

THOMAS P. DINAPOLI
COMPTROLLER



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ALBANY, NEW YORK 12236

STATE OF NEW YORK
OFFICE OF THE STATE COMPTROLLER

July 29, 2019

Mr. Patrick J. Foye
Chairman
Metropolitan Transportation Authority
2 Broadway
New York, NY 10004

Re: Selected Aspects of Capital Program
Project Management
Report 2018-S-15

Dear Mr. Foye:

Pursuant to the State Comptroller's authority as set forth in Article X, Section 5 of the State Constitution and Section 2803 of the Public Authorities Law, we audited Metropolitan Transportation Authority – New York City Transit to determine whether the Department of Capital Program Management has a formal capital project management process that its employees and contractors are required to follow; and whether that process was followed and was effective in managing scope, time, quality, and budget to the satisfaction of stakeholders. The audit covered capital projects that were in active status between January 1, 2015 and May 30, 2018.

Background

The Metropolitan Transportation Authority (MTA) is a public benefit corporation established by the State Legislature. New York City Transit (Transit) is an affiliated agency of the MTA that provides subway and bus service 24 hours a day, 7 days a week.

In 1981, the State Legislature mandated that the MTA prepare five-year capital programs to rebuild and improve the New York region's transit network. To establish the planning context prior to the development of each of these five-year capital programs, the MTA prepares a 20-year capital needs assessment that sets forth long-term capital investments that would be made in a program. These investments focus on two priorities: rebuilding and expanding the system. A five-year capital program identifies capital projects and equipment purchases, provides a planning schedule, and identifies options for financing the plan. Each capital program is broken down by agency (e.g., Transit), asset category (e.g., Stations, Signals), project element (i.e., similar types of work), and project description.

The 2015-2019 MTA Capital Program (Program) is the latest approved capital program,

with an original budget of \$29.57 billion. In February 2017, the MTA approved the first amendment to the Program. In July 2017, the Capital Program Review Board (CPRB) approved the second amendment to the Program, increasing the total budget to \$32.46 billion – \$2.89 billion more than the original program cost. Transit’s portion of the budget was increased from the original \$15.85 billion to \$16.32 billion. In May 2018, the CPRB approved the third amendment to the Program, bringing another increase in the budget to the total Program cost of \$33.27 billion, with Transit’s portion raised to \$16.74 billion.

Transit’s Department of Capital Program Management’s (CPM) mission statement is to improve New York City’s transit system by designing and building world-class capital projects. As of May 30, 2018, CPM had 2,111 projects in various stages listed in its Project Status Report (PSR) system. PSR is a database used for capital project management and documentation of the projects’ cycle with major milestones. For each project, PSR contains estimated and actual dates for when milestones, such as design completion, construction start, and construction completion, have been reached. The system is updated at least monthly and is used to track each project’s progress.

Once a project’s Master Plan is approved, the design phase begins. This phase, under the direction of a Design Manager, usually results in the development of a bid package, including plans and specifications. Once the contract is awarded, the construction phase begins and a Construction Manager (CM) takes over the project. During this phase, there are various activities, such as job progress meetings, additional work orders (AWOs, which are used to address various issues such as technical requirements that have been revised, a mistake in judgment, or work incorrectly done during design), contractor payments, and reviewing submittals, such as record/as-built drawings, operations and maintenance manuals, and quality and safety programs.

Transit has developed a set of Project Management Procedures (PMPs) and Project Management Guidelines that cover capital project management to help ensure that capital projects are completed on time and within budget. MTA Rules and Regulations state that all employees are required to follow their division’s instructions.

As construction draws to a close, the CM determines whether substantial completion (all contract work has been completed and the project is acceptable to be placed in service, except for items on a punch list such as computer system manuals, broken glass or floor tiles, and as-built drawings) has occurred. After the construction phase is complete (all punch list and clean-up work complete), there is a closeout stage, when all the sign-offs and final payments are made, after which the project is considered closed.

Results of Audit

For our review, we sampled six projects with a total budget of \$815.7 million (see Exhibit A). We determined that Transit’s PMPs were not always followed, and found that there were process deficiencies both before and after contracts were awarded to contractors, which contributed to delays and additional costs, including:

- Design errors and omissions: Four of the six projects in our sample encountered design-related issues during construction, leading to delays and additional costs. For instance, in one project, an omission by Transit’s design team was discovered during construction, resulting in ten AWOs and additional costs of \$617,000.
- Contractor non-conformances: Contractors did not always comply with a documented requirement (i.e., specifications), resulting in the work needing to be corrected. These included broken speed bumps, debris left by the contractor within train yards, and missing certifications and credentials for crane operators. Additionally, despite the significance of these non-conformances, on four of the five projects, the contractors did not perform the required root-cause analysis, which would help prevent future non-conformance.
- Insufficient contractor personnel on site: On four of our sampled projects, we determined that the contractor’s scheduled personnel were not always present at the site, with an average attendance rate as low as 52 percent on one of the projects. For one project, Transit had to issue continuous reminders to the contractor to increase technical staffing to meet the critical work schedule.

