with constructing CMU walls, lead abatement, installation of conduits, drain lines, sprinkler lines and water mist system in the West Fan Plant.*
 - *In Area 5 lead abatement and steel work on mezzanines 1 and 2 are ongoing.*
 - *Temporary and permanent steel erection continues in Area 5.*
 - *In Area 6 pouring of the G3 wall is ongoing.*
 - *On the Platform ongoing work includes; applying intumescent paint, placement of concrete (G3 and G4), installation of brackets for overhead conduits and applying spray acoustic.*
 - *Asbestos abatement work at Entrance #1 scheduled to start the week of August 5, 2012.*
 - *MTACC conducted a Quarterly Quality Oversight review of the contractor on July 19, 2012. Report to the contractor is pending (overall score). Next Quarterly Quality Oversight review is scheduled for October 11, 2012.*
- **Contract C-26007 (C4B) 72nd Street Station Cavern Mining and Lining**
 - *During July 2012, an additional six-thousand fifteen (6,015) cubic yards (cy) of rock were removed. Of the total 184,657 cy of rock to be removed, 159,812cy have now been removed. Blasting of the main cavern and tunnels is expected to be completed by early August 2012.*
 - *Ancillary #1(North-west corner of 69th Street): Open cut excavation by means of blasting has progressed to an elevation of 35 feet under the decking. Installation of walers and struts and utility relocation is ongoing. Approximately 61 feet remain. Blasting is expected to continue through February 2013.*
 - *Ancillary #2 (North-west corner of 72nd Street): Open cut excavation by means of blasting has progressed to an elevation of 29 feet under the decking. Approximately 66 feet remain. Blasting is expected to continue through February 2013.*
 - *Entrance #3(South-east corner of 72nd Street): Support of Excavation (SOE) walls were completed, decking installed and excavation by means of blasting commenced on July 23, 2012. Blasting is scheduled to continue through mid-October 2012.*
 - *The concrete phase of the station, crossovers, G3/S1 and G4/S2 caverns has started with the installation of drain pipes, waterproofing and invert pours.*
- **Contract C-26008 (C5B) 86th Street Station Cavern Mining and Lining**
 - *The North Muck Conveyance System is complete and has been operational. The South system is complete and undergoing testing. During July 2012 the north Gantry had operational problems and was shut down. The Gantry is being repaired and the*

contractor has brought in a temporary mobile crane in order to continue the drilling, blasting and muck removal at the north shaft.

- *In the South open cut area drilling, blasting and muck removal continued between Elevations 112 and 101. The contractor is beginning a swing shift at the south side of the project.*
- *Installed the “Scrubber” at the north muck station. Began installation of structural steel and decking to support the “Scrubber” at Ancillary #1. The scrubbers are a high tech air filtration system introduced to the project as a result of community concerns/complaints about air quality.*
- *Continued with removal of decomposed rock and soil under the sub-basement slab in Ancillary #2 and began preparations for line drilling and rock excavation. Completed the Support of Excavation wall along 2nd Ave.*
- *Continued demolition of A2 structure at Ancillary #2.*
- *At Entrance #1 erection of support steel and jacking continued along with the placement of the mini caissons.*
- *At Entrance #2 tie-in for the new gas main continued.*

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

- *Field office has been located at 309 East 94th Street between 2nd and 1st Avenues.*
- *Efforts are ongoing to identify and resolve discrepancies between the shop drawings prepared by the station contractors and the C-26009 contract documents. Approximately 350 drawings have been reviewed.*
- *MTACC continued the review of contract’s key personnel qualifications and acceptance.*
- *Surveys at the 63rd Street Station to locate the insulated joints (IJ) are ongoing by the contractor.*
- *MTACC completed the review of the Baseline CPM Schedule and Detailed Cost Breakdown (Revision). Comments have been forwarded to the contractor.*
- *A Dispute Resolution Board is being established to resolve the issue of who has the responsibility to install the embedded conduits in the track bed.*

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

MTACC continues to verify that the construction contractors are implementing their Quality Management Systems as specified in the General Requirements (Section 01 43 00). Ongoing MTACC oversight activities include: participating in contractor audits of major subcontractors and suppliers; conducting Quarterly Quality Oversight for all active contracts; participating in internal contractor audits; reviewing and providing comments on Contractors’ Quality Work Plans; participating in Preparatory Phase Sessions; conducting surveillance of QA/QC process for Construction Design Support; disposition of nonconforming hardware; and training of staff on the MTACC Project Process. *The PMOC’s monitoring of MTACC’s quality assurance efforts on the SAS project is ongoing. During July 2012, the PMOC attended QA/QC meetings for the*

C2A, C3, C4B, and C5B contracts and a Quarterly Quality Oversight Review of the C3 contract. The PMOC is concerned at the length of time it takes to process nonconforming hardware (disposition, rework/repair and implement corrective action) on all contracts.

2.0 SCHEDULE DATA

Integrated Project Schedule (IPS) Update #72 was received on July 10, 2012 and is based on a Data Date of July 1, 2012. Update #72 contained a narrative report, a schedule variance report, a schedule revision log and “PDF” versions of several schedule reports.

The updated IPS forecasts completion of all construction and NYCT Pre-Revenue Training & Testing by October 3, 2016, with 90 calendar days (CD) or 64 work days (WD) of contingency when measured against MTACC’s target Revenue Service Date (RSD) of December 30, 2016. Schedule contingency along the primary critical path leading to the start of revenue operations was unchanged this period.

