

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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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).....	6
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	11
E Risk Management.....	12
F Technical Capacity and Capability Review	12
G Site Safety and Security Review	12
H Major Issues/Problems	13
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 the second quarter of 2012.

Quarterly Progress Review Meeting (QPRM)

The QPRM for the first quarter of 2012 was held on May 21, 2012.

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. The remaining procurements are planned for early third quarter of 2012.

Construction Activity

At the PATH Hall, the structural steel contractor completed the jacking system under the 1 Line box in preparation for the load transfer to its permanent supports and continued the installation of precast ductwork installation above Tracks 1 and 2. The general contractor completed the placement of concrete, waterproofing and fill placement over the roof of the 1 Line box at the underpass area. The general contractor continued structural concrete and finishes installation

at Platform A and advanced MEP and finishes installations in the support areas. PATH forces installed the track turnout at the south end of Platform A

At the Transit Hall, the structural steel contractor continued framing to Plaza level; continued erection of the east end arch; and completed several sections of metal deck installation at elevations 296 and 320. The superstructure concrete contractor completed slab construction at elevations 254 and 274 and began placement of reinforcing steel for the concrete slabs at elevations 296 and 320. Fabrication of Oculus steel continued during the month of June 2012, with fabrication focusing on the structural elements needed for the start of erection in the third quarter of 2012. Oculus glass fabrication remains in the start-up phase, and close coordination with the European glass manufacturer continues.

Mechanical, Electrical, and Plumbing (MEP) and fire protection contractors continued field installation during June 2012 throughout the site and began the installation of embedments and penetrations at the elevation 296 and 320 slabs in close coordination with the superstructure concrete contractor.

Energization of the two remaining electrical power distribution centers (PDCs) was completed in June 2012, increasing the overall amount of electric power available.

The vertical circulation contractor is expected to mobilize in July 2012 and begin the 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] The release of IMS 63 is expected in August 2012.

Cost Data

WTCC submitted an updated cost model on June 26, 2012. The cost model is currently under review by the Project Management Oversight Contractor (PMOC). Based on awards through June 30, 2012; the WTCC Estimate at Completion (EAC) for the federally funded PATH Hub project remains at \$3.4 billion. WTCC is reporting that PATH Hub expenditures through February 29, 2012, are approximately \$2.2 billion, or 64 percent of the current EAC.

Risk Management

The PMOC conducted a contingency update workshop in August 2011. To provide an improved project risk tool, the FTA, the PMOC, and WTCC are completing the Project Execution Plan (PEP) in conjunction with the completion of the RRCA.

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 Operations Management Plan, PMP sub-plans.

Project Quality Assurance

During June 2012, the PMOC oversaw one activity audit performed by WTCC Construction Management Quality Assurance (QA) staff and one program audit performed by the Construction Management QA staff that verified implementation of contractor quality program and field construction activities.

In addition, the PMOC participated in two biweekly QA meetings with the WTCC QA staff focusing on WTCC QA's oversight of WTCC Hub construction activities and its follow-up on corrective actions from past audits.

Site Safety and Security Review

From the start of the year through the end of May 2012, there have been eight lost-time injuries and 28 recordable injuries on the WTC PATH Hub project and 833,731 total hours worked. The resultant year-to-date Lost-Time Incident Rate (LTIR) for the WTC PATH Hub project is 1.92, which compares favorably to the national average of 2.10. The corresponding Total Case Incident Rate (TCIR) for the same period is 6.72, 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 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. WTCC and the LMRO continue to resolve issues related to the RRCA. Completion of the RRCA is planned for the second quarter of 2012.

Quarterly Progress Review Meeting

The QPRM for the first quarter of 2012 was held May 21, 2012. FTA and the grantee discussed all major project issues.

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.

Procurement and Contracting Activities

To date, WTCC has completed over 95 percent of its planned procurements. The remaining procurements planned for completion early in the third quarter of 2012 are for the stone installation and the Oculus coatings.

WTCC received proposals on June 12, 2012 for the stone installation procurement.

WTCC has completed its review of the Oculus coatings package and is expected to recommend award at the July 2012 PANYNJ Board meeting.

