

MONTHLY MONITORING REPORT

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

December 2014



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Cover: View of the new fire command station being built in the back-of-house space at elevation 306' in the northeast corner of the Transit Hall.

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. DTFT60-09-D-00008, Task Order No. 002. 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 December, the oculus steel contractor demobilized the second of its two tower cranes and most of the heavy-frame work platforms that had surrounded both the east and the west cranes. Oculus steel welding activities also advanced and focused on the few remaining rafter base and splice welds located at the far ends of the oculus structure, along with the replacement of two purlins, also at the far ends of the structure.

In the west bathtub, Platform B work advanced as multiple trades worked at the platform and mezzanine levels as well as in the back-of-house spaces necessary to support the opening of the platform to revenue service. Setting of the new running rails at Track 2 commenced, and the electrical and fire alarm subcontractors deployed extended workdays for work in the equipment rooms behind the north end of the platform. Both rooms are critical to opening the platform to revenue service. Preparations for the placement of the final concrete sections at the north end of the platform were completed, and the placement of the last concrete slab section is expected in early January 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. 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 processed in early 2014 and established an updated RCD of December 31, 2016.

Quarterly Progress Review Meeting (QPRM)

A QPRM for the fourth quarter of 2014 is expected to be held during February, 2015.

Design Activity

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

Procurement Activity

World Trade Center Construction (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 December 2014, the project continued its pursuit of the placement into service of the emergency generator plant located in the podium of Tower 3, but was again unable to secure that objective because the emergency diesel fuel delivery system was not able to maintain sufficient flow to all eight generators during a full load test. The designer identified further modifications to that system during the month (b) (4)

At the Transit Hall, the oculus steel contractor turned over most of the oculus structure to the follow-on contractors, and demobilized its western tower crane and most of the associated work platform during the month. However, a number of welding activities were still ongoing at the end of the month with welder access provided using boomlifts, principally at the far eastern and western ends of the structure. The planned straightening of a small group of the longest rafter elements has not yet started, and it is pending approval of the contractor's proposed procedure for that work. Other continuing oculus steel work includes punchlist work related to the completed welding, and welding needed to attach shell plates at both the east and west oculus abutments. Two replacement purlins are also being welded into position.

Construction of the new Platform B advanced during December. The installation of the two elevators and three escalators continued with elevator enclosures placed and escalator support systems installed. The installation of fire alarm equipment and electrical panels at the rooms at the north end of Platform B continued on a directed overtime basis, during December. Conduit runs to the two rooms were completed during the month, and some pulling of conductor cables was initiated. The contractor completed the decking and rebar installation for the last section of slab at the north end of the platform during the month, and concrete placement at this location is expected to occur during the first week of January 2015. Ceiling panel installation also progressed in December, and the contractor commenced the installation of new running rail at Track 2.

Also during December, under WTCC's re-structured plan to implement an early access pedestrian corridor through the east bathtub, finish work in the Tower 2 lobby advanced. Stone floor and stair work from the lobby level to the first landing approached completion, and wall panel installation advanced. Temporary electric heaters were also installed during the month at the new mezzanine level fare collection area below the 1 Line box, in support of this plan.

Schedule

In November 2014, WTCC released Integrated Master Schedule (IMS) 76 (b) (4)

(b) (4)

[REDACTED]

Cost Data

WTCC submitted its monthly cost model revision on *December 30, 2014*. It shows that, based on the contract awards and estimates through *November 30, 2014*, 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 *November 30, 2014* to be over *\$3.02 billion, or approximately 81.2 percent* of the EAC. That total of PATH Hub expenditures includes an additional *\$22.2 million* in PATH Hub expenditures over the total contained in the *November 30, 2014* 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. As information on the impacts of Hurricane Sandy became available, the PMOC conducted PEP workshops in June 2013 to discuss and quantify the impacts to cost and schedule from the storm. The PMOC then reconciled the results of the workshops with WTCC, and the outcome of this effort was used to update the PEP. The PEP was finalized in February 2014 and recognized WTCC's eligibility for receiving partial release of risk retainage by achieving beneficial use of Platform A on February 25, 2014. In July of 2014, the PMOC initiated a review of the 2013 PEP update in consideration of various project developments that had arisen during the intervening period. In August of 2014, the PMOC updated the contingency drawdown curve 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 October 2014, the PEP exhibits were finalized, and a spot report reflecting those updates was issued through the FTA to WTCC. The next potential release of risk retainage will be at the completion of oculus steel erection. 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.

