

MONTHLY MONITORING REPORT

World Trade Center Port Authority Trans-Hudson Terminal
PORT AUTHORITY OF NEW YORK AND NEW JERSEY
New York, New York

April 2015



PMOC Contract Number: DTFT60-14-D-00010

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TABLE OF CONTENTS

TABLE OF CONTENTS	2
DISCLAIMER.....	3
REPORT FORMAT AND FOCUS	4
EXECUTIVE SUMMARY	4
Project Description	4
Construction Agreement (CA)	4
Quarterly Progress Review Meeting (QPRM)	4
Design Activity	4
Procurement Activity	5
Construction Activity	5
Schedule	5
Cost Data.....	5
Risk Management	6
Technical Capacity and Capability Review (TCCR)	6
Project Management Plan (PMP).....	6
Project Quality Assurance.....	6
Site Safety and Security Review	6
Major Issues/Problems	6
MONITORING REPORT	8
A Project Description	8
B Project Status	8
C Schedule	14
D Cost Data	14
E Risk Management	14
F Technical Capacity and Capability Review	16
G Site Safety.....	17
H Major Issues/Problems	17
APPENDIX A – LIST OF ACRONYMS	18

Cover: Setting of curtain wall panels advanced during April with glass panels being installed on both the north side and south side (pictured) of the oculus structure.

DISCLAIMER

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

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

Therefore, the information in the monthly reports may change from month to month, based on relevant factors for the month and/or previous months.

REPORT FORMAT AND FOCUS

This monthly report is submitted in compliance with the terms of the Federal Transit Administration (FTA) Contract No. DTFT60-14-D-00010, Task Order No. 006. Its purpose is to provide information and data to assist the FTA in continually monitoring the grantee's technical capability and capacity to execute a project efficiently and effectively, and hence, whether or not the grantee continues to receive federal funds for project development.

This report covers the project management activities on the Permanent World Trade Center (WTC) Port Authority Trans-Hudson (PATH) Terminal (Hub) project, conducted by the Port Authority of New York and New Jersey (PANYNJ) as grantee and funded by the FTA's Lower Manhattan Recovery Office (LMRO).

EXECUTIVE SUMMARY

During April, World Trade Center Construction (WTCC) formally submitted Recovery Plan 03, which identifies two Revised and Restated Construction Agreement (RRCA) milestones that were missed or expected to be missed, and which also identifies its strategy for maintaining the remainder of the RRCA milestone dates while mitigating the delays to the two reforecast milestones. In late April 2015, the Project Management Oversight Contractor (PMOC) issued a spot report that recommends acceptance of Recovery Plan 03.

In April, 329 curtain wall glass panels were set at the Transit Hall, bringing the total set since this work commenced in mid-March to almost half of the total required quantity of 772. At the PATH Hall, Platform B work approached the final stages in anticipation of WTCC's projected opening to revenue service during May 2015.

Project Description

The WTC PATH Hub Terminal serves the PATH electrified rail transit system in Lower Manhattan. The PATH Hub is an extensive underground complex of pedestrian corridors and train station facilities that will replace the original WTC PATH Terminal destroyed by terrorist attack on September 11, 2001.

Construction Agreement (CA)

The CA was signed by the LMRO on April 25, 2006. An RRCA was executed on September 18, 2012. The RRCA establishes a Required Completion Date (RCD) of December 17, 2015, and commits \$2.872 billion in federal funding to the PATH Hub project. The RRCA establishes a not-to-exceed amount of \$3.995 billion for the project. Recovery Plan 02 was approved in early 2014 and established an updated RCD of December 31, 2016.

Quarterly Progress Review Meeting (QPRM)

A QPRM for the first quarter of 2015 *has been scheduled* for May 27, 2015.

Design Activity

The designer continues to provide construction support services, including the review of contractor shop drawings and other submittals.

WTCC has completed all planned procurements for the PATH Hub project. However, change orders continue to be issued as necessary under the active construction contracts.

