



MTA MUST IMPROVE CONSTRUCTION MANAGEMENT SYSTEM– FINAL REPORT

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I. EXECUTIVE SUMMARY

The Metropolitan Transportation Authority's (MTA) multi-billion-dollar capital construction program is managed by MTA Construction and Development (C&D). To monitor the hundreds of individual projects in the program, the agency uses an electronic project management system called Asite. Internal and external stakeholders use Asite to oversee the design and construction of projects, collaborate on day-to-day workflows, and share critical documents. The MTA's previous software program, Constructware, was discontinued in 2021, and staff members in New York City Transit (NYC Transit) were responsible for coordinating the transition from Constructware to Asite. As part of MTA's recent reorganization and consolidation, in 2021, C&D took on full responsibility for managing the Asite system.

During our review of the migration of project data from Constructware to Asite, the Office of the MTA Inspector General (OIG) identified opportunities for C&D to improve how Asite is used so that the system can better support the effective oversight of MTA's critical capital projects:

- Retrieval of project documents in both the old and new software is onerous due to contractors and MTA staff being allowed too much discretion in where to file documentation, and an overly complex, daunting, 64-page filing protocol.
- OIG could not find nearly half the documents that should have been filed for a sample of construction projects. The documents had not been loaded into Constructware or Asite as required by agency policy and contract language. This noncompliance continued once data was migrated to Asite.
- No one is held accountable for failing to comply with document retention requirements in part because no one is checking.
- Currently, no mechanism exists to link documentation of the preconstruction design and construction phases of a project into a complete project record. The absence of complete project records significantly diminishes the database's value and reduces the overall efficiency of the project management process.

C&D conducted its own evaluation and came to similar conclusions. They accepted the OIG recommendations and provided a timeline for when implementation will be accomplished. (See the end of the report for details.)

II. BACKGROUND

A. Project Documents

The MTA should retain all relevant records on every construction project from its beginning in planning and design for the life of the asset. During a project's life cycle, staff members in C&D and contractors use the electronic management system to oversee all facets of the work, including virtually all activities in construction, design changes, scheduling, budget, and overall progress. For example, the system is used to document project meetings, initiate and track Additional Work Orders (AWOs), address design-related issues, and process Requests for Information (RFIs). After the completion of a project, these records are critically important as a reference for future maintenance and construction work. For example, when an asset is scheduled to undergo future work, MTA personnel must review drawings that show actual post-construction conditions, specifications, warranty and maintenance requirements on installed equipment, and other relevant information on the completed project. This is especially significant when completed work is underground, within walls, or otherwise hidden from view. The electronic system should be a secure, reliable, and readily accessible repository for these critical documents.

B. Authorized Users

MTA's contracts with general contractors include instructions for the use of an "Internet Based Project Management" system. The standard clause requires all project participants to use the system – the general contractor, consultant construction manager, construction manager, resident engineer, designer of record, and others. Each authorized individual receives password access to the secured website corresponding to their areas of responsibility and workflow, as defined by the engineer supervising the project.

General contractors have additional responsibilities: They are required to submit and track all documents and communications in the system and are further responsible for coordinating all subcontractors, suppliers, or vendors in using the software. They must also comply with MTA's document retention requirements. Similar compliance requirements exist for consultant construction management firms and MTA project personnel.

III. FINDINGS

A. The Procedures for Organizing Data in Asite Are Inadequate

Asite is configured to allow project personnel to upload documents into general areas rather than a defined hierarchy of folders. Therefore, to retrieve documents, users must be prepared to use Asite's search function to locate specific items efficiently. For this search function to be effective, standardized file numbering and naming systems are essential.

C&D does require adherence to a procedure that outlines exactly such a naming system: *Uniform Filing System – PMP 104* (Procedure), but it is ponderous and confusing. Initially instituted by NYC Transit in 1985, the Procedure preceded MTA's use of any electronic systems for managing projects and documents. Further, it has been revised 13 times – most recently in May 2019, to address the expected discontinuation of Constructware and to specify the required protocols for any “successor program.”

The 2019 Procedure's stated purpose is to “assure that all significant information relating to each capital project, covering all phases from planning through design, construction, and closeout, is available for reference.” Although the document is described as “general guidance only,” it is 62 pages long and sets forth an extraordinarily detailed set of instructions. For example, each document must be assigned a category with its accompanying number. However, under the stated protocols, a document could logically be filed under several different categories and/or file numbers, rendering the search process more laborious. Unless the same type of document, such as a piece of correspondence, receives the same standardized naming and numbering protocols in all projects, users have been experiencing significant difficulty in locating the desired documents. For example, according to the Procedure's *Correspondence* section, a letter, memo, or email can be classified as any one of the following:

39. PROJECT CORRESPONDENCE - CHRONOLOGICAL

39.0 From Contractor

39.0.1 To Contractor

39.0.2 General

40. INTERNAL CORRESPONDENCE

40.0 Memo - Incoming

40.1 Memo - Outgoing

40.2 Record of Telephone Conversations

40.2.1 Tele-fax Info

40.3 Personnel Assignments

41. EXTERNAL CORRESPONDENCE

41.0 Letters - Incoming

41.1 Letters - Outgoing

41.2 Equipment Received Letters

Thus, an outgoing letter to a general contractor could be filed as 41.1 (Letters - Outgoing) and/or as 39.0.1 (Project Correspondence - Chronological - To Contractor). Notably, these are just some of the Correspondence codes available. Depending on the subject of the correspondence, multiple other categories and codes might also apply.

