

MONTHLY MONITORING REPORT

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

February 2013



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Cover: *During February 2013, electrical distribution Spot Network SN-TN rooms were cleared of all equipment damaged by Hurricane Sandy in preparation for the installation of replacement equipment.*

THIRD-PARTY 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 FTA or the project sponsor, in accordance with the purposes as described below.

For projects funded through FTA's Lower Manhattan Recovery program, 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 financed by the FTA's Lower Manhattan Recovery Office (LMRO).

EXECUTIVE SUMMARY

The assessment of the cost and schedule impacts of the Hurricane Sandy damage to the PATH Hub project is being completed. Replacement of storm-damaged equipment and systems is under way throughout the project site as permanent construction activities continue. The costs related to Hurricane Sandy will be funded from a separate operating account and likely will not impact the project's current Estimate at Completion (EAC).

Project Description

The PATH Hub facility is an intermodal terminal serving 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. The RRCA includes an FTA-allowable amount not to exceed of \$3.995 billion. The hurricane damage may delay the project.

Quarterly Progress Review Meeting (QPRM)

The fourth quarter 2012 QPRM is scheduled for March 18, 2013.

Design Activity

The designer continues to provide guidance and technical criteria for the assessment and replacement of equipment and systems damaged by the storm.

Procurement Activity

World Trade Center Construction (WTCC) has completed all planned procurements. Additional procurement actions to support Hurricane Sandy recovery efforts continue.

Construction Activity

Replacement of storm-damaged equipment and systems is under way throughout the project site as permanent construction activities continue.

At the PATH Hall in the west bathtub, the structural steel contractor continued with welding, installation of precast ductwork above Tracks 1 and 2, and application of intumescent paint. The general contractor continued both permanent construction and storm remediation at the mezzanine level, Platform A, and the East-West Connector. Vertical transportation construction continued in the East-West Connector.

At the Transit Hall in the east bathtub, the structural steel contractor continued welding of the east and west end arches. Grade-level slab waterproofing is substantially completed, and the contractor is addressing punch list items. The Oculus steel contractor continued erection of the Oculus steel. Contractors continued with various Mechanical, Electrical, and Plumbing (MEP) installations.

Schedule

In October 2012, WTCC released Integrated Master Schedule (IMS) 64, (b) (4) [REDACTED] Damage caused by Hurricane Sandy will delay the construction progress and the scheduled completion date. IMS 65 will not reflect Hurricane Sandy impacts but will serve as a baseline against which the impacts of Hurricane Sandy will be evaluated.

WTCC will continue to assess and quantify the impacts of the storm, and a re-baseline IMS 66, with the impacts of Hurricane Sandy included, will be issued during the first quarter of 2013.

Cost Data

WTCC submitted its Cost Model Revision on *February 28, 2013*. Based on the contract awards and estimates through *January 31, 2013*, WTCC's EAC for the federally funded PATH Hub project is just over \$3.7 billion. WTCC is reporting the PATH Hub expenditures through *January 31, 2013*, to be over \$2.4 billion.

Risk Management

The Project Management Oversight Contractor (PMOC) conducted a contingency update workshop in August 2011. 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. It is expected that risks associated with the recovery from Hurricane Sandy will be identified and quantified as information becomes available.

Technical Capacity and Capability Review (TCCR)

An update to the TCCR and resulting report are anticipated to be completed later in 2013.

Project Management Plan (PMP)

The grantee is preparing updates to its Project Quality Assurance Plan, Force Account Plan, and Operations Management Plan, all of which are PMP sub-plans.

Project Quality Assurance

During February 2013, WTCC Quality Assurance(QA) and the Construction Manager (CM) QA performed five quality assurance audits of ongoing field construction activities, including installation of the Oculus structural steel sub-portals.

Site Safety Review

The 2012 summary safety data is now available. From the start of the year through the end of December 2012, there were 36 lost-time injuries and 91 recordable injuries on the WTC PATH Hub project, with 2,135,865 hours worked. The resultant year-to-date Lost-Time Incident Rate (LTIR) for the project was 3.37 and the Total Case Incident Rate (TCIR) for the same period was 8.52.