As a result of these deficiencies and other factors, Transit was unable to complete improvements to its system on time or within the originally proposed budgets, ultimately impacting the millions of passengers who rely on Transit.

Issues Leading to Delays and/or Cost Overruns

We found that all six projects in our sample fell behind schedule when compared with the original baseline dates, and four – with a total budget of \$672.2 million as of May 30, 2018 – were over budget by a combined \$43.2 million.

Pre-Construction Delays

For five of the six projects reviewed, the construction start was delayed on average by 13 months, with two delayed by 21 and 27 months. Many of the delays were due to inefficiencies at Transit, such as delivering the design late or not having the funds required on time.

For example, the January 2008 Master Plan projected that design would start in early 2008, the construction contract would be awarded in 2010, and substantial completion/voluntary compliance with the Americans with Disabilities Act would occur in 2013. However, the design was not completed until February 2011 (3 months late), and the contract was not awarded until March 2014 (27 months late), which was one year later than the originally proposed completion date. This project was still active as of August 2017.

In another project, the final Master Plan dated January 29, 2008 stated that the design would start in 2004, the construction contract would be awarded in 2008, and substantial completion would occur in 2013. Unfortunately, the design was not completed until December 2007 (14 months late), and the contract was not awarded until June 2010 (21 months late). As a result, the public benefits of this new signal system (advanced safety features allowing trains to operate more frequently and closer together) were delayed. This project was still active as of

September 2018. Delays in contract award from the date originally planned will result in increased costs due to inflation. Transit officials said that problems with funding, contractor equipment, and software implementation, as well as delays in another contract that the schedule was contingent upon, delayed the project. Further, other emergency track work, including Hurricane Sandy work, and public concerns about service disruptions also contributed.

Design Errors and Omissions

Four of the projects encountered design-related issues during construction, which resulted in AWOs coded as “design errors” or “design omissions.” Some were described as issues with design but were miscoded as “field condition.” For the fifth project, Transit had not located the design documents as of November 7, 2018. The sixth sampled project did not require a design phase.

These design issues led to project delays and additional costs. For example, on one of the projects, the contractor requested a 38-day extension for an AWO due to a design error in the shop drawings for a sink pipe; it was installed according to the shop drawings but was not adequate and had to be rerouted. In another example, Transit’s design team omitted a necessary raising of a platform edge to accommodate passengers with wheelchairs. The issue was discovered during construction and caused ten AWOs costing an additional \$617,000. We were advised that this project also experienced additional delays and costs due to digital communications issues in the elevator intercom. For three of the projects, the total cost of the AWOs coded as design errors/omissions was \$1.84 million, in addition to time delays.

Further, we note that the dates recorded in PSR show that all five projects with a design phase were late on design completion by an average of 7 months (ranging from 1 to 15 months).

Contractor Non-Conformances

Transit’s CM office is required to monitor and verify contractor compliance with the contract, per the PMPs. We determined that, for five of the six projects, Transit identified 223 non-conformances by contractors, including: broken speed bumps; debris left within train yards; missing certification and credentials for equipment operators; an expired New York City Department of Transportation permit for the contractor to enter the premises; guardrails that failed; an unapproved safety-related sign; and newly installed materials that were rusting.

We reviewed the issued and closed dates for 71 non-conformances. Twenty-seven were closed, ranging from zero days (closed on the same day) up to almost 3 years (1,053 days) later. Thirty-eight did not list a status or date, three did not have a closed date, two were still open, and one had a closed date that preceded the issued date.

Examples of these non-conformances include:

- Installation of unapproved cable at the job site. This condition was reported on March 23, 2015 and was not reported corrected until November 1, 2017.

- Recently installed stop cradles showing signs of rust. The item was reported on October 28, 2014 and was reported as closed on September 15, 2017.

For the six projects, we found that Transit performed and documented contractor evaluations twice per year, as required by the PMPs. We reviewed 59 contractor evaluations and found that 55 were rated overall satisfactory. However, in 35 of these satisfactory evaluations (which were spread among the six projects), there were marginal ratings in one or more sub-categories, including in quality deficiencies, meeting milestones, adequacy of staffing, and management, which are all essential for project management. It is not unexpected that these projects were delayed, considering that the contractors were rated marginal in these important sub-categories.

Non-conformances can affect the safety of contractor and Transit personnel as well as the general public. The time and cost to resolve these issues contribute to overall delays and rising costs within the project. Despite the significance of these non-conformances, we saw no evidence that the contractors performed root-cause analyses, as required in PMP 303 and Contract Specification Section 1J (Section 1J), for four of the projects. These analyses would help to prevent repeated failures resulting from the same or similar cause(s).