Project Quality Assurance (QA)

During *December* 2014, 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 *December* 2014 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 *November* 2014, the project recorded *two* recordable incidents and two lost-time incidents, resulting in a TCIR of 2.61 and an LTIR of 2.61, based on 153,510 hours worked. In comparison, the *October* 2014 incident totals were *five* recordable incidents and two lost-time incidents, resulting in a TCIR of 5.90 and an LTIR of 2.36, based on 169,530 hours worked. In reviewing the *November* safety performance, WTCC Safety continued its active role in managing worker safety, evaluating the causes of each incident, addressing actions to prevent recurrence and developing lessons learned. *December safety initiatives are discussed in the project monitoring section of this report.* The *December* 2014 safety data for the project was not fully available at the time this report was drafted but is expected to be available after mid-*January* 2015.

Issues/Problems/Suggestions

The widespread regional damage caused by Hurricane Sandy in late October of 2012 caused a delay to the forecast completion of the PATH Hub project. (b) (4)

Coordination of construction trades and multiple prime contractors at the Transit Hall has been challenging during the double-shift operation used for oculus steel erection *over the last several months.* (b) (4)

(b) (4)

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.

Quarterly Progress Review Meeting

A QPRM for the fourth quarter of 2014 is expected to be held during February, 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. Contractor RFIs are tracked by the CM 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: During *December*, the contractor *continued to relinquish areas of the oculus structure to the oculus curtain wall contractor allowing that contractor to increase its rate of installing attachments that will ultimately support the glass and metal panel curtain wall system. Also during December, the west tower crane was demobilized although some residual portions of the heavy-framed work platforms that surrounded both of the contractor's tower cranes remained in place at the end of the month. Welding activities were reduced during the month but remained active predominantly at the eastern and western ends of the structure where rafter base welds, two purlin replacements, rafter splice welds, and welds at the seams between adjacent abutment shell plates continued. Punchlist work related to completed oculus structure welds also continued during December. Remaining work also includes the heat-straightening of a small group of the longest rafters and the adjustment of a small group of rafter tips to improve their visual alignment.*

Oculus Glass: During *December*, the oculus glass contractor *continued to install exterior, interior, and center support clips onto the oculus steel upper portals. The contractor used 17 boom lifts in an effort to complete the welding of clips before the onset of colder weather. Installation of the panel angle irons that will support the curtain wall metal panels commenced during December. These supports are being attached to various transition arches at the oculus roof level. Also during December, several field conditions related to the glass component fit to the upper portal steel continued to be under review with the designer for possible solutions.*

Oculus Skylight: The oculus skylight contractor, which is the same contractor as the oculus glass contractor, *neared completion of the assembly of finished skylight sections at a facility located in Chester, Virginia, during December. All of the 40 steel frames required for the skylight panels were previously completed and the remainder of the required 224 glass cassettes were fabricated during the month. The skylight sections will be delivered to the site when installation is ready to begin. Access for skylight installation will be provided by the contractor's planned installation of a hanging scaffold, which will be located just below the oculus roof line and will span from the eastern end of the oculus to the western end, a total length of 305 feet. Installation of turnbuckles that will connect the scaffold to the oculus steel began during December. Stair towers to access the hanging scaffold are planned at both ends. Most of the components for this scaffold are on site and are being temporarily stored on the oculus main floor level at elevation 274'. Installation of the hanging scaffold is awaiting the mobilization and activation of the skylight contractor's tower crane, which is scheduled to be mobilized and assembled during January 2015.*

