



Metropolitan Transportation Authority

# Capital Program Oversight Committee Meeting

## March 2017

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### Committee Members

F. Ferrer, Acting Chair

I. Greenberg

S. Metzger

J. Molloy

M. Pally

J. Samuelsen

L. Schwartz

P. Trottenberg

J. Vitiello

P. Ward

C. Wortendyke

N. Zuckerman

# **Capital Program Oversight Committee Meeting**

**2 Broadway, 20th Floor Board Room  
New York, NY 10004**

**Monday, 3/20/2017  
1:45 - 2:45 PM ET**

## **1. PUBLIC COMMENTS PERIOD**

## **2. APPROVAL OF MINUTES FEBRUARY 21, 2017**

*- Minutes from February '17 - Page 3*

## **3. COMMITTEE WORK PLAN**

*- 2017-2018 CPOC Committee Work Plan - Page 6*

## **4. QUARTERLY MTA CAPITAL CONSTRUCTION COMPANY**

- Progress Report on Cortlandt Street #1 Line - Page 8*
- IEC Project Review on Cortlandt Street #1 Line - Page 16*
- IEC Cortlandt Appendix - Page 21*
- Progress Report on East Side Access - Page 22*
- IEC Project Review on East Side Access - Page 33*
- IEC East Side Access Appendix - Page 39*
- Project Overview on Second Avenue Subway - Phase 2 - Page 40*
- Update on Penn Station Access Project - Page 49*

## **5. CAPITAL PROGRAM STATUS**

*- Commitments, Completions, and Funding Report - Page 53*

## **6. QUARTERLY CAPITAL CHANGE ORDER REPORT (for information only)**

*- CPOC Change Order Report - All Agencies - Page 60*

**MINUTES OF MEETING**  
**MTA CAPITAL PROGRAM OVERSIGHT COMMITTEE**  
**February 21, 2017**  
**New York, New York**  
**1:15 P.M.**

MTA CPOC members present:

Hon. Fernando Ferrer  
Hon. Susan Metzger  
Hon. John Molloy  
Hon. Mitchell Pally  
Hon. Peter Ward

MTA CPOC members not present:

Hon. Ira Greenberg  
Hon. John Samuelsen  
Hon. Lawrence Schwartz  
Hon. Polly Trottenberg  
Hon. James Vitiello  
Hon. Carl Wortendyke  
Hon. Neal Zuckerman

MTA Board members present:

Hon. Andrew Albert

MTA staff present:

Naeem Din  
Michael Garner  
Veronique Hakim  
Craig Stewart  
Michael Wetherell

B&T staff present:

Joe Keane

LIRR Staff present:

Deborah Chin

MNR Staff present:

Anthony Forcina

Independent Engineering Consultant staff present:

Mark Cosmedy  
Joe DeVito  
Nabil Ghaly  
Calvin Gordon

\* \* \*

Acting Chairman Ferrer called the February 21, 2017 meeting of the Capital Program Oversight Committee to order at 1:40 P.M.

**Public Comments Period**

There were two public speakers in the public comments portion of the meeting: Jason Pineiro and Kevin Zeng.

## **Meeting Minutes**

Upon motion duly made and seconded, the CPOC members approved the minutes to the previous meeting held on January 23, 2017.

## **Committee Work Plan**

Mr. Stewart announced that there were no changes in the Work Plan.

## **Statement by Interim Executive Director**

Citing an earlier discussion with some Board Members about Judlau Contracting, Inc., Ms. Hakim reported that she has recently been in contact with the firm's principals and they have reiterated and confirmed their commitment to all the MTA projects in which they are involved, as well as to keeping schedules that they have committed to.

## **B&T Capital Program Update**

Mr. Keane provided a status report on the 2010-2014 and 2015-2019 Capital/Sandy Programs, Major Construction Completions, Recent Major Construction Awards, as well as updates on the Tunnel Program, the Verrazano-Narrows Bridge Program, the Robert F. Kennedy Bridge Program, Rehabilitation of the Marine Parkway Bridge, and Open Road Tolling. In its Program Reviews of the Verrazano Narrows Bridge Upper Deck Replacement (VN-80B), RFK Bridge Bronx Plaza Rehabilitation (RK-65A), Hugh L. Carey Tunnel Restoration (BB-28/28S, BB-54), and the Queens Midtown Tunnel Restoration (QM-40/40S and QM-18 Projects), the IEC stated that the projects are all on schedule and on budget, and that project contingencies are sufficient to complete the projects. In addition, the IEC recognized the VN-80B project team for completing the work requiring permanent lane closures ahead of schedule, thus minimizing the impact to the travelling public. Further details of these presentations, and Committee Members' comments and questions with respect thereto are included in the video recording of the meeting maintained in MTA's records

## **LIRR and MNR Positive Train Control (PTC) Update**

Ms. Chin reported on progress on the Positive Train Control (PTC) initiative since the last report to CPOC in October, 2016. She stated that the Project Budget is \$968 million and with respect to schedule, Ms. Chin reported that Beneficial Use is December 2018. In its Project Review, the IEC reported that the budget remains at \$968M as last reported in October 2016 and that the latest schedule indicates that the project remains on schedule. The IEC Observations include the following: delays in completing the Requirements Traceability Matrix (RTM) could impact design completion and development of test cases for system integration testing; Successful completion of the Factory Acceptance Test (FAT), which is currently scheduled for April/May 2017, is critical for validation of proper integration between various subsystems; and prerequisites to commence formal integration testing at pilot installations include successful completion of FAT and completion and validation of the vital database for pilot lines. The IEC then stated that it remains concerned that progressing equipment manufacturing and installation prior to design completion increases the risk of rework, especially for interfaces between various subsystems. Further details of the presentations, and Committee Members' comments and questions with respect thereto are included in the video recording of the meeting maintained in MTA's records.

## **Update on Minority, Women and Disadvantaged Business Participation**

Mr. Din cited charts highlighting the MTA-Wide DBE and MWBE Awards through prime contracts, subcontracts, and the Small Business Development Program (SBDP) for the last several years. The DBE Awards chart indicates that in 2016, combined prime contract and subcontract awards accounted for a \$217 million (or 17.2%) DBE award total (versus the \$1.26 billion federally funded

Capital Plan amount), and SBDP awards accounted for a \$1 million (or .1%) DBE award total (versus the \$1.26 billion federally funded Capital Plan amount). The MWBE Awards chart indicates that in 2016, combined prime contract and subcontract awards accounted for a \$158 million (or 20.2%) MWBE award total (versus the \$778 million state-funded Capital Plan amount), and SBDP awards accounted for a \$17.3 million (or 2.2%) MWBE award total (versus the \$778 million state-funded Capital Plan amount). Mr. Din then provided an update on the MWDBE Participation Rates for 2016. The MTA anticipates achieving a 17% participation rate against its 17% DBE Federal goal, and against its 15% MBE and 15% WBE State goals, anticipates achieving 12% and 11% participation rates, respectively. Mr. Garner provided an explanation for the 2016 shortfall against the goals for state-funded projects and then underscored his optimism with respect to achieving Small Business Mentor Program goals -- and in turn, MWBE goals -- in 2017. Further details of the presentation, and Committee Members' comments and questions with respect thereto are included in the video recording of the meeting maintained in MTA's records.

### **MTA Capital Program Commitments & Completions and Funding**

Mr. Stewart reported on 2017 Commitment and Completion goals. The MTA plans \$7.3 billion in commitments (including 51 major commitments) composed of the following: \$2.4 billion in Rolling Stock; \$1.1 billion in Stations; \$566 million in Track; \$557 million in Communication and Signals; and \$481 million in Network Expansion. The MTA plans \$5.0 billion in completions (including 34 major completions) composed of the following: \$953 million in Sandy Restoration and Resiliency; \$924 million in Communication and Signals; \$859 million in Track; \$505 million in B&T projects; and \$386 million in Rolling Stock. With respect to Commitments and Completions as of January of this year, Mr. Stewart then brought the Committee's attention to the Report in the CPOC Agenda.

### **Adjournment**

Upon motion duly made and seconded, Acting Chairman Ferrer adjourned the February 21, 2017 meeting of the MTA Capital Program Oversight Committee at 2:50 PM.

Respectfully submitted,  
Michael Jew-Geralds  
Office of Construction Oversight

## **2017-2018 CPOC Committee Work Plan**

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I. Recurring Agenda Items

Approval of the Minutes  
Committee Work Plan  
Commitments/Completions and Funding Report

II. Specific Agenda Items

**April**

NYCT Capital Program Update

- Capital Program Overview
- Signals and Train Control Division
- Systems and Security Division

Quarterly Traffic Light Reports

Update on Capital Program Security Projects (in Executive Session)

**May**

LIRR Capital Program Update

- Jamaica Capacity Improvements
- Main Line Double Track

MNR Capital Program Update

- Harmon Shop Replacement
- Hudson Line Sandy Restoration

NYCT, LIRR, MNR Update on New Fare Payment System

**June**

Quarterly MTACC Capital Program Update

LIRR and MNR Update on Positive Train Control (PTC)

Quarterly Change Order Report

Quarterly Traffic Light Reports

**July**

NYCT Capital Program Update

**September**

Quarterly MTACC Capital Program Update

Update on Minority, Women and Disadvantaged Business Participation

Update on Small Business Development Program

Quarterly Change Order Report

Quarterly Traffic Light Reports

**October**

LIRR and MNR Capital Programs Update  
LIRR and MNR Update on Positive Train Control (PTC)  
Update on Capital Program Security Projects (in Executive Session)

**November**

NYCT Capital Program Update  
NYCT, LIRR, MNR Update on New Fare Payment System  
CPOC Committee Charter Review

**December**

Quarterly MTACC Capital Program Update  
Quarterly Change Order Report  
Quarterly Traffic Light Reports

**January**

NYCT Capital Program Update

**February**

B&T Capital Program Update  
LIRR and MNR Update on Positive Train Control (PTC)  
Update on Minority, Women and Disadvantaged Business Participation

**March**

Quarterly MTACC Capital Program Update  
Quarterly Change Order Report  
Quarterly Traffic Light Reports

# **MTACC Quarterly Progress Report to CPOC**

## **Cortlandt Street #1 Line Station Reconstruction**

March 20, 2017

## Project Overview

### Overall Status

Item	Comments
Schedule	Substantial Completion is August 2018
Cost	Current Budget is \$158.4 million (excludes Risk Reserve)

### Highlights

#### Progress

- Completed Forming, rebar placement, and pouring concrete for northbound platform
- Installed new electrical service conduit and communications conduit within southbound platform
- Formed and placed concrete for new structural columns and walls
- Installed new inner blast plates for nine columns at north mezzanine
- Relocated Vesey Street Pump Room electrical feed from the existing right of way

#### 90 Day Look Ahead

- Demolish PATH North Temp Access (NTA) Caissons
- Complete new electrical service duct bank and conduit installation at southbound platform (3 months later than last report)
- Complete negotiations for the additional communication and electrical design changes
- Continue northbound and southbound platform construction where impacted by design changes
- Coordinate and install Con Edison Normal Power Property Line Box and associated conduits through slurry wall
- Demolish sidewalk vault for installation of new Con Edison transformer vault

