

## MONTHLY MONITORING REPORT

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

*June 2015*



PMOC Contract Number: DTFT60-14-D-00010

Task Order Number: 006

O.P.s Reference: 01, 02, 25, 26, 40

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PMOC / Start of Assignment: David Evans and Associates, Inc. / October 2008

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Cover: *Demolition activities are underway at former Platform C.*

## **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

*On June 20, setting of the glass panel portion of the Transit Hall curtain wall was completed with the last of 772 glass panels set into position after a three-month period since the first glass panel had been set in March 2015. Also during June, demolition activities at former Platform C and the mezzanine above that platform proceeded at an increased pace following the relocation and removal of various temporary elements that had resided within those spaces. World Trade Center Construction (WTCC) also during the month commenced the construction of a temporary pedestrian corridor extension on the main floor of the Transit Hall leading to and connecting with New York City Transit's (NYCT) Dey Street Concourse.*

### 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)

Recovery Plan 03 was approved on June 4, 2015.

### Quarterly Progress Review Meeting (QPRM)

A QPRM for the first quarter of 2015 was held on May 27, 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. *During June, the PMOC attended the opening and closing meetings for a two-week Change Order Review by the FTA's Financial Management Oversight Consultant.*

## Construction Activity

*During June, demolition activity proceeded at an increased pace at Platform C and the mezzanine above the platform, following the de-commissioning of systems and equipment that had formerly been housed at those locations. Excavation in the rock substrate for new column footings also started.*

*At the Transit Hall, the last of the 772 glass panels comprising the glass portion of the oculus curtain wall was set into position on June 20, 2015.*

## Schedule

In May 2015, WTCC released Integrated Master Schedule (IMS) 79 (with a data date of April 1, 2015), (b) (4)

. WTCC achieved the "Platform B Operational" milestone event on May 7, 2015, which represents an approximate five-month delay from WTCC's original projection for achieving this milestone. If the delay trends in platform construction continue at Platforms C and D, the possibility that WTCC will achieve the PATH Hub (b) (4)

. WTCC is expected to release IMS 80 (with a data date of June 1, 2015) at the beginning of July 2015. In April 2015, WTCC submitted Recovery Plan 03, which addresses project impacts and mitigation actions related to the delay in completion of the RRCA milestones of "Transit Hall Superstructure Complete (Glazing)" by January 13, 2015, and "Mezzanine Structural Steel at Platform C Substantially Complete" by June 30, 2015. WTCC is now targeting completion of the oculus glazing by August 31, 2015, and mezzanine structural steel at Platform C by October 31, 2015. *Recovery Plan 03 was approved by the FTA on June 4, 2015. WTCC has not yet submitted IMS 80.*

## Cost Data

WTCC submitted its monthly cost model revision on *June 30, 2015*. *The cost model revision shows that, based on the contract awards and estimates through May 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 May 31, 2015 to be approximately \$3.13 billion, or 84.0 percent of the EAC. That total of PATH Hub expenditures includes an additional \$16 million in PATH Hub expenditures over the total contained in the April 30, 2015 report.*

## 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)

In May, the FTA, the PMOC, and WTCC met in a workshop session to collaborate on identifying and assigning risk retainage release values to the remaining PEP milestones as well as identifying potential additional PEP milestones. *That dialogue was continued in mid-June when WTCC provided other project milestones as candidates to be added to the PEP and those suggestions remained under consideration at the end of the month.* 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)

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 is preparing an updated version of the Operations Management Plan and is forecasting its submittal during July 2015.*

## Project Quality Assurance

During June 2015, WTCC QA completed six oversight audits that included reviewing the Construction Manager (CM) QA's field audits and performing its own field construction audits. The June 2015 audit total reflects the six 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 May 2015, the project had three recordable incidents and one lost-time incident, resulting in a TCIR of 5.09 and an LTIR of 1.70, based on 117,855.0 hours worked. Ongoing June safety initiatives are discussed in the project monitoring section of this report. The June 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-July 2015.

## Issues/Problems/Suggestions

*Demolition of former Platform C and its mezzanine progressed substantially during June as a result of extended workday and workweek hours being deployed in that demolition effort. During the month, an extended workday and extended work shifts were also utilized at the Transit Hall to prepare, coat, and in the case of the rafter elements, recoat the oculus steel surfaces. Rafter recoating was not originally anticipated but became necessary because of the widespread rafter discoloration that had occurred since the rafters were initially delivered and erected at the site.*

*Also during June, the Hub project continued its efforts to deliver chilled water from the Central Chiller Plant to the Central Fan Plant. Workarounds that provide temporary supply and return piping between the two facilities were advanced, with flushing of those temporary lines underway at the end of the month. Temporary spot coolers remained in widespread use at the end of June as an interim measure to address heat build-up in several equipment rooms throughout the Hub project site.*



## 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)

(b) (4)

(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.*

#### Quarterly Progress Review Meeting

A QPRM for the first quarter of 2015 was held on May 27, 2015.