Platform B: During *December*, platform construction activities continued at Platform B. The *enclosures for elevators 5 and 6 were constructed and the cab rails were installed. The hydraulic lines were also connected to the car pistons during the month. Also during December, all of the escalator balusters were installed and escalator support systems, such as sprinkler pipes and electrical conduits, were installed to the escalator pits. Temporary electric service was also installed to provide interim power through the testing phase. Elsewhere on the platform, the contractor continued to install conduits for power, fire alarms and communications along the platform to the newly-constructed rooms at the north end. Fire alarm panels were installed and cables pulled through the conduits to these panels. Electrical panels were also installed and some conduits were connected to these panels. Also during the month, the electrical subcontractor installed light fixtures along the smoke baffle section of the platform ceiling.*

Cable trays for signal cable were set along the east side of Track 3. The last section of platform at the north end was prepared for concrete placement, which is expected to occur in early January 2015. The mechanical contractor continued to install piping for heating, cooling, and drainage in the under-platform area during December, and stainless steel supply piping for the track mist system was installed along Tracks 2 and 3. The contractor also commenced setting running rails and the associated direct fixation pads for new Track 2. Metal ductwork installation below the platform and up onto the platform columns neared completion. Fire smoke dampers still remain to be installed throughout the Platform B area. Twelve Metrocard Vending Machines (MVMs) are on site and ready to be installed outside and to the east of the fare control line at the mezzanine level.

Platform D: At the Platform D work area, the contractor completed the under-platform utility tunnel and air plenum structures during December. Working from south to north the contractor also continued constructing the Platform "D" concrete base slab and support walls. About 60 percent of this work was completed by the end of the month. At the north end of the Platform D area, the contractor also constructed a portion of the concrete base slab and support walls during December.

East Bathtub Mechanical, Electrical, Plumbing, and Fire Protection Work: During December, the mechanical contractor delivered a portion of the soundtraps that will be installed in the fresh air intake shaft in the podium of Tower 3, which supplies outside air to the PATH Hub's Central Fan Plant. Also during December, testing of the emergency fuel delivery system at the emergency generator plant continued following modifications intended to remedy fuel-starving issues at two of the generator units when tested under full load. Those tests revealed that the fuel delivery problem had not been resolved and therefore more substantial modifications were designed. Those modifications include the elimination of one of the two day tanks, installation of a manifold-style fuel delivery piping arrangement, and the introduction of three in-line fuel pumps intended to maintain pressure in the fuel piping as fuel circulates to all of the emergency generators. Once the issues with the fuel delivery system are resolved, subsequent testing of the downstream electrical distribution components that are connected to the generators, including the emergency distribution switchboards (EDSs) housed at EDS-PN and EDS-NW, will commence. In the final built-out configuration, the emergency generator plant will be connected to a total of 201 Automatic Transfer Switches (ATSSs) via the eight EDSs that are located around the site. All of the EDSs and ATSSs will need to be tested under simulated emergency conditions before the current temporary emergency generators at the North Temporary Access (NTA) can be decommissioned.

Primary Distribution Center (PDC) at Tower 1: Migration of PATH Hub project electric loads from the Temporary Primary Distribution Center (TPDC) in the NTA to the PDC in Tower 1 advanced during December, with the second load transfer completed on December 17, 2014. This migration of electric loads occurred following an extended period that had elapsed since the successful completion of the first of the six required load transfers in August, 2014. The migration of loads was initially expected to advance in two-week increments through the six-step transfer process. WTCC continued to report that one of the sources of delay in the migration of loads is the unavailability of the permanent emergency generator plant. (b) (4)

Four more

transfers are required before the PATH Hub project will be fully disconnected from the TPDC at the NTA.