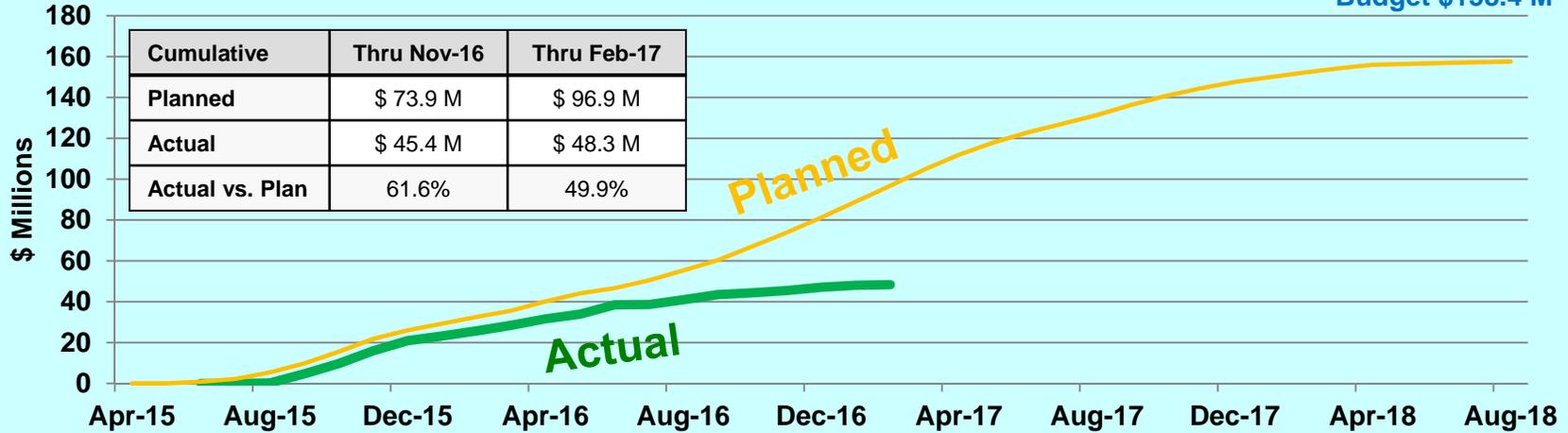
March 20, 2017

Cortlandt

Cost & Schedule Performance

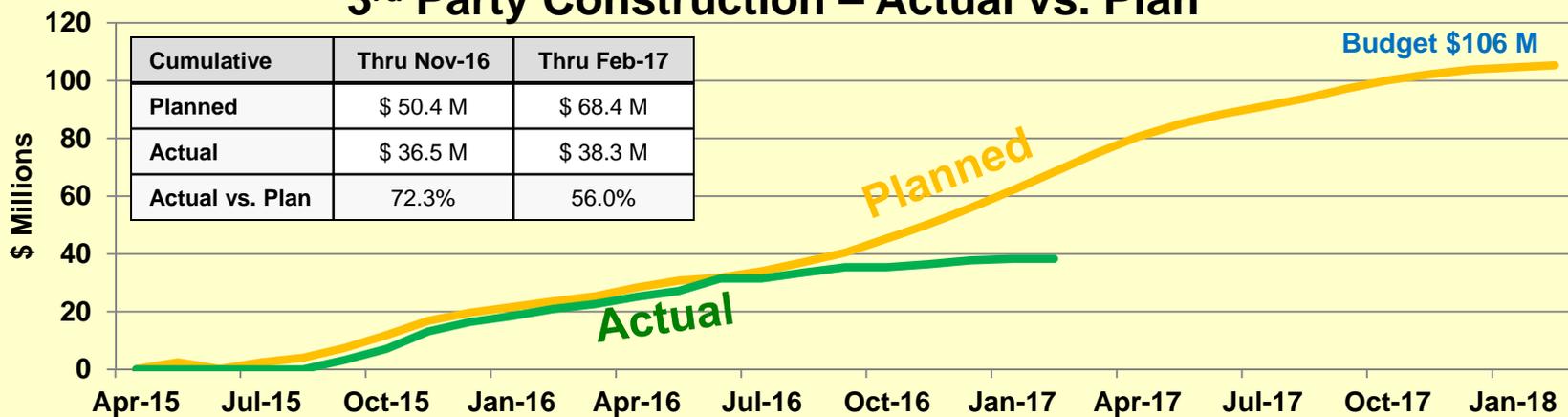
Total Project – Actual vs. Plan

Budget \$158.4 M

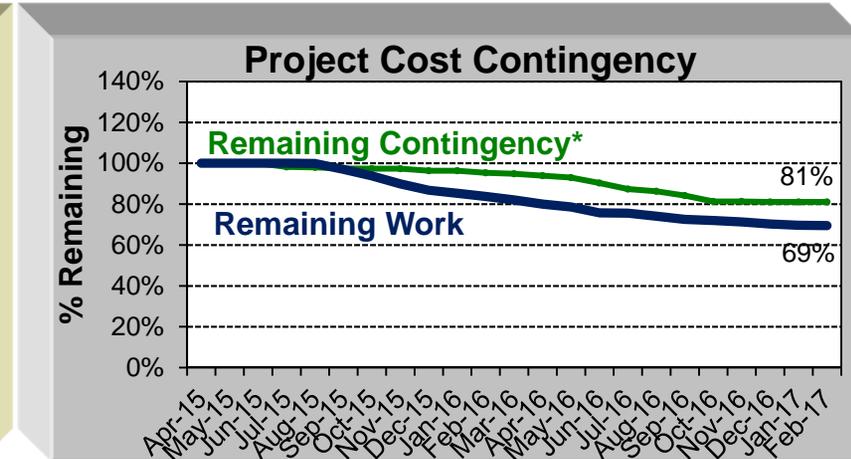
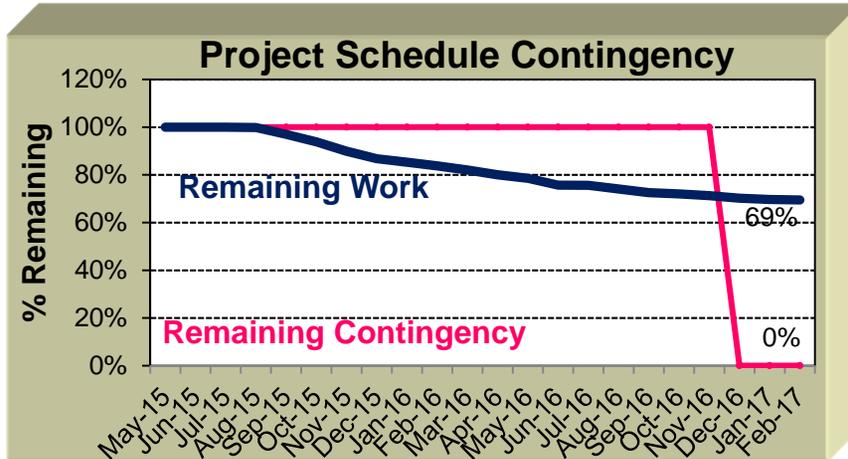


3<sup>rd</sup> Party Construction – Actual vs. Plan

Budget \$106 M



## Cost & Schedule Contingency Status



\*Remaining contingency percentage updated to reflect combined cost contingency.

- 2015 schedule contingency: 181 days (6 months)
- Current schedule contingency has been exhausted due to modifications from original Port Authority Contract to meet NYCT requirements for mechanical, communications and electrical systems (Bulletin 2).
- Contingency delay is being further evaluated to determine if improvements to the schedule can be made.

- Original Budget contingency was established at \$16.5 million which includes
  - \$5.6 million for contract change orders
  - \$10.9 million allocated for known anticipated change orders associated with Bulletin 2 and the PANYNJ North Temporary Access.
- Current combined contingency is \$13.4 million, same as last report
  - \$2.5 million for contract change orders
  - \$10.9 million allocated for known anticipated change orders associated with Bulletin 2 and the PANYNJ North Temporary Access.
- Analysis shows that the budget value of unmitigated risk reserve (\$16.9M), which is currently not included in the project budget, would be sufficient to address remaining changes.

## Critical Milestones and Issues

Status	Activity	Date Needed	Issues
 Green	<b>Confirm Location for Routing of New Con Edison Service from Liberty Street</b>	<b>March 2017</b>	<p><b>Issue:</b> New Property Line Boxes (PLB's) and conduit paths could not be installed as designed due to existing utility congestion from Liberty Street to Greenwich Street.</p> <p><b>Impact:</b> Inability to install PLB's and conduit as designed to provide permanent power to the Station</p> <p><b>Mitigation:</b> A new route has been identified and accepted by Con Edison for the normal service. The reserve service will be confirmed shortly.</p>

### Legend

	Red	Significant impacts with potential impacts on Revenue Service Date, Cost, or Customer Benefit Milestones
	Yellow	Impacts which can lead to cost increases or schedule delays on individual milestones or contracts.
	Green	No Near Term Impact for Design, Procurement & Construction. Successful management of major activity to stay on schedule or budget.

## Critical Milestones and Issues

Status	Activity	Date Needed	Issues
 Yellow	<b>Demolition of the Existing PATH Station North Temporary Access (NTA), and Construction of West Bathtub Vehicle Access (WBVA) Foundation by PANYNJ for Installation of Vesey Street Entrances</b>	<b>Demolition Completed (Required June 2017)</b>  <b>WBVA Foundation December 2017</b>	<p><b>Issue:</b> Potential delays by The Port Authority of New York and New Jersey (PANYNJ) when demolishing the PATH Station North Temporary Access and building the West Bathtub Vehicle Access (WBVA) foundation could delay project completion.</p> <p><b>Impact:</b> If full access, including installation of the foundation (WBVA), is not provided by PANYNJ by December 2017, the contract completion could be delayed.</p> <p><b>Mitigation:</b> The NTA has been demolished. Construction of the WBVA foundation needs to occur by December 2017. MTACC continues to monitor progress.</p>

### Legend

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## Critical Milestones and Issues

Status	Activity	Date Needed	Issues
 Yellow	<b>Relocation of            PANYNJ Utilities            Located within            MTA Allocated            Space</b>	<b>Various</b>	<p><b><u>Issue:</u></b> PANYNJ has installed various PANYNJ and Retail Tenant utilities within MTA allocated spaces.</p> <p><b><u>Impact:</u></b> Some of PANYNJ utilities interfere with the construction of the station rooms and systems.</p> <p><b><u>Mitigation:</u></b> MTACC and PANYNJ meet weekly to review and resolve critical interferences. Designer redesigns and relocate utilities that directly interfere with station construction. Approximately 90% of interferences have already been resolved. Costs associated with these issues are being paid by PANYNJ.</p>

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## Critical Milestones and Issues

Status	Activity	Date Needed	Issues
 Red	<b>Negotiate Cost and Schedule Impacts with Contractor for Electrical, Communications, Mechanical and Plumbing Design Changes (Bulletin 2)</b>	<b>March 2017</b>	<p><b>Issue:</b> Needed changes to the original PANYNJ design are required to bring the communications, electrical, mechanical and plumbing systems to NYCT standards.</p> <p><b>Impact:</b> Delays in commencing this additional work continues to impact the Project's completion date.</p> <p><b>Mitigation:</b> MTA continues to meet with the contractor to re-sequence the schedule and minimize cost and schedule impacts.</p>

### Legend

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# March 2017 CPOC IEC Project Review



## Cortlandt Street # 1 Line Station Reconstruction



## SCHEDULE REVIEW

- The IEC concurs with the Agency assessment that the previously reported schedule contingency of 6 months has been consumed.
  - The contingency has been consumed primarily by the issuance and negotiation of critical change orders.
  - The most impactful of these are the Bulletin 2 communication and electrical changes.
- In the IEC's opinion, continued delays in negotiating Bulletin 2 changes will delay project completion.