#### WTC Site Master Plan

WTCC's latest site master plan is Master Plan Version 11, dated October 10, 2013. *This was re-confirmed with WTCC during June.*

#### 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:** The oculus steel contractor continued to focus on surface restoration and painting of the erected oculus steel during *June*. As in *May*, the coordination of this work with the work of the various other contractors that require access to the oculus structure was challenging, although successfully accomplished. During *June*, the contractor *continued* a recoating program to address the widespread development of discoloration of *all of the* rafter elements. The recoating program consists of surface preparation in those areas that are discolored, and then applying the required *painting system to restore the bright white appearance of the rafters*. *Through the end of the month, six rafters were re-coated at the southeast end of the oculus structure and eight rafters were re-coated at the northwest end. These 14 rafters are the smallest in size of the total population of 114 rafters, and their combined surface area is estimated to be less than 5 percent of the total surface area to be repainted. Some mismatch in color at the base of the re-coated rafters was noted where the rafter connects to the previously painted steel transition elements and this phenomenon will be monitored by the PMOC as the re-coating program advances. The surface restoration and painting by the oculus steel contractor and its painting subcontractor are expected to continue through the fall of 2015. Separately, a second painting contractor not associated with the oculus steel contractor, and working under a prime painting contract with WTCC, is coating other portions of the oculus structure with both undercoatings and specified finished coatings including intumescent paint (fireproofing). The intumescent paint is only applied to the oculus steel surfaces that have been specifically designated as requiring fireproofing. This painting work was ongoing in June and is expected to continue throughout the summer months.*

**Oculus Curtain Wall:** During *June*, the curtain wall contractor set an additional 252 glass panels bringing the total quantity of glass panels set to 772, which is the total number of glass panels required. However, none of the 112 metal panels (WT-3s) that also serve as part of the curtain wall system have yet been placed pending the performance of other prerequisite work. . Additionally, each of the glass panels that have been set are yet to be fully trimmed and sealed, a process which includes installations on both the interior and exterior sides of the glass, and which is performed by multiple trades. To complete the WT-1 glass panel system, metal side panels must be installed at the interior and exterior upper portal pockets, along with insulation, gaskets and caulking. All of the clips that hold the interior and exterior trim panels have already been installed. Boomlift activity around the oculus perimeter will continue to be a concern for the curtain wall contractor, given the painting and mechanical work also underway at the oculus perimeter. During the month, the contractor has also commenced the installation of the waterproofing system at the horizontal and vertical areas of the oculus steel arch elements. This system must be successfully tested before the installation of the WT-3 metal panels discussed

*above. In June, WTCC's special inspection consultant began its visual inspection of the glass panel placement, and this inspection continued during the month.*

*Oculus Skylight: During June, the oculus skylight contractor, which is the same contractor as the oculus curtain wall contractor, set the remaining skylight guide rails at the oculus roof level. These rails require a final adjustment before their associated skylight modules can be mounted. Approximately 70 percent of the guide rails had been adjusted by the end of the month. Through the end of June, 15 of the 40 modules had been mounted to the rails, all of which are on the east side of the oculus. There are also four motor control centers (MCCs) that control the four quadrants of the skylight systems. To date all of the power and control wiring has been pulled between the skylights and the four MCCs. Termination of these cables was underway at the end of the month.*

*Platforms C and D: During June, de-commissioning of various systems that had resided within the Platform C and mezzanine areas was completed, thereby allowing structural demolition of the old platform and mezzanine to advance at a faster rate. Working from south to north, about 75 percent of Platform C had been removed by the end of the month and about 25 percent of the mezzanine slab and supporting steel also had been demolished. The contractor also installed rock anchors and started constructing the footing for "hammerhead" column FC06, which is one of the three required hammerhead columns that remain to be erected at the platform level. Also during June, "top of rock" was uncovered at the location where the Platform C utility tunnel will be excavated, although rock excavation for the tunnel and corresponding adjacent ventilation tunnel has yet to commence. The mechanical subcontractor advanced the work of creating the first of two alternate temporary chilled water paths between the Central Chiller Plant and the Central Fan Plant by tying into the temporary 20-inch return chilled water line that is adjacent to track 4. A 14-inch chilled water return line was being installed that runs northward and down into the eastern portion of the utility tunnel, where it will be connected to the permanent chilled water return line segment. This work will eliminate the leaks that arose during testing of the temporary 20-inch return line, by removing that segment of the return line from the chilled water loop. At the south end of Platform D, the contractor continued the construction of Concrete Masonry Unit (CMU) walls for utility rooms and commenced the delivery of equipment to outfit some of those spaces during the month.*