Insufficient Contractor Personnel on Site

Transit's CM office is required to monitor and verify contractor compliance with the contract, per the PMPs. For one project, the CM office identified that the contractor did not have the required number of personnel at the job site. Transit sent constant reminders to the contractor about this issue, instructing the contractor to increase its technical staff to meet the critical work schedule. We compared the number of contractor personnel on daily reports with the contractor work schedule for 15 days and found that the contractor was short on staff by an average of 29 percent. For these 15 days, an average of 37 employees were required, but an average of only 26 were on site. In response to our preliminary findings, Transit requested more information on this issue. We notified Transit that the information requested was provided as supporting schedules for the preliminary findings. We did not receive a response.

Because of these discrepancies, we then compared a sample of ten employees on this contractor's payroll reports to the daily reports, which list the employees on site, as observed by MTA inspectors. We found that the sampled employees were paid despite not listed as being at the project site. For example, on one project, we compared the contractor's payroll reports for December 2016 through February 2017 to the corresponding daily reports and found the employees were present at the work site for 80 percent of 469 paid days. In a second project, we compared the contractor's payroll reports to the daily reports for January 2014 through March 2014 and found these employees were paid a total of 378 days, despite being at the project site only 52 percent of the time. This project was still active in September 2018.

Further, we also compared the contractor's payroll report to the contractor's access forms (which are completed by the contractor and submitted to the MTA, indicating the date, time, and personnel who are granted access to the project site). For one project, we found that ten sampled

employees were not listed on the contractor's access forms 22 percent of the time. As a result, there is no assurance those employees were authorized to work at the project site.

Transit officials stated that the access forms are a control to ensure that the contractor's staff is present. As an additional control, the contractor's vice president signs an affidavit certifying payments. However, Transit does not check the access forms against the certified payroll reports prior to forwarding the invoice to MTA Capital Payments for processing. In addition, Transit does not spot check the field site to ensure that the correct number of employees are present. As a result, there is a risk that work and overall projects may be delayed if an insufficient number of employees report for work.

Quality Assurance/Quality Control

The contractor (as stated in Section 1J) and Transit CPM's Quality Management group are both responsible for ensuring the quality of the work. Per PMP 307, the contractor is required to comply with all aspects of the Quality Program. For projects over \$5 million, the contractor must have a Quality Manager (QM) and Quality Staff (QS) on site full time to oversee all active work. The QS submits daily quality reports of its quality control activities to the QM, who then submits a combined report to Transit's engineer by close of business the next workday. Transit Quality Management prepares Quarterly Quality Assessment Reports (Assessments) to ensure quality requirements are being met by the contractor; they also help ensure that the CM receives all the proper materials and documents from the contractor. The Quality Management group indicated that it typically performs Assessments between a project's active construction start and its substantial completion.

We found lapses in QS monitoring for two of the six projects. For one project, daily quality reports were discontinued before substantial completion, even though Section 1J requires QS to submit those reports for the duration of the project's construction phase. For another project, there was no evidence that QS was on site, no daily quality reports, and no evidence of QS signing in on daily reports.

Based on the construction start and substantial completion dates reported in PSR for each project, we estimated that Transit should have completed about 101 Assessments for the six projects we reviewed. As of February 6, 2019, we have not received 53 Assessments. For 13 of those, Transit explained that the projects either were not in active construction yet or were close to substantial completion. For another 13 missing Assessments, Transit noted that the nature of the project necessitated Assessments to be done bi-annually instead of quarterly; however, we noted gaps of up to two years between Assessments. For another missing Assessment, Transit confirmed that it was not conducted, without providing any reason. We received no explanation for the remaining 26 missing Assessments.

On each Assessment, Transit's Quality Management group assesses projects using a standard criteria of 14 elements. According to Transit and PMP 307, four elements must be evaluated (five since mid-2018) on every Assessment, while the remaining elements are usually evaluated at least once per year. Without the missing Assessments, there is no assurance that the

five elements were reviewed or that the underlying work was performed correctly. Based on our review of 48 Assessments, we found that Transit generally followed this practice if the element evaluated was applicable. In July 2018, this practice was formally incorporated into PMP 307. A previous version of this PMP (as of March 2016) simply stated that the responsibilities of the Quality Program representative include performing quarterly quality assessments, with support from a CM office representative.

Other Control Deficiencies

Contractor Submittals and Requests for Information

Contractors must submit drawings, manuals, listings of key personnel, and other documentation (submittals) for approval. Contractors can also submit questions about the plans or processes for a formal response (known as Request for Information, or RFI). PMP 305 generally requires Transit to respond to contractor RFIs and other submittals within 20 working days. For 16 of the 35 RFIs we reviewed, Transit responded past the 20-day time frame, ranging from 7 to 132 days late.