## BUDGET REVIEW

- The current project budget of \$158.4M does not include anticipated schedule impact costs related to Bulletin 2 changes.
- MTA carries a Risk Reserve earmarked for the Cortlandt Street #1 Line Station Reconstruction that is not included in the project budget.



## IEC OBSERVATIONS

- Contractor productivity, as measured in work completed and billed per month, has decreased since last report.
  - Based on the past 6 months, current productivity has averaged \$0.8M per month.
- In order to meet the completion date of August 2018, productivity averaging \$3.2M per month is required.
- If the current rate of productivity continues, project completion will be delayed significantly.



## IEC RECOMMENDATION

- Develop and implement a comprehensive recovery schedule that includes:
  - Bulletin 2 changes as well as all known changes to the project scope.
  - Additional milestones for critical issues and work items required for station opening.
  - Agreement from the contractor, subcontractors and MTACC to implement the recovery schedule.



# RECOMMENDATIONS LOG

Recommendation (March 2017)	Agency Response/Action	Status
A recovery schedule, which includes Bulletin 2 scope changes and all work required for station opening, is agreed on by the contractor and MTACC and implemented.	MTACC is actively working with the contractor to develop a schedule which includes the Bulletin 2 work in its entirety along with reasonable and appropriate impacts.	In progress



# **MTACC Quarterly Progress Report to CPOC**

## **East Side Access**

March 20, 2017

## Project Overview

### Overall Status

Item	Comments
Schedule	On schedule for December 2022 revenue service date
Cost	\$10.178 billion budget (excluding \$463 million rolling stock reserve) is under review

### Highlights

#### Progress

- Fabricated 48% and installed 12% of the pre-cast concrete beams and deck panels for the GCT Caverns and Track (CM007) contract.
- Progressed the Harold Structures Part 3A—Westbound Bypass (CH057A) contract: East Approach is 48% complete; West Approach is 40% complete; and Pump Station is 60% complete.
- Completed concrete for the Tunnel D cut and cover structure as part of the Harold Structures Part-3 (CH057) contract, which is now 73% complete.
- Commenced pre-cutover testing of the remaining Harold Interlocking CILs.
- Issued Notice to Proceed for Tunnel A Cut and Cover (CH061A) contract.
- Received bids for the Mid-Day Storage Yard Facility (CQ033) contract.

## Highlights

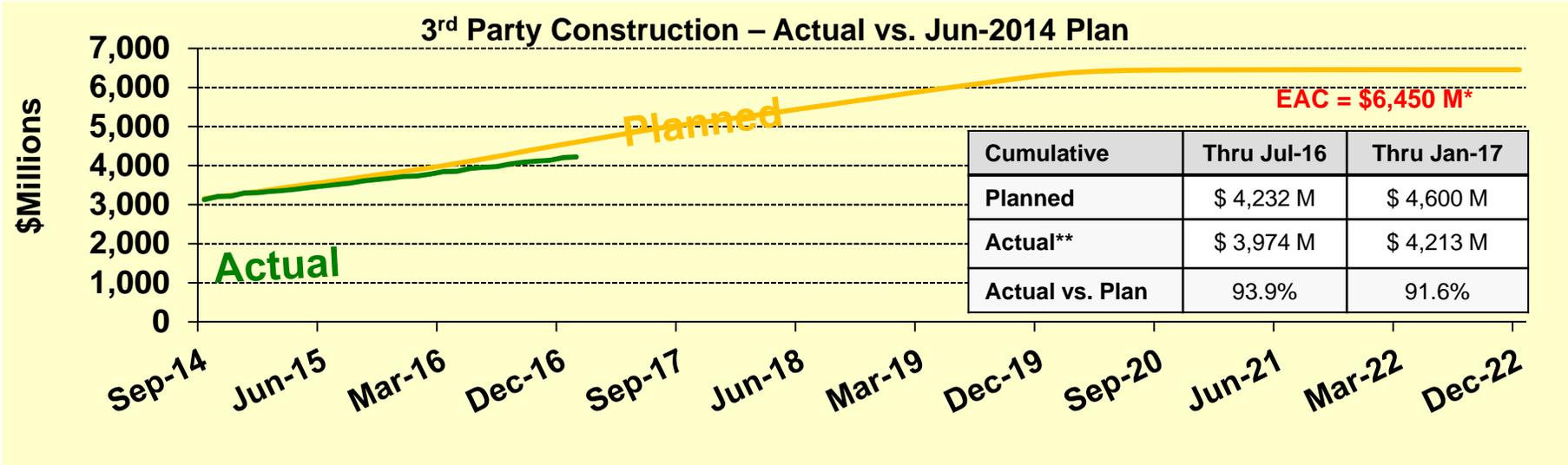
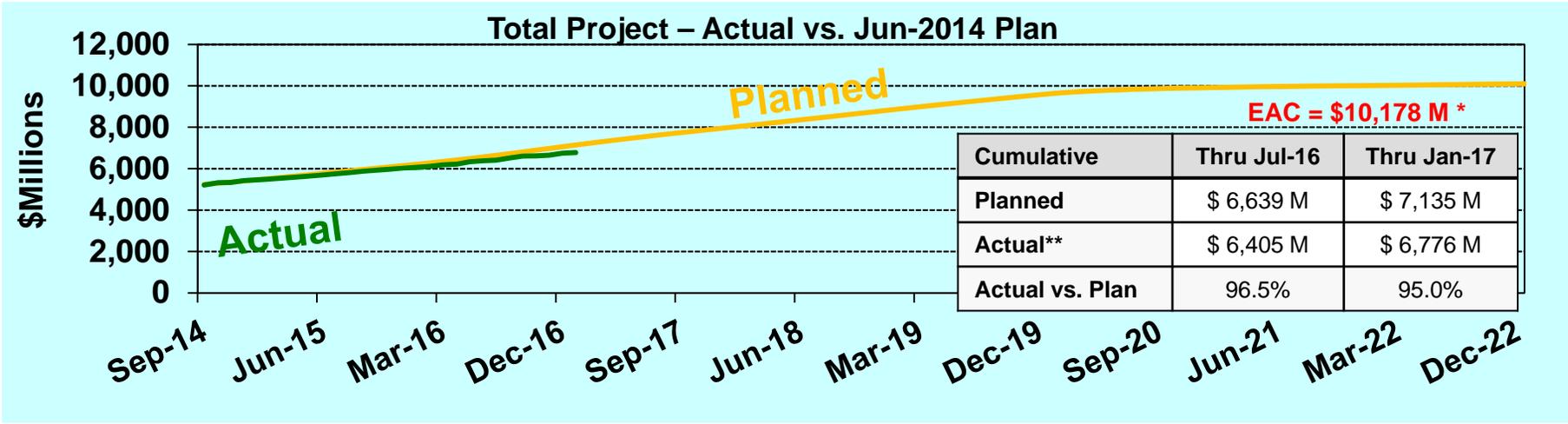
### 90 Day Look Ahead

- Due to Con Edison delays, complete work required for Substantial Completion of Plaza Substation and Queens Structures (CQ032) 7 months later than last reported.
- Complete work required for Substantial Completion for Manhattan North Structures (CM006).
- Advertise the final systems contract, Tunnel Systems Package 2—Signal Installation (CS086), 2 months later than last reported.
- Advertise 48<sup>th</sup> Street Entrance (CM015), 4 months later than last reported.
- Award the Mid-Day Storage Yard Facility (CQ033) contract, 1 month later than last reported.

# ESA

## Cost & Schedule Performance

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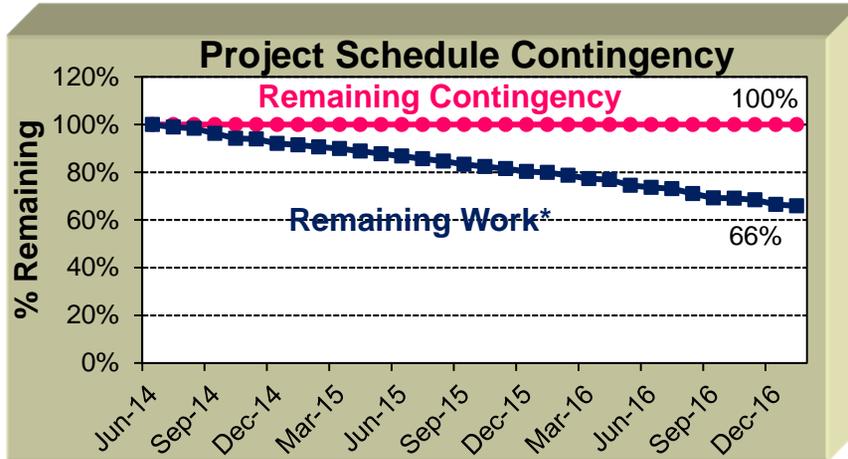


\*EAC is under review.

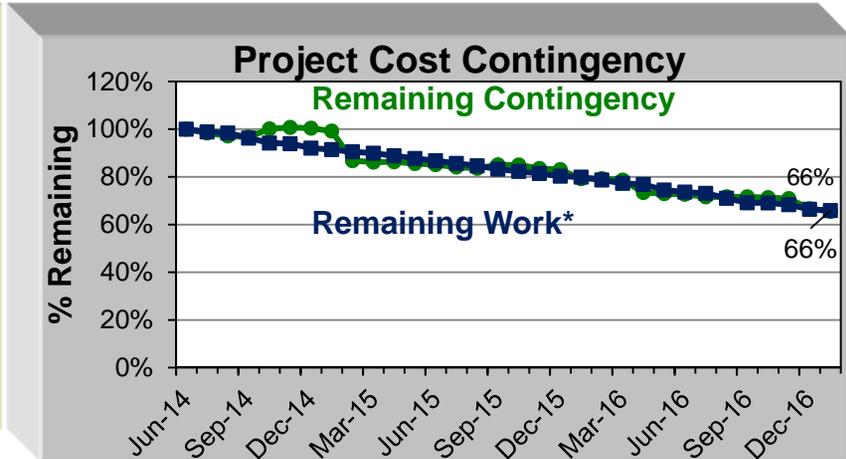
\*\*Actual represents expended; does not include retainage.