A summary of significant schedule accomplishments or issues for each active contract include:

- *Contract C-26005 (C2A): Work generally proceeded in accordance with the current schedule. Slurry panel installation is forecast to complete in July 2012; secant pile installation will complete in late July/early August 2012. Forecast contract substantial completion was extended 3 CD this period to July 18, 2013.*
- *Contract C-26006 (C3): In July 2012 the Contractor implemented a second shift to increase steel erection production and mitigate delays resulting from steel fabrication issues. Forecast contract substantial completion was extended 13 CD this period to September 18, 2014*
- *Contract C-26007 (C4B): Overall excavation is approximately 86% complete and no longer controls the project critical path. The contract Substantial Completion date recovered 14 WD to December 23, 2013. The recovery was the result of adjusting the schedule to properly account for future critical path concrete work that was performed out of sequence. “Cost-to-Cure utility relocation work at Entrance No. 1 gained 14 WD of schedule float as a result of the decrease in the estimated duration of the work due to scope reductions included in the latest design.*
- *Contract C-26008 (C5B): North shaft production blasting and excavation are underway; South shaft production blasting will be underway by August 1, 2012. Work is underway at Entrance #1 and Ancillary #1 and #2. All schedule milestone dates were maintained during this update period.*
- *Contract C-26009 (C6): For Systems Contract C-26009, contractor preparation and submission of key submittals continues. Field surveys also continue of the existing conditions at 63rd Street Station Tunnels. No other work is underway at this time. Development of the baseline schedule continues.*

Project Critical Path: *There are multiple, independent schedule paths through the 86th Street Station with schedule float less than 25 WD. Collectively, these paths can all be considered “critical”.*

- *“Path 1” is initiated by the C5B South Cavern Excavation and continues through multiple phases of this work (Development & Top Heading -> Intermediate Bench -> Public Cavern Top Heading -> Public Cavern Bottom Bench). After excavation, the critical path follows the sequence of invert drainage, waterproofing and concrete lining through the South Cavern to MS #1. Upon achieving MS #1 in early March 2014, the critical path shifts to start and completion of Contract C5C mezzanine and platform concrete work, followed by the start of concrete work in early September 2014, then shifting to 1st and 2nd fix work in the 86th Street Station South Ancillary (No. 1), where it is handed over to C6 in April 2015. The critical path continues into C6 Systems Signal and Traction Power work for the next six (6) months within the 86th Street Station, followed by Integrated Testing of the Traction Power system beginning in mid-December 2015. Upon completion, this area is handed over for Pre-Revenue Operations Testing beginning in late June 2016 and is forecast to complete by October 13, 2016. The MTACC’s forecast RSD remains as December 30, 2016.*
- *“Path #2” (2 WD float) involves the demolition, underpinning, excavation (both cut-and-cover, and escalator tunnel) and structural concrete construction of Entrance #1. Heavy civil construction performed by C5B is transferred to C5C for finish construction via “Hand-off No. 2”.*
- *“Path #3” (8 WD float) involves excavation and concrete construction for the northern portion of the cavern. This work mimics the work at the South Cavern (Path #1). This path runs through C5B Substantial Completion, where the work is transferred to C5C.*
- *“Path #4” (16 WD float) involves excavation and structural concrete work for Entrance #2. Transfer to C5C for finish construction is scheduled to occur in late August 2014.*

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

- +23 WD:** *NYCT Pre-Revenue Operation Activities, scheduled to start on August 18, 2014.*
- +45 WD:** *C4B, Ancillary #2 rock excavation and structural concrete. This work is currently underway. The path extends through C4B Milestone #1 to C4C Ancillary 2 construction.*
- +48 WD:** *Mezzanine deck concrete installed by C4C starts in September 2013 and is followed by mezzanine and platform concrete, MEP, finish and systems work at 72nd Street Station. This work is initiated via handoff from C4B (and not a truly independent path).*
- +75 WD:** *Cost-To-Cure at 301 East 69th Street and 1322 2nd Avenue. The start of construction of C4B, Entrance #1 is controlled by two building modifications/utility relocations. Approximately eleven (11) work days of float were gained along this path during the most recent update period due to the reduced scope/schedule duration associated with the latest design.*
- +77 WD:** *This path extends through the construction of the 96th Street Station (C2A -> C2B -> C6). It is initiated by Stage 5 (95th to 97th Streets) slurry wall installation, forecast*

for completion on approximately July 27, 2012. Following C2A deck installation, excavation and concrete invert construction this path moves to the C2B Station Finishes package in July 2013. Systems installation and testing (C6) at the 96th Street Station is forecast to start on August 29, 2014 and continue through October 5, 2015, at which time this path merges with the integrated system testing (critical) path.

+85 WD: C2A support of excavation and mass excavation activities leading to a turnover to C2B (Milestone #2) in April 2013. C2A performs mezzanine, roof and MEP construction through November 2014, at which time C6 takes over system installation.

+147 WD: C5C Procurement

+175 WD: C4C Procurement

Previous updates have identified the 96th Street Station as the second most critical element of the Second Avenue Subway, Phase 1 Project. Over recent update periods, work at the 96th Street Station (C2A) has maintained or surpassed contemporaneous schedule forecasts and thereby gained schedule float when compared to the critical path. Conversely, over the same period work at the 72nd Street Station (C4B) has experienced delays and lost float when compared to the critical path.

As of IPS Update #72, certain work at the 72nd Station has become “near-critical” and the 72nd Street Station may be considered the second most critical element of the project with respect to schedule.