We also reviewed 30 submittals and found no response due date on 28 of them. However, the contract specifications for the six projects indicated a general due date of 20 working days, with some specialized submittals, such as drawings, diagrams, schedules, manuals, and follow-up submittals, due from 30 to 60 working days. Three submittals did not have either the date submitted or response date; thus, we could not determine the elapsed response times. We found that for five submittals, Transit took over 60 working days to respond (ranging from 84 to 450 working days).

Additional Work Orders

Transit is required to follow the AWO process described in PMP 207, including holding “In-House AWO Scope Development Meetings” without the contractor, and “AWO Negotiation Meetings” with the contractor. It is also required to document “lessons learned” for each AWO. The six projects contained a total of 267 AWOs, totaling \$11.87 million. We reviewed 29 of these AWOs, totaling \$3.66 million, and found that for 28 Transit did not hold In-House AWO Scope Development Meetings.

In response to our preliminary findings, Transit stated that there is no specific scope development meeting held and that each AWO is subject to a lengthy review/approval process. However, our review of the AWO packages found nothing that appeared to equate to the In-House AWO Scope Development Meetings. For 25 packages, there was no evidence of any meetings. Three packages mentioned some type of meeting, but it was not clear if the contractor was present. For example, one package had a list of dates for 27 meetings held for scope clarification and indicated that designers, contractors, and procurement managers participated. However, it did not indicate if any of these meetings met the requirement for the In-House AWO Scope Development Meetings without the contractor present. At In-House AWO Scope Development

Meetings, key project officials determine whether work is indeed an AWO (and not contract work), verify the cause (e.g., design error/omission, field condition), and consider other alternatives.

In addition, no lessons learned were documented for 18 of 29 AWOs. PMP 207 provides for lessons learned as part of the AWO process. Moreover, the ones that were documented were brief and provided insufficient root-cause analyses to help avoid future AWOs. For example, several AWOs stated “will be included in the Standard Specifications” and “proper coordination between CPM and MOW [Maintenance of Way] engineering during design phase” as lessons learned. However, to be effective, lessons learned should focus on the specific issues at hand and include recommendations on how to avoid them in the future.

Job Progress Meetings

Transit must hold and document monthly Job Progress Meetings. For two of the six projects, we found that, while Transit held monthly meetings, there was limited progress. Moreover, items listed did not include estimated completion dates. Various items listed on the meeting agendas were repeated and relisted from meeting to meeting. On one of the projects, where job progress meetings were held more frequently than monthly, five items on the first meeting’s agenda were still not completed by the fifth meeting. One of the items listed on a Job Progress Meeting from March 2, 2016 was “Form work for Canopy Columns”; however, this item was still listed as an issue on a Job Progress Meeting on May 11, 2016, with no explanation in the meeting minutes why it took so long. In the absence of due dates, it is not possible to determine if an item is being addressed in a timely manner.

Contractor Progress Payments

In accordance with PMP 208, when making progress payments, Transit’s CM should determine the reasonable value of work performed by evaluating job progress taken and recorded by appropriate personnel assigned to the job. For the six projects reviewed, we sampled 163 out of 239 progress payments made to contractors.

We found no evidence, such as notes or adjustments, showing that the CM or any other appropriate Transit personnel assigned to the job reviewed job progress or the reasonable value of work performed for 68 (out of 163) progress payments, totaling \$246.5 million.

In response to our preliminary findings, Transit stated that there is ample documentation of all payment packages having been reviewed and properly authorized by the CM. However, no additional documentation was provided for the 68 progress payments.

Recommendations

1. Assess liquidated damages as allowed when:

- Contractors that design projects omit critical components that result in additional costs or time for the completion of the project;

- Contractors provide an insufficient number of workers to accomplish the work in a timely manner; and
 - Contractors do not have the QM or QS necessary to provide the reports and reviews required by the contract.
2. Determine the root cause of the design errors or omissions and develop corrective action plans (e.g., additional training) to avoid recurrence.
 3. Require the CM office to verify the number and title of employees on site on a daily basis, determine whether they are authorized to be on site, and document the results. If all scheduled employees do not report on site, the alternate work site should be recorded. Cross-reference payroll documents to daily access reports.
 4. Ensure all Assessments are performed and document any exceptions to this requirement.
 5. Require the CM office to document specific lessons learned in the AWO. Monitor the lessons learned for all projects and exchange information among CMs to determine if there are trends or patterns that can be applied to future projects.
 6. Ensure that Transit meets the response due dates for RFIs and submittals. If the due dates are not met, document the reason for the delay.

Audit Scope, Objectives, and Methodology

The objectives of our audit were to determine if MTA – Transit’s CPM has a formal capital project management process that its employees and contractors are required to follow; and whether that process was followed and was successful in managing scope, time, quality, and budget to the satisfaction of stakeholders. The audit covered capital projects that were in active status between January 1, 2015 and May 30, 2018.