# ESA

## Cost & Schedule Contingency Status



\* Remaining work is re-planned in June 2014 and indexed to 100% remaining



\* Remaining work is re-planned in June 2014 and indexed to 100% remaining

- None of the June 2014 plan schedule contingency of 22 months (669 days) has been used.
- ESA acknowledges that there is a schedule risk to the CS179 contract. Potential impacts to Program Schedule Contingency are evaluated each month as part of the Integrated Project Schedule update.

- June 2014 plan budget contingency: \$818 million
  - Unallocated contingency: \$439 million
  - Allocated contingency: \$266 million
  - Design development contingency (AFI): \$113 million
- Current budget contingency: \$536 million (last reported \$586 million)
  - Unallocated contingency: \$292 million
  - Allocated contingency: \$204 million
  - Design development contingency (AFI): \$41 million
  - The \$50M decrease in contingency is driven by the use of Unallocated Contingency to add \$25M for OCIP, \$3M for GEC CPS, \$7M for Harold 3rd Party Contract and Force Account needs and \$2M to fund Manhattan contract needs; a \$5M reduction in Allocated Contingency to fund potential contract modifications; and a \$7M reduction in Pre-Award Contingency after the award of CH061A.

# ESA

## Critical Milestones and Issues

Status	Activity	Date Needed	Issues
 <b>Green</b>	<b>Central Instrument Location (CIL) Cutover Schedule in Harold Interlocking</b>	<b>May 2018</b> (Per ESA/LIRR Concurrence)	<p><b>Issues:</b></p> <ul style="list-style-type: none"> <li>The final CIL cutover, which was scheduled for September 2018, can now be completed by May 2018, which allows for the timely completion of the track/switch work necessary to commence construction of the final Harold contract required for Revenue Service (Tunnel B/C Structure and Approach).</li> <li>The Harold CIL cutover program now defines the Harold Interlocking and Program Critical Path.</li> </ul> <p><b>Impact:</b></p> <ul style="list-style-type: none"> <li>Delay to the CIL cutovers will delay the completion of the Harold program work required for Revenue Service.</li> </ul> <p><b>Mitigation:</b></p> <ul style="list-style-type: none"> <li>LIRR approved and adopted the revised CIL Cutover Schedule with a completion date of May 2018, and has committed its resources and support to ensure its timely completion.</li> </ul>

### Legend

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# ESA

## Critical Milestones and Issues

Status	Activity	Date Needed	Issues
 <b>Yellow</b>	<b>Design Completion and IST Plan &amp; Schedule for Package 1 - Facilities Systems (CS179)</b>	<b>Originally March 2016</b>  <b>Now June 2017</b>	<p><b><u>Issue:</u></b></p> <ul style="list-style-type: none"> <li>Tutor Perini Corporation's (TPC) design of the Control Systems will be completed in March 2017, 12 months later than originally scheduled. Nine out of 10 Control System designs have been approved by ESA.</li> <li>Design of the Non-Control Systems is progressing and is scheduled to be completed in June 2017, 15 months later than originally scheduled.</li> </ul> <p><b><u>Impact:</u></b></p> <ul style="list-style-type: none"> <li>ESA forecasts a 4-month delay to installation activities and start of Integrated Systems Testing (IST).</li> <li>Based on the review of TPC's IST Plan and Schedule, ESA also forecasts a 3-month IST duration increase, from 15 months to 18 months.</li> </ul> <p><b><u>Mitigation:</u></b></p> <ul style="list-style-type: none"> <li>Modification #18, executed in April 2016, extended the Substantial Completion from November 2019 to July 2020, which added 7 months to the duration of CS179.</li> <li>The added time will be used to cover design delays and the extension of IST duration. There is no impact on the 22 months of ESA Program Contingency.</li> <li>TPC will update the next schedule to revise the installation and IST durations, which will enable ESA to reassess its forecast.</li> </ul>

**Legend**

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# ESA

## Critical Milestones and Issues

Status	Activity	Date Needed	Issues
 Yellow	<b>Substantial Completion of Concourse and Facilities Fit-Out (CM014B)</b>	<b>August 2018</b> (Contract Date)	<p><b>Issue:</b></p> <ul style="list-style-type: none"> <li>GCTC JV's installation of concourse structural steel and the curved metal ceilings in the escalator wellways is delayed.</li> </ul> <p><b>Impact:</b></p> <ul style="list-style-type: none"> <li>ESA is forecasting a Substantial Completion of June 2019, 10 months beyond the August 2018 contract date.</li> </ul> <p><b>Mitigation:</b></p> <ul style="list-style-type: none"> <li>GCTC JV has committed to increasing labor resources once steel and major equipment begin arriving, which is expected in June 2017.</li> <li>GCTC JV has submitted a partial recovery schedule that reduces delays in the wellways. It is under review by ESA.</li> </ul>

### Legend

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	Green	No Near Term Impact for Design, Procurement & Construction. Successful management of major activity to stay on schedule or budget.

March 20, 2017

# ESA

## Critical Milestones and Issues

Status	Activity	Date Needed	Issues
 Yellow	<b>Substantial Completion of Concourse and Facilities Fit-Out (CM014B)</b>	<b>August 2018</b> (Contract Date)	<p><b>Issue:</b></p> <ul style="list-style-type: none"> <li>Additional measures to remediate pre-existing leaks are being added to the contract.</li> <li>Strategic initiatives (i.e. wireless cellular/wifi, digital advertising) are being considered for the CM014B contract.</li> </ul> <p><b>Impact:</b></p> <ul style="list-style-type: none"> <li>Additional leak remediation measures will cause cost increases and may cause schedule delays.</li> <li>MTA has committed to fund the strategic initiatives, but the initiatives may cause schedule delays.</li> </ul> <p><b>Mitigation:</b></p> <ul style="list-style-type: none"> <li>The GEC has completed the design to address additional measures for pre-existing leaks in the GCT Concourse area including a leak detection system. ESA is in the process of preparing contract modifications for the individual packages.</li> <li>ESA is evaluating the potential schedule impacts of the strategic initiatives.</li> </ul>

### Legend

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# ESA

## Critical Milestones and Issues

Status	Activity	Date Needed	Issues
 Red	<b>Amtrak Resources Required for Harold Interlocking Work</b>	<b>Continuing Need; Per Project Schedule Requirements</b>	<p><b><u>Issues:</u></b></p> <ul style="list-style-type: none"> <li>The levels of weekday Amtrak Electric Traction (ET), weekday track foreman, and all weekend resources remain less than that required to support schedule in accordance with prior agreement between Amtrak and MTA. In addition, requested levels need to be supported over 2017 and 2018 which are the peak construction years in Harold.</li> </ul> <p><b><u>Impact:</u></b></p> <ul style="list-style-type: none"> <li>Failure to provide required levels of support will put at risk ESA Revenue Service Date.</li> </ul> <p><b><u>Mitigation:</u></b></p> <ul style="list-style-type: none"> <li>Project Team continues to work with Amtrak on maximizing the productivity and increasing their support of construction in Harold.</li> </ul>

**Legend**

	Red	Significant impacts with potential impacts on Revenue Service Date, Cost, or Customer Benefit Milestones
	Yellow	Impacts which can lead to cost increases or schedule delays on individual milestones or contracts.
	Green	No Near Term Impact for Design, Procurement & Construction. Successful management of major activity to stay on schedule or budget.

# ESA

## Critical Milestones and Issues

Status	Activity	Date Needed	Issues
 Yellow	<b>Substantial Completion of Harold Structures - Part 3A Westbound Bypass (CH057A)</b>	<b>October 2017</b> (Contract Date)	<p><b>Issues:</b></p> <ul style="list-style-type: none"> <li>Tunnel mining has stopped due to Harold Structures Joint Venture (HSJV) problems with operation of the tunnel shield.</li> </ul> <p><b>Impact:</b></p> <ul style="list-style-type: none"> <li>Current Substantial Completion forecast of May 2018 is 8 months later than contract date of October 2017.</li> <li>Tunnel mining is now the CH057A contract critical path.</li> </ul> <p><b>Mitigation:</b></p> <ul style="list-style-type: none"> <li>HSJV will resume mining after correcting the operational problems by making modifications to the shield and altering the mining methodology.</li> </ul>

### Legend

	Red	Significant impacts with potential impacts on Revenue Service Date, Cost, or Customer Benefit Milestones
	Yellow	Impacts which can lead to cost increases or schedule delays on individual milestones or contracts.
	Green	No Near Term Impact for Design, Procurement & Construction. Successful management of major activity to stay on schedule or budget.

# March 2017 CPOC IEC Project Review



## East Side Access



## BUDGET & SCHEDULE REVIEW

- Risks to cost contingency
  - Additional budget needs for soft cost, third party, and force account work, due to extended project schedule
  - Bids were received for Mid-Day Storage Yard Facility (CQ033); the lowest bid was lower than the engineer's estimate but higher than the current budget
  - Design changes and leak remediation work to GCT Concourse and Facilities Fit-Out (CM014B)
- Risks to schedule contingency
  - The IEC projects a reduction of 6 months to the 22-month Program Schedule Contingency
    - Manhattan/System projected to be the program Critical Path, as a result of delays to Package 1 - Facilities Systems (CS179) contract



## IEC OBSERVATIONS – MANHATTAN

- GCT Concourse & Facilities Fit-out (CM014B)
  - The Design changes (wireless cellular/Wi-Fi, digital advertising) – schedule risk
  - Remediation of pre-existing leaks required before finish-out work – cost and schedule risk
  - Installation of structural steel and resequencing of curved ceiling panels in the escalator wellways – schedule and coordination risk
  - A comprehensive, long-term solution to prevent water infiltration into the future GCT/LIRR concourse should include:
    - Diversion of surface water
    - Repair of the Metro North track bed and platform drainage system
- GCT Caverns and Track (CM007)
  - Composite schedule, showing civil/systems contract interdependencies, has yet to be approved
  - Delays to approval of track submittals (Resilient Tie Blocks) may impact track production / installation – near critical on the Manhattan/Systems critical path



## IEC OBSERVATIONS – SYSTEMS (CS179)

- Delay to the completion of the design continues to impact progress
  - Unresolved design issues and pending Change Proposal Requests (CPRs) are impacting a number of non-control systems, including Public Address/Variable Message Signs, Two-Way Radio and Blue Light System (BLS)
- Design delays, for both control and non-control systems, have impacted Factory Acceptance Testing (FAT)
  - Most racks required in communication rooms are associated with non-control systems
  - The majority of the racks require FAT completion in order to start manufacturing
  - Schedule does not reflect sufficient test durations



## IEC OBSERVATIONS – SYSTEMS (CS179)

- A review of the latest status of the contractor's schedule indicates that most of the IEC's concerns regarding impact to predecessor activities to the Integrated Systems Testing (IST) have not been addressed
- As a result of systems design, assembly, installation and testing issues, the IEC projects a 9-month delay to the start of IST and maintains a 22-month IST duration
  - This consumes all contract contingency and reduces the program contingency