During April, WTCC remained focused on three major construction activities, consisting of the completion of Platform B and the mezzanine above Platform B, implementation of repairs and remedies at the new Emergency Generator Plant, and installation of the oculus curtain wall system. Once WTCC recognized that testing and commissioning activities could not be completed during the month, even with the implementation of temporary measures, the opening of Platform B to revenue service was ultimately deferred to May. The Emergency Generator Plant repairs and remedial work were also under way throughout April in an effort to bring this Hub Project asset online. Additional booster pumps to improve diesel fuel flow to the generators were received and set in position during the month. In addition, a fuel line leak in the annular space within the double-wall fuel system piping was diagnosed and isolated. Replacement of that section of piping began during the month. Oculus curtain wall installation advanced at a better than expected rate with over 300 glass panels set in place during April, bringing the quantity of glass panels set to nearly 50 percent of the total required.

In March 2015, WTCC released Integrated Master Schedule (IMS) 78 (with a data date of February 1, 2015), (b) (4)

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During this period, WTCC submitted two monthly cost model revisions, recovering from a lag in reporting that commenced at the start of the current calendar year. Taken together, those revisions show that, based on the contract awards and estimates through March 31, 2015, WTCC's Estimate at Completion (EAC) for the federally funded PATH Hub project is just over \$3.7 billion, which is unchanged from the cost model revision submitted at the end of the prior month. WTCC reported total PATH Hub expenditures through March 31, 2015 to be approximately \$3.10 billion, or 83.2 percent of the EAC. That total includes an additional \$18.8 million in PATH Hub expenditures over the total contained in the January 31, 2015 report.

Risk Management

To provide an improved project risk tool, the FTA, the PMOC, and WTCC completed the Project Execution Plan (PEP) in conjunction with the execution of the RRCA on September 18, 2012. *That document sets forth a series of project review points with specific project milestones that must be met within the FTA risk tolerance to trigger the release of defined amounts of risk retainage to the grantee. As each PEP milestone event is achieved, the PMOC updates the contingency drawdown curves to reflect the evaluation of the project's residual risks and the potential risk retainage release amounts associated with each of the remaining PEP milestones.* During January 2015, the PEP milestone defined as "Oculus Steel Erection Complete" was achieved, triggering the initiation of *another* partial release of risk retainage. Top risk drivers are mentioned within the body of the monitoring report, below.

Technical Capacity and Capability Review (TCCR)

The TCCR will be updated as necessary in conjunction with the update of the PEP.

Project Management Plan (PMP)

The grantee updated its PMP and submitted version 6.0 of the plan in early August 2014. The PMOC transmitted its *formal* spot report on the PMP update, *recommending its conditional approval, conditional upon modification of the sections that describe the reporting relationships of WTCC's Quality Assurance (QA) Unit, to the FTA on April 27, 2015. The FTA transmitted that spot report on to the grantee on April 28, 2015.*

Project Quality Assurance (QA)

During April 2015, WTCC QA completed *five* oversight audits that included reviewing the Construction Manager (CM) QA's field audits and performing its own field construction audits. The April 2015 audit total reflects the *five* WTCC QA audit reports that were issued and received at the time this monthly report was drafted. No quality issues were identified for corrective action.

Site Safety

The WTC PATH Hub project has established its own project safety performance goals for Total Case Incident Rate (TCIR) and Lost-Time Incident Rate (LTIR) of less than 5.0 and less than 2.0, respectively. In March 2015, the project had three recordable incidents and one lost-time incident, resulting in a TCIR of 4.10 and an LTIR of 1.37, based on 146,451.3 hours worked. Ongoing *April* safety initiatives are discussed in the project monitoring section of this report. The *April* 2015 safety data for the project was not fully available at the time this report was drafted but is expected to be available after mid-May 2015.

