MONTHLY MONITORING REPORT

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

August 2015

PMOC Contract Number: DTFT60-14-D-00010
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TABLE OF CONTENTS

Cover: *Rock excavation for the utility and ventilation tunnels through the Platform C work area.*

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

Starting in early August, utilization of chilled water via the Central Fan Plant was initiated. This followed the late July initiation of chilled water delivery from the Central Chiller Plant via temporary piping. Operating in a construction start-up mode, the chilled water pumps and air-handling units at the Central Fan Plant were selectively operated to bring relief from the heat build-up that had been difficult to address with temporary spot coolers at various equipment rooms. Platform B and the mezzanine above Platform B were also included in the initial operation, receiving tempered air from two of the air-handling units in the Central Fan Plant.

Throughout August, better than expected progress was made with the rock excavation required for the utility tunnel and ventilation tunnel that will pass beneath Platform C and Tracks 4 and 5. That work was completed by the end of the month, allowing the follow-on construction of the new tunnels to commence in early September 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. A Revised and Restated Construction Agreement (RRCA) was executed on September 18, 2012. (b) (4) [redacted].

Quarterly Progress Review Meeting (QPRM)

No second quarter 2015 QPRM will be held. Any project issues will instead be addressed in the regularly held biweekly progress review meetings or in the periodically held executive meetings. The next QPRM will address the third quarter of 2015 and is scheduled to be held during November 2015.

Design Activity

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

Procurement Activity

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.

Construction Activity

During August, WTCC implemented changes in the approach to critical portions of the project construction by deferring the plan to open an Early Access Pedestrian Corridor through the east bathtub and also by modifying its plan to place only a portion of the new Emergency Generator Plant into service, instead opting to work towards placing the entire Emergency Generator Plant into service in the upcoming few months.

At the end of August, rock excavation for the utility tunnel and the adjacent ventilation tunnel through the Platform C work area was completed, thereby allowing the construction of the of the two tunnels to begin in early September.

Another August development was the construction start-up of some of the Central Fan Plant equipment following the delivery in late July of chilled water to that facility from the Central Chiller Plant via temporary piping. This start-up of Central Fan Plant equipment in turn allowed some downstream start-ups of permanent cooling equipment at spaces where temporary spot coolers had been only marginally successful in preventing heat build-up.

Schedule

On September 1, 2015, WTCC released Integrated Master Schedule (IMS) *81* (with a data date *of August* 1, 2015), [redacted] WTCC achieved the "Platform B Operational" milestone event on May 7, 2015, which represent*ed* an approximate five-month delay from WTCC's original projection for achieving that milestone. [redacted] *In August* 2015, WTCC *also* submitted Recovery Plan *04,* which addressed *project schedule extensions for the milestones "Vertical Circulation Elements Operational", "Chiller Plant Utility Tunnel Complete", "Transit Hall Substantially Complete (Fit-Out)" and "Platform C & D Substantially Complete." The most significant milestone revision—to the milestone "Vertical Circulation Elements Operational"—was made as a result of the required coordination with adjacent retail space and office tower development.*

Cost Data

WTCC submitted its monthly cost model revision on *August 31, 2015*. (b) (4) [redacted]

Risk Management

To provide an improved project risk tool, the FTA, the Project Management Oversight Contractor (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 in order 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 May 2015, the PEP milestone defined as "Platform B Operational" was achieved, triggering the initiation of another partial release of risk retainage. (b) (4) [redacted]. The PMOC formally transmitted Spot Report 2146R to the FTA with that recommendation on July 22, 2015. Top risk drivers are mentioned within the body of the monitoring report, below. *The PMOC is currently assessing the remaining risk to the project cost and schedule, and is developing potential additional PEP milestones, focusing on the various back-of-house support elements that are essential to the fulfillment of the RRCA PATH Hub project scope.*

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)

An updated draft of WTCC's Operations Management Plan, a PMP sub-plan, was submitted in August 2014, but it was found to lack essential elements. The grantee submitted an updated version of the Operations Management Plan in mid-July 2015. The PMOC is currently reviewing that document and compiling comments.