*East Bathtub Mechanical, Electrical, Plumbing (MEP), and Fire Protection Work: During June, WTCC continued to focus on bringing the new Emergency Generator Plant on-line. During the month, WTCC commenced the implementation of an interim plan to place three of the eight new generators (No. 2, No. 4, and No. 7) online to meet the growing emergency power demands of the project, since those demands can no longer be sustained by the two fully-loaded temporary emergency generators located at the North Temporary Access (NTA). Fuel will be supplied via the 320-gallon day tank within the Emergency Generator Plant space. The day tank was filled using local fuel drums during the month as an interim measure. Testing of this arrangement commenced at the end of June and is expected to continue in early July. At the Transit Hall, the MEP work continued to advance. During June, the electrical and controls contractors pulled power and control wiring to the oculus roof-level smoke purge fans. The mechanical contractor took measurements for the smoke purge fan liners and placed an order for those elements. The mechanical contractor performed remedial work on the diesel fuel north riser piping that passes through an enclosed portion of the fresh air supply duct located in the Tower 3 podium.*

*This remedial work during June hampered the completion of the required fresh air shaft treatments and therefore continues to delay the setting of the new air supply fans at the top of that shaft by the same mechanical contractor.*

*East Bathtub Finish Work: During June, at elevation 296 along the east side of the oculus walkway and at the north transept, the stone contractor continued to install stone flooring. At the underside of the walkway at elevation 296, installation of the ceiling framing grid system continued during the month. Around the interior of the oculus near street level, carpenters are installing the glass fiber reinforced gypsum (GFRG) band. At elevation 274 at the east half of the oculus WTCC extended the Early Access Pedestrian Corridors from the north and south transepts up to the eastern end of the Transit Hall and leading to MTACC's Dey Street Corridor. At the east end of the oculus the east grand stairs between elevations 274' and 284' received a temporary concrete topping to act as interim stair treads, and components of the ceiling support system were being installed during the month.*

*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 early June, with the third of six sequential transfers successfully accomplished. Two transfers had been completed previously, one in August of 2014 and the second in December 2014. WTCC projects that the fourth transfer in the series will be accomplished during July 2015.*

*Vertical Circulation: During June, work continued on the installation of escalators and elevators located in both the Transit Hall and the PATH Hall. Some of these escalator and elevator units, which are required to support WTCC's plan to route pedestrian traffic through temporary corridors in the east bathtub, have been inspected, and have undergone 24-hour testing. WTCC currently forecasts that this route will open to the public during July, 2015. The vertical transportation elements not required for the Early Access Pedestrian Corridor also progressed during the month. Escalators at the east and west Transit Hall observation level have been set into position. Other escalators continue to receive fire alarm installations and pre-action sprinkler installations. Two elevators at the east end of the oculus require extra steel work in order to address alignment and plumbness issues and are expected to be completed later than originally planned. The two street-level elevators at the east and west entrances to the oculus have had significant design changes and are also expected to be completed later than originally planned. The status of elevators and escalators through the end of June is summarized in the following table:*

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

*Fire Alarm System: During June, work continued at the new Hub project fire command station, which is being built in the back-of-house spaces at elevation 306' of the Transit Hall. Ultimately this facility will serve as the primary fire command station for all of the Hub spaces and will be*

*occupied on a continuous basis by the Transit Hub Fire Safety Directors. Interior room finishes, including ceiling panels and painting of the floor and walls have been completed and ventilation equipment has been installed. Still underway is the installation of the fire alarm system control panels and communications equipment required for the fire command station to become fully functional, although progress during June was significant. Until the new fire command station is in service, the existing temporary fire command station housed within the NTA will necessarily remain in service. In addition, the equipment for the remote street-level fire alarm console at the east end of the oculus was received on-site during June and is forecast to be installed during July 2015.*