## IEC OBSERVATIONS – HAROLD

- The latest ESA schedule shows Harold remaining on the program critical path – 3 months later than the Manhattan/ Systems
- Westbound Bypass (CH057A) tunnel mining has yet to resume and a forecast is undetermined; no impact on the critical path – cost and schedule risk
- Delays to Central Instrumentation Location (CIL) cutover beyond May 2018 – coordination risk
  - North East Quadrant work - August 2018
  - Positive Train Control - December 2018



# Recommendations Log

Recommendation (June 2015)	Agency Response/Action	Status
A detailed schedule for Systems Package 1, which includes project-wide integrated systems testing (IST), agreed on by the contractor and MTACC has to be provided without further delay to allow tracking of progress.	MTACC has received a contractor baseline schedule and several updates. Full approval of the schedule will be included at the end of control system design in December 2016. The goal is to have a full IST detailed schedule by the end of January 2017.	Superseded (see Sept. 2016)
Recommendation (September 2015)	Agency Response/Action	Status
Facilities Systems Package 1 (CS179) Schedule: The IEC recommends that MTACC addresses the unattainable resource peaks for installation and local testing in the current contractor schedule, to improve schedule certainty.	ESA acknowledges the IEC's concerns and is working with the contractor to address resource peaks for fabrication, installation, and local testing within the schedule. This includes identifying additional fabrication resources.	Superseded (see Sept. 2016)
Recommendation (December 2015)	Agency Response/Action	Status
Revise the Integrated Project Schedule (IPS) to include recently accepted resource loaded contractor schedules for CS179 and CM014B.	A summarized version of the CM014B approved contractor's schedule has been incorporated in the 11/1/2016 IPS update. A summarized version of the CS179 contractor's schedule has been incorporated in the 10/1/2016 IPS.	Closed
Recommendation (March 2016)	Agency Response/Action	Status
The IPS needs to be revised to include accepted resource loaded contractor schedules to show the new completion dates for Manhattan/Systems and Harold work; this will allow proper monitoring of the ESA status.	ESA has incorporated summary schedules for CM006, CH057, CH057A, CS084, CM014B and CS179. The summary schedule for CM007 was incorporated in the Integrated Project Schedule Update Data Date 12/01/2016.	Closed
Recommendation (September 2016)	Agency Response/Action	Status
Develop outline of Integrated Systems Testing schedule, based on framework document, to demonstrate that IST durations as well as installation & local testing activities will not further impact CS179 substantial completion and remaining Program contingency	The contractor submitted an Integrated Systems Testing (IST) Schedule which required further refinement, including integration with the contract schedule. Resubmittals of the schedule were received in November 2016 and February 2017 and approval is now planned for March 2017.	In Progress



# MTACC REPORT TO CPOC

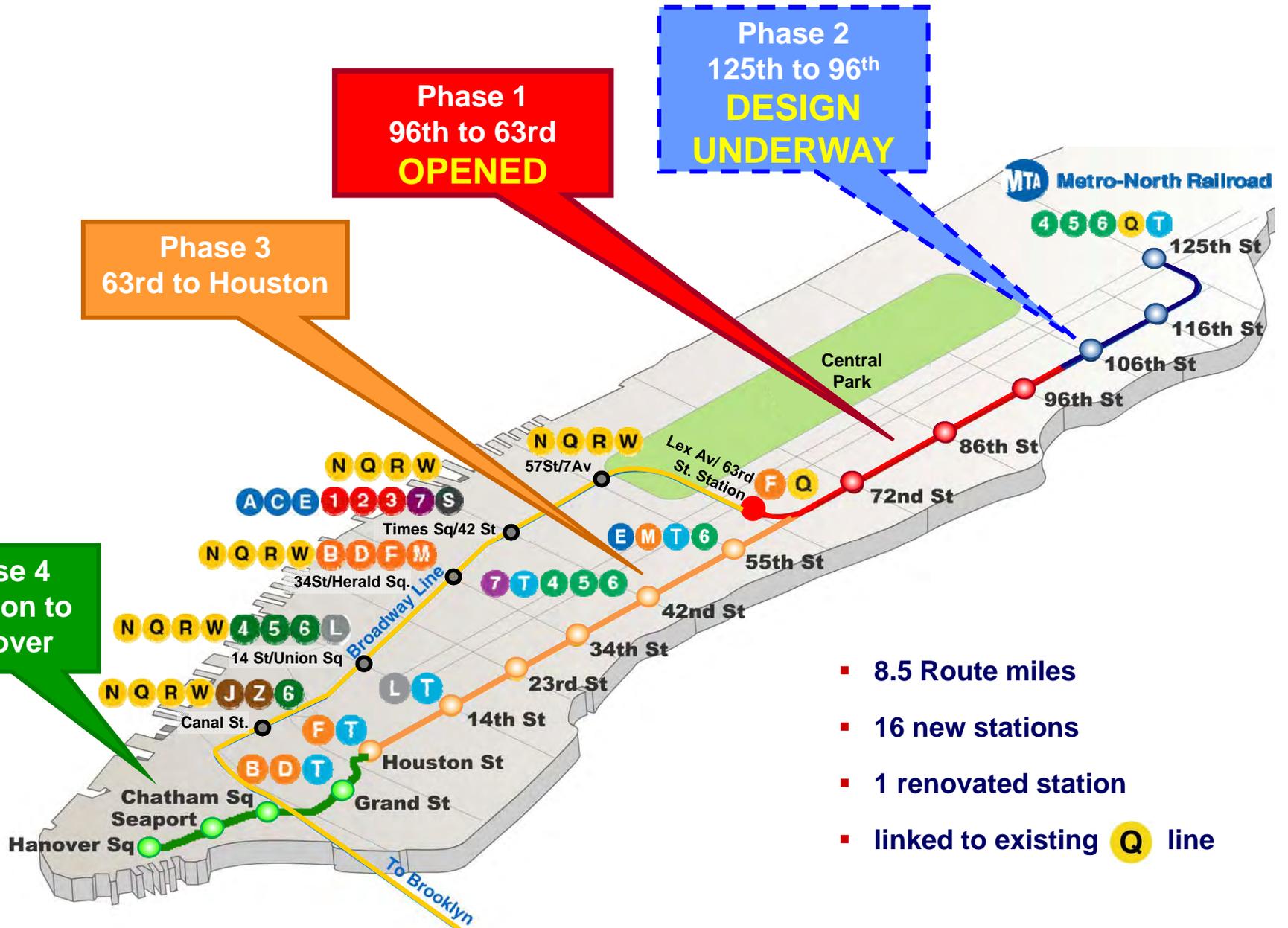
## SECOND AVENUE SUBWAY – PHASE 2

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MARCH 20, 2017

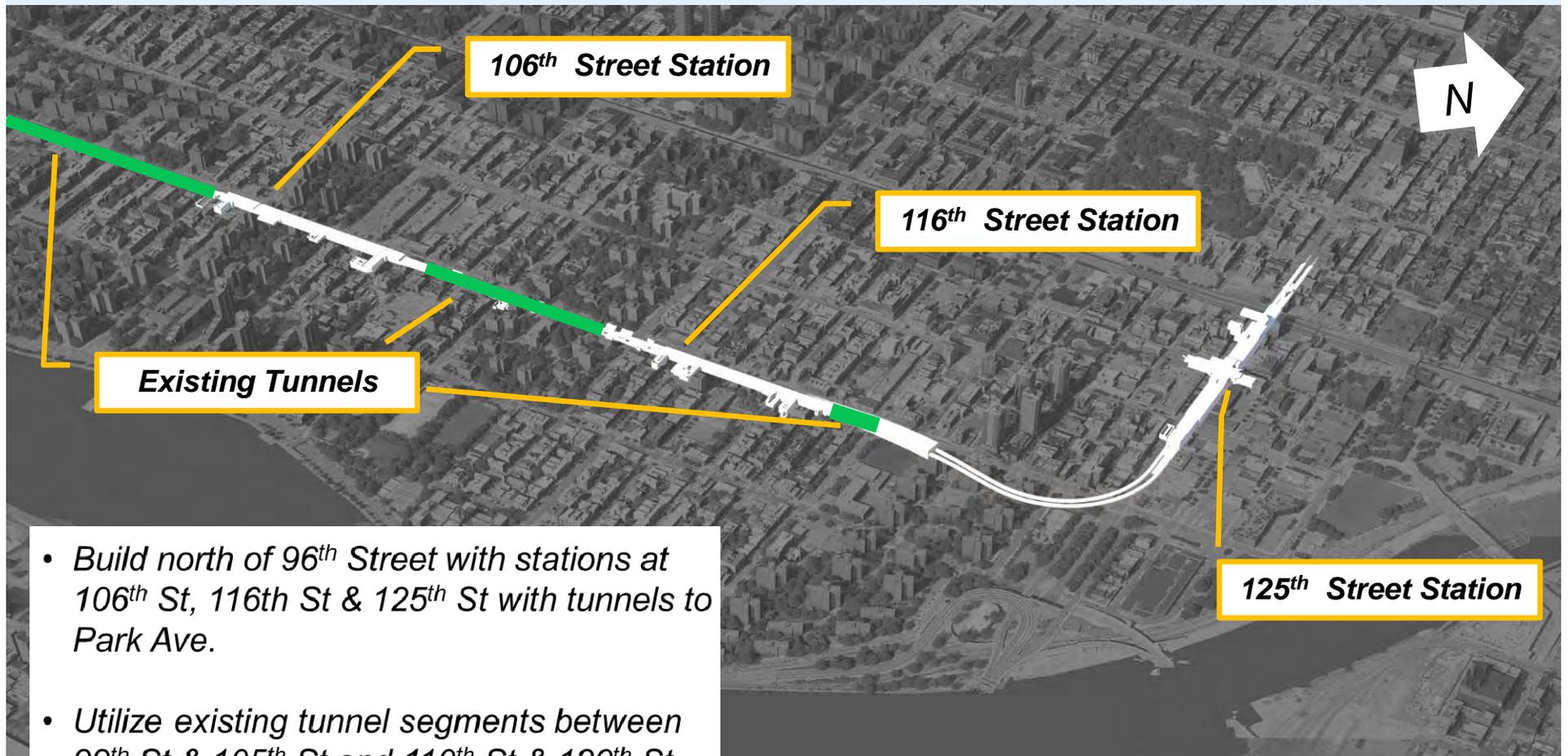


# SAS COMPLETE PROJECT PROFILE



- 8.5 Route miles
- 16 new stations
- 1 renovated station
- linked to existing **Q** line