Issues/Problems/Suggestions

(b) (4)

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MONITORING REPORT

A. Project Description

The PATH Hub facility is an intermodal terminal serving the PATH electrified heavy rail transit system, which has a total of 13 PATH stations in New York and New Jersey. When completed, the PATH Hub will connect to 11 New York City Transit (NYCT) subway lines in Lower Manhattan. The PATH Hub will include a platform level, associated mezzanine and concourse levels called the PATH Hall, and a terminal building called the Transit Hall, or oculus, with north-south and east-west pedestrian connections to the NYCT subways, the World Financial Center, and WTC above-grade site development. It will be a permanent replacement of the original WTC PATH Terminal complex destroyed by the terrorist attack on September 11, 2001.

B. Project Status

Construction Agreement

The CA was signed on April 25, 2006. An RRCA was executed on September 18, 2012. The RRCA established an RCD of December 17, 2015, and commits \$2.872 billion in federal funding to the PATH Hub project. It also includes an FTA-allowable not-to-exceed amount of \$3.995 billion. The FTA approved WTCC's February 18, 2014 Recovery Plan 02, thereby establishing a revised RCD of December 31, 2016. Also included in the Recovery Plan was a change in WTCC's forecasted substantial completion date to December 31, 2015. WTCC submitted Recovery Plan 03 on April 15, 2015. *In late April, the PMOC recommended acceptance of Recovery Plan 03, which maintains the PATH Hub project's substantial completion date and RCD from Recovery Plan 02.*

Quarterly Progress Review Meeting

A QPRM for the first quarter of 2015 *has been scheduled* for May 27, 2015.

WTC Site Master Plan

WTCC's current site master plan is Master Plan Version 11, dated October 10, 2013.

Environmental Compliance

(Reported on separately by FTA's LMRO.)

Design Support During Construction

The designer continued providing post-award design support services for the PATH Hub construction, including responding to contractor Requests for Information (RFIs) and providing design certifications for completed elements of construction. The designer also continues to prepare and issue addenda that incorporate multiple, issued RFI responses in which the designer authorized changes to the base design documents that bring those documents into conformance with the RFI responses. The CM tracks contractor RFIs for each of the prime contractors working on the project. The CM, in concert with WTCC, then prioritizes the order in which

those RFIs are answered by the designer based on their relative importance in advancing project work.

Construction Status

Oculus Steel: Coating of the oculus steel became the central issue for the oculus steel contractor during April. Although most of the steel oculus structure is to be painted under a separate prime painting contract, the oculus steel contractor retains the responsibility for restoring the coating system on the oculus steel to its pre-erection condition, including all locations where temporary attachments were required in order to facilitate erection. Examples are locations where scaffolding was attached to the structural steel to allow contractor craft personnel to access the upper levels of the structure during setting and connecting of the oculus steel elements. The oculus steel contractor is required to touch up the coating system at those connection points. In addition, rafter elements were delivered to the site from the fabrication subcontractor's shop with a contractually required three-coat paint system already applied, unlike any of the other oculus steel elements, which required only a shop primer coat. The rafter element coating system must also be restored to a consistent three-coat system under the oculus steel contract. Work by the painting subcontractor advanced during April on all of the touch-up work, as was anticipated given the onset of warmer post-winter temperatures. Two related but separate issues with the appearance of the oculus steel structure also arose during April. One is the degradation of the overall appearance of the rafter finish surface in areas where no field attachments had been made. These areas appeared bright white at the time of erection but have taken on an orange-shading during the intervening months. The second issue is the visible creases in the abutment shell plates where there should be a smooth finish. Remedies for both of these appearance-related problems were under development at the end of the month, and it is likely that the oculus steel contractor will remain active at the site addressing both of these conditions for the next several months.