Issues/Problems/Suggestions

- The overall completion of the PATH Hub project is expected to be delayed as the effects of Hurricane Sandy are remediated. (b) (4)
- While the cost to complete the PATH Hub is expected to increase significantly as WTCC remediates and mitigates the effects of Hurricane Sandy, WTCC has advised that the costs related to Hurricane Sandy will be funded from a separate operating account and likely will not impact WTCC's current EAC. The adequacy of the current budget and schedule contingencies will be evaluated as information becomes available.

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 Oculus, or Transit Hall, 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 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 establishes an RCD of December 17, 2015, and commits \$2.872 billion in federal funding to the PATH Hub, and includes an FTA-allowable amount not to exceed of \$3.995 billion.

Quarterly Progress Review Meeting

The fourth quarter 2012 QPRM is scheduled for March 18, 2013.

WTC Site Master Plan

WTCC's current site master plan is Master Plan Version 10, released October 1, 2010.

Environmental Compliance

(Reported 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 and providing certifications of completion of elements of construction.

The designer continues to provide guidance and technical criteria for the assessment and replacement of storm-damaged equipment and systems for all categories of construction, including electrical, HVAC, fire protection, compressed air, architectural, structural, and vertical transportation.

Procurement and Contracting Activities

WTCC has completed all planned procurements for the PATH Hub project. Additional procurement actions to support its Hurricane Sandy recovery efforts are under way.

WTCC and its CM provided the PMOC with the construction and professional services Change Order (CO) logs and updates to the procurement schedule.

Construction Status

Construction activity increased again during February, continuing a three-month trend since dropping off immediately after Hurricane Sandy in October 2012. As measured by craft labor hours, construction activity has not yet returned to pre-storm levels. The assessment of the cost and schedule impacts of the storm damage to the PATH Hub project is being completed. Contractors have begun to remove selected equipment and systems to make way for the replacement equipment and systems.

Transit Hall Concrete: The concrete contractor continued placement of concrete equipment pads, concrete stairs, electrical conduit encasement, concrete slab sections at elevation 241, and concrete wall sections located at the lower levels of the Transit Hall. The contractor continued patching the underside of the slab sections at elevations 237 and 254.

Transit Hall Waterproofing and Site Work: The contractor substantially completed installing the waterproofing system on the Transit Hall structural concrete slab at elevation 320 and began performing punch list work for the waterproofing system.

Structural Steel to Grade (SSTG) – Area 3: Structural Steel to Grade work in Area 3 continued during February 2013. The contractor is currently completing the welding of the elements referred to as the East and West Box Girders and associated components and attachments, all of which are located at the far eastern and far western ends of Area 3. The SSTG contractor's workforce has been shrinking over the last several months, falling from a peak rate of approximately 70,000 craft labor hours in June of 2012 to an amount just under 14,000 craft labor hours in January 2013.

Oculus Steel: Fabrication of Oculus steel continued during February 2013. The current metrics issued by the fabrication subcontractor are: 100 percent completion for sub-portals, 100 percent completion for lower portals, 49 percent completion for upper portals, 65 percent completion for abutments, 34 percent completion for arches, and 38 percent completion for transitions. The second shipload of Oculus steel elements, including a significant portion of the upper portals and abutments, is scheduled to arrive in New York during the first week of March 2013. Erection of Oculus steel also progressed during February. All of the 50 lower portals and 48 sub-portals have been brought to the site and erected, although alignment and fastening activities are ongoing for those elements. Additionally, erection of the steel ribs that mimic the form of the Oculus steel members began during February in the North-South Connector.

Oculus Glass: The fabrication of the Oculus glass began during January 2013. During February, WTCC planned a one-week visit to the fabrication subcontractor's facility to review the production and assembly of glass units.

Transit Hall Interior Stone: This contract was awarded in August of 2012 and provides for the installation of stone flooring and other stone treatments at various Transit Hall locations, including the interior of the Transit Hall, the North-South Connector, and other areas in the

PATH Hub. The contractor is in the submittal and shop drawing phase of the contract work at present.

PATH Hall Construction (PHC): The PHC contractor has continued contract work at Platform A, the South Mezzanine, and the East-West Connector. The contractor has completed the concrete placement of slab sections at elevations 227 and 250 of the Central Fan Plant, and the concrete slab sections at elevation 266 of the mezzanine level. The PHC contractor has completed removal of the emergency smoke purge fans and electrical systems that were damaged by Hurricane Sandy, in order to make way for their subsequent replacement. The PHC contractor continued cleaning and retrofitting electrical systems and mechanical components damaged by Hurricane Sandy. WTCC expects to complete Platform A in the fourth quarter of 2013.

