

MONTHLY MONITORING REPORT

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

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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 CA (RRCA) is planned for the first quarter of 2012.

Quarterly Progress Review Meeting (QPRM)

The QPRM for the fourth quarter was held February 27, 2012. WTCC discussed the preliminary results of the agency-wide audit ordered by the governors of NY and NJ (PA Board Audit Report), which includes the construction at the WTC site and the PATH Hub project.

Design Activity

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

Procurement Activity

To date, World Trade Center Construction (WTCC) has completed over 95 percent of its planned procurements. The remaining procurements are planned for the first *and second quarters* of 2012.

Construction Activity

At the Greenwich Street Corridor, work was substantially completed during February 2012. The contractor is completing punch list items and demobilizing from the site.

At the PATH Hall, the contractor continued platform and track construction. Concrete placement on the roof continued. Mechanical, electrical, and plumbing (MEP) fit-out work continued at the Bermuda triangle, south mezzanine, and Platform A. *A mock-up of platform finishes was installed for review. The Package 20 Structural Steel to Grade (SSTG) contractor is completing punch list work for the welded connections for the PATH Hall roof and East Box Girder (EBG).*

At the Route 9A Underpass, concrete placement for Zones 3, 4, and 5 is substantially complete, *and the contractor is completing punch list work.*

At the Transit Hall, foundation concrete was completed and the area made available for the superstructure concrete work to continue at elevations 254 and 274. The MEP contractors continued installations in coordination with the work of the concrete contractors. The Hudson & Manhattan (H&M) east bathtub wall demolition continued. Oculus steel fabrication continued. The SSTG Area 3 structural steel erection began at elevation 274.

Progress continued on site-wide infrastructure, most notably with the preparation for energizing equipment in the PATH Primary Distribution Center (PDC) in Tower 1.

Schedule

WTCC released Integrated Master Schedule (IMS) 60 in February 2012. [REDACTED]

Cost Data

WTCC submitted a partial cost model on January 23, 2012. The cost model is currently under review by the Project Management Oversight Contractor (PMOC). Based on awards through December 31, 2011, the WTCC Estimate at Completion (EAC) for the federally funded PATH Hub project is approximately \$3.4 billion. WTCC is reporting that the PATH Hub expenditures through December 31, 2011, are approximately \$2.0 billion, or about 59 percent of the current EAC. *There was not an updated cost model at the time of this report.*

Risk Management

The PMOC conducted a contingency update workshop in August 2011. WTCC and the PMOC reviewed the results generated by their respective risk models. The FTA and the PMOC expect WTCC to complete the Project Execution Plan (PEP) in conjunction with the completion of the RRCA. *FTA and WTCC are updating the draft PEP.*

Technical Capacity and Capability Review (TCCR)

An update to the TCCR and the ensuing TCCR Spot Report are anticipated in 2012, after the FTA receives the completed RRCA from WTCC *and the PEP is fully implemented.*

Project Management Plan (PMP)

The grantee is addressing FTA/PMOC comments on its final draft of the PMP version 5.5.

Project Quality Assurance

During February 2012, WTCC Quality Assurance (QA) conducted one QA audit of WTCC Document Control activities. The Construction Manager's (CM's) QA conducted four audits to verify implementation of its subcontractors' quality programs.

Site Safety and Security Review

The January 2012 data shows that WTCC's PATH Hub safety program performance measures were essentially at or below the national norms for the first month of the calendar year. From the start of the year through February 10, 2012, there were two (2) lost-time injuries and ten (10) recordable injuries on the WTC PATH Hub project for 389,965 hours of work. The resultant year-to-date Lost-Time Incident Rate (LTIR) for the WTC PATH Hub project calculates at 1.03, which compares favorably to the national average of 2.10. The corresponding Total Case Incident Rate (TCIR) for the project for the same period calculates at 5.13, essentially at the national average of 5.10.

WTCC made improvements to its site access protocol and equipment during the month of February 2012.