Oculus Glass: During April, the curtain wall contractor continued the setting of glass panels. By the end of the month, 361 glass panels of the total of 772 had been set in position—179 on the north side and 182 on the south side. The southeast quadrant now has all the glass panels set in place. During the week of April 19, the glass contractor had an additional crane (crawler crane) onsite and installed a weekly high of 109 glass panels. However, that crane was removed at the end of the week, because, according to the contractor, there was not enough available area to effectively use the additional crane. Boomlift activity continues to be a concern for the glass contractor. Painters, mechanical contractor personnel and the curtain wall contractor all maneuver for position around the oculus perimeter with the glass contractor using 17 boomlifts. Also during April, the contractor continued installing exterior, interior, and center support clips in the pockets of the oculus steel upper portals at the northeast and southwest corners of the oculus. The contractor also installed interior trim pieces before the glass panels were set. Brackets that will support the WT-3 panels (metal panels) continued to be welded to the transition arches at the roof level of the oculus at the northwest quadrant. To date, none of the exterior metal panels (WT-3 panels) themselves have been installed. Tube steel and smoke purge dampers will have to be installed at the 60 smoke purge fan openings before installation of the WT-3 metal panels. During April, discussions and a field meeting occurred with the commissioning agents to review the procedures and requirements for commissioning the building envelope. Fifteen percent of the envelope system must receive intrusion testing.

Oculus Skylight: During April, the oculus skylight contractor, which is the same contractor as the oculus curtain wall contractor, commenced the installation of guide rails at the oculus roof level. As of the end of the month, 65 of the 112 guide rails were set in position. These rails contain the drive motors and belts that will uniformly open and close the skylight sections. The electrical contractor has completed pulling power and control cables through the interior of the portal steel columns from the street level to the roof level of the oculus. The first skylight glass sections are currently forecast to be installed in June 2015.

Platform B: During April, platform construction activities continued at Platform B on an extended workday and workweek basis in an effort to achieve the placement of the platform into revenue service. Although this goal has proven to be elusive, it currently appears that the placement of Platform B into revenue service is on the immediate horizon. Many of the platform support systems and features underwent active testing and commissioning activities during the month, with participation by WTCC's controlled inspection entity and by PANYNJ's Quality Assurance Division (QAD). Systems tested included the two elevators and three escalators serving the platform, the fire alarm system at the platform and mezzanine levels, emergency lighting, and Automatic Transfer Switches (ATSs) and Uninterruptable Power Supplies (UPSs) that support the platform. In early May, the third rail at Tracks 2 and 3 is expected to be energized, followed by the running of test trains on both tracks. Also during April, emergency power was brought to the ATSs in the utility room at the north end of Platform B by bridging from the ATS at the north end of Platform A (which remains connected to the emergency generators at the NTA for emergency power supply). The fire alarm system testing mentioned above included speakers, strobes, smoke/heat/duct detectors, pull boxes, flow/tamper switches, and warden phones. At the end of the month, fire alarm system testing at Platform B was continuing as punch list items were generated and corrected. Testing of security cameras, speakers, electrical sign boxes, and the radio system also occurred during April, and the related punch list items were being actively addressed at month's end. Elsewhere on the platform and mezzanine levels some areas of the platform received temporary finishes such as drop ceilings, plywood floors, and plywood handrails. The final finishes are not expected to be available at the time of platform opening, but they will be installed in the future when they are delivered to the site.

Platform D: During April the contractor completed the construction of the Platform D concrete slab. Concrete walls were also constructed adjacent to the preserved remnants of the north twin-tower's footings, where glass platform sections will be installed to allow their viewing from the platform. Also during April, contractors worked in the chases beneath Platform D to install conduits, piping, and ductwork. Work on the new mezzanine level above Platform D remains constrained by the presence of temporary smoke purge equipment that protects existing temporary Platform C and its mezzanine.