Quarterly Milestone Tracking: The final tabulation of milestone schedule performance for the 2nd Qtr. 2012 is contained in the accompanying Table 3. Milestones not completed this Quarter will be “carried over” into the 3rd Quarter 2012 tracking log. A summary of schedule performance based on these milestone activities includes the following:

Summary	
# Calendar Days Elapsed	182
Average Δ from Baseline - all activities (CD)	65
Average Δ from Baseline - completed activities (CD)	18
Average Δ from Baseline - ongoing activities (CD)	91
Avg TF - Open Activities (WD)	223
2nd Qtr. Milestone Summary	
# Activities Forecast this Qtr.	12
# Activities forecast to complete this Qtr.	9
# Activities completed this Qtr.	4
# Activities on/ahead of baseline	0
# Activities behind baseline	8
Carryover Milestone Summary	
# Activities Carried Over	21
# Activities forecast to complete this Qtr.	19

# Activities completed this Qtr.	9
# Activities on/ahead of baseline	0
# Activities behind baseline	12

Based on the sampling of activities in Table 3, the PMOC notes the following:

- For the Second Quarter 2012, 13 of 28 activities originally forecast to complete during this Quarter were actually completed (46%).
- Completed activities averaged an 18 CD variance from their forecast completion date.
- Activities not completed this Quarter average 223 WD of schedule float.

This analysis supports the conclusion that the SAS Project Team, including its construction contractors, are actively using the IPS and associated construction schedules as tools for planning and executing the work in a timely manner.

ELPEP/SMP Compliance: In the opinion of the PMOC, SAS Phase 1 is in compliance with the metrics, deliverables and beneficial outcomes expressed in the Enterprise Level Project Execution Plan (ELPEP), dated January 15, 2010, and as further described by the Schedule Management Plan (SMP). Specifically:

- Forecast Revenue Service Date:
 - ELPEP Requirement: February 28, 2018
 - Current Forecast: December 30, 2016
- Minimum Allowable Float; ROW/Real Estate Activities:
 - ELPEP Requirement: 60 CD
 - Current Forecast:
 - All Real Estate Takings were completed as of November 1, 2011.
 - Cost-To-Cure Activities

<u>Pkg.</u>	<u>Location</u>	<u>Property</u>	<u>Sch. Float</u>
C4B	Entrance #1	301 E. 69 th Street 1322 2 nd Avenue	75 WD
C3	Entrance #1	200 East 63 rd Street	150 WD*
* Float is estimated. IPS does not contain adequate detail for this work to make a more detailed evaluation.			

- Minimum Allowable Secondary Float Path:
 - ELPEP Requirement: 25 Calendar Days
 - Current Forecast: Approx. 63 CD (45 WD) through C4B excavation and subsequent construction of Ancillary #2.

- Secondary Schedule Mitigation (critical path compression):
 - ELPEP Requirement: 125 CD
 - Current Forecast: Several opportunities are under consideration by the SAS Project Team that will improve the schedule primary and/or secondary paths. These opportunities are discussed in the next section of this report.
- Minimum Schedule Contingency along the Critical Path:
 - ELPEP Requirement: 240 CD measured against the “risk-informed” target RSD of February 28, 2018
 - Current Forecast: 513 CD
 - Note: MTACC has maintained its target RSD of December 30, 2016. IPS Update #72 identifies 90 CD (64 WD) of float measured against this target.

In addition to the metrics above, the MTACC continues to demonstrate that it is using the IPS to actively plan, organize, direct and control individual packages and the overall project, and to provide reliable forecasts of the SAS RSD and other major accomplishments. These beneficial outcomes are significant components of ELPEP/SMP compliance.

Schedule Improvement Opportunities:

In its monthly schedule update report, SAS identifies potential schedule improvement (secondary schedule mitigation) opportunities.

#	Description	Current SAS Position	PMOC Comment
1.	<i>Increased excavation work from 5 day work week to a 6 day work week</i>	<i>Use “as needed” to recover lost time for C5B.</i>	<i>Concur</i>
2.	<i>Adjusted/increased turnovers between the SAS Finishes Contracts at 72nd, 86th, and 96th Street Stations and the C6 Systems contract</i>	<i>Provide multiple staging areas for C6 Contractor – under active consideration and review.</i>	<i>Substantial cost exposure if implemented after contract execution</i>
3.	<i>Addition of C6 Interim Milestone for completion of Integrated Systems Testing from 55 MO to 52 MO</i>	<i>Still valid</i>	<i>Constructive acceleration of C6 contract – major cost exposure</i>
4.	<i>Transfer of Mezzanine and Platform Concrete to 86th St Station Mining contracts</i>	<i>Possibly valid</i>	<i>Previously deferred by MTACC due to excessive cost proposal from Contractor</i>
5.	<i>Adjustment of contract blasting restriction from 04-Jun-12 to early April 2012 (30 CD) to replenish schedule contingency used as a result of the contract award delay.</i>	<i>Initiative Closed. MTACC released Contractor to blast in April 2012. Net schedule delay realized due to extended duration required for construction of the Muck Conveyance</i>	

#	Description	Current SAS Position	PMOC Comment
		<i>Systems.</i>	
6.	<i>Construction of Ancillary Nos. 1 and 2 for 86th Station using multiple crews. IPS currently based on 1 crew for these locations.</i>	<i>Under active consideration and review.</i>	<i>Potential of approx. 40 WD of duration reduction. Similar to #1 – use as needed.</i>
7.	<i>Providing 96th St. Station Contractor w/additional support crane during slurry wall installation operation</i>	<i>Implemented</i>	<i>Monitoring actual schedule improvement realized.</i>
8.	<i>Acceleration of concrete work by 30 CD in 86th St. Station Cavern and Ancillary Structures</i>	<i>Valid; contractor proposal reviewed and initiative will not be pursued at this time as a result of the cost; however may be reviewed at a later date.</i>	<i>Initiated when no improvement using #5 was realized. Excessive cost.</i>

The SAS Project Team continues to evaluate potential opportunities to compress the schedule critical or near-critical path(s) and reduce the risk of schedule delay. Of the eight schedule improvement concepts currently under consideration, one has been closed, one has been implemented, and three are not being actively pursued at this time due to excessive cost. The remaining three concepts (#1, #3 and #6) may be best suited to overcome the impact of specific, limited delays. At this time, the opportunity to provide meaningful schedule acceleration (secondary schedule mitigation) appears constrained by the excessive costs associated with such efforts and the multiple, interconnected “near-critical” paths throughout the project.

