

## **MONTHLY MONITORING REPORT**

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

*July 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

### 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. *Completion of the Revised and Restated Construction Agreement (RRCA) is planned for later in the third quarter of 2012.*

### Quarterly Progress Review Meeting (QPRM)

*The QPRM for the third quarter of 2012 is to be scheduled.*

### Design Activity

The designer continued to provide post-award design support services.

### Procurement Activity

To date, World Trade Center Construction (WTCC) has completed more than 95 percent of its planned procurements. *Award of the remaining procurements is planned for early in the third quarter of 2012.*

### Construction Activity

*At the PATH Hall, the structural steel contractor completed the load transfer of the 1 Line box to its permanent supports and continued the installation of precast ductwork above Tracks 1 and 2. The general contractor began preparing the area over the roof of the 1 Line box for pavement. The general contractor continued structural concrete and finishes installation at Platform A and substantially completed Mechanical, Electrical, and Plumbing (MEP) and*

*finishes installations in the support areas. The general contractor began track installation for Track 1.*

*At the Transit Hall, the structural steel contractor completed erection of framing to the plaza level and continued welding, continued erection of the east end arch, and completed additional sections of metal deck installation at elevations 296 and 320. The superstructure concrete contractor continued placement of reinforcing steel for the concrete slabs at elevations 296 and 320. Fabrication of Oculus steel continued during the month of July 2012 and focused on the structural elements needed for the start of erection later in the third quarter of 2012. Oculus glass fabrication remains in the start-up phase, and close coordination with the glass manufacturer continues.*

*The MEP and fire protection contractors continued field installation throughout the site during July 2012, including the continued installation of embedments and penetrations in the slabs at elevations 296 and 320, in close coordination with the superstructure concrete contractor.*

*The vertical circulation contractor mobilized in July 2012 and began installation of the escalators for the East-West Connector and Platform A. Many of the escalators have been fabricated and are being stored off-site until the contractor is ready for field installation.*

#### Schedule

*In June 2012, WTCC released Integrated Master Schedule (IMS) 62, [REDACTED] [REDACTED] The release of IMS 63 is expected in August 2012.*

#### Cost Data

*WTCC provided a further updated excerpt of its Cost Model Revision 11 on July 30, 2012. Based on the contract awards and estimates through June 30, 2012, WTCC's Estimate at Completion (EAC) for the federally funded PATH Hub project is approximately \$3.4 billion, which is \$1.1 billion more than the 2006 CA budget. WTCC is reporting the PATH Hub expenditures through May 31, 2012, at \$2.2 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 are completing the Project Execution Plan (PEP) in conjunction with the completion of the RRCA for execution later in the third quarter of 2012.*

#### Technical Capacity and Capability Review (TCCR)

*An update to the TCCR and the ensuing TCCR Spot Report are anticipated in the fourth quarter of 2012.*

#### Project Management Plan (PMP)

*The grantee is preparing updates to both its Force Account Plan and its Operations Management Plan, which are PMP sub-plans.*

## Project Quality Assurance

*During July 2012, the PMOC oversaw three quality activity audits performed by WTCC Construction Management Quality Assurance (QA) staff and one QA program audit performed by the Construction Management QA staff. Each audit verified implementation of contractor quality programs and the quality aspects of ongoing field construction activities.*

*In addition, the PMOC participated in one biweekly QA meeting with the WTCC Construction Management QA staff that focused on WTCC QA's oversight of WTCC Hub construction activities and follow-up on corrective actions from past audits.*

## Site Safety and Security Review

*From the start of the year through the end of June 2012, there have been ten lost-time injuries and 46 recordable injuries on the WTC PATH Hub project and 986,473 total hours worked. The resultant year-to-date Lost-Time Incident Rate (LTIR) for the WTC PATH Hub project is 2.02, which compares favorably to the national average of 2.10. The corresponding Total Case Incident Rate (TCIR) for the same period is 9.32, which is above the national average of 5.10.*

## Major Issues/Problems

- It is the opinion of the PMOC, based on its assessment of risk and evaluation of the available information and current trends, recent contract awards, and engineer's estimates, that the cost of the project may increase to approximately \$3.8 billion. However, it should be noted that this opinion may change as WTCC advances the project and either incurs or mitigates risk.
- The trend for current project construction indicates that delays have occurred in several construction packages. *The overall completion of the PATH Hub project has not slipped in the past quarter; but given the complexity of coordination for the construction that remains, additional delays continue to be a concern. WTCC continues to mitigate schedule delays to prevent further slippage.*