East Bathtub Mechanical, Electrical, Plumbing (MEP), and Fire Protection Work: During April, work at the Emergency Generator Plant continued to receive priority attention. More information on this topic is provided in the Commissioning section of this report, below. Work on the Emergency Chiller Plant, which is located in the podium of Tower 3, also continued during April. This facility is designed to provide an alternate source of chilled water for cooling of vital PATH Hub project equipment rooms in the event of a loss of primary chilled water supply from the Central Chiller Plant. A current emphasis on making this facility available for service is

spurred by the lack of chilled water supply from the Central Chiller Plant to the east bathtub. The option to utilize the Emergency Chiller Plant as an interim workaround *until chilled water from the Central Chiller Plant can be provided remained under consideration during April.* Other east bathtub MEP and fire protection work undertaken during April included the initial setting of one of the 60 required smoke purge fans at the oculus roof by the mechanical contractor as a test fit-up for the subsequent installation of all of these fans. Pulling of power and control wiring to the oculus roof level through the interior of upper portal steel elements was also advanced during April, but proceeded slowly due to greater than expected resistance during the pulling operation. Installation of radiant heating piping was initiated in early April but was subsequently deferred when the main floor of the oculus was designated a controlled access zone in order to eliminate any hazard from contractors working overhead.

East Bathtub Finish Work: During April, at elevation 296 along the south side of the oculus walkway, the stone contractor *continued* to install stone floor from the south transept eastward. *The painting of the inside surface of oculus steel at street level and above approached completion during the month. In addition, the installation of metal ceiling panels at the north and south transepts commenced after most of the work in the above-ceiling areas was completed.*

Primary Distribution Center (PDC) at Tower 1: The status of the migration of PATH Hub project electric loads from the Temporary Primary Distribution Center (TPDC) in the NTA to the PDC in Tower 1 remained unchanged during April. Two transfers have been completed to date, one in August of 2014 and the second in December 2014, with four transfers remaining to be accomplished. *Continuation of electrical load migration activities is contingent upon the availability of the new Emergency Generator Plant. As designed, feeders from the PDC will connect to the spot networks. Backup power in the event of a loss of those feeders must be available from the new Emergency Generator Plant. At present, feeders from the TPDC are backed up by the temporary emergency generators at the NTA. Those feeders must remain in service with that backup source until the new Emergency Generator Plant is fully available. Until that occurs, the TPDC at the NTA will necessarily remain in service.*

Vertical Circulation: During April, work continued on the installation of escalators and elevators located in both the Transit Hall and the PATH Hall. Some of these units are required to support WTCC's plan to route pedestrian traffic through the east bathtub. Preliminary testing of escalator units at Platform B was completed during April, concluding with a 24-hour run test. More discussion regarding the Platform B vertical circulation elements is included above in the "Platform B" paragraph. The elevators that are needed to support the opening of the northern portion of the Early Access Pedestrian Corridor are elevators 12 and 23. Elevator 12 underwent final testing, with a punch list then being generated and corrective work *almost completed.* Elevator 23, which is located in Tower 2, is being managed by the PANYNJ Retail group. Emergency power is not yet available for the elevators and escalators *in the east bathtub, and it is required for commissioning.* Escalators required for the northern portion of the Early Access Pedestrian Corridor are escalators 23, 24, 47, and 48. These units have completed final testing, and *most punch list work has been completed. The 24-hour run test for these units is still pending. At the southern portion of the Early Access Pedestrian Corridor, escalators 33, 34, 43, 44, 45, and 46 have received some preliminary testing, but follow-up testing is still required. The overall status of elevator and escalator installation at the end of April was unchanged from the prior month and is restated in the table shown below. Also during April, the elevator contractor*

commenced the installation of Material Lift ML-2. The lift will be used to move materials in and out of the Central Fan Plant from elevation 250.

Item	In Service Last Month	In Service This Month	Onsite/Under Construction Last Month	Onsite/Under Construction This Month	Not Yet Onsite	Total
Escalators	8	8	34	34	5	47
Elevators	4	4	13	13	4	21

Fire Alarm System: During April, the fire alarm work necessary for the relocation of the fire command station from the temporary location at the NTA to the new permanent location at elevation 306 of the Transit Hall continued. Throughout the PATH Hub area, fire alarm conduits are being installed, and cables are being pulled to this new fire command station. Most of the required fire panels and associated equipment have been installed in this room, but several pieces of equipment have not yet been delivered.

