

MONTHLY MONITORING REPORT

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

December 2012

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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

Most of the immediate impacts of Hurricane Sandy to the PATH Hub project were addressed during the month of December 2012. The water that infiltrated the site was pumped away, debris was removed, and affected areas were cleaned. The damage assessment was substantially completed; cost estimating and equipment procurement planning are continuing.

Normal construction activity returned to pre-storm levels in December 2012. The cost and schedule impacts of the damage to the PATH Hub project are being assessed.

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 QPRM for the third quarter of 2012 was reformatted and rescheduled for handling in executive session because of the effect Hurricane Sandy recovery had on normal operations.

Design Activity

The designer provided guidance and technical criteria for the assessment of equipment and systems damaged by the storm.

Procurement Activity

World Trade Center Construction (WTCC) has completed all planned procurements. It is likely that WTCC will require additional procurement actions to support its Hurricane Sandy recovery efforts.

Construction Activity

Normal construction activity, which had come to a standstill due to the storm, returned to pre-storm levels during December 2012. In addition to storm recovery efforts, permanent construction activity was performed during the month.

At the PATH Hall in the west bathtub, the structural steel contractor continued with welding, application of intumescent paint, and installation of precast ductwork above Tracks 1 and 2. The general contractor was able to resume permanent construction activity only at the mezzanine level, Platform A, and the East-West Connector.

At the Transit Hall in the east bathtub, the structural steel contractor continued welding of the east end arch. The superstructure concrete contractor has substantially completed placement of reinforcing steel and concrete for grade level slabs at elevation 320. The Oculus steel contractor started erection of the Oculus steel in December 2012.

Schedule

In October 2012, WTCC released Integrated Master Schedule (IMS) 64, [REDACTED]. Damage caused by Hurricane Sandy will delay the construction progress and the scheduled completion date. WTCC plans to release IMS 65 in January 2013, but it will not reflect Hurricane Sandy impacts. IMS 65 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, with impacts of Hurricane Sandy included, will be issued during the first quarter of 2013.

Cost Data

WTCC submitted its Cost Model Revision on December 29, 2012. Based on the contract awards and estimates through November 30, 2012, WTCC's Estimate at Completion (EAC) for the federally funded PATH Hub project is just over \$3.7 billion. WTCC is reporting the PATH Hub expenditures through November 30, 2012, at approximately \$2.4 billion.

Risk Management

The PMOC conducted a contingency update workshop in August 2011. 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. 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 TCCR Spot Report had been anticipated in the second quarter of 2013. The update will be delayed due to the Hurricane Sandy impacts.

Project Management Plan (PMP)

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

Project Quality Assurance

During December 2012, the WTCC and Construction Manager (CM) Quality Assurance (QA) performed nine quality assurance audits, including audits of WTCC Document Control, field construction, and inspection activities for the Oculus structural steel received at the contractor's storage facility.

Site Safety and Security Review

After Hurricane Sandy, WTCC took measures that included using protective equipment, following Federal Emergency Management Agency guidelines, conducting decontaminating procedures, assessing environmental conditions, securing petroleum tanks and flammable material, and monitoring the air for contaminants and for carbon monoxide.

In addition to conducting its regularly scheduled safety meetings with contractors and construction management staff, WTCC is reviewing blast plate painting procedures and organizing a fall protection demonstration in connection with the Oculus structural steel erection. The safety management performance metrics will be updated in the next report.

Issues/Problems/Suggestions

- The overall completion of the PATH Hub project is expected to slip as the effects of Hurricane Sandy are remediated. [REDACTED]
- 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 current budget and schedule contingency 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 QPRM for the third quarter of 2012 was reformatted and rescheduled for handling in executive session because of the effect Hurricane Sandy recovery had on normal operations.

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 certifications of completion of elements of construction.

The designer continued to provide guidance and technical criteria for the assessment 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. It is likely that WTCC will require additional procurements actions to support its hurricane recovery efforts.

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

The immediate impacts of Hurricane Sandy to the PATH Hub project have been effectively dealt with during the month of December 2012. The water that infiltrated the site was pumped away, debris was removed, and the affected areas were cleaned. The damage assessment was substantially completed; cost estimating and equipment procurement planning are underway.

Contractors have demobilized their pumping equipment and have largely completed all debris removal. Cleaning was substantially completed; only smaller areas that are difficult to access still need to be completed. With the substantial completion of the damage assessment, contractors have begun to remove selected equipment and systems to make way for their subsequent replacement.

Normal construction activity, which had come to a standstill due to the storm, returned to pre-storm levels during December.

Transit Hall Concrete: The contractor has substantially completed the Transit Hall concrete slabs at elevation 320 (ground level). The contractor continued placement of concrete equipment pads and concrete wall sections located at the lower levels of the Transit Hall.

Transit Hall Waterproofing and Site Work: The contractor continued to install the waterproofing system on the Transit Hall structural concrete slab at elevation 320.

