

## **MONTHLY MONITORING REPORT**

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

*August 2012*

PMOC Contract Number: DTFT60-09-D-00008

Task Order Number: T09002, Project Number: RV-43-0001, Work Order No. 002

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

David Evans and Associates, Inc., 17 Battery Place, Suite 1328, New York, NY 10004

PMOC Lead: Craig Goodall, Contact Information: 212-364-2112, [cxgo@deainc.com](mailto:cxgo@deainc.com)

PMOC Length of Time:	David Evans and Associates, Inc.	October 2008
	Craig Goodall	December 2005

## TABLE OF CONTENTS

TABLE OF CONTENTS .....	2
THIRD-PARTY DISCLAIMER.....	3
REPORT FORMAT AND FOCUS .....	4
EXECUTIVE SUMMARY .....	4
Project Description.....	4
Construction Agreement (CA) .....	4
Quarterly Progress Review Meeting (QPRM) .....	4
Design Activity .....	4
Procurement Activity .....	4
Construction Activity .....	4
Schedule .....	5
Cost Data.....	5
Risk Management .....	5
Technical Capacity and Capability Review (TCCR) .....	5
Project Management Plan (PMP).....	5
Project Quality Assurance.....	6
Site Safety and Security Review .....	6
Major Issues/Problems .....	6
MONITORING REPORT .....	7
A Project Description .....	7
B Project Status .....	7
C Schedule .....	10
D Cost Data .....	10
E Risk Management.....	11
F Technical Capacity and Capability Review .....	11
G Site Safety and Security Review .....	12
H Major Issues/Problems .....	12
I Action Items .....	13
APPENDICES .....	14
APPENDIX A – LIST OF ACRONYMS .....	14
APPENDIX B – LESSONS LEARNED .....	14

### **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

*World Trade Center Construction (WTCC) has completed all of its planned procurements.*

### Construction Activity

*At the PATH Hall, the structural steel contractor continued with remaining welding and the installation of precast ductwork above Tracks 1 and 2. The general contractor completed the placement of roadway base material over the roof of the 1 Line box. The general contractor completed structural concrete and continued finishes installation at Platform A. The support area spaces in the South Mezzanine were prepared for acceptance testing and inspection. The general contractor continued rail installation for Track 1 and substantially completed the removal of the 1 Line box temporary underpinning.*

*At the Transit Hall, the structural steel contractor 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 completed the elevation 296 concrete slabs and continued placement of reinforcing steel and concrete for elevation 320. Fabrication of Oculus steel continued during the month of August 2012 and focused on the completion of the structural elements needed for the start of steel erection later in 2012. Oculus glass fabrication progressed, with the completion of visual and performance mock-ups.*

*The Mechanical, Electrical, and Plumbing (MEP) and fire protection contractors continued field installation throughout the site during August 2012. The MEP embedments and penetrations installations in the slabs at elevations 296 and 320 were completed in close coordination with the superstructure concrete contractor.*

*The vertical circulation contractor continued with installation of the escalators for the East-West Connector and began preparations for installations in 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 August 2012, WTCC released Integrated Master Schedule (IMS) 63, [REDACTED] [REDACTED] The release of IMS 64 is expected in October 2012.*

#### Cost Data

*WTCC provided a further updated excerpt of its Cost Model Revision 11 on August 27, 2012. Based on the contract awards and estimates through July 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 June 30, 2012, at approximately \$2.3 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 resulting 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 August 2012, the PMOC oversaw eight quality assurance (QA) activity audits and one quarterly program audit of the Oculus steel contractor performed by the Construction Management QA staff. In addition, the PMOC oversaw a QA activity audit for a hydrostatic test and a QA program audit on the closeout of Package 18bxt conducted by WTCC QA staff. Each audit verified implementation of a specific contractor's quality program, including ongoing field construction activities, tests, and inspections.*

*In addition, the PMOC participated in two biweekly QA meetings with the WTCC QA manager 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 July 2012, there have been 14 lost-time injuries and 54 recordable injuries on the WTC PATH Hub project and 1,043,254 total hours worked. The resultant year-to-date Lost-Time Incident Rate (LTIR) for the WTC PATH Hub project is 2.68, which compares unfavorably to the national average of 2.10. The corresponding Total Case Incident Rate (TCIR) for the same period is 10.16, 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 LMRO have resolved all 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).