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 with the large quantity of steel installation remaining, 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. In January 2012, WTCC and the LMRO continued to work on issues related to the RRCA. Completion of the RRCA is planned for the first quarter of 2012.

Quarterly Progress Review Meeting

The QPRM for the fourth quarter was held February 27, 2012. FTA and the grantee discussed the progress and issues surrounding delivery of the PATH Hub project.

WTCC discussed the preliminary results of the agency-wide audit ordered by the governors of NY and NJ (PA Board Audit Report), which includes the construction at the WTC site and the PATH Hub project. WTCC advised that the Audit Report only represented preliminary findings (Phase I) and that at this point there is only speculation about possible outcomes. A more detailed audit (Phase II) began the week of February 27, 2012.



WTC Site Master Plan

WTCC's current site master plan is Master Plan Version 10, which was released on 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.

As part of its design support during the construction effort, the designer issued addenda as comprehensive releases of all documents when design adjustments were made to support contract package procurements. As of December 2011, there were 34 comprehensive addenda releases. Because the last of the packages have been completed for procurement, there is no longer a need for comprehensive addenda releases. Design adjustments will be made and distributed using the Request for Information (RFI) process, and release of the pertinent information will be made to the affected contractor.

Procurement and Contracting Activities

To date, WTCC has completed over 95 percent of its planned procurements. WTCC reports that the procurements that are planned to be completed in the first *and second quarter of 2012 are the Stone Purchase and the Oculus Coating and the Oculus Skylight, respectively.*

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

Construction Status

Package 20 Greenwich Street Corridor (GSC): *The GSC contract is substantially complete. The contractor is completing punch list work and demobilizing from the site.*

Package 20 Transit Hall Foundations: *Contract work was substantially completed in February 2012, and WTCC conducted a Final Inspection for the Transit Hall Foundation before turning over areas of completed construction for follow-on construction by others. Minor punch list work will continue through March 2012.*

Package 20 Transit Hall Concrete: The contractor continued placement of multiple sections of the Transit Hall concrete slabs at elevations 254 and 274. *The contractor continued placing concrete along the walls supporting the precast plenum level.*

Package 20 H&M Wall Demolition: Removal of applicable portions of the H&M east bathtub wall continued on the second shift. *The contractor began removal of the final section of the H&M east bathtub wall alongside the R Line subway structure. WTCC conducted partial final inspection for the completion of the demolition of the north section of the H&M wall before turning over areas of completed construction for follow-on construction by other contractors.*

Package 20 Structural Steel to Grade (SSTG): The structural steel contractor continued working double shifts on the EBG and on the east and west arch trusses located immediately adjacent to the 1 Line box. The contractor continued a third shift operation, performing radiographic examination of certain fracture-critical welds and weld repairs. *WTCC conducted partial final inspection for the completion of the structural erection of the PATH Hall roof and EBG before turning over areas of completed construction for follow-on construction by other contractors.*

Package 20 SSTG – Area 3: *The structural steel contractor began erection of the structural steel framing above elevation 274 on February 13, 2012. This milestone was achieved two days ahead of the planned start, as shown in draft IMS 60.* The contractor is completing plans to build an 80-foot temporary roadway extension at street level over Area 3 and to install rails and a slider crane on the slab at elevation 274. These treatments are required to allow for off-loading and

erection of heavier structural steel members that would exceed the capacity of the existing tower crane.

Package 20 PATH Hall Construction (PHC): *The structural steel contractor completed steel installation of the PATH Hall roof and EBG.* The PHC contractor continued progress on Track 1 construction and completed installation of columns at Platforms A and B. The precast ductwork installation on Platforms A and B continued. *The mock-up installation of typical finishes for Platform A was completed during February 2012. WTCC expects Platform A to be completed in the fourth quarter of 2012.* The PHC contractor continues placing concrete for the PATH Hall roof and for the Cortlandt Street Station roof. *The PATH Hall roof load transfer and the gravity transfer of east and west arch trusses of the 1 Line box are expected to begin in the second quarter of 2012.* The PHC contractor made progress on the extensive MEP installation and architectural construction for the operational support areas on elevations 266 and 284 in the south mezzanine, the Bermuda triangle, 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.