To better understand the complexity of the Procedure’s filing system, it is helpful to examine the number of categories and codes any document can be filed under; there are 9 categories just under the “General File Categories” section, each with multiple classification codes. These are:

<u>General File Categories</u>	<u>Number of Codes</u>
1. Reports – General Files	49
2. Information	18
3. Conferences	9
4. User Departments – General Files	28
5. Correspondence – General Files	8
6. Agencies	19
7. Art Work	2
8. General Files Miscellaneous	13
9. Directives	25

Beyond the 9 “General Files” and 171 unique codes shown above, the Procedure has 18 additional sections with 75 distinct categories and thousands of individual associated codes. According to the Asite administrators, this excessively detailed categorization confuses the parties uploading documents as well as those performing search functions, effectively impeding the timely sharing of documents, the precise purpose of having the Asite system in the first place.

In early 2021 responsibility for the Asite function was moved to MTA C&D. Asite will be the centralized system, and document repository, for capital construction work performed in all MTA agencies. C&D managers told OIG that they’re aware that the Procedure is unwieldy in its current state, and they are in the process of streamlining the guidelines to render them workable.

B. Contractor, Consultants and MTA Personnel Do Not Upload Key Documents Consistently

To test the completeness of the project files maintained in Asite, as well as the accuracy of the data migration from Constructware, OIG staff selected a limited sample of 9 construction projects in varying stages of completion. The 9 projects were either active – in the “Construction” or “Closeout” phase – or completed and officially closed at the time of our analysis. OIG then selected 14 document types common to all construction projects and

searched for them in each selected project in Asite.¹ Each MTA Construction Manager is responsible for ensuring that the general contractor, MTA personnel, and the Consultant Construction Manager (if one is assigned) upload these required documents on time and in accordance with the special conditions set forth in the contract.

Our analysis showed that nearly half of the documents were missing. Further, we found that these significant omissions had not resulted from an incomplete migration, because in every case the documents were also missing from Constructware where applicable. Our analysis showed that file completeness varied among the 9 projects, ranging from a compliance rate of 93% to a rate of just 21%. The overall compliance rate of the sample was 52%. (See Appendix A for detail.)

In discussing this low rate of compliance with C&D officials, OIG learned that prior to the responsibility being shifted to C&D, no NYC Transit personnel enforced contractors' compliance with the Procedure's document-management requirements primarily because to do so was so unwieldy. We were also told by the Asite administrators that MTA Construction Managers allow the contractors to determine what documents were uploaded, and where, since they were the ones who needed to find them. Since MTA staff have as much, if not more need, to find, review, approve, and use these documents during project administration, this is a serious misconception on the part of the Construction Managers. Moreover, after a project is complete, only MTA staff will need to find these documents should the asset be selected for additional work, should questions arise on completed work, or to design upgrades to the asset.

C&D is aware of the myriad issues surrounding the use of Asite, including the need for compliance with contract requirements for capturing the information in a standardized format. However, C&D is in the early stages of assuming responsibility for this effort and is only now in the process of setting up and staffing a quality group which will be auditing projects for compliance with documentation retention. For the ASITE software to fulfill its purpose, it is imperative that C&D direct adequate resources and managerial attention to this effort.

¹ The document types were: conformed contract documents, project meeting minutes, subcontractor approvals, schedules, the quality work plan, daily site reports, contractor access forms, inspection reports, Requests for Information (RFIs), AWOs, payment applications, shop drawings, and as-built drawings and other closeout documents for projects in the Closeout phase or completed.

C. Pre-Construction Design Information is Captured Only on Isolated Servers

When new work is being planned on an existing asset, it is imperative that the designer understands not only the actual condition of the asset and the work “as is” on site from past construction projects, but also why it was constructed the way it was. For example, the designer must determine whether certain options were rejected because they did not meet the needs of a user department and whether the design was altered to comply with budget constraints or to accommodate anticipated future work.

Because a construction project is not established in Asite until its contract is awarded, Asite does not capture any pre-construction materials – most significantly, documents from the design phase. Since each discipline in NYC Transit’s Capital Program Management (CPM) department, such as Stations, Signals, and Line Structures, had design managers embedded in the operating departments, there was no separate design department and thus no natural organizational unit to establish protocols for managing these critical documents. C&D is maintaining this organizational structure.