Project Quality Assurance

During *August* 2015, WTCC Quality Assurance (QA) completed *five* oversight audits that included reviewing the Construction Manager (CM) QA's field audits and performing its own field construction audits. The *August* 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 *July* 2015, the project had *four* recordable incidents and *three* lost-time incidents, resulting in a monthly TCIR of *6.56* and an LTIR of *4.92*, based on 121,*934*.0 hours worked, *both of which rates exceeded the established goals*. Safety initiatives that took place in *August* are discussed in the project monitoring section of this report. The *August* 2015 safety data for the project was not fully available when this report was drafted but is expected to be available after mid-*September* 2015.

Issues/Problems/Suggestions

During August, WTCC started to distribute chilled water downstream from the Central Fan Plant on a construction start-up basis to alleviate heat build-up conditions that had developed at a number of the equipment rooms where temporary spot coolers had been insufficient to maintain the required temperatures. This step was taken as a matter of expediency before the equipment involved had been completed, tested, and commissioned.

Also during August, WTCC deferred its plan to route pedestrians through the east bathtub via the Early Access Pedestrian Corridor, and commenced the removal of segments of that route that had been erected and fitted out with temporary treatments. Similarly, the plan to place in service only a portion of the new Emergency Generator Plan was replaced with a plan to work towards placing the entire emergency generator facility into service in the upcoming few months.

Recently, the investment of resources into temporary plans has proven to provide only limited return to the PATH Hub project. While retrospective review of prior WTCC decisions is done with the benefit of information not available when the decisions were initially made, it nonetheless appears worthwhile for the project to more fully weigh the costs in time and money when diverting resources from permanent work to temporary work.

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. (b) (4) 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. On June 4, 2015, the FTA approved Recovery Plan 03. Recovery Plan 03 identifies new target dates for two of the RRCA milestones, extending the date for "Transit Hall Superstructure Complete (Glazing)" from January 13, 2015, to August 31, 2015, and extending the date for "Mezzanine Structural Steel at Platform C Substantially Complete" from June 30, 2015, to October 31, 2015. *During August, WTCC submitted Recovery Plan 04,* (b) (4) *Recovery Plan 04 remained under review by the PMOC at the end of the month, and an associated spot report is expected to be released in early September.*

Quarterly Progress Review Meeting

A second quarter 2015 QPRM *was not* held. Project issues *are* instead being addressed *at* the regularly held biweekly progress review meetings or at the periodically held executive meetings. The next QPRM will address the third quarter of 2015 and is scheduled to be held during November 2015.

WTC Site Master Plan

WTCC's latest site master plan is Master Plan Version 11, dated October 10, 2013, as was reconfirmed with WTCC during June 2015.

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 should be answered by the designer based on their relative importance in advancing project work.

Construction Status

Oculus Steel: *August activity by the oculus steel contractor imitated the activity that occurred in July; the repainting of the oculus steel rafters and the repair of the steel surfaces on all of the oculus steel elements were again the primary focus, although both of these activities continued to be encumbered by the work of other trades in the oculus curtain wall and roof-level areas. Additional encumbrances were encountered on those days where painting activities could not be advanced due to the forecast of rain and days where dew point readings were within 10 degrees of the air temperature or humidity readings were over 90%. By the end of the month, rafter repainting on the north side of the oculus reached approximately 70 percent completion, and oculus repainting at the south side of the oculus reached approximately 85 percent completion. WTCC is currently projecting that completion of the remaining work will occur before the coming onset of cold weather.*

Oculus Curtain Wall: During *August*, the curtain wall contractor continue*d to do finish work on* the glass panel portion of the curtain wall system *and started the installation of the metal portion, which is located near the roof level of the oculus. Installation of insulation, gaskets, metal trim pieces, and caulking for the glass portion advanced during the month in the work areas identified by the CM as available for contractor access. Also during August, installation of the metal panel portion of the curtain wall system started, with a total of 25 vertical pieces erected by month's end, but only at those bays of the oculus structure that are not* being *equipped with smoke purge fans. The 60 bays that are being equipped with smoke purge fans require several predecessor activities to be completed before the associated metal panels can be erected, including installation of liner steel in the fan openings, and tube support steel, gaskets, and power-operated dampers on the exterior face of the fan openings. For the horizontal portions of the metal panels, waterproofing installation on the oculus arch steel elements must be completed before those elements can be installed, adding to the mix of required predecessor activities. WTCC is projecting that most of these activities will be underway during September as each trade is given opportunities to work in each of the quadrants of the oculus.* To date, the *required* water and air intrusion testing *on the oculus curtain wall system* has not commenced, *but it is forecast to begin before the end of September.*