Structural Steel to Grade (SSTG) – Area 3: Structural Steel to Grade work in Area 3 continued during December, but with a diminishing workforce, as the structural steel work in this area continues to wind down. The contractor completed its erection of all structural steel and is currently finishing the welding of that steel, which is located at the far eastern and far western ends of Area 3. The SSTG contractor's remaining welding is forecast for completion in January 2013, essentially completing the SSTG contractor's work in Area 3.

Oculus Steel: Fabrication of Oculus steel continued during December 2012. The current metrics issued by the fabrication subcontractor are: 100 percent completion for sub-portals, 100 percent completion for lower portals, 37 percent completion for upper portals, 48 percent completion for abutments, 12 percent completion for arches, and 18 percent completion for transitions. All of the 48 sub-portals and all of the 50 lower portals were received in New York City on December 19, 2012, and were off-loaded at the contractor's storage facility. Mobilization of the Oculus steel contractor's high capacity assist crane was completed during December. The assist crane was then used by the Oculus steel contractor to assemble the first of two high capacity tower cranes at the east end of the Oculus area. The start of Oculus steel erection began on December 19, 2012.

Oculus Glass: Although the control samples of glass panels were approved for fabrication on September 13, 2012, the production of the Oculus glass has not yet begun. It is currently forecast to begin on January 3, 2013. WTCC has retained the services of a consultant to visit the fabrication facility once the production has shifted to assembly of glass units, which is currently forecast to occur in March of 2013.

Transit Hall Interior Stone: Mobilization is underway. This contract will provide 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 PATH Hub.

PATH Hall Construction (PHC): *The PHC contractor has completed washing and cleaning the flooded areas. The contract work has resumed at Platform A, the South Mezzanine, and the East-West Connector. The PHC contractor has made progress removing the damaged emergency smoke purge fans and electrical systems to make way for their subsequent replacement. The PHC contractor and WTCC continued to assess the damage to the flooded electrical systems and the mechanical equipment. The completion of Platform A will be delayed by several months.*

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 December 2012, 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 December 2012, the three MEP contractors and the fire protection contractor were unable to make progress on most of their work because of the conditions and damage resulting from Hurricane Sandy. Additionally, much of the in-place work performed to date at the lower elevations suffered irreparable damage and will have to be redone, including Spot Network SN-TN, the North Fan Room, the South Fan Room, and initial work performed in the Central Fan Plant, located at elevation 229 in the east bathtub.*

Permanent Electric Power System: *Work in Spot Network SN-TS, located in Tower 3, continued during December 2012.*

Vertical Circulation: *The contractor continued installation of the escalators in the East-West Connector. Replacements for the damaged sections of the Platform A escalators were ordered. The contractor continued installation of the Platform A elevator rails.*

Architectural Trades: *The storefronts are fabricated and are expected to be delivered to the job site in January 2013.*

Miscellaneous Metals: *During December 2012, the contractor continued to install steel components at many PATH Hub locations, including the spot network rooms.*

North Projection Structural Rehabilitation: *During December 2012, the contractor continued installation of the secant pile wall. The contractor has substantially completed the repairs to the existing slurry wall at elevations 253, 267, and 284. The contractor continued to construct the slab above the PATH tracks and to install the Concrete Masonry Units (CMUs).*

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 and the New York City Department of Transportation*

(NYCDOT) coordinated closely to ensure that the contractor received the necessary road use permits to deliver the Oculus structural steel to the World Trade Center construction site.

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 [REDACTED]. The release of IMS 65 is now expected in January 2013 and 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 IIMS 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 Bathtub Weather-tight 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 December 29, 2012. Based on the contract awards and estimates through November 30, 2012, WTCC's EAC for the federally funded PATH Hub project is more than \$3.7 billion. WTCC is reporting the PATH Hub expenditures through November 30, 2012, at approximately \$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 *November 30, 2012*:

Description	EAC (WTCC's Forecast) (in millions)	Expenditures (in millions)
Construction	\$2,847	\$1,807
Program Management and Design	666	569
Contingency		
Total		

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 in the second quarter of 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, which are all 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 December 2012, the WTCC and CM QA's performed nine quality assurance audits, including audits of WTCC Document Control, field construction, and inspection activities for the Oculus structural steel received at the contractor's storage facility.

G Site Safety and Security Review

After Hurricane Sandy, WTCC took measures that included using protective equipment, following Federal Emergency Management Agency guidelines, conducting decontaminating procedures, assessing environmental conditions, securing petroleum tanks and flammable material, and monitoring the air for contaminants and for carbon monoxide.

In addition to conducting its regularly scheduled safety meetings with contractors and construction management staff, WTCC is reviewing blast plate painting procedures and organizing a fall protection demonstration in connection with the Oculus structural steel erection. The safety management performance metrics will be updated in the next report.

H Issues/Problems/Suggestions

- The storm damage to the new PATH Hub facility construction is extensive. Much of the equipment and systems have 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. [REDACTED]
- 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
CMU	Concrete Masonry Unit
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
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.