Commissioning: During April, WTCC continued to focus available resources on commissioning activities associated with the emergency electrical distribution equipment that is downstream from the new Emergency Generator Plant, while also continuing to implement various remedies at the Emergency Generator Plant and fuel delivery system. These efforts are aimed at securing the dependable delivery of emergency power supply from the Emergency Generator Plant under simulated full load. Among the commissioning activities performed were testing of various ATSS and UPSs, particularly those associated with the plan to open Platform B to revenue service. Remedial work at the Emergency Generator Plant, which started during the first quarter of 2015, has advanced, and in April included the removal and disposal of the contaminated diesel fuel, cleaning of the three fuel storage tanks, cleaning of the fuel piping that runs between the tanks and the emergency generators, removal of one of the two day tanks, addition of three fuel booster pumps to improve the flow of fuel to the generators, and replacement of some of the piping with piping of larger diameter and different configuration. Unexpectedly, an additional problem arose with the double-walled fuel delivery system piping when a leak was discovered at the end of March 2015. During April, this leak was located in an inaccessible pipe chase that was subsequently opened to allow the start of the piping repair by the end of the month. The delivery of a control panel required for the operation of the new booster pumps is forecast for mid-May 2015.

Communications Systems: During April, the fiber optic core was completed, and the data communications network became available to support the device population that it will serve, including: the security Closed Circuit Television (CCTV) and access control systems, customer information systems including signage and public address systems and voice and data networks serving ticket vending, and voice systems, as well as other functions of the local and wide area networks. Also during April, public address speakers were installed on Platform B along with electronic signage.

Security Systems: The fiber optic network will provide the transmission backbone of the security system that will include security cameras. The table below identifies the status of the

CCTV cameras that will serve Platform B and the Early Access Pedestrian Corridor through the east bathtub *at their opening*:

Status Date	Cameras Installed, Wired, and Tested	Cameras Installed	Cameras In Progress	Cameras Not Started	Total
End of Feb.	50	31	46	53	180
End of Mar.	98	17	36	48	199
<i>End of April</i>	<i>153</i>	<i>13</i>	<i>17</i>	<i>22</i>	<i>205</i>

Central Fan Plant: During *April*, work at the fresh air intake shaft located in the Tower 3 podium advanced with the *installation of power-operated dampers at the top of the shaft*. However, the three large-capacity supply fans remain staged adjacent to the shaft and are not yet set in their final positions. Installation of the supply fans (SF-1, SF-2, and SF-3) *remains critical to bringing the Central Fan Plant online. At the east side of the Central Fan Plant, steamfitters relocated overhead chilled water lines to remove a conflict that was preventing the installation of Material Lift-1.*

Construction Logistics

The WTCC Office of Program Logistics (OPL) continued to facilitate construction progress and the sharing of access, egress, and work zones among all contractors onsite. Among the recent logistical changes are the start of truck screening operations at the Vehicle Security Center *in late 2014. closure of the glory hole above Track 2, which was used to facilitate the delivery and removal of materials associated with the work at Platform B, in March 2015, and opening of a wider sidewalk area for pedestrians at Liberty Street, directly to the south of the site perimeter.*

Interagency Coordination

OPL continued its coordination of site construction and logistics among the many project stakeholders, including contractors, construction managers, tenants, insurance firms, PATH operations, and the Port Authority Police Department. Monthly meetings continue to be held among the various entities. *During April, Metropolitan Transportation Authority Capital Construction held a construction kickoff meeting for construction of the next phase of the Cortlandt Street Station on the #1 subway line. That station is within the limits of the WTC site and will restore access to the #1 line at the WTC.*

Community Relations

OPL continued to distribute construction alerts, updates, and monthly construction progress newsletters to the community and stakeholders. During February, OPL published a delivery requirements memorandum detailing the procedure for deliveries to the WTC, including security requirements. Updates on the project are also listed at the website wtcprogress.com, and specific presentations are periodically made to Manhattan's Community Board #1.