Oculus Skylight: During *August*, the oculus skylight contractor, which is the same contractor as the oculus curtain wall contractor, *concentrated on adjusting and operating the skylight system.* The contractor's sub consultant that is charged with synchronizing the skylight opening and closing operations *is scheduled to return to the site in early September 2015 to resume those activities.* At the four skylight motor control centers (MCCs), all of the required cables have been pulled and terminated. *The installation of skylight centerline gaskets and cap installation will start after the synchronization of the skylight module movements has been completed.*

Platforms C and D: During August, the *demolition of the former Platform C mezzanine slab and support steel was completed.* The contractor *also* set columns *FD03 and FD04* in place and started the process of welding the column components. *Footings for hammerhead columns FC01 and FC04 were also constructed during the month.* Three columns *are* yet to be erected. *South of the utility tunnel, all of the truss girders have been set, and work on their bolted and welded connections was continuing at the end of the month.* These truss girders will support the precast concrete smoke purge ducts that *will* also serve as the mezzanine floor slabs. *Also during August, rock excavation for the utility tunnel and adjacent ventilation tunnel was completed, earlier than expected. At the north end of Platform C, rock excavation for the SW-2 shear wall footing commenced. Another advancement made during August was the removal of the "up-and-over" temporary chilled water piping and the placement into service of the replacement temporary chilled water lines, which are set in a trench that runs just below the future track level. Near the end of the month, the contractor lowered a large-capacity crawler crane into the work area that will be used to set the remaining structural steel and the precast concrete smoke purge ducts in the coming several weeks.*

East Bathtub Mechanical, Electrical, Plumbing (MEP), and Fire Protection Work: During *August, the plumbing contractor began installing a metal box trench around the outside perimeter of the oculus, just below the grade level of the future plaza. The plumber will ultimately tie the oculus roof drains into this box trench. Also during August, the mechanical contractor set the last 5 of the 60 smoke purge fans in the north arch of the oculus and continued* welding the smoke purge fans *into position.* The smoke purge fan *interior and exterior* liner *material was also received on-site during August.* The controls contractor continued *to pull wires to the smoke fan Motor Control Center cabinets located in each quadrant of the oculus.* The electrical contractor *continued to install the bench lighting* at street level in each bay of the oculus structure. *At elevation 274 of the oculus, the mechanical contractor continued to install the radiant floor heating system, working primarily in the southern half of the floor, and this work was closely followed by work by the stone installation contractor. Also in this area, the controls contractor installed in-floor control boxes and wiring for the radiant heating system. The controls contractor also completed the work associated with air conditioning (AC) units28 and 28A, conduits, and wire and point-to-point testing for AC units 22 and 22A, 26 and 26A, and 32 and 32A in August. Work on AC units 16 and 16A and AC units 21 and 21A, which serve communications rooms PL-007 and TH-015, continued during the month. At the Emergency Generator Plant, the mechanical contractor started flushing the repaired diesel fuel delivery piping during August, and that activity is expected to continue into early September. Also during August, WTCC eliminated its plan to put only a portion of the Emergency Generator Plant on-line and is instead planning to place the entire facility on-line once the remaining work has been completed.*

East Bathtub Finish Work: During *August, the stone contractor began installing stone floors at the south side of the oculus floor, completing approximately 75 percent of the southeast quadrant during the month. Along the south oculus walkway, at elevation 296, carpenters began the installation of metal ceiling panels during the month. In that same area, the ornamental metals contractor began to install the glass panel rail system at the edge of the floor slab. The stone contractor installed stone treads and risers on the staircases adjacent to the escalators in the south transept.*

Primary Distribution Center (PDC) at Tower 1: Migration of PATH Hub project electric loads from the Temporary Primary Distribution Center (TPDC) in the North Temporary Access (NTA) to the PDC in Tower 1 advanced during *early August*, with the *fourth* of six sequential transfers successfully accomplished. *WTCC reported that this fourth transfer made the PATH Hub project independent of the normal power feeds from the TPDC at the NTA. All normal power feeds for the project are now originating from the PDC at Tower 1. However, the project remains dependent on the NTA for emergency power from the two temporary emergency diesel generators that are housed there and EDS-NTA, which is located within the NTA facility. That temporary emergency power supply will be required until all of the permanent emergency generators at Tower 3 are in service, at which time the migration from EDS-NTA to the permanent EDSs that will support the Hub project emergency power needs will occur*.