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 has substantially completed placement of the Transit Hall concrete slabs at elevations 254 and 274. The installation of MEP embedded inserts and sleeves and slab reinforcement commenced on the Transit Hall slabs at elevations 296 and 320. The concrete placement of multiple sections of the concrete slabs at elevation 296 and 320 are scheduled in July 2012.

Hudson & Manhattan (H&M) Wall Demolition: Contract work was substantially completed in June 2012, and WTCC conducted a Final Inspection for the H&M Wall Demolition on June 4, 2012 before turning over the areas of completed construction to follow-on construction by others. The contractor is expected to demobilize by the end of June 2012. This contract will no longer be reported on.

Structural Steel to Grade (SSTG) – Area 3: The structural steel contractor continued erection of the structural steel framing up to the plaza level during June 2012. Erection of the shorter-span east end arch also continued during June. Fit-up activity for the arch members approached 100 percent completion with welding activity reaching approximately 75 percent completion at month's end. Steel between column lines -12 and +12, which comprises the main body of the SSTG for the Transit Hall, is 85 percent erected, 75 percent welded, with 40 percent of the welding verified through non-destructive testing through the end of the month. The west tower crane was re-assigned to the SSTG contractor from the structural concrete contractor on June 6, 2012, and immediately converted to a traveler crane similarly to how the east tower crane was previously converted. The SSTG contractor is also installing heavy gauge metal decking on the newly installed structural steel framing at elevations 296' and 320'. That metal decking will serve as a form for the reinforced concrete slabs that will follow at both elevations. Efforts to identify alternate sources of metal deck material are underway following the reported supply chain problems of the metal deck fabricator. Work on the Area 3 east box girder, which is to the east of column line +12 at elevation 296' also advanced during June 2012 with fit-up of the girder elements reaching 75 percent completion and welding on those elements advancing to approximately 60 percent completion at month's end. Completion of the Area 3 structural steel to grade erection is currently forecast to occur in the third quarter of 2012.

Oculus Steel: Fabrication of Oculus steel continued during June 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 progress is presently 97 percent complete for sub-portals, 56 percent complete for lower portals, 13 percent complete for upper portals, 15 percent complete for abutments, 1 percent complete for arches, and 0 percent complete for transitions. Transatlantic delivery of the Oculus steel will be divided into six shiploads, with the first vessel projected to leave Italy at the start of September 2012 and arrival in the United States currently forecast to occur three weeks later. Oculus steel erection is currently dependent upon several predecessor activities being performed by others including completion of the Area 3 structural steel to grade, placement of concrete slabs at elevations 296' and 320' by the structural concrete contractor, removal of the truck ramp by the SSTG

contractor, and removal of the two traveler cranes also by the SSTG contractor. The start of oculus steel erection also requires the installation of two high capacity cranes by the oculus steel contractor in order to handle the oculus steel structural elements. Mid-October 2012 is the current projection for the start of the erection of oculus steel, but that event could be negatively impacted by any delays that arise in the activities that precede it.

Oculus Glass: Regular biweekly meetings with the contractor continued during June 2012. Fabrication of a visual mock-up and a performance mock-up were both performed during June 2012 at the glass manufacturer's Austrian facility. Shipment of the mock-ups is expected to occur by the end of the month. WTCC is currently reviewing the feasibility of having the performance mock-up, which is roughly 20'x20'x10', delivered and mounted on a temporary base at the Harrison Rail Yard.

PATH Hall Construction (PHC): The PHC contractor has completed placement of the 1 line box concrete roof at the underpass. The waterproofing system was completed and the super imposed dead load was placed on top of the 1 line box structure. The load transfer of 1 line box is expected to begin on June 30, 2012. The contractor continued to make progress on Platform A. The installation of track work of Track Number 1 began in the month of June 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 has completed the jacking system installation under the 1 line box. The installation of the precast concrete ductwork over Track Number 1 and 2 of platform A continued. The contractor has made progress erecting structural steel north of the east box girder (EBG). The contractor is completing punch list work on the 1 Line box steel support structure.