Package 20 MEP Work: The three MEP contractors and the fire protection contractor continued field construction activities in the east bathtub during *February 2012*. In coordination with the concrete placements, the MEP contractors continued installing embedded elements into the slabs and walls being constructed by the Transit Hall concrete contractor. *Significant progress is also being made for two of the spot networks that will serve the PATH Hub project. Spot Network SN-TS is in the final stages of construction and is expected to be energized before the end of March 2012. It will provide power to both the PATH Hub and the Vehicular Security Center projects. Spot Network SN-TN is advancing at the B4 level of Tower 2 and should be the second of the six overall spot networks to be placed in service in the coming months. This Spot Network will also serve the PATH Hub project as well as selected other stakeholders.*

Permanent Electric Power System: *Initial energization of the first two line-ups at the PDC in Tower 1 is imminent. Con Edison has performed necessary splices to the main feeders at splice chambers #1 and #2 at the B4 level of Tower 1, and the electrical contractor has also been performing the necessary associated punch list work and testing on the first two line-ups (PDC A and PDC B) as directed by Con Edison. Energization of these components will provide the PATH Hub project with initial access to permanent electric power. Subsequent energizations will increase that permanent power availability over the succeeding periods until all PATH Hub electrical power is available through the shared PDC facility.*

Package 20 Oculus Steel: Fabrication of Oculus sub-portal elements is underway at the fabricator's shop in Italy. *Shop drawing submittal and designer review for lower portal and upper portal elements continued. During February, the CM and WTCC sent representatives to the fabrication shop to assess the fabrication process and status. Increased monitoring of the work is planned, and specific production rates have been established in order to meet the delivery dates currently defined in the PATH Hub IMS.*

Package 20 Vertical Circulation: The contractor continued submitting engineering drawings and technical data for review and approval by the designers. Multiple elevators and escalators are currently in fabrication and are anticipated to be shipped to the site in the second quarter of 2012.

Package 20 Architectural Trades: *A mock-up of a typical storefront in the East-West Connector is being installed and is expected to be completed by mid-March 2012.*

Package 20 Miscellaneous Metals: *On Friday, February 24, 2012, blast doors were delivered for subsequent installation in Shear Wall #3 at elevation 254 of the Transit Hall.*

Package 18bx Route 9A Underpass: The contractor has substantially completed the concrete placement for Zones 3, 4, and 5. *Punch list work is expected to continue through March 2012.*

Package 18by North Projection Structural Rehabilitation: The contractor *continued* repairs to the existing slurry wall and reinforcing steel installation of the north liner wall. *The contractor completed placement of the concrete slab at elevation 267. The installation of the formwork and reinforcing steel of the concrete slab at elevation 284 began.*

Package 2.06 General Site Work via Work Order #6, PATH Harrison West Transfer Yard (Harrison Rail Yard): Utilization of the yard for loading and delivering materials via work train to the WTC site is pending activation of the signal system. *In the meantime, staging of the work trains is performed elsewhere on the PATH system as needed.*

Construction Logistics

The WTCC Office of Program Logistics (OPL) continued weekly logistics and coordination meetings for the west bathtub, the Greenwich Street Corridor, and the east bathtub. *The meetings 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 continues its coordination with Metropolitan Transportation Authority Capital Construction for work on the 1 Line Cortlandt Street Station, the R Line Cortlandt Street Station, and the H&M wall demolition.

Community Relations

OPL continued to distribute construction alerts, updates, and monthly construction progress newsletters to the community and stakeholders. OPL continued its regular release of the “World Trade Center Two-Week Projected Construction Status” report.