Schedule Contingency: *IPS Update #72 forecasts all Phase 1 construction and pre-revenue testing to be complete on October 4, 2016. This results in an 90 CD (64 WD) contingency when measured against the MTA’s target RSD of December 30, 2016 and a 513 CD contingency when measured against the FTA Risk-Informed RSD of February 28, 2018.*

3.0 COST DATA

Based upon financial expenditures reported by the MTACC during July 2012, SAS Phase 1 is approximately 41.4 % complete. The completion status of the active construction contracts through July 2012, also based upon reported expenditures through that date, is as follows:

- C26002 (Tunnel Boring) – 96.1%
- C26005 (96th Street Station) – 69.9%
- C26013 (86th Street Station – Sitework) – 100%
- C26008 (86th Street Station – Heavy Civil) – 18.9%
- C26006 (63rd Street Station) – 19.9%
- C26007 (72nd Street Station) – 51.4%
- C26009 (Systems – Track, Power, Signals and Communications) – 1.5%

Aggregate Construction % Completion:

- 82% of all construction work has been bid and is under contract.
- 35.1 % of all construction is complete.

Based upon cost data received from MTACC for July 2012:

- Value of construction in place this period = \$33,590,081
- Estimated value of construction remaining = \$1,730,775,943
- Target construction completion = August 16, 2016
- Number of months remaining = 49
- Rate of construction required to achieve target completion date = \$35,575,111/month

Note: No progress was reported during this period for Contract C2A.

The average progress (payments) achieved over the most recent six month period is \$34,151,850. Based on a review of cost data for July 2012, it appears that adequate overall progress was made on the project to achieve the RSD of December 30, 2016.

Estimate-At-Completion (EAC): The SAS Project Team has extended its risk-based contingency forecasting effort to the development of an EAC for all construction. To date, this effort is limited to construction cost only. The project EAC is a combination of the risk-based approach for construction cost and traditional estimating for soft costs. Table 6 contains a summary of the current EAC, which is currently \$4,199,709,553, unchanged from last month.

Based on the information available, the PMOC's EAC validates the reasonableness of the MTACC's Current Working Budget of \$4.451B. Based upon current information, this effort suggests the project can be built within the limits of the Current Working Budget. This effort will be revisited periodically, to incorporate updated information and evaluate its effect on the overall EAC.

Cost Growth: For the period ending July 31, 2012, the total cumulative Additional Work Order (AWO) exposure was reported to be \$106,521,244, an increase of \$757,437 (.71%) over the \$105,763,807 exposure reported for period ending June 30, 2012. Executed AWOs as documented on AWO tracking logs totaled \$87,486,319, an increase of \$957,700 from the \$86,528,619 reported for the period ending June 30, 2012.

The change in AWO exposure was driven by the following:

1. Contract C1: AWO exposure increased by a total of \$476,338. This increase is due to the incorporation of initial cost estimates for AWOs # 132 and 147 and reductions in the estimated cost of AWOs # 133 and 142.
2. Contract C2A: AWO exposure reduced by a total \$126,587. This reduction is due to the incorporation of initial cost estimates for AWOs #101 and 120 and reductions in the estimated cost of AWOs # 111 and 121.
3. Contract C3: AWO exposure increased by a total of \$112,459. This increase is due to the incorporation of initial cost estimates for AWOs # 15 and 16 and revisions to the estimated cost of AWOs # 8, 9, 10, 11, 12, 13 and 14.

4. *Contract C5A: AWO exposure reduced by a total of \$11,574.*
5. *Contract C5B: AWO exposure increased by a total of 138,894. Increased exposure is due to the incorporation of initial cost estimates for AWOs # 11, 18 and 28 and an adjustment to the estimated cost of AWO # 26. It is noted that there is no “Exposure Value” for 17 of the 28 AWOs contained on the log.*

The change in Executed AWO Value was driven by the following:

1. *Contract C2A: Execution of AWOs with net value of \$339,000.*
2. *Contract C3: Execution of AWOs with net value of \$158,000.*
3. *Contract C5A: Execution of AWOs with net value of \$168,000.*
4. *Contract C5B: Execution of AWOs with net value of \$292,700.*

ELPEP/CMP Compliance: *The PMOC previously expressed concern that the MTA’s financial management of the project has not incorporated the community relations effort. During July 2012, the MTACC demonstrated that the cost of its planned community relations effort is contained within its current CWB. These costs are embedded within other line items and may not represent the optimum way to document and track these costs; however the project team has a documented approach to managing the budget and cost of this element of the project and is no longer a concern of the PMOC.*

The PMOC continues to note that a significant number of AWOs (Pkgs. C1, C2A, C5B) where “Exposure Values” do not exist in the respective logs. AWO “Exposure Values” are important to the overall cost and cost contingency management effort. These AWO Logs should be periodically reviewed to ensure that “Exposure Values” and other pertinent information are as up-to-date as possible.

Cost Contingency: *During July 2012, contingency changes were limited to routine incorporation of AWOs into the individual project and overall program reporting systems. No other significant changes in the SAS construction program have been reported that materially affected the forecast cost contingency baseline against which the current contingency balance is measured.*

The PMOC has updated and adjusted its contingency drawdown and utilization model to reflect changes made this period. Models maintained by both the PMOC and the SAS Project Team verify that the current contingency balance is greater than the Planned Balance and exceeds the ELPEP Required Balance.