C. Schedule

WTCC released IMS 78 in March 2015, with a data date of February 1, 2015. (b) (4)

WTCC is expected to release IMS 79 (with a data date of April 1, 2015) at the beginning of May 2015. (b) (4)

The following table summarizes the 90-day look-ahead for significant activities:

Significant Activity	Action by
Platform B Operational	WTCC
Central Fan Plant Online	WTCC
Migrate PATH Hub Electrical Loads from the TPDC at the NTA to the PDC at Tower 1	WTCC
Start of Oculus Skylight Panel Installation	WTCC
Demobilization of Oculus Steel Contractor	WTCC

The PMOC, independent of the grantee's schedule forecasts, has developed selected schedule tools to forecast upcoming critical schedule milestones. During March, the results of that effort were updated and identified the following forecast dates for three milestone events:

Schedule Tool Topic	PMOC Forecast
Finish Oculus Curtain Wall	9/24/2015
Finish Oculus Skylight	10/29/2015

D. Cost Data

The RRCA commits \$2.872 billion in federal funding to the PATH Hub project and includes an FTA-allowable not-to-exceed amount of \$3.995 billion.

On October 18, 2012, the Port Authority Board reauthorized the WTC PATH Hub project, at an estimated total project cost range of \$3.724 billion to \$3.995 billion. This reauthorization provided for an increase in the budget from approximately \$3.4 billion to slightly more than \$3.7 billion.

The \$3.7 billion budget reflects the updated engineer's estimates for all packages in the completed procurement plan, and includes the PATH Hub project's share of the common infrastructure projects, such as Retail, the Central Chiller Plant, the Common Electrical System, and site-wide operational support elements. WTCC continues to update the cost allocations that are assigned to the PATH Hub project.

The following table summarizes the latest available EAC (WTCC's forecast) and expenditures as of *March 31, 2015*:

Description	EAC (WTCC's Forecast) (in millions)	Expenditures (in millions)
Construction	\$2,804	\$2,425
Program Management and Design	703	674
Contingency	(b) (4)	(b) (4)
Total	(b) (4)	(b) (4)

During this period, WTCC submitted two monthly cost model revisions, recovering from a lag in reporting that commenced at the start of the current calendar year. Taken together, those revisions show that, based on the contract awards and estimates through March 31, 2015, WTCC's EAC for the federally funded PATH Hub project is just over \$3.7 billion, which is unchanged from the cost model revision submitted at the end of the prior month. WTCC reported total PATH Hub expenditures through March 31, 2015, to be approximately \$3.10 billion, or 83.2 percent of the EAC. That total includes an additional \$18.9 million in PATH Hub expenditures over the total contained in the January 31, 2015 report.

Over the last 12 months (including March 2015), the average project expenditure per month has been *approximately \$24 million*. That monthly expenditure is below the monthly burn rate of \$69.4 million that would be necessary to support the substantial completion date of December 2015.

E. Risk Management

To provide an improved project risk tool, the FTA, the PMOC, and WTCC completed the Project Execution Plan (PEP) in conjunction with the execution of the RRCA on September 18, 2012. That document sets forth a series of project review points with specific project milestones that must be met within the FTA risk tolerance to trigger the release of defined amounts of risk contingency funds to the grantee. As each PEP milestone event is achieved, the PMOC updates the contingency drawdown curves to reflect the evaluation of the project's residual risks and the potential risk retainage release amounts associated with each of the remaining PEP milestones. During January 2015, the PEP milestone defined as "Oculus Steel Erection Complete" was achieved, triggering the initiation of another partial release of risk retainage. Following that milestone event, a series of internal PEP meetings were held between the FTA and the PMOC to

develop additional PEP milestones and updated risk contingency drawdown curves. The outcome of those internal meetings is scheduled to be shared with the grantee during May 2015 and adopted for use going forward. Top risk drivers are discussed within the body of this report.. In late February, WTCC resubmitted its combined Risk and Contingency Management Plan, and it is under review.