MEP and Fire Protection Work: The three MEP contractors and the fire protection contractor continued their field construction activities during June 2012, primarily working on respective portions of spot network SN-TN at the 237' elevation of Tower 2. Energization of this spot network is currently projected for mid-July and is important to Tower 2's securing of a temporary certificate of occupancy and 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. In late June 2012, the first portions of the completed Area 3 metal deck at elevations 296' and 320' were provided to the MEP and Fire Protection contractors to install any embedded items, sleeves or penetrations, prior to the subsequent release of those same areas to the structural concrete contractor to install reinforcing steel and concrete. This same process will continue over the next few months as each of a total of 20 sub-areas of the metal decking are released by the SSTG contractor.

Permanent Electric Power System: The two remaining PDC line-ups, PDC G and PDC H, were energized by Con Edison in June 2012, including the splicing of feeder cables in the Tower 1 splice chamber. This completes the energization of all eight line-ups at the PDC. Ultimately, all PATH Hub electrical power will be delivered through the shared PDC facility at Tower 1 as

load is shed from the temporary primary distribution center at the north temporary access and added, via the spot networks, to the permanent primary distribution center at Tower 1.

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 in fabrication and are anticipated to be shipped to the site in the second quarter of 2012. The contractor is expected to mobilize in July 2012 and will begin installing the escalators and elevators located in the East-West Connector and Platform A.

Architectural Trades: The fascia mock up was installed in the East-West Connector during the month of June 2012. The designer will review the mock-up and provide comments in July 2012. The contractors continued submitting shop drawings and technical data for review and approval by the designers.

Miscellaneous Metals: Various miscellaneous metals items were delivered to the site during June 2012. The contractor crews continued installation of steel components at various PATH Hub locations, including the spot network rooms.

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 the removal of the temporary shield above the PATH railroad tracks.

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 of [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
<i>Load transfer – 1 Line underpass structure</i>	WTCC
<i>Mobilization of Oculus Steel Contractor</i>	WTCC
SSTG Area 3 steel complete	WTCC

D Cost Data

WTCC submitted an updated cost model on June 26, 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 June 30, 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 April 30, 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 April 30, 2012:

Description	EAC (WTCC's Forecast) (in millions)	Expenditures (in millions)
Construction	\$2,635	\$1,602
Program Management and Design	590	580
Contingency	159	0
Total	\$3,384	\$2,182

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. It appears the cost and schedule attachments will be updated dependent upon the release of updated cost and schedule information as a result of the second phase of the agency-wide audit.

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.

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

Project Organization

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

Project Quality Assurance

During June 2012, the PMOC oversaw one activity audit performed by WTCC Construction Management Quality Assurance (QA) staff and one program audit performed by the Construction Management QA staff that verified implementation of contractor quality program and field construction activities.

In addition, the PMOC participated in two biweekly QA meetings with the WTCC QA staff focusing on the status of WTCC QA's oversight of WTCC Hub construction activities and its follow-up on corrective actions from past audits.

G Site Safety and Security Review

The May 2012 year-to-date safety data shows that WTCC's PATH Hub safety performance was relatively unchanged during the month. From the start of the year through the end of May 2012, there have been 8 lost-time injuries and 28 recordable injuries on the WTC PATH Hub project and 833,731 hours worked. The resultant year-to-date LTIR for the WTC PATH Hub project is 1.92, which compares favorably to the national average of 2.10. The corresponding TCIR for the project for the same period is 6.72, which is above the national average of 5.10.

[REDACTED]

WTCC has taken steps to improve [REDACTED] safety performance. WTCC revised its policy on Fall Protection and Eye Protection to detail a sequence of progressively more severe penalties for workers and supervisors who do not properly employ fall and eye protection. In both policies, permanent revocation of site access privileges will be imposed as the final step in the process for multiple offenses. The effectiveness of these policy changes in improving the safety performance of the SSTG contractor will be reviewed as data is collected on the frequency of both types of incidents in the coming months.

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 61 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. However, with the large quantity of steel installation remaining, delays to the completion of the project remain 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	Second 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
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	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
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.