	<u>June 2012</u>	<u>July 2012</u>
<i>Required Balance (ELPEP):</i>	<i>\$220,000,000</i>	<i>\$220,000,000</i>
<i>Planned Contingency Balance:</i>	<i>\$331,895,066</i>	<i>\$329,684,165</i>
<i>Actual Contingency Balance (PMOC):</i>	<i>\$426,627,088</i>	<i>\$425,869,651</i>
<i>Actual Contingency Balance (MTA):</i>	<i>\$430,706,000</i>	<i>TBD</i>

4.0 RISK MANAGEMENT

Risk Mitigation Meeting No. 18 was held on July 24, 2012. Recent risk management activities reviewed include:

- *Risk Mitigation Meeting No. 17 on June 28, 2012.*
- *Established tentative agenda and date (8/16, 8/17) for C4C Risk Analysis Workshops.*
- *Completed June EAC forecast for monthly budget presentation.*

Risks reviewed and updated during this meeting include:

- 1) **Contract Interfaces (Risk CNS 4 (C6)):** *Managing contractual interfaces during construction. No major update this period. This risk will continue to be monitored as tools and procedures for managing the contract interfaces are refined.*

SAS will further review and evaluate the proposed cost of using 4-D modeling as an additional tool to coordinate contractual and technical interfaces. The current plan calls for implementation of this approach at the 63rd Street Station (C3/C6) as a test case through which the tool's overall value to the Project will be evaluated.

- 2) **System Safety Certification (Risk CNS 8 (C6)):** *Limited progress this period. No additional training occurred and the "coordinator" position that will have primary responsibility for managing this effort will not be staffed until late July 2012.*

It was proposed that this risk be transitioned to "monitoring" status, whereby Risk Management will revisit the task on a Quarterly schedule to ensure satisfactory status and progress.

- 3) **Shop Drawing Processing (Risk ID TBD):** *This risk will be monitored on a periodic basis to evaluate performance and verify that delays in submittal processing do not cause actual delays to construction progress.*

- 4) **Cost-To-Cure Utility Relocations (Risk C4B 77 and C4B C14):** *Relocating utilities that service buildings adjacent to Entrance No. 1 (301 East 69th Street, 1322 Second Avenue) may delay construction at this location. A design package was sent to the Owner for its review on July 18, 2012. The project team believes this submittal will be generally acceptable to the building owner.*

- 5) **Risk C3 Entrance 1 (200 East 63rd Street):** *Additional design work is required. Very limited progress in resolving this issue appears to have been achieved over the June/July 2012 time period.*

- 6) **C4C Procurement (Risk C4C 79):** *Several actions have been taken during this period that should decrease the risk of delay during the procurement of this package.*

a) The approval of subcontractors has been identified as a cause of significant delay during the C2B procurement. MTA Procurement has revised this procedure and it is not expected to delay subsequent procurements.

- b) *The sequencing and duration of the bid periods for both C4C and C5C have been “optimized”. Turnaround time for processing of contractor questions and development of addendums will be improved.*

In the PMOC’s opinion, the SAS Project Team is actively managing retained risks and generally achieving a moderate to high level of mitigation of the overall growth of project cost. This period, the follow-up effort required to achieve a high level of risk mitigation was not consistently maintained. The PMOC is concerned over the limited progress that has been made in achieving a satisfactory resolution to the C3 utility relocation at Entrance 1. During July 2012, implementation of the construction phase effort to support System Safety Certification did not maintain the progress and momentum achieved over previous months. The PMOC recommends additional effort be devoted to managing these risks in order to mitigate their potential contribution to schedule and cost growth.

5.0 ELPEP

There were no ELPEP meetings held during July 2012. With respect to SAS, the current status of each of the main ELPEP components is summarized as follows:

- ***Technical Capacity and Capability (TCC):*** The PMOC completed its review of the Revision 8 SAS PMP and has verified incorporation of all Candidate Revisions with FTA. The PMOC recommendations regarding approval were forwarded to FTA in February 2012. *During July 2012, these recommendations were reviewed with the MTACC.*
- ***Schedule Management Plan (SMP):*** The PMOC continues to monitor and verify SAS substantial compliance with the SMP. The process of transferring the compliance verification process to the MTACC is discussed below.
- ***Cost Management Plan (CMP):*** FTA conditional approval of the Cost Management Plan, including five (5) Candidate Revisions was provided on September 1, 2011. The PMOC is monitoring and verifying compliance with this plan.
- ***Risk Mitigation Capacity Plan (RMCP) and Risk Management Plan (RMP):*** On February 2, 2012, the FTA/PMOC consolidated comments on the SAS Risk Management Plan were forwarded to the MTACC. PMOC recommendations regarding approval were forwarded to FTA. *The PMOC is monitoring compliance with these plans.*
- ***Conformance and Compliance Demonstration:*** A target date for the transfer of compliance verification to MTA of July 1, 2012 was established. *A meeting is scheduled for September 12, 2012 to review conformance and compliance.*

The SAS Project Team has implemented the majority of the principles and requirements embodied in the ELPEP. The procedural changes instigated by the ELPEP have become an integral part of the management of the project.