Vertical Circulation: During December, work continued on the installation of escalators and elevators located in both the Transit Hall and the PATH Hall. Some of these units are still required to support WTCC's revised plan to reroute pedestrian traffic through the east bathtub. Preliminary testing of the escalator units that have been completed thus far continued to be performed during December. Those units will require only minor final testing going forward. Work on the Platform B vertical circulation elements is discussed above. Other vertical circulation elements that must support the opening of the northern portion of the early access pedestrian corridor are elevators 12 and 23. Elevator 12 has some minor remaining items such as completing the installation of exterior panels and activation of the emergency telephone line. Also, like most of the elevators, no emergency power is yet available for elevator 12, although it will be required for opening. The installation of elevator 23 is being managed by the PANYNJ Retail Group. Currently the elevator 23 enclosure is completed and the elevator cab is constructed. Other ancillary items such as fire alarms and sprinklers are ongoing. Escalators required for the northern portion of the early access pedestrian corridor are escalators 23, 24, 47 and 48. These units have been tested and punchlist work is underway. The overall status of elevator and escalator installation at the end of December 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	8	8	32	32	7	47
Elevators	4	4	13	13	4	21

North-South Concourse: During December, the stone contractor continued the stone floor installations working northward at the upper level (elevation 296') of the concourse located at Tower 3. At the Tower 2 street-level entrance area, finish work in the lobby advanced. Stone floor and stair work approached completion from the lobby level to the first below-grade landing, and wall panel installation also approached completion. Similarly, at the Tower 4 street-level entrance area, stone work on the stairs and floors also approached completion during December. One of the essential elements for the opening of the north section of the early access pedestrian corridor is the availability of Americans with Disabilities Act (ADA) treatments which allow barrier-free travel from the WTC PATH Station platforms to the street level at Tower 2. The completion of elevators 12 and 23 is required to meet that requirement and status is provided above. Elevator 12 will provide service from elevation 266' to elevation 274'. Elevator 23 will provide service from elevation 274' to street level (elevation 326').

Fire Alarm System: During December, fire alarm work necessary for the relocation of the temporary fire command station at the NTA to the new permanent fire command station at elevation 306' of the Transit Hall continued. Among the other ongoing priority fire alarm activities was the fire alarm work at Platform B, where the contractor is deploying overtime to hasten the installation of local fire alarm panels and connection of those panels to the platform devices as well as the connection of the panels to the downstream data-gathering panels and ultimately to the new fire command station.

Commissioning: Commissioning activities during *December continued to focus on elements of the emergency generator plant that were available for testing. As discussed elsewhere in this report*, fuel delivery system difficulties at the emergency generator plant prevented the advancement of various tests and also meant that the commissioning of that facility, and the downstream electrical distribution elements that it will supply power to in the event of a loss of primary power, had to be deferred. *Additional modifications to the emergency fuel delivery system were identified during the month and are expected to be implemented over the next two months.*

Low-Voltage Systems: *Low-voltage systems typically include systems such as fire alarm, building temperature control, access control, public address, Closed Circuit Television (CCTV), and other data transmission systems over media such as small gauge copper wiring or fiber optic cable. Various low voltage systems at the PATH Hub will use the new sitewide redundant backbone to interconnect system elements and will utilize redundant high capacity “core” routers located in two primary communications rooms, PL-077 and MZ-195. As of the end of December, the core network still requires the installation of power to the equipment rooms and completion of terminations within the core network. A total of 12 equipment rooms must have connectivity to the core network in order for the low-voltage systems to be fully activated.*

Central Fan Plant: During *December*, tinsmiths continued installing sheet metal wall lining in the fresh air intake shaft at the Tower 3 podium, which will provide fresh air to the Central Fan Plant for further distribution throughout the PATH Hub project spaces via *Air-Handling Units (AHUs)*. Supply of fresh air via supply fans SF-1, SF-2, and SF-3 is one of the critical elements of the work needed to place the Central Fan Plant in service. *As of the end of December, the fresh air supply fans still remain to be installed along with their associated sound traps. Also during December, steamfitters continued to install the heavy duty expansion compensation brackets for the main steam supply line to the Central Fan Plant. The electrical contractor’s presence at the Central Fan Plant installing conduits for power and controls to the AHUs was substantial during the month.*

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 relocation of site boundary fencing along Vesey Street, which widened the available walkway for pedestrian traffic to the PATH Temporary Station at the NTA, opening of the northern and southern sidewalk areas around Tower 1 to the public in conjunction with the initial occupancy of Tower 1 by its first tenant in early November 2014, and the start of truck screening operations at the Vehicle Security Center.*

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.