Structural Steel to Grade (SSTG): The SSTG contractor continued to install the precast concrete box girders, which also serve as ductwork over Tracks 1 and 2 at Platform A, and made progress erecting structural steel north of the East Box Girder (EBG). During February 2013, the contractor continued applying the intumescent paint coating to the structural steel at the East-West Connector and the PATH Hall roof. The contractor continued performing punch list work on the 1 Line box steel support structure and the PATH Hall roof ribs.

Mechanical, Electrical, and Plumbing (MEP) and Fire Protection Work: During February 2013, the contractors that will be rebuilding spot network SN-TN received some of the replacement equipment that they will use to perform that work. Also during February 2013, the demolition of the existing spot network SN-TN facility was completed, thereby clearing the way for rebuilding to commence in March 2013. The MEP and fire protection contractors also continued work at spot network SN-TS, located at elevation 254 in Tower 3.

Primary Distribution Center (PDC) at Tower 1 – All eight line-ups at the Primary Distribution Center (PDC) at Tower 1, which had been energized and placed into service to feed various locations, including some of the previously completed spot networks serving the PATH Hub, suffered some damage from Hurricane Sandy and were taken out of service. These eight line-ups, also known as PDCs A through H, were stripped of their damaged components; replacement components are currently being procured. Testing will be performed before the line-ups are placed back in service. In the interim, the PDC electrical loads have been migrated back to the temporary primary distribution center in the North Temporary Access facility.

Vertical Circulation: The contractor continued to install the escalators in the East-West Connector and the Route 9A underpass. Replacements for the damaged sections of the Platform A escalators were ordered. The contractor also continued to install the Platform A elevator rails.

Architectural Trades: Architectural steel members were installed in the Transit Hall at elevation 274. The storefronts are expected to be delivered to the jobsite in March 2013.

Miscellaneous Metals: During February 2013, the contractor continued to install steel components at many PATH Hub locations, including the spot network rooms.

North Projection Structural Rehabilitation: During the month of February 2013, the contractor continued cleaning and patching walls and ceilings to prepare for painting at elevations 253, 267, and 284. The contractor continued installing the security fence at elevation 254. The contractor is expected to substantially complete contract work in the first quarter of 2013.

Construction Logistics

The WTCC Office of Program Logistics (OPL) continued weekly logistics and coordination meetings to facilitate construction progress and the sharing of access, egress, and work zones among all contractors on-site. OPL is currently working with the Oculus steel contractor and providing coordination with the New York City Department of Transportation (NYCDOT) to arrange for the removal and relocation of a streetlight on Fulton Street between Broadway and Church Street, in order to permit the oversized load delivery of larger Oculus steel elements, including upper portals, to the project site from the Brooklyn storage facility.

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.

Community Relations

OPL continued to distribute construction alerts, updates, and monthly construction progress newsletters to the community and stakeholders.

C Schedule

WTCC released IMS 64 in October 2012. This latest IMS, with a data date of August 1, 2012, shows no slippage to the PATH Hub project overall completion date (b) (4). IMS 65, when released, will reflect the schedule up until Hurricane Sandy. Because of the damage caused by Hurricane Sandy, construction progress is anticipated to be slowed and, accordingly, potential delays to the scheduled completion date are expected. WTCC is assessing and quantifying the impacts. The re-baselined IMS 66, with impacts of Hurricane Sandy included, will be issued during the first quarter of 2013.

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

Significant Activity	Action by
East Bathhtub Weathertight at Elevation 274	WTCC
East-West Connector Turnover to Retail	WTCC
All Oculus Abutments and Lower Portals Steel Fabrication Complete	WTCC

D Cost Data

WTCC submitted its Cost Model Revision on February 28, 2013. Based on the contract awards and estimates through January 31, 2013, WTCC's EAC for the federally funded PATH Hub project is more than \$3.7 billion. WTCC is reporting the PATH Hub expenditures through January 31, 2013, to be over \$2.4 billion.

On October 18, 2012, the Port Authority Board re-authorized the WTC PATH Hub project, at an estimated total project cost range of \$3.74 billion to \$3.995 billion. This allocation provided for an increase in the budget from \$3.4 billion to \$3.7 billion.