## 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 original CA was signed on April 25, 2006. *WTCC and the LMRO are completing the resolution of open items for the RRCA. Execution of the RRCA is planned for later in the third quarter of 2012.*

#### Quarterly Progress Review Meeting

*The QPRM for the third quarter of 2012 is to be scheduled.*

#### 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.)

#### Preliminary Engineering (PE) and Final Design (FD)

*The designer continued providing post-award design support services for the PATH Hub construction, including responding to contractor Requests for Information, certifications of completion of elements of construction, and energy consumption modeling to meet Sustainable Design Guidelines (SDG). In July 2012, the designer issued the final energy model and report, which confirmed that the 20 percent energy cost reduction requirement of SDG was not only met but exceeded.*

#### Procurement and Contracting Activities

To date, WTCC has completed over 95 percent of its planned procurements. *The remaining procurements, which include stone installation and Oculus coatings, are scheduled to be presented at the August 2, 2012 PANYNJ Board meeting.*

*Two ancillary contracts have yet to be awarded: Cortlandt Street Station finishes, for which proposals are due August 2, 2012, and North Temporary Access demolition, which will be scheduled later in the project.*

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

### Construction Status

*Transit Hall Concrete: The contractor continued placement of multiple sections of the Transit Hall concrete slabs at elevation 296. The installation of reinforcing steel continues after the MEP trades complete the installation of embedded inserts and sleeves on completed sections of metal deck at elevations 296 and 320.*

*Structural Steel to Grade (SSTG) – Area 3: The structural steel contractor continued erection of the structural steel framing up to the plaza level during July 2012. Erection of the shorter-span east end arch was completed during July. Steel between column lines -12 and +12, which comprises the main body of the SSTG for the Transit Hall, reached 100 percent erected and 95 percent welded, with 75 percent of the welding verified through non-destructive testing through the end of the month. The SSTG contractor's installation of heavy gauge metal decking on the structural steel framing at elevation 296 approached 100 percent completion at the end of July 2012, and the heavy gauge decking at elevation 320 reached approximately 50 percent completion. This heavy gauge metal decking will serve as a form for the reinforced concrete slabs that will follow at both elevations. After the supply chain problems reported by the previous metal deck fabricator, alternative sources of metal deck material were secured, and all required metal decking has been received on-site. Most of the decked areas at elevation 296 have been turned over to the MEP, fire protection, and structural concrete contractor, and several of the decked areas at elevation 320 have also been turned over. The remaining portions of the metal decking at elevation 320 are scheduled to be turned over during August 2012. Completion of the Area 3 structural steel to grade erection is still forecasted for the third quarter of 2012.*

*Oculus Steel: Fabrication of Oculus steel continued during July 2012. Current metrics on the status of fabrication of the principal Oculus steel elements, based on recent shop status reports issued by the fabrication subcontractor, indicate that fabrication is presently 100 percent complete for sub-portals, 86 percent complete for lower portals, 22 percent complete for upper portals, 27 percent complete for abutments, 2 percent complete for arches, and 0 percent complete for transitions. Transatlantic delivery of the Oculus steel will be divided among seven shiploads, with the first vessel projected to arrive in New York, three weeks later. A detailed delivery route for the truck delivery of the steel to the site has been developed; more than 460 over-sized truck loads are planned for late night hours at the rate of four loads per night. The mid-October 2012 projected start of Oculus steel erection will be supported by the installation of two high capacity cranes by the Oculus steel contractor in order to handle the Oculus steel structural elements.*

*Oculus Glass: Regular biweekly meetings with the contractor continued during July 2012. Visual and performance mock-ups, completed during June 2012 at the glass manufacturer's facility, are expected to arrive in the New York area by the end of August 2012. The visual mock-*



*up is currently planned to be delivered to the Harrison Rail Yard, and the performance mock-up is to be delivered to the testing lab in Pennsylvania.*