6.0 SAFETY AND SECURITY

Project-wide monthly safety meetings are being held, with representation from contractors, CCM, MTACC, OCIP, and the PMOC present. The meetings serve as a forum to discuss specific

incidents and the sharing of lessons learned. The Lost Time Accident Rate and OSHA Recordable Accident Rate from the start of construction until June 30, 2012 are 2.21 and 5.42 respectively. Both rates are above the national average of 2.2 and 4.2. The cumulative construction time worked since the project inception is 3,983,099 hours. Cumulative lost time injuries since project inception is 44 and the cumulative recordable injuries are 64. Synthesizing the data shows the C4B contractor to be the major contributor to the high rates. The C4B contractor has accumulated 854,487 man-hours on the project with 17 lost time injuries and 14 recordable injuries. The lost time rate per 200,000 work-hours is 3.98 and the recordable rate is 7.26 %. SAS Project management has express concern about the rates and have meet with the contractor's upper management. A corrective action plan has been requested and is expected by mid-August 2012.



7.0 ISSUES AND RECOMMENDATIONS

Organization Issues: Organizational changes (reference MTA's Quarterly Review Report – 2nd Quarter 2012) have been made which are not reflected in Section 2.0 (Organization and Staffing) of the SAS PMP (Revision 8). The current SAS Project Team as depicted does not appear to accurately represent the manner by which the project team functions or is managed. The organization of the construction management team is of particular concern. As depicted, it can be inferred that the management of the 63rd Street Station Modification (C3) and Systems Package (C6) are not fully integrated with the management of the other construction packages. The PMOC recommends a review and clarification of this organizational structure via an update of Section 2.0 (Organization and Staffing) and Figures 3 thru 12 of the SAS PMP. The SAS Project Team should generate a Candidate Revision to track the update.

Staffing Issues: The SAS Quality Manager's and Contract C6 Quality Manager's positions are still unfilled. Adequate quality presence on the project is critical especially as the Systems contractor's efforts are increasing. The PMOC recommends that efforts be expedited to fill these positions and a plan developed to share QA staff until the positions are filled.

Cost-To-Cure: Several design/construction activities required as a result of real estate or right-of-way acquisition have encountered substantial delays. These issues are becoming more significant to the overall project schedule each month. The PMOC is concerned that these issues are not all included in the IPS in sufficient detail to reasonably model their effect on the schedule. Design and construction work associated with cost-to-cure work at Entrance 1, Contract C3 and Entrance 1, C4B, should be modeled in greater detail, to facilitate the actual tracking of progress and support development of alternative scenarios.

Safety Certification: The safety certification process has been identified as a risk to project completion. This risk is currently identified in the C6 contract Risk Register as ID # CNS8. The

PMOC was concerned that consistent progress would not be achieved until adequate, dedicated resources were available to coordinate the efforts. Subsequently, the Chief – Quality, Safety, and Security Manager is now responsible to identify and obtain the resources necessary to carry the certification process forward. A Systems Safety Specialist was recently hired to support the effort.

Design Changes: *In its May 2012 Monthly Report, the PMOC expressed concern about the number of changes that were being incorporated into the design subsequent to the completion of Final Design and the potential impact of the changes on the project’s current working budget and schedule. The PMOC was also concerned that the Configuration Change Control process might not have been utilized to approve the changes. Subsequent meetings with SAS Project Design Management revealed that the changes were “outstanding” design items that had been agreed upon by NYCT’s Department of Subways (DOS) and Capital Project Management (CPM). The changes were being tracked via the configuration management process where cost and schedule impacts are addressed. MTACC decided to issue Modification #67 to the Design Engineer’s contract to update the packages that had not been advertised and to utilize the AWO process for packages what were in construction. TAC approval would not be required since the changes had been agreed upon by all parties. The PMOC’s concerns have been adequately addressed and this issue is considered closed.*

AWO Exposure Value: *Section 5.3 of the SAS Cost Management Plan states that each entry in the AWO Log will include an estimated cost. As a practical matter, this may not always be possible; the scope/cost may take some time to become fully identified and developed. However, the PMOC continues to note that significant number of SAS AWOs do not have estimated cost exposures included in the log. EAC forecasting is an important element of the SAS Cost Management Plan and all reasonable efforts should be made to keep “Exposure Costs” and similar values as up-to-date as possible.*

Ship America/Fly America: *There is an ongoing difference of opinion between MTACC and the C-26008 (C5B) contractor with regards to the applicability of the Cargo Preference Act and the Fly America Act to the procurement and inspection of construction equipment and machinery for the 86th Street muck conveyance systems which originates overseas. The issue is whether such equipment and machinery must be transported on privately owned commercial vessels of the United States and employees of the contractor who travel overseas to inspect such equipment must utilize American carriers for their air travel. Through correspondence the contractor has taken the position that the Cargo Preference Act does not apply to this material. The applicability of the Fly America Act is still be evaluated by the contractor, and they will provide a position once the evaluation is completed. MTACC’s position is that both Acts apply and through correspondence has stated such. It is recommended that FTA/PMOC investigate and provide a position statement so resolution of these issues can be obtained.*

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
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
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	August 30, 2016	October 2017
Revenue Service	June 30, 2014	December 30, 2016	February 2018

A = Actual

Table 2 - Schedule Contingency

IPS Update #	59	62	65	68	71	72
Data Date	06/01/11	09/01/11	12/01/11	03/01/12	06/01/12	07/01/12
Contingency (CD)						
RSD=12/30/2016	67	67	67	80	90	90
RSD=02/28/2018	490	490	490	503	513	513