Vertical Circulation: During August, *PANYNJ accepted all of the elevators and escalators required for the Early Access Pedestrian Corridor through the east bathtub. Later in the month, the plan for the Early Access Pedestrian Corridor was deferred, and these elevator and escalator units were treated with temporary protection that will remain until they are used for pedestrian traffic. Since these units are not in public service, they are not listed as in-service in the table below. Work continues on the remaining contract elevators and escalators. In the east bathtub, elevators 16 and 17 remain behind schedule due to field conditions, and elevators 14 and 18, also known as the scenic elevators, remain behind schedule because of late design changes. In the west bathtub, the construction of Platforms C and D must advance further before elevator and escalator installations can begin. The material lift at the west side of the Central Fan Plant (ML-2) was completed during July but, as of the end of August, remained untested.* The forecast for the installation of the material lift at the east side of the Central Fan Plant *was updated, and this installation is now estimated* to begin in *September* 2015. The status of elevators and escalators through the end of *August 2015* is summarized in the following table:

Item	In Service Last Month	In Service This Month	Onsite/Under Construction Last Month	Onsite/Under Construction This Month	Not Yet Onsite	Total
Escalators	11	11	31	31	5	47
Elevators	6	6	11	11	4	21

Fire Alarm System: During *August*, work continued at the new PATH Hub project *Fire Command Station*, which is being built in the back-of-house space at elevation 306 of the Transit Hall. At street level, the remote street-level fire command station console was set into the weatherproof enclosure cabinet, and wire terminations at that console *were ongoing*. *With the*

Early Access Pedestrian Corridor plan deferred, WTCC intends to have the new fire command station in service when the public first passes through the oculus.

Commissioning: *During August, initial testing of the smoke purge fans at the roof level of the oculus commenced, with about half of the total of 60 fans operated by the end of the month. Preparations were also under way for the testing of the oculus curtain wall and the oculus skylight with the development of Pre-Functional Checklists and Functional Performance Tests for both elements. The commissioning entity develops both of these documents, and the contractor completes pertinent portions of those documents before they are used to guide the testing and commissioning process at the appropriate juncture. Also in August, WTCC identified the priorities for the CM and the Commissioning Entity moving forward by establishing the pedestrian corridors leading to the new Vesey Street and Liberty Street Hub entrances as the first priority, followed by the full Emergency Generator Plant, with the remaining elevators and escalators in the east bathtub as the third priority.*

Communications Systems: During *August, the availability of chilled water to the Central Fan Plant allowed some AC units at equipment rooms to be activated. Communications rooms MZ-194, MZ-195, and PL-077 started receiving air conditioning from these AC units. However, other communications rooms continue to be cooled with temporary spot coolers. Network and signage testing is continuing, and there are some network integration issues. The network is, however, presently operating in a reliable manner. The back-of-house telephones are being installed, but at a slow pace. The Public Address System Factory Acceptance Test remains unapproved at present.* The Supervisory Control and Data Acquisition (SCADA) system factory acceptance testing *was approved during August; this testing will occur off-site and will be witnessed by a third party. Fiber optic installation at the North Projection has been completed. System integration of the Lenel and Firecom has not been resolved. Room TH-015 is critical to the deployment of the radio system head end. Patch chord installations have been completed in Room TH-015, and a plan is being developed to bring radio service to this room from its current temporary location in room MZ-194.*