As of April 2015, the PMOC considers the following issues among the top risks to the PATH Hub project:

- Placement into service of the Emergency Generator Plant.
- Coordination among the oculus curtain wall and skylight contractor and the other contractors working in the Transit Hall space.
- *Duration of the rock excavation for utility and ventilation tunnels under the new Platform C.*

F. Technical Capacity and Capability Review

The FTA uses the PEP to measure WTCC's technical capability and capacity.

Project Management Plan

The grantee updated its PMP and submitted version 6.0 of the plan in early August 2014. The PMOC transmitted its *formal* spot report on the PMP update, *recommending its approval, conditional upon the modification of the sections that describe the reporting relationships of WTCC's QA Unit*, to the FTA on April 27, 2015. The FTA transmitted its conditional approval, including that spot report, on to the grantee on April 28, 2015. An updated draft of WTCC's Operations Management Plan, a PMP sub-plan, was also submitted in August 2014, but it was found to lack essential elements. The grantee is preparing an updated version of the Operations Management Plan.

Project Organization

WTCC continues to update consultant and contractor staff assignments across project areas to address staffing needs as the project advances.

Project Quality Assurance

During April 2015, WTCC QA completed *five* oversight audits that included reviewing the CM QA's field audits and performing its own field construction audit. The April audit total reflects the *five* WTCC QA audit reports that were issued and received at the time this monthly report was drafted. No quality issues were identified for corrective action.

G. Site Safety

The WTC PATH Hub project has established its own safety performance goals for its TCIR and LTIR of less than 5.0 and less than 2.0, respectively. In March 2015, the project had *three* recordable incidents and *one* lost-time incident, resulting in a TCIR of 4.10 and an LTIR of 1.37, based on 146,451.3 hours worked. Additional ongoing safety initiatives during April included *completing* the installation of *suspended work* platforms that are *supported from* the Oculus roof

and will be used during the installation of the Oculus skylight. In addition, WTCC Safety issued Safety Bulletins and other safety information for use by its site safety managers that addressed: *Use of Aerial Lifts, HAZ COM training, and the Occupational Safety and Health Administration's (OSHA's) Recordkeeping Rule on Reporting Fatalities and Severe Injuries*. Site safety managers are encouraged to use this material at toolbox talks and to make copies available in the work shanties.

The *April* safety data for the project was not fully available at the time this report was drafted but is expected to be available after mid-*May* 2015.

H. Issues/Problems/Suggestion

(b) (4)

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End of report. Appendix follows.

APPENDIX A – LIST OF ACRONYMS

ATS	Automatic Transfer Switch
CA	Construction Agreement
CCTV	Closed Circuit Television
CM	Construction Manager
EAC	Estimate at Completion
FTA	Federal Transit Administration
IMS	Integrated Master Schedule
LMRO	Lower Manhattan Recovery Office
LTIR	Lost-Time Incident Rate
MEP	Mechanical, Electrical, and Plumbing
NTA	North Temporary Access
NYCT	New York City Transit
OPL	Office of Program Logistics
OSHA	Occupational Safety and Health Administration
PANYNJ	Port Authority of New York and New Jersey
PATH	Port Authority Trans-Hudson
PDC	Primary Distribution Center
PEP	Project Execution Plan
PMOC	Project Management Oversight Contractor
PMP	Project Management Plan
QA	Quality Assurance
QAD	Quality Assurance Division
QPRM	Quarterly Progress Review Meeting
RCD	Required Completion Date
RFI	Request for Information
RRCA	Revised and Restated Construction Agreement
TCCR	Technical Capacity and Capability Review
TCIR	Total Case Incident Rate
TPDC	Temporary Primary Distribution Center
UPS	Uninterruptable Power Supply
WTC	World Trade Center
WTCC	World Trade Center Construction