*Commissioning: During June, the commissioning effort focused on the testing of the sub-group of three of the eight new emergency diesel generators (Nos. 2, 4, and 7) that were being made ready as part of WTCC's interim plan to place them on-line. Using three of the eight generators to augment the emergency power available from the two temporary emergency generators located at the NTA became necessary as an interim measure in order to meet the Hub project's current demand for back-up power, while allowing the completion of the balance of the Emergency Generator Plant, including the remedial work on the fuel delivery system, to continue. By the end of the month, testing of the group of three generators had commenced with initial results reported as favorable. Testing was expected to continue in early July, 2015.*

*Communications Systems: These systems include security cameras, access control devices, and telephone service. During June, sweep testing for radio systems, occurred in all the Early Access areas to ensure that adequate signals are being received. The lack of Chilled water for Communication rooms is continuing to force a reliance on spot coolers to maintain the required equipment operating temperatures. The testing of the signage system and network redundancy continued during June. Testing and alignment of security cameras also advanced during the month. Progress has been made with the deployment and testing of room access control devices for back of house facilities and the PATH Operations Command Center (OCC). Test plans for the security system integration are currently under review between the contractor and the CM.*

*Central Fan Plant: During June, additional duct work was installed over the location where the supply fans will be installed, which is on the fourth floor of the Tower 3 podium. However, the three large-capacity supply fans are still staged adjacent to the shaft and not yet set in position. Additional chilled water pipe support were added in several areas of the CFP during the month. However, the ongoing absence of chilled water delivery from the Central Chiller Plant to the Central Fan Plant continued to prevent downstream distribution of cooling capability to various equipment rooms and occupied spaces, thereby requiring the re-introduction of temporary spot coolers throughout many of those spaces 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. In June, Greenwich Street within the site boundary was opened to pedestrian traffic, thus easing day-time congestion along Church Street and affording visitors to the Memorial and Museum a more direct route. Initial results were favorable and the hours of operation of this pedestrian route are being expanded in July to allow pedestrian traffic daily from 6 AM to 8 PM. Pedestrian traffic flow*

*between Liberty Street and Vesey Street along Greenwich Street also required the re-configuration of the site security fencing and security screening locations throughout the Greenwich Street corridor area. Also during June, OPL rededicated areas directly to the south of the NTA for the exclusive use of the Metropolitan Transportation Authority #1 Line Cortlandt Street Station project.*

#### Interagency Coordination

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. *June activity included the coordination with NYSDOT regarding its removal of the temporary portion of the Liberty Street pedestrian bridge across West Street. Laydown area for setting and dis-assembly of bridge sections was made available to NYSDOT's contractor during June for this activity.*

#### 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 [wtccprogress.com](http://wtccprogress.com), and specific presentations are periodically made to Manhattan's Community Board #1.

#### C. Schedule

In May 2015, WTCC released IMS 79 (with a data date of April 1, 2015), (b) (4)

[REDACTED]

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

Significant Activity	Action by
Utility Tunnel Complete at Platform C	WTCC
Central Fan Plant Online	WTCC
Migrate PATH Hub Electrical Loads from the TPDC at the NTA to the	WTCC

Significant Activity	Action by
PDC at Tower 1	
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 *June*, the results of that effort were updated and identified the following forecast dates for *three* milestone events:

Schedule Tool Topic	PMOC Forecast
(b) (4)	

#### 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 *May 31, 2015*:

Description	EAC (WTCC's Forecast) (in millions)	Expenditures (in millions)
Construction	\$2,807	\$2,449
Program Management and Design	709	681
Contingency	(b) (4)	(b) (4)
Total	(b) (4)	(b) (4)

WTCC submitted its monthly cost model revision on *June 30, 2015*. It shows that, based on the contract awards and estimates through *May 31, 2015*, (b) (4)

That total of PATH Hub expenditures includes an additional \$16 million in PATH Hub expenditures over the total contained in the *April 30, 2015* report.

Over the last 12 months (*July 2014 to June 2015*), the average project expenditure per month has been approximately \$23 million. That monthly expenditure is below the monthly burn rate of *just over \$87 million* that would be necessary to support WTCC's substantial completion by the forecast date of December 2015.