During this review, OIG found that design documents are stored on each design manager’s shared network drive with limited access to others involved in a given project. These materials include conceptual design outlines; 30%, 60%, and 90% designs; design assumptions; a master plan; schedules, user group comments, and signoffs. Computer-Aided Design and Drafting (CADD) drawings may reside on another separate server. Design managers have templates of filing systems from previous projects; however, each design manager saves only what they feel are relevant documents based on their experience. The preconstruction design documents are not linked to the construction documents in Asite after project completion in any way, and therefore even those documents saved by each design manager are not indexed or retrievable to allow a complete project review. C&D is in the process of developing a method to electronically link all documents related to each project.

When the operating agencies were responsible for managing their own capital construction projects, they used several electronic project management systems. Now that C&D will administer all capital projects, the agency has designated Asite as its standardized system. Projects already begun using other electronic systems will be completed in those legacy systems, which will then be phased out.

IV. RECOMMENDATIONS

OIG began our review of the Construction Management System in 2019 when a legacy program, Constructware, was in use. We then followed the migration of the data to ASITE, and the transfer of responsibility for the management system to the newly integrated and consolidated MTA Construction & Development agency in early 2021. We first met with the NYC Transit group coordinating the migration to discuss our initial observations in June 2020. They were aware of most of the issues, effectively coordinating the migration, and were receptive to our proposed recommendations, but lacked the authority to implement them. Once this group transitioned and Asite became the responsibility of C&D, the concerns were acknowledged, and we found that C&D was developing a clear understanding of the weaknesses outlined above and the actions necessary to correct them. In their response to our preliminary report from October 2021, C&D explained that their evaluation of the system “largely align with the recommendations contained in the OIG’s Report.”

The OIG recommendations and C&D’s responses follow:

1. Revise PMP 104 to establish a greatly streamlined, clear, and concise filing protocol covering all required project documents. The protocol should be manageable with non-duplicative document locations. The new PMP should be appended to each construction project’s contract(s).

Agency Response: Agreed. C&D will implement a new procedure by the second quarter of 2022. The new procedure, which C&D is currently working on, will be a streamlined policy that will apply across all the C&D capital project management systems to ensure that all projects are operating under the same guidelines. C&D intends to use a basic folder structure with document tagging and to incorporate this procedure into future contracts.

2. Train and hold accountable project staff tasked with enforcing contractual requirements concerning document management in Asite.

Agency Response: Agreed. C&D will implement this recommendation by the second quarter of 2022. C&D is in the process of revamping the existing Asite training to drive record management requirements and set clear directives for staff and their managers.

3. Initiate a compliance audit and enforcement program on document management as soon as possible. A minimum number of projects should be targeted each year for audit, with published reports issued to the appropriate management level, including any action taken by the quality group when noncompliance is found.

Agency Response: Agreed. C&D will implement the recommendation by the first quarter of 2022. C&D is currently in the process of creating a compliance audit and enforcement program which will have input from both its Quality Management and Project Controls groups.

4. All preconstruction design records maintained outside of Asite should be linked to construction phase Asite documents to create a complete project record.

Agency Response: Agreed. C&D will implement the recommendation as it impacts Asite by the fourth quarter of 2022. C&D further noted that it is in the process of centralizing all file storage and is also in the very early stages of deploying a project document management system. Each system is being designed to store contract records under the contract number, which will allow for easy cross-referencing of information from a given project across the systems. These two changes are expected to streamline and organize document storage.

Appendix A

Document Sought in Files	9 Projects Sampled Y = found, N = not found, NA= not applicable									Percent of Contracts with these Documents Compliance
	A35301	A36090	A37106	A46005	C48702	C48706	E31509	E33886	S32461	
Conformed Contract	Y	Y	N	N	N	Y	N	N	N	33%
Meeting Minutes	N	Y	N	N	N	N	N	N	Y	22%
Sub Approvals	Y	Y	Y	Y	Y	Y	N	N	N	67%
Schedules	Y	Y	N	N	Y	N	N	N	N	33%
Quality Work Plan	Y	N	N	N	Y	Y	Y	Y	N	55%
Daily Site Reports	Y	Y	Y	Y	Y	N	N	N	Y	67%
Access Forms	Y	Y	Y	N	Y	N	Y	Y	N	67%
Inspection Reports	Y	Y	Y	N	Y	N	N	N	N	44%
RFIs	Y	Y	Y	Y	Y	N	Y	N	N	67%
AWOs	Y	Y	N	N	N	N	Y	Y	N	44%
Payment Apps	Y	Y	NA	N	N	NA	N	Y	N	43%
Shop Drawings	Y	Y	Y	Y	Y	Y	Y	Y	N	89%
As-Built Drawings	Y	Y	NA	N	Y	NA	N	Y	Y	71%
Closeout Docs	Y	N	NA	N	N	NA	N	N	N	14%
Total Compliance	13 / 14	12 / 14	6 / 11	4 / 14	9 / 14	4 / 11	5 / 14	6 / 14	3 / 14	62/120
Percent Compliance	93%	86%	55%	29%	64%	36%	36%	43%	21%	52%