To accomplish our objectives and evaluate the relevant internal controls, we reviewed Transit’s related policies, procedures, and guidelines as well as regulations and laws. We interviewed officials and employees of CPM and the Division of Capital Planning and Budget to obtain an understanding of the capital project management process. We also reviewed records for each of the sampled projects pertaining to the phases of each project, such as design and construction.

We obtained a listing of 2,111 projects that were active between January 1, 2015 and May 30, 2018. We judgmentally selected 15 projects: three projects for each of the five areas (Communications Based Train Control, Americans with Disabilities Act, Depot Rehabilitation, Signal Systems, and Station Renewal). The selection was based on a variety of factors, such as project costs and the status of projects (two closed, four in closeout, eight in construction, and one in final design). This report covers six of the 15 projects valued at \$815.7 million as of May 30, 2018. The projects were either in construction, in closeout, or closed, and started as far back as 2003.

Out of the 39 PMPs, we selected 13 to determine if the projects were in compliance (see Exhibit B). Our samples were not designed to be projected to the entire population.

We conducted our performance audit in accordance with generally accepted government auditing standards. Those standards require that we plan and perform the audit to obtain sufficient, appropriate evidence to provide a reasonable basis for our findings and conclusions based on our audit objectives. We believe that the evidence obtained provides a reasonable basis for our findings and conclusions based on our audit objectives.

In addition to being the State Auditor, the Comptroller performs certain other constitutionally and statutorily mandated duties as the chief fiscal officer of New York State. These include operating the State's accounting system; preparing the State's financial statements; and approving State contracts, refunds, and other payments. In addition, the Comptroller appoints members to certain boards, commissions, and public authorities, some of whom have minority voting rights. These duties may be considered management functions for purposes of evaluating organizational independence under generally accepted government auditing standards. In our opinion, these functions do not affect our ability to conduct independent audits of program performance.

Reporting Requirements

We provided a draft copy of this report to MTA officials for their review and formal comment. Their comments were considered in preparing this final report and are included in their entirety at the end of the report.

In their response, MTA – Transit officials generally disagreed with the audit findings and recommendations, claiming that the auditors did not provide sufficient support that the conditions noted resulted in the late completion of projects and additional costs. In addition, they state they were already in compliance with their policies and procedures. However, the audit identified multiple areas of non-compliance with procedures as well as several other conditions that factored into the delays. Our responses to certain comments are included in the report's State Comptroller's Comments.

Within 90 days after the final release of this report, as required by Section 170 of the Executive Law, the Chairman of the Metropolitan Transportation Authority shall report to the Governor, the State Comptroller, and the leaders of the Legislature and fiscal committees advising what steps were taken to implement the recommendations contained herein, and where the recommendations were not implemented, the reasons why.

Contributors to this report were Robert C. Mehrhoff, Erica Zawrotniak, Julia Ibrahim, Celedonia Deaver, Paisley Fisher, Teeranmattie Mahtoo-Dhanraj, and Slamon Sarwari.

We wish to thank the management and staff of the Metropolitan Transportation Authority for the courtesy and cooperation extended to our auditors during this audit.

Very truly yours,

Carmen Maldonado
Audit Director

cc: M. Fucilli, MTA, Auditor General
D. Jurgens, MTA, Audit Director
NYS Division of the Budget

Exhibit A

Sample	Program Area	Project Name	Cost (in Millions)*
1	Computer Based Train Control	Test Track Phase II/Culver	\$84.9
2	Computer Based Train Control	Flushing Line	\$389.1
3	Americans with Disabilities Act	Ozone Park/Lefferts Blvd/Liberty Avenue	\$24.3
4	Americans with Disabilities Act	23 St/Lexington	\$21.7
5	Signal Systems	Sandy Repair South Ferry Interlocking	\$58.6
6	Signal Systems	Dyre Ave Line Signals	\$237.1

*As of May 30, 2018.

Exhibit B

PMPs for Project Review

1. PMP No. 109 – Processing Consultant Contract Modifications
2. PMP No. 115 – Evaluation of Contractor/Consultant Performance (ACE)
3. PMP No. 206 – Obtaining WAR Certificates
4. PMP No. 207 – Processing Construction Additional Work Orders
5. PMP No. 208 – Processing of Payments Funded Through the Capital Budget
6. PMP No. 301 – Design Management
7. PMP No. 303 – Contract Waivers, Deviations, Non-Conformances and Variance Requests
8. PMP No. 305 – Handling Contractors' and Consultants' Submissions and Requests
9. PMP No. 307 – Quality Assurance/Quality Control During Construction
10. PMP No. 316 – Value Engineering
11. PMP No. 323 – Construction Administration
12. PMP No. 328 – Approval of Subcontractors and Suppliers
13. PMP No. 333 – Customer Satisfaction

Agency Comments

2 Broadway
New York, NY 10004
212 878-7000 Tel

Patrick J. Foye
Chairman and Chief Executive Officer



May 9, 2019

Ms. Carmen Maldonado
Audit Director
The Office of the State Comptroller
Division of State Government Accountability
59 Maiden Lane, 21st Floor
New York, NY 10038

Re: Draft Report #2018-S-15 (Selected Aspects of Capital Program Project Management)

Dear Ms. Maldonado:

This is in reply to your letter requesting a response to the above-referenced draft report.