Table 3 – 2nd Quarter 2012 Schedule Milestone Comparison

Pkg.	Act.	Description	Milestone Updates			
			Baseline	M-3	Δ	TF
3rd Qtr 2011 Tracking Milestones (Carryover)			1-Jul-11	1-Jul-12		
C4B	72C1185	Excavate Top Heading Area 2	30-Jun-12	6-Apr-12 A	-85	-
4th Qtr 2011 Tracking Milestones (Carryover)			1-Oct-11	1-Jul-12		
C2A	A117	Complete ANC #1 Secant Piles	11-Jul-12	31-Jul-12	20	132
C2B	PR40	Award C2B Contract	30-Apr-12	22-Jun-12 A	53	-
C3	LP025	Complete Demo – Lower Platform	31-May-12	1-Oct-12	123	403
	UP040	Complete Demo – Upper Platform	11-Apr-12	8-Jun-12 A	58	-
C4B	72C1225	Excavate Cavern Bench	9-May-12	20-Jul-12	72	102
1st Qtr 2012 Tracking Milestones (Carryover)			1-Jan-12	1-Jul-12		
C2A	6S235	Start Invert Inst. 93rd -> 95th Streets	8-Feb-12	2-Apr-12 A	54	
C3	005	Complete Sub/App Struct. Steel Shop Dwgs	20-Jul-12	8-Nov-12	111	241
	A1010	Begin Demo - Ancil #1	2-May-12	31-Aug-12	121	549
	EN105	Begin Structural Work - Ent 1	22-May-12	24-Sep-12	125	274
	MZB05	Compl. Asbestos/Lead Abatement - Fan Plant	27-Mar-12	30-Jul-12	125	324
	010	Begin Elevator Fab	7-Mar-12	18-Oct-12	225	380
C4B	SCC1000	South Crossover Excavate	31-Jul-12	9-May-12 A	-83	-
	G3S11060	G3 TBM F/P/S Tunnel Invert	28-Mar-12	24-Jul-12	118	129
	C4B ENT1200A	Contractor (Start) Cost to Cure Work	2-Mar-12	11-Sep-12	193	326
	ETA1000	Ent 2 Adit Excavation Complete	11-Jan-12	12-Jul-12	183	141
	E3C1010	Ent 3 Bldg Demo Complete	29-Mar-12	25-May-12 A	57	-
C5B	S110a	Complete Installation of Mucking Sys-South	25-Apr-12	26-Jul-12	92	0
	S100a	Complete Installation of Mucking Sys-North	10-Apr-12	22-Jun-12 A	73	-
	S150	N. Cavern Exc; Development & Top Heading	11-Apr-12	7-May-12 A	26	-
	S110b	S. Cavern Exc; Development & Top Heading	26-Apr-12	11-Apr-12 A	-15	-
2nd Qtr 2012 Tracking Milestones			1-Apr-12	1-Jul-12		
C2A	E226	Install Stage 4 SOE Slurry Panel – Ent 2	29-May-12	28-Apr-12 A	-31	-
	E105	Relocate MEP @ Rainbow Hardware (AWO98)	25-Jun-12	14-Aug-12	50	128

			Milestone Updates				
Pkg.	Act.	Description	Baseline	M-3	Δ	TF	
C3	MZB15	<i>Start Interior Work/Finishes M6 Utility Rms</i>	5-May-12	22-Jun-12	A	48	
	MZC01/M ZC05	<i>Asbestos/Lead Abatement & Demo-Lower Mezz</i>	27-Apr-12	12-Jul-12		76	241
	MZ5001/0 10/015	<i>Lead Abatement/Demo -M1- >M6</i>	10-Jul-12	13-Aug-12		34	274
	UP025	<i>Begin Structural const; CBH Control Rm</i>	2-Apr-12	9-Jul-12		98	346
C4B	72C1430	<i>Start Main Cavern Invert F/R/P/S</i>	24-Jul-12	7-Sep-12		45	102
	NCC1035	<i>Start North X-Over Invert WP</i>	9-May-12	3-Aug-12		86	127
	63S1050	<i>Complete 63rd St Stub Cavern Invert F/R/P/S</i>	8-Jun-12	14-Jun-12	A	6	-
C5B	AN100	<i>Compl. Ancil 2;SOE (Piles & Lagging)</i>	13-Apr-12	25-Jun-12	A	73	-
	E210/240/2 42	<i>Complete Entrance 2; Utility Relocations</i>	4-Oct-12	29-Aug-12		-36	16
	E110	<i>Complete Entrance 1; Structural Demo</i>	26-Jun-12	8-Aug-12		43	7

Table 4 - Project Budget/Cost 

	FFGA			FFGA Amend	MTA Current Working Budget (CWB)		Expenditures as of July 31, 2012	
	\$ Millions	% of Total	Obligated* (\$ Million)	TBD	\$ Millions	% of Total	\$ Millions	% of Total
Grand Total Cost:	4,866.614	100	4,375.76		5,267.614	100	1,844.664	35.02
Financing Cost	816.614	16.78			816.614	15.55		
Total Project Cost:	4,050.000	83.22	4,375.76		4,451.000	84.50	1,844.664	35.02
Total Federal:	1,350.693	27.75	1,063.942		1,350.693	25.64	600.763	11.40
Total FTA share:	1,300.000	96.25	990.049		1,300.000	24.68	589.651	11.19
5309 New Starts share	1,300.000	100	990.049		1,300.000	24.68	589.651	11.19
Total FHWA share:	50.693	3.75	73.893		50.693	0.96	11.112	0.21
CMAQ	48.233	95.15	71.433		48.233	0.92	8.652	0.16
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**	66.61	1,243.901	23.62
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 - Contingency Drawdown