C Schedule

WTCC released IMS 60 in February 2012. This latest IMS, with a data date of December 1, 2011, shows no slippage to the PATH Hub project overall completion date of [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 following summarizes the 90-day look-ahead for significant activities:

Significant Activity	Action by
Award of the Oculus Skylight contract	WTCC
Completion of RRCA	WTCC and FTA
Completion of Transit Hall Foundation to Elevation 274	WTCC
PATH Hall roof complete	WTCC
Load transfer of PATH Hall roof	WTCC
<i>SSTG Area 3 Slider Crane in Operation</i>	<i>WTCC</i>

D Cost Data

WTCC submitted an updated portion of its cost model on January 23, 2012. The PMOC is reviewing the model and continues to discuss the cost model with WTCC. Meanwhile, based on the contract awards and estimates through December 31, 2011, 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 that the PATH Hub expenditures through December 31, 2011 are approximately \$2.0 billion. An updated cost model was not available for this report.

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 December, 31 2011:

Description	EAC (WTCC's Forecast) (in millions)	Expenditures (in millions)
Construction	\$2,571	\$1,414
Program Management & Design	660	595
Contingency	154	0
Total	\$3,384	2,009

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 approximately \$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. The FTA and WTCC are working on an RRCA to address the budget and schedule issues.

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 WTCC to complete the PEP in conjunction with the completion of the RRCA. WTCC is reviewing a draft of the PEP.

F Technical Capacity and Capability Review

An update to the TCCR and a new TCCR Spot Report are anticipated in 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 WTCC PATH Hub PMP version 5.5 is currently in final draft form and the grantee is addressing FTA/PMOC comments on the final draft.

Project Organization

WTCC continues to update consultant and contractor staff assignments across the project areas to address staffing needs.

Quality Management Program

During February 2012, WTCC QA conducted one QA audit of WTCC Document Control activities. The CM's QA conducted four audits to verify implementation of its subcontractors' quality programs. One of these audits reviewed the SSTG contractor's welding activities. The CM's auditors randomly selected eleven welds, which included three critical weld repairs. All related quality control inspection records were complete and retrievable in the records database.

G Site Safety and Security Review

The January 2012 data shows that WTCC's PATH Hub safety program performance was essentially at or below the national norms for the first month of the calendar year. From the start of the year through February 10, 2012, there were two (2) lost-time injuries and ten (10) recordable injuries on the WTC PATH Hub project for 389,965 hours of work. The resultant year to date Lost-Time Incident Rate (LTIR) for the WTC PATH Hub project calculates at 1.03, which compares favorably to the national average of 2.10. The corresponding Total Case

Incident Rate (TCIR) for the project for the same period calculates at 5.13, which is essentially at the national average of 5.10.

Noteworthy is the continuation of the skewing of the PATH Hub project’s safety performance due to unfavorable individual results recorded by the SSTG contractor and the concrete superstructure contractor. Both of these entities were above the national average with LTIRs of 2.56 and 2.60 respectively. Additionally, the SSTG contractor’s TCIR for the period was also above the national average, calculating at 23.06.

WTCC introduced a new day pass booth to quickly assist workers who have forgotten their passes. This increases productivity by eliminating the need for workers to visit the security office for a day pass. WTCC also purchased new scanners to improve efficiency at entry gates.

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 59 does not show any delay to the completion of the PATH Hub project in [REDACTED] WTCC continues to mitigate schedule delays to prevent further slippage. However, with the large quantity of steel installation remaining, delays to the completion of the project remain a concern.
- *There had been only limited progress to date on the fabrication of the Oculus steel at the shop in Italy. During February, WTCC sent representatives to the fabrication shop to assess the fabrication process and status. Increased monitoring of the work is planned, and specific production rates have been established in order to meet the delivery dates currently defined in the PATH Hub IMS. This issue is closed.*

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	[REDACTED]	[REDACTED]

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
GSC	Package 20 Greenwich Street Corridor
H&M	Hudson & Manhattan
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
PDC	Primary Distribution Center
PE	Preliminary Engineering
PEP	Project Execution Plan
PHC	Package 20 PATH Hall Construction
PMOC	Project Management Oversight Contractor
PMP	Project Management Plan
QA	Quality Assurance
QPRM	Quarterly Progress Review Meeting
RFI	Request for Information
RRCA	Revised and Restated Construction Agreement
SSTG	Package 20 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.