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

WTCC released IMS 76 in November 2014, with a data date of October 1, 2014. (b) (4)

(b) (4)

WTCC is expected to release IMS 77 in early January 2015. (b) (4)

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 Glazing Panel Installation	WTCC
<i>Demobilization of Oculus Steel Contractor</i>	<i>WTCC</i>

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 re-authorized the WTC PATH Hub project, at an estimated total project cost range of \$3.724 billion to \$3.995 billion. This re-authorization 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.

Although it was the opinion of the PMOC that the budget established after the October 18, 2012 project re-authorization by the Port Authority Board would not provide WTCC with adequate funding to complete the project given the impacts of Hurricane Sandy, WTCC has advised that the costs related to Hurricane Sandy are being funded from a separate operating account set up by PANYNJ for Hurricane Sandy and will not impact WTCC's current EAC of \$3.7 billion.

The following table summarizes the latest available EAC (WTCC's forecast) and expenditures as of *November 30, 2014*:

Description	EAC (WTCC's Forecast) (in millions)	Expenditures (in millions)
Construction	\$2,798	\$2,357
Program Management and Design	706	668
Contingency	(b)	■
Total	■	(b) (4)

WTCC submitted its monthly cost model revision on *December 30, 2014*. It shows that based on the contract awards and estimates through *November 30, 2014*, 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 *November 30, 2014* of just over \$3.02 billion, or approximately 81.2 percent of the EAC. That total includes \$22.2 million more in PATH Hub expenditures than the total contained in the *November 30, 2014* report.

Over the last 12 months, the average project expenditure per month has been \$26.2 million. That monthly expenditure is below the monthly burn rate of \$53.7 million that would be necessary to support the substantial completion date of December 2015.

Monthly project expenditures since the start of 2014 are as follows:

January	\$28 million	July	\$29 million
February	\$17 million	August	\$59 million
March	\$28 million	September	\$3 million
April	\$39 million	October	\$25 million
May	\$24 million	November	\$22 million
June	\$18 million	December	Not yet available

It should be noted that the June value (\$18 million) understated the actual project expenditure, because it incorporated a downward adjustment of \$6.04 million for soft costs that had been incorrectly charged to the project in prior periods. Those costs were allocated to other stakeholders during June, thus skewing the PATH Hub project expenditure value. The August expenditure of \$59 million is higher than typical because it includes an amount of approximately \$40 million in payment to the Structural Steel to Grade (SSTG) contractor consisting of accumulated payments for prior work and the PATH Hub project share of a settlement of multiple commercial issues. The September expenditure of \$3 million is significantly lower than expenditures in other months because WTCC allocated \$15 million of PATH Hub cost to the line item designated "PATH Hub work performed by SPI".

E. Risk Management

The PMOC conducted a contingency assessment workshop in August 2011 to facilitate the completion of the PEP and the RRCA. WTCC and the PMOC reviewed the results of the cost and schedule risk models. Results from this workshop and subsequent analyses were used to develop the executed RRCA and PEP. 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.

As information on the impacts of Hurricane Sandy became available, the PMOC conducted PEP workshops in June 2013 to discuss and quantify the hurricane's impacts on cost and schedule. The PMOC then reconciled the workshop results with WTCC, and the outcome of this effort was used to update the PEP. In July 2014, the PMOC began assessing the impacts of oculus steel delays on the project's critical path. In August, the PMOC updated the contingency drawdown curve to reflect the evaluation of the project's residual risks and the potential risk retainage release amount associated with each of the remaining PEP milestones. During October 2014, the PEP exhibits were finalized, and a spot report reflecting those updates was issued through the FTA to WTCC. Also during October, WTCC submitted drafts of its Risk Management Plan and Contingency Management Plan. The PMOC reviewed both of these documents and, *during December, issued a spot report that discusses the results of that review. That spot report was in turn issued to WTCC by the FTA, also during December 2014.*