## SAS PHASE 2 – ALIGNMENT



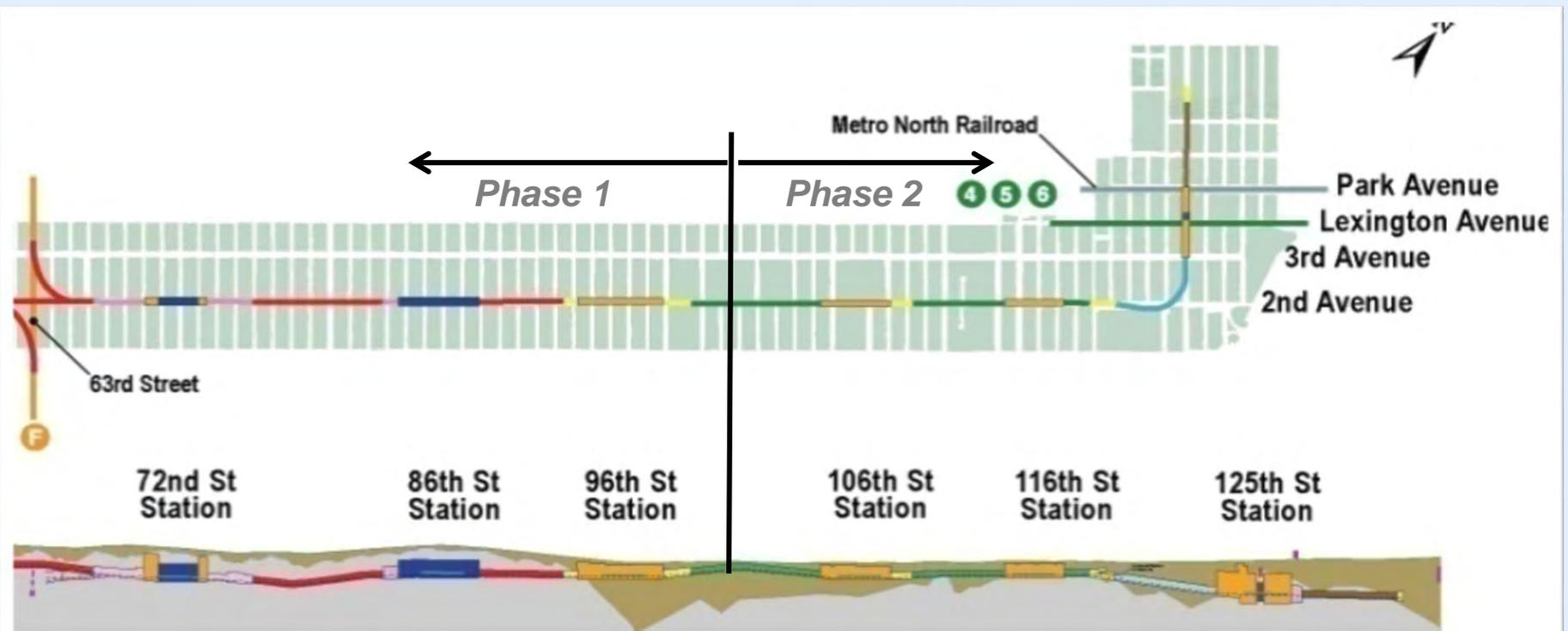
- *Build north of 96<sup>th</sup> Street with stations at 106<sup>th</sup> St, 116<sup>th</sup> St & 125<sup>th</sup> St with tunnels to Park Ave.*
- *Utilize existing tunnel segments between 99<sup>th</sup> St & 105<sup>th</sup> St and 110<sup>th</sup> St & 120<sup>th</sup> St. (includes 116<sup>th</sup> St station)*
- *Storage tracks to extend West to 5<sup>th</sup> Ave.*

## SAS PHASE 2 - BENEFITS

- Phase 2: (96<sup>th</sup> to 125<sup>th</sup> Streets)
  - **Benefits:**
    - Essential critical infrastructure for regional development and additional relief to Lexington Ave with estimated additional 100,000 daily riders
      - *Delivers better connectivity to Harlem*
      - *Provides for future connection to the Bronx*
      - *Enhances growth in upper East side*
      - *Transit links to a growing 125th and 116th Street business areas*
    - Community and Elected officials are in support



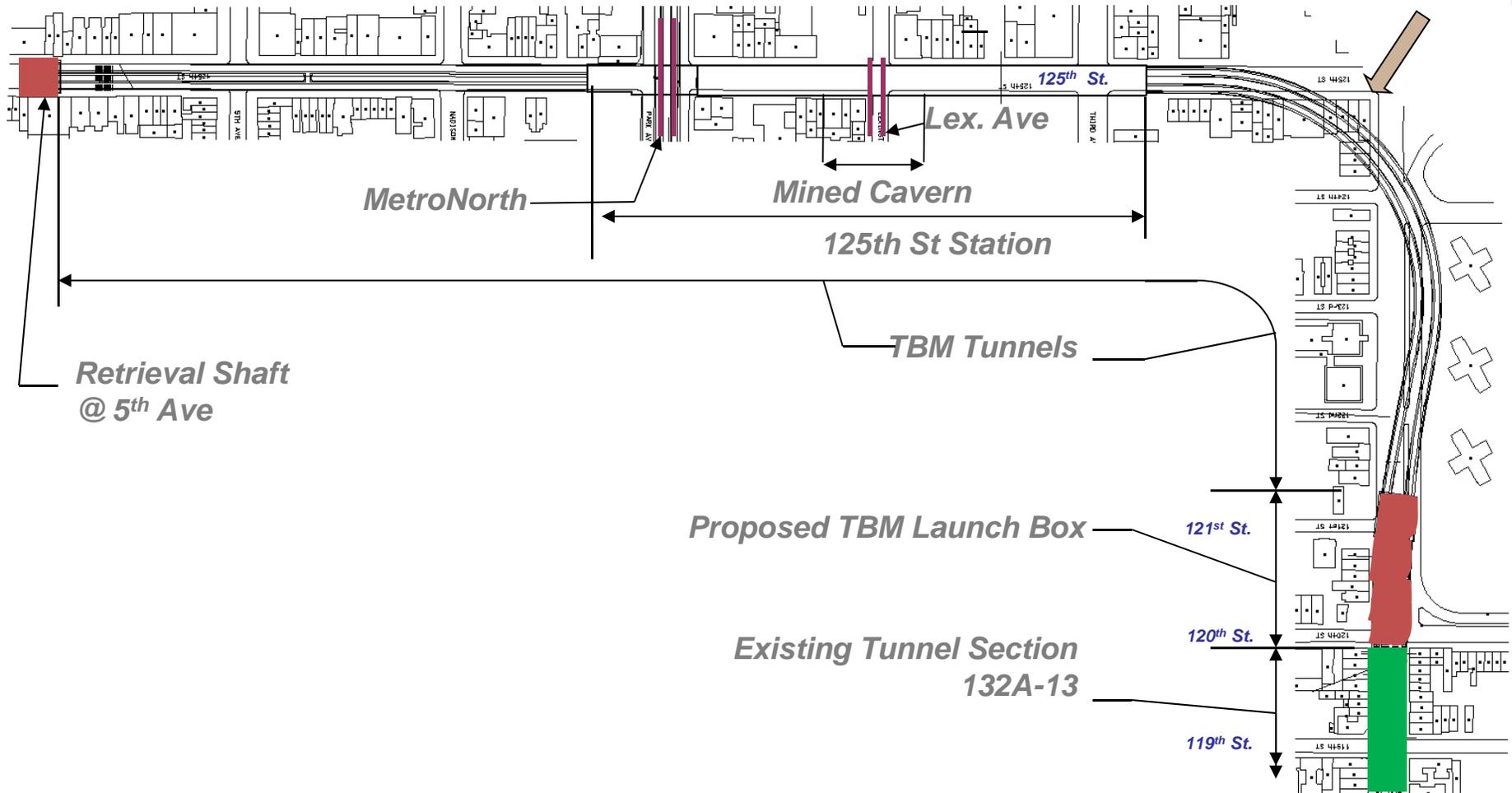
# SAS PHASE 2 PLAN AND PROFILE



## LEGEND:

- |  |  |   |
|--|--|---|
|  EXISTING SUBWAYS & SERVICES            |  EXISTING TUNNELS           |  EXISTING CHRYSIE ST. TUNNEL |
|  CUT & COVER TUNNELS                    |  BORED OR MINED ROCK TUNNEL |  MINED CAVERN                |
|  CUT & COVER STATION + ANCILLARY SPACES |  SOFT GROUND TBM TUNNELS    |  SOFT GROUND TUNNELS         |
|  MINED STATION + ANCILLARY SPACES       |  FILL                       |  ROCK                        |
|  BASE OF RAIL                           |  |   |

# SAS PHASE 2 CONSTRUCTION METHODS



# SAS PHASE 2 CURRENT STATUS – DESIGN

## Design:

- Awarded design contract to P2P (a WSP/STV joint venture) in December 2016
- Overall design schedule of 48 months including base contract and options
  - *Base contract (Months 1 to 24)*
    - Complete extended preliminary engineering
      - 2 track vs. 3 tracks at 125<sup>th</sup> Street Station
      - Provide bellmouth for future service to the Bronx
      - Optimize operating speeds at 125<sup>th</sup> Street Station
      - Accommodate Tunnel boring machine operations
    - Complete design/bid/build/ (DBB) advance utility relocation contract
    - Complete design/build (DB) tunnel & station shell structural contracts
    - Identify changes to real estate needs
    - Incorporate lessons learned from Phase 1

Continued



# SAS PHASE 2 CURRENT STATUS – DESIGN

## Design:

- *Options (Months 24 to 48)*
  - Complete design/bid/build/ (DBB) *and/or* design/build (DB) for station contract(s)
  - Complete design/bid/build/ (DBB) *and/or* design/build (DB) for system contract(s)
- *Provide construction phase support*
- *Continue to support environmental review and Federal New Starts program*



## SAS PHASE 2 CURRENT STATUS – ENVIRONMENTAL & COMMUNITY OUTREACH

### **Environmental:**

- *Awarded environmental review contract to AKRF in December 2016*
- *Supplemental Environmental Review (SER)*
  - *Finalize documentation and obtain Finding within 18 months*
- *Provide as needed support to Federal New Starts program*
- *Ongoing support to design & construction including reevaluation*