*PATH Hall Construction (PHC): The PHC contractor began removal of the temporary support system of the 1 Line box at the PATH Hall Underpass. The contractor continued to make progress on Platform A. Track work installation for Platform A Track 1 continued during July 2012. WTCC expects Platform A to be completed in the fourth quarter of 2012. The PHC contractor also made progress on the extensive MEP installation and architectural construction for the operational support areas on elevations 266 and 284 in the south mezzanine, Platform A, PATH substation No. 3, and level 4 in Tower 4. The PHC contractor continued interior fit-out work at the East-West Connector.*

*Structural Steel to Grade (SSTG): The structural steel contractor completed the load transfer of the 1 Line box at the PATH Hall Underpass. The installation of the precast concrete ductwork over Tracks 1 and 2 of Platform A continued. The contractor made progress erecting structural steel north of the East Box Girder (EBG). The contractor began the intumescent paint coating of the structural steel at the East-West Connector. The contractor is expected to complete punch list work on the 1 Line box steel support structure by the end of August 2012.*

*MEP and Fire Protection Work: The three MEP contractors and the fire protection contractor completed their work in spot network SN-TN, thus allowing its energization to be accomplished in mid-July 2012. Energization of this spot network is important to obtaining a Tower 2 temporary certificate of occupancy and is also important to energizing smoke purge fans SX-1 and SX-2 in the north fan room. Those fans must be available to support the opening of Platform A later this year. Also during July, additional portions of the completed Area 3 metal deck at elevations 296 and 320 were provided to the MEP and fire protection contractors so that they could install any embedded items, sleeves or penetrations before releasing those same areas to the structural concrete contractor to install reinforcing steel and concrete. Most areas at elevation 296 and approximately half of the areas at elevation 320 were completed by the MEP and fire protection contractors during July in preparation for concrete placement.*

*Permanent Electric Power System: Spot Network SN-TN was energized in mid-July 2012, thus allowing for delivery of permanent power to critical PATH Hub elements, including the north fan room. The north fan room will provide temporary ventilation at Platform A when it opens to revenue service.*

*Vertical Circulation: The contractor continued to submit engineering drawings and technical data for review and approval by the designers. Multiple elevators and escalators were fabricated and were placed in a storage facility, and additional elevators and escalators are currently being fabricated and are anticipated to be shipped to the site later in the third quarter of 2012. The contractor continued installation of the escalators in the East-West Connector and is expected to begin installation of the elevators and escalators located in Platform A during August 2012.*

*Architectural Trades: In July 2012, the designer reviewed the fascia mock-up installed in the East-West Connector and will provide comments in August 2012. The storefronts were released for fabrication in July 2012. The contractors continued submitting shop drawings and technical data for review and approval by the designers.*

**Miscellaneous Metals:** *Miscellaneous metals submittals are under review by the designer. The contractor crews continued to install steel components at many PATH Hub locations, including the spot network rooms.*

**North Projection Structural Rehabilitation:** *The contractor continued making repairs to the existing slurry wall and reinforcing steel installation of the north liner wall at elevations 253, 267, and 284. The installation of concrete masonry units began in July 2012.*

#### 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.

#### 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 logistics coordination for the delivery of Oculus structural steel to the site.*

#### Community Relations

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

#### C Schedule

WTCC released IMS 62 in June 2012. This latest IMS, with a data date of April 1, 2012, shows no slippage to the PATH Hub project overall completion date [REDACTED]

[REDACTED] This projection is based on the PMOC's assessment of risk and its evaluation of the available information and current productivity trends. However, WTCC's current projected completion date of [REDACTED] is achievable if risks are properly managed. The release of IMS 63 is expected in August 2012.

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

Significant Activity	Action by
Completion of RRCA	WTCC and FTA
Completion of metal deck concrete at street level	WTCC
Platform A in operation	WTCC
Mobilization of Oculus steel contractor	WTCC
SSTG Area 3 steel complete	WTCC

## D Cost Data

*WTCC provided a further updated excerpt of Cost Model Revision 11 on July 30, 2012. Based on the contract awards and estimates through July 31, 2012, WTCC's EAC for the federally funded PATH Hub project is approximately \$3.4 billion or approximately \$1.1 billion more than the 2006 CA budget. WTCC is reporting the PATH Hub expenditures through May 31, 2012, at approximately \$2.2 billion.*

The \$3.4 billion budget reflects the updated engineer's estimates for many of the packages awarded over the past several months. 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 Facilities. WTCC continues to update the shared cost allocations associated with the non-Hub costs. Updated information was not available at the time of this report.