#### Procurement and Contracting Activities

*With award of the stone installation and Oculus coating contract packages in August 2012, WTCC has now completed all planned procurements for the PATH Hub 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 elevations 296 and 320. Elevation 320 is street and plaza level. As the MEP trades complete the installation of embedded inserts and sleeves on completed sections of metal deck, the installation of reinforcing steel continues. The remaining sections of metal deck at elevation 320 are expected to be turned over to the contractor in early September 2012.*

**Structural Steel to Grade (SSTG) – Area 3:** *The SSTG contractor neared completion of erection of the structural steel framing up to the plaza level during August 2012. Steel between column lines -12 and +12, which comprises the main body of the SSTG for the Transit Hall, reached 100 percent completion during the month, including welding verification through non-destructive testing. Installation of heavy gauge metal decking on the structural steel framing at elevation 296 also reached 100 percent completion in early August 2012, and the heavy gauge decking at elevation 320 reached approximately 95 percent completion. The contractor started removal of the temporary truck ramp on August 24, 2012. Remaining work is primarily welding of the east and west abutments, and is expected to be completed in September 2012.*

**Oculus Steel:** *Fabrication of Oculus steel continued during August 2012. The current metrics issued by the fabrication subcontractor are 100 percent completion for sub-portals, 90 percent completion for lower portals, 24 percent completion for upper portals, 28 percent completion for abutments, 2 percent completion for arches, and 0 percent completion for transitions. Delivery of Oculus steel is expected to begin in late October 2012. A detailed delivery route for the truck delivery of the steel to the site is currently being coordinated and reviewed with New York City Department of Transportation staff, and has been discussed with the Lower Manhattan Construction Command Center (LMCCC). The Oculus steel contractor is currently expected to mobilize a high capacity assist crane to the site on September 24, 2012, and Oculus steel erection currently is forecasted to begin by November 1, 2012.*

**Oculus Glass:** *Regular biweekly meetings with the contractor continued during August 2012. Visual and performance mock-ups, which were fabricated at subcontractors' facilities, were received in the New York area during August. The visual mock-up is currently planned to be assembled and erected at the Harrison Rail Yard, where it will be available for inspection. The performance mock-up is currently being assembled at the contractor's testing facility in York, Pennsylvania, where performance testing is scheduled to start on September 13, 2012.*

**PATH Hall Construction (PHC):** *The PHC contractor continued removal of the temporary support system of the 1 Line box at the PATH Underpass. The contractor continued to make progress on Platform A. Track work installation for Platform A Track 1 continued during August 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, south and north ventilation plants, 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 SSTG contractor continued installation of the precast concrete ductwork over Tracks 1 and 2 at Platform A. The contractor made progress erecting structural steel north of the East Box Girder (EBG). The contractor continued applying the intumescent paint coating of the structural steel at the East-West Connector. The contractor*

*continued performing punch list work on the 1 Line box steel support structure and the PATH Hall roof ribs.*

*MEP and Fire Protection Work: During August 2012, the three MEP contractors and the fire protection contractor completed their installation of embedded items, sleeves, and penetrations on the Area 3 metal deck at elevation 296 and for much of the metal deck at elevation 320.*

*Permanent Electric Power System: Spot Network SN-TS, located in Tower 3, has received the major mechanical and electrical elements, which have been set on concrete pads. Those elements were set before the construction of the Concrete Masonry Unit (CMU) partition walls that serve as the enclosure for the spot network facility. Construction of those CMU walls commenced during August 2012.*

*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 for Platform A during September 2012.*

*Architectural Trades: In August 2012, the designer provided comments on the for the balcony edge and store front mock-ups installed in the East-West Connector. The storefronts are being fabricated and are expected to be delivered to the job site in October 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 contractor continued installation of 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.

### 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 63 in August 2012. This latest IMS, with a data date of June 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 64 is expected in October 2012.

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

Significant Activity	Action by
Completion of RRCA and PEP	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 its Cost Model Revision 11 on August 27, 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 June 30, 2012, at approximately \$2.3 billion.

The \$3.4 billion budget reflects the updated engineer's estimates for 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 June 30, 2012:*

Description	EAC (WTCC's Forecast) (in millions)	Expenditures (in millions)
Construction	\$2,635	\$1,696
Program Management and Design	590	555
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. Results from this workshop and subsequent analyses were used to develop the final RRCA and PEP.

#### 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 continues to update consultant and contractor staff assignments across the project areas to address staffing needs as the project develops.*

## Project Quality Assurance

*During August 2012, the PMOC oversaw eight QA activity audits and one quarterly program audit of the Oculus steel contractor conducted by the Construction Management QA staff. In addition, the PMOC oversaw one QA activity audit on a hydrostatic test and a QA program audit on the closeout of Package 18bxt performed by WTCC QA staff. Each audit verified implementation of a specific contractor's quality program, including ongoing field construction activities, tests, and inspections.*

*In addition, the PMOC participated in two biweekly QA meetings with the WTCC QA manager that focused on 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 July 2012 year-to-date safety data indicates a slight deterioration in WTCC's PATH Hub safety performance during the month compared to the safety performance in June 2012. From the start of the year through the end of July 2012, there have been 14 lost-time injuries and 54 recordable injuries on the WTC PATH Hub project and 1,043,254 hours worked. The resultant year-to-date LTIR for the WTC PATH Hub project is 2.68, which compares unfavorably to the national average of 2.10. The corresponding TCIR for the project for the same period is 10.16, which is above the national average of 5.10.*

*WTCC continues to take steps to improve the [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 monitored 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 awarded but not yet in construction). 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 64 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

<b>Key Project Action Item</b>	<b>Agency</b>	<b>Target Completion</b>	<b>Status/Comments</b>
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. Report to be completed.

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
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.