

# **World Trade Center Quarterly Report**

**2<sup>nd</sup> Quarter 2011**

October 25, 2011

The Honorable Andrew M. Cuomo  
Governor of the State of New York  
State Capitol  
Albany, New York 12224

Dear Governor Cuomo:

I am pleased to provide you with the eleventh of The Port Authority of New York and New Jersey's World Trade Center Quarterly Reports – an ongoing initiative to give the public a tangible way to track the Port Authority's progress. These quarterly installments are published on our WTC website – [www.wtcprogress.com](http://www.wtcprogress.com) – and contain a complete accounting of the interim milestones that the Port Authority established in October 2008 and others we have since added so the public has a full understanding of what we are doing to advance the rebuilding effort.

The 2<sup>nd</sup> Quarter of 2011 continued the substantial progress at the site. This past quarter, the Port Authority completed the Memorial Pavilion structure and curtainwall months ahead of its original commitment. At the same time, One World Trade Center (1WTC) continues to rise in the City skyline, reaching the 86<sup>th</sup> floor. Steel has also started to rise at the site of the WTC Vehicular Security Center and Tour Bus Parking Facility (VSC), a key milestone to ensuring the timely completion of this central artery for site operations.

Finally and most importantly, the Port Authority delivered on our commitment to opening 9/11 Memorial on the 10<sup>th</sup> Anniversary of the attacks. The Memorial remains open to the public going forward.

Overall, this past quarter, the Port Authority met 16 of 19 milestones. Two of the three missed milestones – Platform A Construction Completion and Installation of 1WTC Podium Glass – have been well documented in past reports, and are further explained in the report that follows. The third incomplete milestone – the completion of cladding of the west vent structure on the Memorial Plaza – was partially complete during the 2<sup>nd</sup> Quarter and was fully completed in time for 9/11/11.

As we look forward, after meeting our commitment to open the Memorial on the 10<sup>th</sup> Anniversary of the attacks, we expect to beat by many months our original commitment date to open the 9/11 Museum by the 2<sup>nd</sup> Quarter 2013 and are pushing to have it open before the end of 2012. 1 WTC remains on track to be completed by the end of 2013 and we expect the VSC will be operational in 2013 as the commercial development comes online. The substantial completion date for the Transportation Hub (Hub) continues to hold to 2014, though we have pushed back that milestone to the end of 2014 from mid-2014. This is due to a number of factors that have been discussed in past reports, including: steel fabrication issues that led to extended utilization of the large crawler crane in the East Bath tub used to support erection of the PATH Transit Hall Roof steel and vierendeel truss, and used to reduce schedule risk to the completion

of the East/West Truss and PATH Transit Hall Tied Arch structures, as well as the complex coordination between multiple stakeholders to ensure the full operation of both the MTA's #1 Subway Line, which bisects the Hub, and the PATH system, which cuts through the western half of the Hub. It should be noted that permanent structures for the Hub will be operational before substantial completion and, most importantly, PATH service will remain fully operational throughout this time as it has been since November 2003.

We look forward to updating you next quarter on our progress as well as our challenges, as we work every single day to build a new World Trade Center.

Sincerely,

Chris Ward  
Executive Director  
Port Authority of New York & New Jersey

Cc: Governor Chris Christie  
David Samson, Chairman, Port Authority of NY & NJ  
Scott Rechler, Vice-Chairman, Port Authority of NY & NJ  
Port Authority Board of Commissioners  
Mayor Michael Bloomberg  
Assembly Speaker Sheldon Silver  
Senate Majority Leader Dean Skelos  
Senate Minority Leader John Samson  
Assembly Minority Leader Brian Kolb  
State Senator Daniel Squadron  
Council Speaker Christine Quinn  
Council Member Margaret Chin  
Manhattan Borough President Scott Stringer  
Senator Charles Schumer  
Senator Kirsten Gillibrand  
Congressman Jerrold Nadler

## MILESTONES



*March 2011*



*June 2011*

A full description of the 2<sup>nd</sup> Quarter 2011 milestones is provided below, along with a look ahead at the key milestones for the 3<sup>rd</sup> Quarter of 2011.