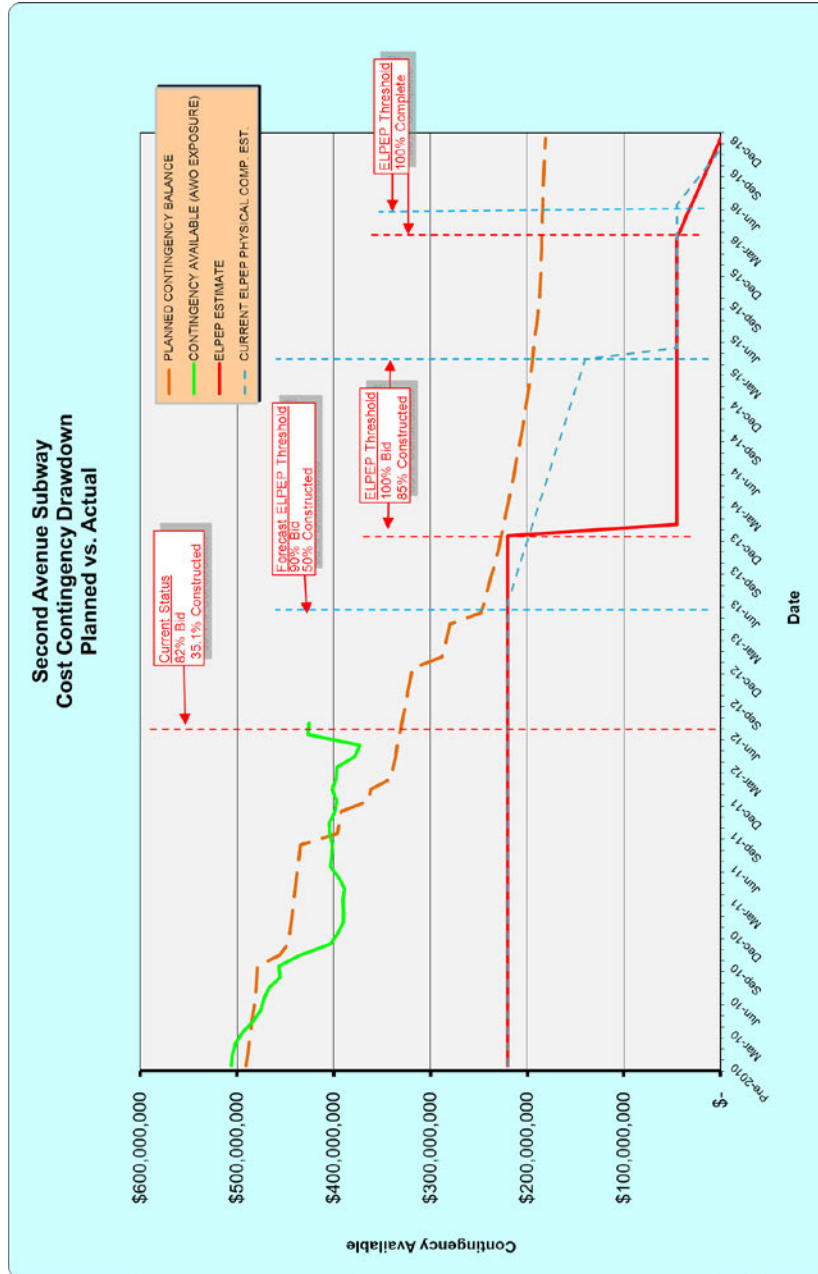


Table 6 - Estimate @ Completion

Description	Budget	Forecast		
	Current Working Budget	PMOC EAC Forecast (April 2012)	MTA EAC Forecast (March 2012)	Notes
Total Construction	\$2,728,172,492	\$3,011,500,000	\$2,934,645,600	
Engineering Services Subtotal	\$576,541,264	\$591,338,287	\$591,338,287	
Third Party Expenses	\$534,800,000	\$534,800,000	\$534,800,000	
TA Expenses	\$125,160,085	\$128,160,085	\$128,160,085	
Contingency	\$321,104,648			
Executive Reserve	\$160,000,000			
Subtotal	\$4,451,000,000	\$4,265,798,372	\$4,199,709,553	

Table 7 - Allocation of Current Working Budget to Standard Cost Categories

Std. Cost Category (SCC)	Description	FFGA	MTA's Current Working Budget
10	Guideway & Track Elements	\$612,404,000	\$728,617,000
20	Stations, Stops, Terminals, Intermodal	\$1,092,836,000	\$1,276,632,000
30	Support Facilities	0	\$562,000
40	Site Work & Special Conditions	\$276,229,000	\$537,621,000
50	Systems	\$322,708,000	\$247,627,000
60	ROW, Land, Existing Improvements	\$240,960,000	\$292,000,000*
70	Vehicles	\$152,999,000	0**
80	Professional Services	\$796,311,000	\$885,941,000
90	Unallocated Contingency	\$555,554,000	\$482,000,000
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

* Includes \$47M Cost-to-Cure.

** FTA Region II has accepted MTACC/NYCT's assertion that recent services reductions will provide ample spare vehicles for the SAS Phase I Project.

Table 8 - Core Accountability Items				
Project Status:		Original at FFGA	Current*	ELPEP**
Cost	Cost Estimate	\$4,050M	\$4,451M	\$4,980M
Contingency	Unallocated Contingency	\$555.554M	\$403M	\$220M
	Total Contingency (Allocated plus Unallocated)	\$555.554M	\$426M (July 2012)	\$220M
Schedule	Revenue Service Date	June 30, 2014	December 30, 2016	February 28, 2018
Total Project Percent Complete	Based on Expenditures	38.7%		
	Based on Earned Value	N/A		
Major Issue		Status	Comments	
<i>Organization and Staffing</i>		<i>Open</i>	<i>Certain relationships on the current Org. Chart do not reflect actual structure and function of project team. Need to fill two open positions ASAP.</i>	
<i>Safety and Security Certification</i>		<i>Open</i>	<i>Detailed planning and organizational prep for safety & certification process needs to continue. Current lack of dedicated staff may impede progress.</i>	
Date of Next Quarterly Meeting:		TBD		

* MTA's Current Working Budget

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

All data based on February 28, 2012 reporting