Central Fan Plant: *During August, the mechanical contractor set into position two of the three fresh air supply fans at the top of the fresh air shaft located in the Tower 3 podium, and the third fan is expected to be set during the first week of September. However,* the fresh air shaft that will feed fresh air to the Central Fan Plant still contains a work scaffold system and openings in the shaft walls at locations where the emergency diesel fuel riser piping has been undergoing repair and retesting. *Restoration of the wall openings and removal of the work scaffold are both necessary before the fresh air shaft can begin to handle outside air to the Central Fan Plant. During August, five air-handling units at the Central Fan Plant were placed in construction start-up mode and began supplying tempered air to Platform B, as well as to the mezzanine over Platforms A and B. Contractor personnel are operating air-handling units 11, 8A, 1, 2, and 5B until the work at the Central Fan Plant progresses, and the testing and commissioning of those units takes place. Also during August, several field meetings were convened to resolve the following issues: the shroud for the damper bank air flow monitors and the end switches for the automatic louver dampers. Only the issue related to the end switches was resolved.*

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. During *August, OPL was engaged in providing access to the Liberty Street pedestrian bridge contractor for work that it needed to perform at the eastern bridge abutment and landing, since that work required reconfiguration of the access control fencing at the Vehicle Security Center. OPL was also actively engaged in the process of setting out the restrictions regarding site access and site activity during the upcoming papal visit to the site in late September. OPL has the lead role in ensuring appropriate distribution of that information to all affected parties.*

Interagency Coordination

Also during August, OPL continued to coordinate site construction and logistics among the many project stakeholders, including contractors, construction managers, tenants, insurance firms, PATH operations, and the Port Authority Police Department (PAPD). Monthly meetings continue to be held among the various entities. *August* activity included coordination with New York State Department of Transportation (NYSDOT) *and the Battery Park City Authority (BPCA) with regard to the remaining work involved in completing the eastern portion of the Liberty Street pedestrian bridge, which lands on the roof of the Vehicle Security Center and provides direct access to the adjacent Liberty Street Park.*

Community Relations

OPL continued to distribute construction alerts, updates, and monthly construction progress newsletters to the community and stakeholders. Updates on the project are listed at the website wtcprogress.com, and specific presentations are periodically made to Manhattan's Community Board #1.

C. Schedule

(b) (4) [redacted]

WTCC achieved the "Platform B Operational" milestone event on May 7, 2015, which represent*ed* an approximate five-month delay from WTCC's original projection for achieving that milestone. *The* trend of delays in platform construction continued at Platforms C and D, *and is reflected in IMS #81, which shows an additional two-month delay for this construction, compared to the projection in the previous IMS. In August* 2015, WTCC *also* submitted Recovery Plan *04,* which addressed *project schedule extensions for the milestones "Vertical Circulation Elements Operational", "Chiller Plant Utility Tunnel Complete", "Transit Hall Substantially Complete (Fit-Out)" and "Platform C & D Substantially Complete." The most significant milestone revision—to the milestone "Vertical Circulation Elements Operational"—was made as a result of the required coordination with adjacent retail space and office tower development.*

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

Significant Activity	Action by
Utility Tunnel Complete at Platform C	WTCC
Mezzanine Structural Steel Complete at Platform C	*WTCC*
Central Fan Plant Online	WTCC
Migrate PATH Hub Electrical Loads from the TPDC at the NTA to the PDC at Tower 1	WTCC
Demobilization of Oculus Steel Contractor	WTCC
Start of Oculus Skylight Commissioning and Testing	WTCC

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

Schedule Tool Topic	PMOC Forecast
(b) (4)	

D. Cost Data

(b) (4)

(b) (4)

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 *July 31, 2015*:

Description	EAC (WTCC's Forecast) (in millions)	Expenditures (in millions)
Construction	*$2,807*	*$2,467*
Program Management and Design	*707*	*690*
[redacted]	(b) (4) [redacted]	[redacted]
[redacted]	[redacted]	[redacted]

WTCC submitted its monthly cost model revision on *August 31, 2015*. It shows that WTCC's (b) (4) [redacted] which is unchanged from the cost model revision submitted at the end of the prior month. (b) (4) [redacted].

Over the last 12 months (*August 2014 to July 2015*), the average project expenditure per month has been approximately $22 million. (b) (4) [redacted]

E. Risk Management

To provide an improved project risk tool, the FTA, the PMOC, and WTCC completed the 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 in order 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 May 2015, the PEP milestone defined as "Platform B Operational" was achieved, triggering the initiation of another partial release of risk retainage. (b) (4) [redacted] The PMOC formally transmitted Spot Report 2146R to the FTA with that recommendation on July 22, 2015. *The PMOC is currently assessing the remaining risk to the project cost and schedule, and is developing potential additional PEP milestones, focusing on the various back-of-house support elements that are essential to the fulfillment of the RRCA Hub project scope.*

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

- Coordination among the oculus curtain wall and skylight contractor and the other contractors working at the Transit Hall space.