#### 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 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. *The PMOC issued Spot Report 2147 in mid-June recommending the release of \$29 million of risk retainage as a result of that milestone being achieved. In May, the FTA, the PMOC, and WTCC met in a workshop session to collaborate on identifying and assigning risk retainage release values to the remaining PEP milestones as well as identifying potential additional PEP milestones. That dialogue was continued in mid-June when WTCC provided other project milestones as candidates to be added to the PEP and those suggestions remained under consideration at the end of the month.*

As of *June 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.
- *Delivery of Fresh Air to the Central Fan Plant by the Supply Fans located in the Tower 3 podium.*

#### F. Technical Capacity and Capability Review

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

##### 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 is preparing an updated version of the Operations Management Plan *and is forecasting its submittal during July 2015.*



## 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 *June* 2015, WTCC QA completed *six* oversight audits that included reviewing the CM QA's field audits and performing its own field construction audit. The *June* audit total reflects the *six* 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 *May* 2015, the project had *three* recordable incidents and *one* lost-time incidents, resulting in a TCIR of 5.09 and an LTIR of 1.70, based on 117,855.0 hours worked. As part of its ongoing safety initiatives, WTCC Safety issued Safety Bulletins and other safety information for use by its site safety managers that addressed *that addressed the topics of Heat Stress and Reporting Site Injuries*. Site safety managers are encouraged to use this material at toolbox talks and to make copies available in the work shanties. *WTCC Safety also held a monthly safety meeting on June 9, 2015, during which it reemphasized WTCC Safety policies such as the process for reporting site incidents, the WTC site's no smoking policy, housekeeping practices, and keeping access/egress areas and fire standpipes free of material that could impede personnel and hinder fire safety work practices.*

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

## H. Issues/Problems/Suggestion

*Substantial progress on the demolition of former Platform C and its mezzanine was accomplished during June with extended workday and workweek hours deployed in that effort. Oculus steel surface preparation, coating, and in the case of the rafter elements, re-coating, were also pursued on an extended workday and workshift basis during the month at the Transit Hall. Rafter re-coating was not originally anticipated but became necessary as a result of widespread rafter discoloration over the period since their initial delivery and erection at the site.*

*Also during June, the Hub project continued its efforts to deliver chilled water from the Central Chiller Plant to the Central Fan Plant. Workarounds that provide temporary supply and return piping between the two facilities were advanced, with flushing of those temporary lines underway at the end of the month. Temporary spot coolers remained in widespread use at the end of June as an interim measure to address heat build-up in several equipment rooms throughout the Hub project site.*

End of report. Appendices follow.

## APPENDIX A – LIST OF ACRONYMS

CA	Construction Agreement
CM	Construction Manager
CMU	Concrete Masonry Unit
EAC	Estimate at Completion
FTA	Federal Transit Administration
GFRG	glass fiber reinforced gypsum
IMS	Integrated Master Schedule
LMRO	Lower Manhattan Recovery Office
LTIR	Lost-Time Incident Rate
MCC	Motor Control Cabinet
MEP	Mechanical, Electrical, and Plumbing
MTACC	Metropolitan Transportation Authority Capital Construction
NTA	North Temporary Access
NYCT	New York City Transit
OPL	Office of Program Logistics
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
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

<i>LL#</i>	<i>Date</i>	<i>Phase</i>	<i>Category</i>	<i>Subject</i>	<i>Lessons Learned</i>
<i>1</i>	<i>2Q2015</i>	<i>Construction</i>	<i>Safety</i>	<i>Controlled Access Zone</i>	<i>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.</i>

### *Near-Miss Incidents and Controlled Access Zone*

*During the second quarter of 2015, some near-miss incidents occurred related to various overhead activities. These incidents prompted the following proactive actions by WTCC Safety: (1) deploying a Controlled Access Zone (CAZ), (2) enforcing the use of toe boards on various lifts and on the structurally hung work platforms (SHWPs), and (3) the tethering of tools and other loose items when working at heights.*

*At the main floor of the oculus structure, a CAZ was delineated by placing 6-foot chain-link fencing and signage around the perimeter of the floor in order to prevent workers from entering the area where items might fall from work being performed above. Access into the CAZ was also coordinated by the Construction Manager's personnel. Work being performed at heights includes work on the outside of the roof, which currently has openings into the oculus; the use of boom lifts and other lifts used during the installation of components and equipment; and installation of the recently completed SHWPs that are supported from the oculus roof.*

*WTCC Safety also reissued several WTCC Site Safety Bulletins so that information could be provided to workers in daily tool box talks and documented as training. These Safety Bulletins included the following topics: Use of Aerial Lifts; Ladder Safety; Safety Rules for Using a Utility Scaffold; Safe Use of Boom-Supported Elevating Work Platforms; Safe Use of Pallet Jacks; Use of the Relief Step Safety Device and Fall Protection Equipment; and the Safe Use of Lasers in Construction.*