I have attached for your information the comments of Andy Byford, President, MTA NYC Transit, which address this report.

Additionally, I requested additional information on the management and review processes at NYC Transit's Capital Program Management department to better understand the issues highlighted by the audit. The MTA recognizes that it's critical to our credibility that we deliver our capital projects on time and on budget, and we will continue to focus closely on our capital project management processes.

Sincerely,



Patrick J. Foye
Chairman and Chief Executive Officer

cc: Veronique Hakim, MTA Managing Director
Michael J. Fucilli, Auditor General, MTA Audit Services

The agencies of the MTA

MTA New York City Transit
MTA Long Island Rail Road

MTA Metro-North Railroad
MTA Bridges and Tunnels

MTA Capital Construction
MTA Bus Company

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Comment

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*See State Comptroller's Comments, page 22.

Memorandum

Date: May 9, 2019

To: Patrick J. Foye, Chairman and Chief Executive Officer, MTA

From: Andy Byford, President, NYCT

Re: New York State Comptroller Request for Response to the Draft Audit Report
“Selected Aspects of Capital Program Project Management” 2018-S-15

New York City Transit has completed the review of the subject draft audit; our responses and comments are below. Similar to the previous draft, this version infers cause and effect without a rigorous evaluation of schedule and budget. Reasons for project delays and cost overruns can vary, and the audit does not cite any definitive analyses used in its determinations.

Many of the issues cited in the audit are not unusual in large, multi-year construction projects. We do, however, recognize that policy reinstruction will reinforce agency best practices, and as noted in the recommendations, we will take such actions.

Results of Audit

Pre-Construction Delays

Schedules included in the Master Plan are very preliminary and are refined as project planning proceeds and as more detailed information (for example, track access and work train availability) is developed. Further, Master Plan schedules can be skewed by any number of developments in this nascent phase of a project, such as the reprioritization of capital program goals, funding availability, resourcing and workload impacts. For these reasons, the Project Status Report provides more meaningful information against which to compare project progress—schedules are established upon funding approval. Therefore, the master plan does not necessarily produce an accurate reflection of project progress.

The audit also cites funding shortfalls as a cause of project delays: While this may be true in some instances, the receipt of funding for the capital plan is beyond the control of both the agency and department, and is not an “inefficiency” that can be controlled through better procedures and guidelines.

Further, all six of the projects included in this audit were awarded as bid contracts, and inflation, as it is generally understood, would not increase the cost of the contract.

Design Errors and Omissions (E/Os)

While E/Os can contribute to overall schedule delays, it is incorrect to extrapolate that it is always the case, as evidenced in the auditors’ own working papers. The audit states as fact that any particular E/O was the direct cause of a schedule or delay in and of itself,

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without considering other contextual factors, which were submitted in the response to the preliminary draft of this audit.

All projects in this audit were designed inhouse. Note that the combined costs of design errors and omissions for the six projects represent 0.35 percent of their total budgets. As noted elsewhere in this response, we will initiate an enhanced lessons-learned process applicable to AWOs and end-of-project reviews. Also, the audit claims that design documents for contract S32139 were missing; however, our records do not indicate that they were requested.

Contractor NonConformance

While the audit states that “the time and cost to resolve these issues [cited on nonconformance reports] contribute to overall delays and rising costs within projects”, there is no detail in the report that supports this statement. Depending upon the nonconformance issue, the corrective action is generally resolved within the project schedule. Also, the cost factor associated with the examples cited—broken speed bumps; debris at the work site; missing certifications; newly installed equipment showing inordinate signs of wear and tear—would be borne by the contractor. We have instructed previously and will issue a reinstruction regarding the submission of root cause analyses.

Insufficient Contractor Personnel on Site

The construction contracts in this audit were awarded based upon the respondent’s bid proposals. The prime contractor, as per contractual terms and conditions, agrees to a work scope, a schedule and a price. The prime contractor is responsible for the means and methods of carrying out the work, and for delivering the project on time and on budget. NYCTA contracts do not specify the number of workers who should be on the site each day.

Contractor personnel are also responsible for other non-construction duties, such as reporting, and equipment and materials testing that occurs off-site, and so would not be present at the construction site. As noted elsewhere in this response, each contractor signs an affidavit, certifying his or her payroll.