### **Community Outreach Consultant:**

- *Submitted for March 2017 MTA Board approval*



# MTACC Report to CPOC

## Penn Station Access

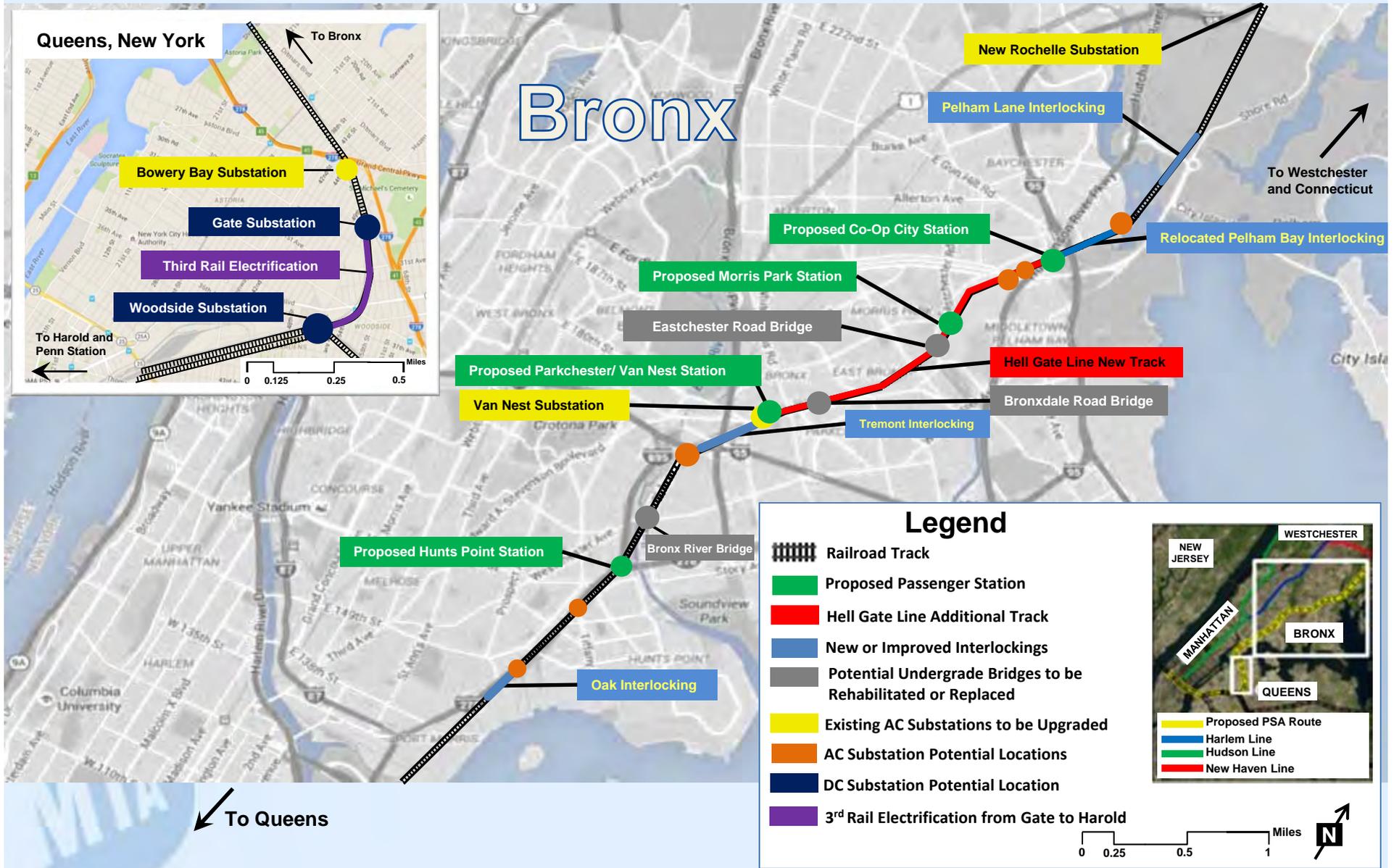
March 20, 2017



# Penn Station Access



# Penn Station Access Proposed Infrastructure Modifications



# Penn Station Access

## Current Project Activities

- Continue environmental analysis.
- Work with stakeholders (MNR, LIRR, Amtrak, CTDOT) on the alignments.
- Alignment information is being used for the Operations and Power Simulations.
- Prepare scope for General Engineering Consultant RFP.



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# **MTA Capital Program Commitments & Completions**

## **through February 28, 2017**

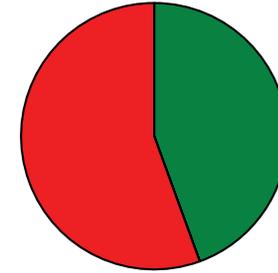
### Capital Projects – Major Commitments – February 2017

In 2017, agencies plan a total of \$7.3 billion in overall commitments with 51 major commitments planned.

Through February, agencies have committed \$572 million versus a \$1,015 million YTD goal. Four major commitments were made on time and five remain delayed. Of the five delayed commitments, two are NYCT's (Structural Repairs/4<sup>th</sup> Ave and B-Division Beacons Train Arrival System), two are the LIRR's (the 2017 Track Program and PTC awards), and one is MTA PD (Nassau County District Office). All delays are explained on the following page.

The MTA forecasts meeting its end of year \$7.3 billion commitment goal.

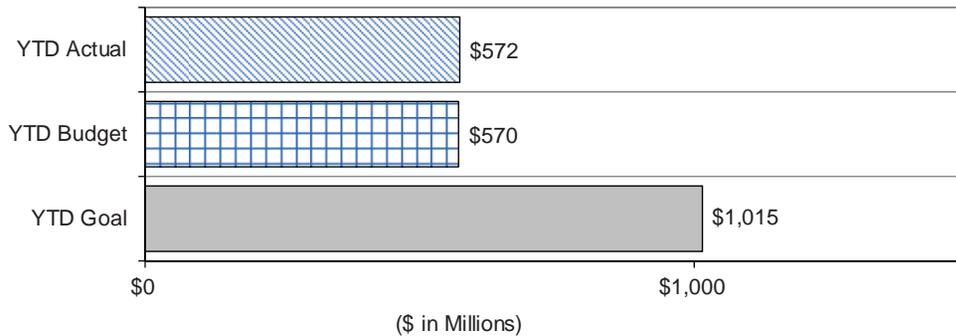
### Year-to-Date Major Commitments



	Count	Percent	Change from Prior Month
<b>GREEN</b> = Commitments made/forecast within Goal	4	44%	↑ 2
<b>YELLOW</b> = Commitments delayed beyond Goal (already achieved)	0	-	-
<b>RED</b> = Commitments delayed beyond Goal (not yet achieved)	5	56%	↑ 5
<b>Total</b>	<b>9</b>	<b>100%</b>	<b>↑ 7</b>

### Budget Analysis

2017 Annual Goal	\$7,280	(\$ in millions)
2017 Forecast	101%	of Annual Goal
Forecast left to Commit	92%	(\$6,745)



### Year-to-Date Agency Breakdown

2017 Goals	Prior month variance		
	GREEN	YELLOW	RED
<b>New York City Transit</b>			
1			+2 RED
2			+2 RED
<b>Long Island Rail Road</b>			
2			+2 RED
<b>Metro-North Railroad</b>			
1			
<b>Bridges and Tunnels</b>			
2	+2 GREEN		
<b>Capital Construction Company</b>			
<b>MTA Bus Company</b>			
<b>MTA Police Department</b>			
1			+1 RED

## Capital Projects – Major Commitments – February 2017 – Schedule Variances

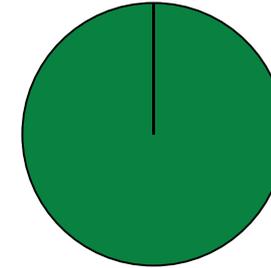
Project	Commitment	Goal	Forecast
<b>5 All-Agency Red Commitments (5 new this month)</b>			
<b>NYCT</b>			
<i>Line Structures</i>			
<b>Structural Repairs / 4th Ave</b> <i>(New Item)</i>	Construction Award	Feb- 17	Mar- 17
		\$84.4M	\$84.4M
Bids have been taken and the project award is delayed due to NYCT budget adjustment procedures resulting from a high bid.			
<i>Signals &amp; Communications</i>			
<b>B- Division Beacon Train Arrival System, Phase 2</b> <i>(New Item)</i>	Construction Award	Feb- 17	Apr- 17
		\$70.0M	\$70.0M
Delayed pending funding allocation approval.			
<b>LIRR</b>			
<i>Track</i>			
<b>2017 Track Program</b> <i>(New Item)</i>	Construction Award	Feb- 17	Mar- 17
		\$75.0M	\$75.0M
The award of the 2017 track program is delayed to March due to administrative delays at LIRR.			
<i>Communications and Signals</i>			
<b>Positive Train Control</b> <i>(New Item)</i>	Construction Award	Feb- 17	Mar- 17
		\$49.1M	\$49.1M
The delayed commitments for PTC are force account- related and have been impacted by delays in design milestones. The LIRR still expects to achieve its overall December 2018 completion date for PTC.			
<b>MTA Police Department</b>			
<b>Nassau County District Office</b> <i>(New Item)</i>	Construction Award	Feb- 17	Mar- 17
		\$7.0M	\$7.0M
A lease was signed with the property owner in February. Administrative reviews and procedures to award the project have delayed forecast award to March.			

### Capital Projects – Major Completions – February 2017

In 2017, agencies plan a total of \$5.0 billion in overall completions with 34 major completions planned.

Through February, agencies have completed \$146 million versus a \$142 million YTD goal. Two major completions were achieved on time in January with no new major completions planned for or achieved in February. By year-end, the MTA forecasts meeting or exceeding its \$5.0 billion goal.

### Year-to-Date Major Completions



	Count	Percent	Change from Prior Month
<b>GREEN</b> = Completions made/forecast within Goal	2	100%	-
<b>YELLOW</b> = Completions delayed beyond Goal (already achieved)	0	-	-
<b>RED</b> = Completions delayed beyond Goal (not yet achieved)	0	-	-
<b>Total</b>	<b>2</b>	<b>100%</b>	<b>-</b>

### Budget Analysis

2017 Annual Goal \$4,970 (\$ in millions)  
 2017 Forecast 103% of Annual Goal  
 Forecast left to Complete 97% (\$4,952)