The \$3.7 billion budget reflects the updated engineer's estimates for all packages in the completed procurement plan. The total cost to complete the PATH Hub project includes the EAC and the non-Hub shares of the common infrastructure projects, such as Retail, the Central Chiller Plant (CCP), the Common Electrical System, and operational support areas. WTCC continues to update the shared cost allocations associated with the non-Hub costs.

The following chart summarizes the latest available EAC (WTCC's forecast) and expenditures as of January 31, 2013:

Description	EAC (WTCC's Forecast) (in millions)	Expenditures (in millions)
Construction	\$2,847	\$1,853
Program Management and Design	666	577
Contingency	(b) (4)	- (b) (4)
Total	(b) (4)	(b) (4)

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

Although it is 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 will be funded from a separate operating account set up by PANYNJ for Hurricane Sandy and likely will not impact WTCC's current EAC of \$3.7 billion.

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.

It is expected that risks associated with the recovery from Hurricane Sandy will be identified and quantified during the first quarter of 2013.

F Technical Capacity and Capability Review

An update to the TCCR and a new TCCR Spot Report are anticipated to be completed later in 2013. The PEP will be used by the FTA to measure WTCC's capability and capacity.

Project Management Plan (PMP)

The grantee is preparing updates to its Project Quality Assurance Plan, Force Account Plan, and Operations Management Plan, all of which are PMP sub-plans.

Project Organization

WTCC updates consultant and contractor staff assignments across the project areas to address staffing needs as the project develops.

Project Quality Assurance

During February 2013, the WTCC QA and CM QA performed five quality assurance audits of ongoing field construction activities, including installation of the Oculus structural steel sub portals.

G Site Safety Review

The WTC PATH Hub project's year-to-date safety performance through January 2013 has not yet been reported: seven of the Hub contractors have yet to provide their January craft labor hours from which the safety indices are derived. Without that information, only the 2012 safety data can be summarized. From the start of the year through the end of December 2012, there were 36 lost-time injuries and 91 recordable injuries on the WTC PATH Hub project, with 2,135,865 hours worked. The resultant year-to-date LTIR for the project was 3.37, which compared unfavorably to the national average of 2.10. The corresponding TCIR for the project for the same period was 8.52, which is also above the national average of 5.10.

H Issues/Problems/Suggestions

- The storm damage to the new PATH Hub facility construction is extensive. Much of the equipment and systems has been submerged and will need extensive rehabilitation or replacement, including large, long-lead-time equipment, such as the emergency smoke purge fans and the electrical power distribution centers.
- The overall completion of the PATH Hub project is expected to slip as the effects of Hurricane Sandy are remediated. (b) (4)
- While the cost to complete the PATH Hub is expected to increase significantly as WTCC remediates and mitigates the effects of Hurricane Sandy, WTCC has advised that the costs related to Hurricane Sandy will be funded from a separate operating account and likely will not impact WTCC's current EAC. The adequacy of the current budget and schedule contingency will be evaluated as information becomes available.

I Action Items

Key Project Action Item Checklist

Key Project Action Item	Agency	Target Completion	Status/Comments
PEP Milestone Review Point	PANYNJ/ LMRO/ PMOC	First Quarter 2013	This will be delayed due to the hurricane damage.

End of report. Appendices follow.

APPENDICES

APPENDIX A – LIST OF ACRONYMS

CA	Construction Agreement
CCP	Central Chiller Plant
CM	Construction Manager
CO	Change Order
EAC	Estimate at Completion
EBG	East Box Girder
FTA	Federal Transit Administration
IMS	Integrated Master Schedule
LMRO	Lower Manhattan Recovery Office
LTIR	Lost-Time Incident Rate
MEP	Mechanical, Electrical, and Plumbing
NYCDOT	New York City Department of Transportation
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
PHC	PATH Hall Construction
PMOC	Project Management Oversight Contractor
PMP	Project Management Plan
QA	Quality Assurance
QPRM	Quarterly Progress Review Meeting
RCD	Required Completion Date
RRCA	Revised and Restated Construction Agreement
SSTG	Structural Steel to Grade
TCCR	Technical Capacity and Capability Review
TCIR	Total Case Incident Rate
WTC	World Trade Center
WTCC	World Trade Center Construction

APPENDIX B – LESSONS LEARNED

No update.