Regarding the example cited in the audit, the project’s construction administrator did contact the equipment supplier to ensure that adequate technicians were available on site during a track outage. For this contract, the daily installation work was done by Comstock. This instance is counter to the audit finding.

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Quality Assurance/Quality Control

According to the audit, project A36199 daily quality reports were discontinued before substantial completion. We disagree: A review of Quality Management assessment documentation reflects that daily quality reports were issued during the time frame covered by the audit as evidenced by our quality representative’s notes.

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Regarding project S32723, assessments were conducted during the time frame referenced by the audit. Also, note that the project had progressed to a point in the first quarter of 2017 where additional assessments were no longer necessary, and therefore assessments for quarters 2-4 of 2017 and the first quarter of 2018 would not have been performed or reported.

To further ensure responsiveness, CPM’s Quality Management unit has implemented a centralized repository for assessment reports, assuring ease of access moving forward.

Contractor Submittals and Requests for Information (RFIs)

Generally, both the contract terms and conditions and the agency’s guidelines delineate a 20-day response time for contractor submittals and RFIs. NYCT works diligently to meet these guidelines, however, we acknowledge that there have been instances where our responses have not been timely, and we will continue to ensure compliance and reinstruct staff regarding this procedure.

Additional Work Orders

Additional Work Order (AWO) scoping is a collaborative process involving construction management, design management, cost estimating, scheduling, and project sponsors. In practice, there is no one specific AWO scoping meeting.

The process is lengthy and well-documented. The lack of documentation in limited cases at a single step of this effort is not evidence that the work has not been analyzed against the contract scope, nor that the cause was not determined, nor that other alternatives were not considered, especially since AWOs are approved by many levels of management, including procurement and law.

We will continue to ensure AWO documentation is in compliance with NYCT policy, however, by issuing reinstruction regarding the need to appropriately document lessons learned.

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Comment
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Job Progress Meetings

All six contracts reviewed within this audit were multi-year and some were multi-location. It is not unusual for items to be listed on the monthly agenda more than once. Additionally, critical path items are given a higher priority than those of lesser importance. Note that an item’s extended stay on the meeting minutes is not indicative of relinquishment.

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Comment
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Contractor Progress Payments

As noted in the response to the preliminary draft, all payment packages submitted to the auditors were complete, and contained all appropriate approvals.

Contractor progress payments are governed by Project Management Procedure 208, which provides uniform guidance on the proper handling of consultant and contractor payments: Specifically, Section 6.3.1.12 lists those items (a – o) that must be included as part of the payment package. Payments cannot be made unless a complete submission is accepted by the agency Controller.

The audit comment that “we found no evidence of notes or adjustments” is unclear. When a contractor requests payment, he or she submits a detailed cost breakdown (DCB) to the construction manager. The DCB is jointly reviewed by the contractor and a member of the NYCT construction management team, and agreement is reached upon the amount of work completed. The DCB is not included in the payment package.

The payment package does include the Payment Transmittal documents which reflect the agreed upon amount that the contractor should be paid, as noted in the DCB. The Field Input Form, which also mirrors the DCB is signed and included in the payment package. If the audit is recommending that additional documentation be amended into the agency’s existing procedure, then the report should so indicate. Otherwise, the Authority respectfully requests that the review specifically cite missing documentation.

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Comment
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Response to Recommendations:

1. *Assess liquidated damages as allowed when:*

- *Contractors that design projects omit critical components that result in additional costs or time for completion of the project.*

NYCT CPM already complies with this recommendation. NYCT CPM has a back-charge procedure for consulting firms engaged for design. Liquidated damages are assessed as per the master legal agreement for general contracting, and are based upon contract milestones as defined in the contract’s specification.

- *Contractors provide an insufficient number of workers to accomplish the work in a timely manner.*

NYCT disagrees with this recommendation. Project delays can result from many circumstances. The contractor is responsible for the means and methods of construction, and construction contracts are lump sum: payments are based upon milestones defined in the contract's terms and conditions. The schedule has the greatest relevance in determining the need to assess liquidated damages.

- *Contractors do not have the quality management or staff necessary to provide the reports or reviews required by the contract.*

NYCT disagrees. As noted above, quality reports and assessments were issued as required. Also, liquidated damages are assessed as per the master legal agreement for general contracting, and are based upon contract milestones as defined in the contract's specifications. To improve our performance in this area, we will issue a reinstruction to all program management staff to strengthen compliance with this procedure.

2. *Determine the root cause of design errors or omissions and develop corrective action plans (e.g., additional training) to avoid recurrence.*

The NYCT disagrees with the inference made from this recommendation, but agrees with the concept where issues arise. An initiative begun in 2018 to assess the efficiency and efficacy of the department's program management guidelines and procedures rightly identified the master plan as a crucial juncture in ensuring solid milestones in the design and construction phases of a project. The revised Project Management Procedures and Project Management Guidelines for this activity will require enhanced investigation of existing conditions; increased destructive testing and a highly detailed scope of work, which should decrease the number of AWOs during construction. This new initiative also requires a more thorough constructability review during design.