As of December 2014, 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 glass contractor and the other contractors working in the Transit Hall space.*
- *Fabrication and delivery of the stone for the Transit Hall main floor.*

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 is currently reviewing that submission. An updated draft of WTCC's Operations Management Plan, a PMP sub-plan, was also submitted in August but it was found to lack essential elements. The grantee is preparing a new updated version of the Operations Management Plan. Finally, WTCC submitted an updated Construction Phase Force Account Plan and Justification to the PMOC in late August, and it was reviewed. *Following additional dialogue with the grantee, portions of that plan were modified and resubmitted individually during November, 2014. As a result, the PMOC issued a spot report during December recommending acceptance of the plan with the modified portions. Also during December, by letter dated December 18, 2014, the FTA accepted the 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 *December* 2014, WTCC QA completed *five* oversight audits that included reviewing the CM QA's field audits and performing its own field construction audit. The *December* 2014 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 *November* 2014, the project recorded *two* recordable incidents and two lost-time incidents, resulting in a TCIR of 2.61 and an LTIR of 2.61, based on 153,510 hours worked. In comparison, the *October* 2014 incident totals were *five* recordable incidents and two lost-time incidents, resulting in a TCIR of 5.90 and an LTIR of 2.36, based on 169,530 hours worked. In reviewing the *November* safety performance, WTCC Safety continues its active role in managing worker safety, evaluating the causes of each incident, addressing actions to prevent recurrence and developing lessons learned. While a review of the incidents in *November* 2014 did not identify any specific trends, the *decrease* in the TCIR *from 5.91 to 2.61, represents a significant effort within the WTCC Safety team to address the up-turn that occurred in October 2104, through increased on-site vigilance in the use of safe work habits that was supported by the re-issuance of several WTC Safety Bulletins for use in training, tool box talks and posting in contractors' shanties. These Safety Bulletins included: Site Injury Reporting; Use of Powder Actuated Tools; Use of Space Heaters in Construction; Material Handling-Moving Material and Equipment; Ladder Safety; Hot Work-Fire Prevention; Fall Protection around Utility and Elevator Shaft Openings; Fall Protection Policy and Eye Protection Policy. In addition, given the impending completion of the oculus steel contractor's work, which accounted for two of the five recordable incidents during October, the potential for future incidents should continue to be reduced.* The *December* 2014 safety data for the project was not fully available at the time this report was drafted but is expected to be available after mid-*January* 2015.

H. Issues/Problems/Suggestions

The widespread regional damage caused by Hurricane Sandy in late October 2012 caused a delay to the forecast completion of the PATH Hub project. WTCC submitted its formal Recovery Plan document to the FTA on February 18, 2014. (b) (4)

Coordination of construction trades and multiple prime contractors at the Transit Hall has been challenging during the double-shift operation used for oculus steel erection over the last several months. (b) (4)

(b) (4)

End of report. Appendix follows.

APPENDIX A – LIST OF ACRONYMS

ADA	Americans with Disabilities Act
AHU	Air Handling Unit
ATS	Automatic Transfer Switches
CA	Construction Agreement
CM	Construction Manager
CMU	Concrete Masonry Unit
<i>CCTV</i>	<i>Closed Circuit Television</i>
EAC	Estimate at Completion
<i>EDS</i>	<i>Emergency Distribution Switchboard</i>
FTA	Federal Transit Administration
IMS	Integrated Master Schedule
LMRO	Lower Manhattan Recovery Office
LTIR	Lost-Time Incident Rate
MEP	Mechanical, Electrical, and Plumbing
MVM	Metrocard Vending Machine
NTA	North Temporary Access
NSC	North-South Concourse
NYCT	New York City Transit
OPL	Office of Program Logistics
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
QPRM	Quarterly Progress Review Meeting
RCD	Required Completion Date
RFI	Request for Information
RRCA	Revised and Restated Construction Agreement
SSTG	Structural Steel to Grade
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