- *Completion of the Fuel Oil Delivery system at the Emergency Generator Plant.*
- Delivery of fresh air to the Central Fan Plant by the supply fans located in the Tower 3 podium.
- Remaining work to be performed by the controls contractor.

F. Technical Capacity and Capability Review

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

Project Management Plan

An updated draft of WTCC's Operations Management Plan, a PMP sub-plan, was submitted in August 2014, but it was found to lack essential elements. The grantee submitted an updated version of the Operations Management Plan in mid-July 2015. The PMOC is currently reviewing that document and compiling comments.

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 *August* 2015, WTCC QA completed *five* oversight audits that included reviewing the CM QA's field audits and performing its own field construction audit. The *August* 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 *July* 2015, the project had *four* recordable incidents and *three* lost-time incidents, resulting in a monthly TCIR of *6.56* and an LTIR of*4.92*, based on 121,*934*.0 hours worked, *both of which rates exceeded the established goals*. As part of its ongoing safety initiatives, WTCC Safety holds weekly safety committee meetings with all site contractor safety managers. During *August*, WTCC Safety issued several Safety Bulletins and other safety information for use by its site safety managers, including information that addressed the topic of Heat Stress *and* an Occupational Safety and Health Administration (OSHA) Fact Sheet on Aerial Lifts. Site safety managers were encouraged to use these materials at toolbox talks and to make copies available in their work shanties. *Two safety incidents that occurred on-site during the week of* July *27*, 2015, and *that resulted in lost-time incidents, were discussed at the weekly safety committee meeting on August 5, 2015, with the intention that all of the contractors could use this information as "lessons learned*."

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

H. Issues/Problems/Suggestion

During August, WTCC started to distribute chilled water downstream from the Central Fan Plant on a construction start-up basis to alleviate heat build-up conditions that had developed at a number of the equipment rooms where temporary spot coolers had been insufficient to maintain the required temperatures. This step was taken as a matter of expediency before the equipment involved had been completed, tested, and commissioned.

Also during August, WTCC deferred its plan to route pedestrians through the east bathtub via the Early Access Pedestrian Corridor, and commenced the removal of segments of that route that had been erected and fitted out with temporary treatments. Similarly, the plan to place in service only a portion of the new Emergency Generator Plan was replaced with a plan to work towards placing the entire emergency generator facility into service in the upcoming few months.

Recently, the investment of resources into temporary plans has proven to provide only limited return to the PATH Hub project. While retrospective review of prior WTCC decisions is done with the benefit of information not available when the decisions were initially made, it nonetheless appears worthwhile for the project to more fully weigh the costs in time and money when diverting resources from permanent work to temporary work.

End of report. Appendices follow.

APPENDIX A – LIST OF ACRONYMS

AC	Air Conditioning
BPCA	Battery Park City Authority
CA	Construction Agreement
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
MCC	motor control center
MEP	Mechanical, Electrical, and Plumbing
NTA	North Temporary Access
NYCT	New York City Transit
NYSDOT	New York State Department of Transportation
OPL	Office of Program Logistics
OSHA	Occupational Safety and Health Administration
PANYNJ	Port Authority of New York and New Jersey
PAPD	Port Authority Police Department
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
QPRM	Quarterly Progress Review Meeting
RCD	Required Completion Date
RFI	Request for Information
RRCA	Revised and Restated Construction Agreement
SCADA	Supervisory Control and Data Acquisition
TCCR	Technical Capacity and Capability Review
TCIR	Total Case Incident Rate
TPDC	Temporary Primary Distribution Center
WTC	World Trade Center
WTCC	World Trade Center Construction

APPENDIX B – LESSONS LEARNED

LL#	Date	Phase	Category	Subject	Lessons Learned
1	2Q2015	Construction	Safety	Controlled Access Zone	Work at the oculus roof level and from the hanging scaffold at the roof level caused near-miss incidents in the work areas below. A controlled access zone was established to protect workers from entering areas where overhead work was being performed.