3. *Require the CM office to verify the number and title of employees on site on a daily basis, determine whether they are authorized to be on site, and document results. If all scheduled employees do not report on site, the alternate work site should be recorded. Cross reference payroll documents to daily access reports.*

NYCT already complies with this recommendation. Payrolls are certified by the contractor via an affidavit. Job sites are secured and controlled by the resident engineer via compliance with Section 1S, Section 1.10 of the contract terms and conditions which control and document the pre-authorized entry of contractor personnel into the project site. As noted above, the contractor is responsible for meeting the project schedule and budget.

The daily reports (which are done for each shift at a job site) would not necessarily reconcile with the contractor's certified payroll, which can include staff off-site who are engaged in nonconstruction activities (for example, reporting; equipment/material testing). Thus, the cross referencing of payroll documents to daily reports would be inconclusive. For this reason, NYCTA requires the submission of a certified payroll. As noted above in the response to Recommendation 1, the contractor is responsible for the means and methods of construction, and construction contracts are lump sum: payments are based upon milestones defined in the contract's terms and conditions.

4. *Ensure all Assessments are performed and document any exceptions to this requirement.*

NYCT agrees with this recommendation. To improve our performance in this area, we will issue a reinstruction to all program management staff to strengthen compliance with this procedure.

5. *Require the CM office to document specific lessons learned in the AWO. Monitor the lessons learned for all projects and exchange information among CMS to determine if there are trends or patterns that can be applied to future projects.*

NYCT already complies with this recommendation. As noted above, in 2018 CPM initiated an assessment of the efficiency and efficacy of the department's program management guidelines and procedures. Recognizing the importance of lessons learned to successful project management, we will propose an enhanced lessons-learned process, applicable to both AWOs and end-of-project review. Also, the

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department has a new requirement that final design approval is contingent upon the incorporation of lessons learned.

6. *Ensure that Transit meets the response due dates for RFIs and submittals. If the due dates are not met, document the reason for the delay.*

NYCT already complies with this recommendation. RFIs and Submittals are tracked and discussed at monthly job progress meetings. Open items are prioritized to allow critical items to be addressed as soon as possible. We will issue a reminder to staff that a response should be documented.

cc: A. Saha

State Comptroller's Comments

1. We view the Chairman's request for additional information on the management and review processes at Transit's CPM department as a positive indication that the MTA will consider the results of this audit and focus on "delivering capital projects on time and on budget."
2. Auditors use a (Criteria, Condition, Cause, Effect, and Recommendation) model that includes cause-and-effect analysis. While techniques used by auditors may be different from what is used by MTA operational staff, they are commonly accepted within the audit industry to develop the elements of an audit finding, including cause and effect.
3. We are pleased that Transit officials will take steps to provide policy reinstruction to reinforce agency best practices, in accordance with our recommendations. However, other steps must also be taken, as reinstruction will likely not be sufficient, as delineated in the report.
4. Transit officials point out that the Master Plan is prepared early in the project development process and is not an accurate reflection of the project in terms of time and funding. They point to the PSR as a better reflection of project progress. However, timelines and costs were also often revised in the PSRs.
5. We revised the report to clarify that the inflation costs referenced apply to delays in contract awards.
6. We made several requests for the design documents and they were not provided.
7. We do not suggest that Transit contracts specify the number of workers that should be on site each day. However, we do suggest that Transit should not take a hands-off approach to overseeing projects just because the contract was awarded based on a bid. Rather, Transit should be continuously monitoring the contractor to ensure the project is completed on time and within budget.
8. A copy of the PSR for project A36199, dated June 18, 2018, shows substantial completion on January 18, 2018, while daily quality reports stopped in May 2017. Regarding project S32723, the PSR dated June 15, 2018 shows October 26, 2018 as the forecasted date for substantial completion. Therefore, additional assessments should have been done after quarter 1 of 2017. As Transit states in its response to the draft report, the PSR "provides more meaningful information against which to compare project progress."
9. Transit replied that it will "continue to ensure AWO documentation is in compliance with [Transit] policy." However, none of the projects reviewed had a record of an In-House AWO Scope Development Meeting without the contractor present. This does not seem to reflect just "a lack of documentation in limited cases."
10. Transit's reply did not address the finding that job progress meeting minutes repeated items that were not completed after several meetings, without a due date.
11. As stated in the report, there was no evidence showing the CM or any other appropriate Transit personnel reviewed the job progress for work performed for 68 of the 163 progress payments auditors reviewed. The determination of how such a review is to be documented and by whom rests with Transit.