*The following chart summarizes the latest available EAC (WTCC's forecast) and expenditures as of May 30, 2012:*

Description	EAC (WTCC's Forecast) (in millions)	Expenditures (in millions)
Construction	\$2,635	\$1,612
Program Management and Design	590	578
Contingency		
Total		

Although the PANYNJ increased the PATH Hub budget to \$3.4 billion, it is the opinion of the PMOC that the budget may increase to \$3.8 billion, based on the PMOC's evaluation of the continuing trends, including delays to construction, and the PMOC's analysis of remaining risks. However, it should be noted that this opinion may change as WTCC advances the project and either incurs or mitigates risk.

## 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. Preliminary results from this workshop and subsequent analyses are being used to develop the final RRCA and PEP. The FTA and the PMOC expect to complete the PEP in conjunction with completion of the RRCA.



## F Technical Capacity and Capability Review

An update to the TCCR and a new TCCR Spot Report are anticipated before the end of 2012, after the FTA receives the completed RRCA and PEP. It is expected that 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 both its Force Account Plan and its Operations Management Plan, 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 July 2012, the PMOC oversaw three quality activity audits performed by WTCC Construction Management QA staff and one QA program audit performed by the Construction Management QA staff. Each audit verified implementation of contractor quality programs and the quality aspects of ongoing field construction activities.*

*In addition, the PMOC participated in one biweekly QA meeting with the WTCC Construction Management QA staff that focused on the status of WTCC QA's oversight of WTCC Hub construction activities and follow-up on corrective actions from past audits.*

## G Site Safety and Security Review

*The June 2012 year-to-date safety data indicates a slight deterioration in WTCC's PATH Hub safety performance during the month when compared to last month's performance. From the start of the year through the end of June 2012, there have been 10 lost-time injuries and 46 recordable injuries on the WTC PATH Hub project and 986,473 hours worked. The resultant year-to-date LTIR for the WTC PATH Hub project is 2.02, which compares favorably to the national average of 2.10. The corresponding TCIR for the project for the same period is 9.32, which is above the national average of 5.10.*

[REDACTED]

*WTCC continues to take steps to improve [REDACTED] safety performance through close coordination with the contractor as well as site-wide safety policy changes. The effectiveness of these efforts in improving the safety performance of the [REDACTED] will be reviewed as additional data becomes available.*

## H Major Issues/Problems

- Although the PANYNJ increased the PATH Hub project budget to \$3.4 billion, it is the opinion of the PMOC that the project cost may increase to approximately \$3.8 billion, based on the PMOC's evaluation of the continuing trends and analysis of remaining risks (such as risks associated with steel fabrication and erection and with the contract packages not yet awarded). However, it should be noted that this opinion may change as WTCC advances the project and either incurs or mitigates risk. WTCC should complete an evaluation of the remaining project risks and update its cost model and forecast as part of its completion of the RRCA.
- The trend for current project construction indicates that delays have occurred in several construction packages. IMS 62 does not show any delay to the completion of the PATH Hub project, which is scheduled for [REDACTED] WTCC continues to mitigate schedule delays to prevent further slippage. *The overall completion of the PATH Hub project has not slipped in the past quarter, but given the complexity of coordination for the construction that remains, additional delays continue to be a concern.*

## I Action Items

### Key Project Action Item Checklist

Key Project Action Item	Agency	Target Completion	Status/Comments
A risk assessment update will be conducted to support the completion of an executable RRCA.	PANYNJ/ LMRO/ PMOC	Fourth Quarter 2012	Analysis completed in fourth quarter 2011. Finalization of the report continues.

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
FD	Final Design
FTA	Federal Transit Administration
IMS	Integrated Master Schedule
LMRO	Lower Manhattan Recovery Office
LTIR	Lost-Time Incident Rate
MEP	Mechanical, Electrical, and Plumbing
NYCT	New York City Transit
OPL	Office of Program Logistics
PANYNJ	Port Authority of New York and New Jersey
PATH	Port Authority Trans-Hudson
PE	Preliminary Engineering
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
RRCA	Revised and Restated Construction Agreement
SDG	Sustainable Design Guidelines
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.