### Year-to-Date Agency Breakdown

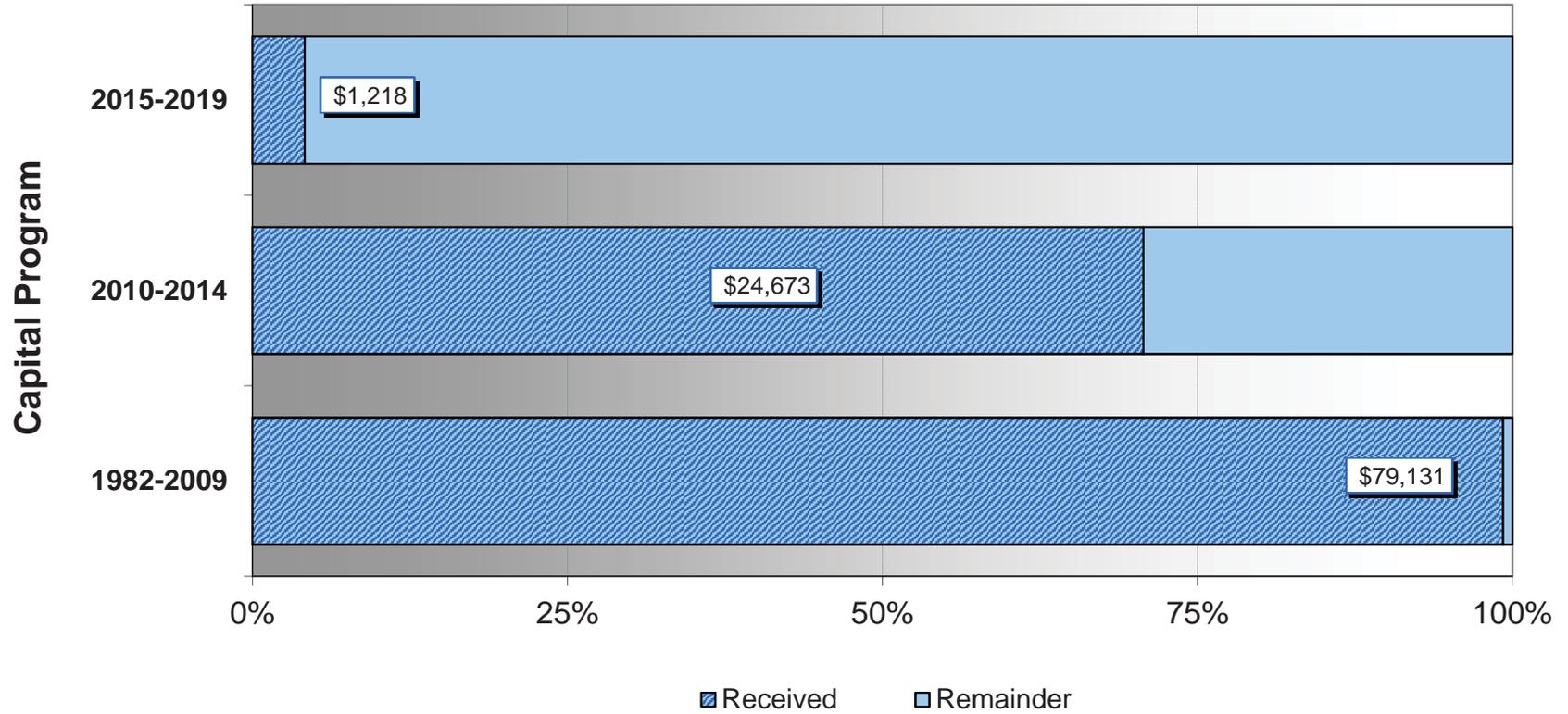
2017 Goals	Prior month variance		
	GREEN	YELLOW	RED
<b>New York City Transit</b>			
1	----	----	----
<b>Long Island Rail Road</b>			
1	----	----	----
<b>Metro-North Railroad</b>			
	----	----	----
<b>Bridges and Tunnels</b>			
	----	----	----
<b>Capital Construction Company</b>			
	----	----	----
<b>MTA Bus Company</b>			
	----	----	----
<b>MTA Police Department</b>			
	----	----	----

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# Status of MTA Capital Program Funding

# Capital Funding (February 28, 2017)

\$ in millions



## Capital Funding Detail (February 28, 2017)

\$ in millions

	Funding Plan	Receipts		
	<u>Current</u>	<u>Thru January</u>	<u>This month</u>	<u>Received to date</u>
<b>2005-2009 Program</b>	24,504	23,916	\$ -	23,916

	Funding Plan	Receipts		
	<u>Current</u>	<u>Thru January</u>	<u>This month</u>	<u>Received to date</u>
<b>2010-2014 Program</b>				
Federal Formula, Flexible, Misc	\$5,839	\$5,614	\$ -	\$5,614
Federal High Speed Rail	295	295	-	295
Federal Security	206	100	-	100
Federal RIFF Loan	-	-	-	-
City Capital Funds	774	607	-	607
State Assistance	770	150	-	150
MTA Bus Federal and City Match	132	103	-	103
MTA Bonds (Payroll Mobility Tax)	12,703	10,048	706	10,754
Other (Including Operating to Capital)	1,538	1,322	110	1,432
B&T Bonds	2,111	1,599	317	1,916
Hurricane Sandy Recovery				
<i>Insurance Proceeds/Federal Reimbursement</i>	9,376	3,423	-	3,423
PAYGO	160	160	-	160
<i>Sandy Recovery MTA Bonds</i>	758	-	-	-
<i>Sandy Recovery B&amp;T Bonds</i>	230	89	30	119
<b>Total</b>	<b>34,892</b>	<b>23,510</b>	<b>1,163</b>	<b>24,673</b>

	Funding Plan	Receipts		
	<u>Current</u>	<u>Thru January</u>	<u>This month</u>	<u>Received to date</u>
<b>2015-2019 Program</b>				
Federal Formula, Flexible, Misc	\$6,275	\$87	\$ -	\$87
Federal Core Capacity	100	-	-	-
Federal New Start	500	-	-	-
State Assistance	8,336	-	-	-
City Capital Funds	2,492	80	-	80
MTA Bonds	5,889	-	-	-
Asset Sales/Leases	600	-	-	-
Pay-as-you-go (PAYGO)	1,846	1,014	-	1,014
Other	562	36	-	36
B&T Bonds & PAYGO	2,856	-	-	-
<b>Total</b>	<b>29,456</b>	<b>1,218</b>	<b>-</b>	<b>1,218</b>

**CPOC COMMITTEE CONTRACT CHANGE ORDER REPORT\* - 4<sup>th</sup> Quarter 2016**  
**(FOR INFORMATION ONLY)**

Agency	Contract Number	Contract Description	Base Contract Value**	Prior Modifications Value	Current Change Order Value	Percentage of Current Change Order Value to Base Contract Value	Change Order Number	Date of Change Order Award	Change Order Description
MTAB&T	PSC-12-2917	Scope Development, Design and Construction Support Services for Project BW-07, Installation of Fender Protection Around the Towers and Anchorages of the Bronx-Whitestone and Throgs Neck Bridges	\$2,186,282	\$109,307	\$301,657	13.80%	3	10/20/2016	Provide additional services in accordance with Boring Program at the BWB.
MTAB&T	VN-80B	Replacement of the Upper Level Roadway Deck on the Suspended Span of the Verrazano-Narrows Bridge	\$235,728,000	\$8,138,615	\$572,080	0.24%	10	11/1/2016	Provide all labor, equipment and materials to fabricate and deliver 10 spare Bridge Rail assemblies for the moveable barrier system.
MTAB&T	VN-80C/VN-35	Furnish New Ramp/Miscellaneous Steel Repairs and Painting at the Verrazano-Narrows Bridge	\$84,300,000	\$4,456,907	\$697,247	0.83%	6	11/3/2016	Provide the additional labor, equipment, materials, supervision and maintenance and protection of traffic required for modification to Ramp J Spans 1-3.
MTAB&T	HH-88A	Administration and Maintenance Building Utilities and MEP Rehabilitation at the Henry Hudson Bridge	\$18,326,425	\$288,238	\$519,498	2.83%	4	11/7/2016	Upper Level Toll Booth Demolition and interim item quantity adjustments
MTAB&T	QM-40S	Sandy Restoration and Mitigation, QM-40/QM-18, Rehabilitation of Tunnel and Manhattan Exit Plaza at the Queens Midtown Tunnel	\$236,500,000	\$200,000	\$635,050	0.27%	2	11/9/2016	Provide labor, material and equipment to install a new wall system to replace the existing terracotta wall in the cut and cover sections of the North & South tubes. This Amendment also made modifications to the lighting system and tile finishes.
MTACC	VM014	Vertical Circulation Elements	\$24,077,558	\$13,774,474	\$269,000	1.12%	12	10/19/2016	Fabrication Phase II Wrap Up
MTACC	CH057	Harold Structures Part III	\$79,882,586	\$3,145,155	\$315,000	0.39%	11	12/22/2016	Demolish Various B-915 Catenary Poles and Foundations
MTACC	CS179	Systems Facilities Package No. 1	\$550,388,000	\$6,986,345	\$334,831	0.06%	27	10/17/2016	Plaza C06 Sloped Floor and Electrical Gear
MTACC	VM014	Vertical Circulation Elements	\$24,077,558	\$6,851,789	\$372,685	1.55%	8	11/3/2016	Final Alignment VM014 to CM007
MTACC	CH057	Harold Structures Part III	\$79,882,586	\$3,460,155	\$633,000	0.79%	12	12/22/2016	G02 Manhole Support of Excavation (SOE) and Conduit Installation
MTACC	CM-1189R	Preparation of a Draft and Final Environmental Impact Statement and Provision of Transit Engineering Design Services for the No. 7 Subway Line Extension- Far West Midtown Manhattan Rezoning	\$86,590,209	\$89,774,193	\$699,039	0.81%	38	10/14/2016	Easement Volume Study

**CPOC COMMITTEE CONTRACT CHANGE ORDER REPORT\* - 4<sup>th</sup> Quarter 2016**  
**(FOR INFORMATION ONLY)**

Agency	Contract Number	Contract Description	Base Contract Value**	Prior Modifications Value	Current Change Order Value	Percentage of Current Change Order Value to Base Contract Value	Change Order Number	Date of Change Order Award	Change Order Description
MTACC	C-26012	Second Avenue Subway - 86th Street Station Finishes, Borough of Manhattan	\$208,376,000	\$5,397,939	\$275,000	0.13%	15	11/17/2016	Architectural, Mechanical and Plumbing Upgrades for Added Battery Rooms
MTACC	C-26012	Second Avenue Subway - 86th Street Station Finishes, Borough of Manhattan	\$208,376,000	\$5,397,939	\$259,500	0.12%	56	11/17/2016	Facility Power Substation Changes Per Con Edison's Request
NYCT	T-80276	St. George Interlocking in the Borough of Staten Island	\$79,449,000	\$1,969,550	\$330,000	0.42%	1	12/16/2016	Installation of Switch Machine Junction Boxes at a Higher Elevation
NYCT	W-32697	PA/CIS "B" Division -Furnishing and Installing Cabinets in the Boroughs of Manhattan, Queens, Brooklyn and the Bronx	\$16,985,000	\$735,000	\$475,000	2.80%	2	12/1/2016	Additional Cabinet Enhancements
NYCT	A-37615	Fabrication and Installation of 23 FlexGate Stairwell Protection Devices	\$11,322,920	\$37,500	\$697,000	6.16%	4	11/18/2016	FlexGate Aesthetic Changes
NYCT	C-44508/C-42001	Repair of Portals & Abutment Wall 120th St - 145th St., Broadway - 7th Ave Line, Borough of Manhattan	\$13,899,000	\$2,714,389	\$512,000	3.68%	9	11/7/2016	Reconciliation of Quantities of Steel Elevated Structure
NYCT	A-37593	South Ferry Station Terminal Complex Rehabilitation in the Borough of Manhattan	\$193,800,000	\$4,377,119	\$372,000	0.19%	32	10//27/16	Fiber Optic Network Equipment Replacement
NYCT	S-32769	Signal System Modernization - 71st Continental Avenue and Union Turnpike Interlockings, Queens Boulevard Line	\$167,000,000	\$2,273,559	\$300,620	0.18%	43	10/21/2016	Changes to Fiber Optic and other Communications Equipment
NYCT	S-32723	Installation of a New Communication Based Train Control Signal System - Flushing Line	\$343,518,371	\$1,077,710	\$748,966	0.22%	49	10/18/2016	Furnish and Provide Additional Spare Parts
No items for LIRR									
No items for MNR									
<b>*Capital change order value \$250,000 to \$750,000, and change orders from \$50,000 to \$250,000 but over 15% of the adjusted contact amount</b>									
<b>** Including any exercised options</b>									