### 2<sup>nd</sup> Quarter 2011

#### **National September 11 Memorial & Museum**

- Start Pavilion Curtain Wall\* - Complete

This original October 2008 Assessment milestone called for the start of installation of the curtain wall of the Pavilion structure in the 2<sup>nd</sup> Quarter 2011. However, because of the Port Authority's accelerated "build the roof first" deckover approach to construction of the Memorial Plaza and PATH Mezzanine Roof (which doubles as the Memorial Plaza floor), we were able to complete this milestone in the 1<sup>st</sup> Quarter of 2011 and have substantially completed all curtain wall construction in advance of 9/11/11. (See accelerated milestone below)

- Complete Museum Pavilion Core and Shell - Complete

Because of careful planning and execution, the core and shell of the Pavilion (Visitor's Center) was completed in the second quarter of 2011. This work includes the concrete, steel, exterior paneling and curtain wall installation. Reaching this milestone is significant in that it surpasses the Port Authority's original 2008 commitment for 9/11/11 to provide completed steel only. Now that the core and shell is complete, interior fit out construction of the Pavilion has begun. This acceleration was made possible by the Port Authority's "build the roof" deckover approach to the WTC Transportation Hub, which was developed as part of the agency's 2008 Assessment. The approach re-sequenced the construction of the WTC Transportation Hub's below-grade mezzanine, building the roof of the terminal first, which serves as the floor of the Memorial Plaza and foundation for the Memorial's Pavilion.

- Begin Phase 4 of Plaza Construction - Complete

This was the final phase of plaza construction area required to be complete for the Port Authority's 9/11/11 commitments. Totalling approximately 27,000 SF, this phase had to be delayed earlier in the year to enable the accelerated completion of the Museum Pavilion's steel erection and curtain wall installation, however, the final fit out of this section is well on track for completion prior to the Memorial Plaza 9/11/11 opening.

- Complete Bronze Nameplate Installation in North Fountain - Complete

Installations of the bronze nameplates are complete on all four sides of the North Fountain. These plates contain the names of the victims of 9/11/01 and 2/26/93 and are backlit from within the parapet housing. A temperature control system has also been installed to keep temperature of the metal regulated at all times. The Port Authority has been coordinating with the National September 11 Memorial & Memorial Museum at the World Trade Center Foundation (NS11MM), which is closely overseeing this aspect of the project.

- Test South Fountain - Complete

Successful testing of the South Fountain occurred in the second quarter of 2011. (The North Fountain was successfully tested last year.)

- Complete West Vent Structure Cladding - Incomplete

The cladding of the west vent structure, which will provide ventilation to the below-grade Museum space, was partially complete. Importantly, cladding will be complete prior to the 10<sup>th</sup> anniversary. The system consists of anchors and metal beams that will support installation of a stainless steel wire mesh façade screening system that will wrap the exterior the structures. The southern building cladding is complete with both support structure and screening. On the north building, support structure is complete and screening installation is nearing completion on the final (western) side. Completion of the cladding along the eastern edge of both buildings was prioritized to enable the Memorial Plaza to be brought up to final grade in these areas.

## **WTC Transportation Hub**

- Substantially Complete Core and Shell Construction of Zones 1&2 of the Route 9A Underpass - Complete

This represents completion of the first two of five zones being constructed under Route 9A/West Street and will connect the Hub's East-West Connector with the World Financial Center. The core and shell of the remaining three zones, work being managed by Brookfield Properties, will be completed by 4<sup>th</sup> Quarter 2011. The Route 9A underpass will be the pedestrian thoroughfare providing commuters and visitors with convenient connection from the World Financial Center to the World Trade Center Transportation Hub's East-West Connector. Upon full build out, pedestrians will be provided easy access from the World Financial Center all the way east to the MTA Fulton Street Transit Center. The completion by the Port Authority of the core and shell

work within the World Trade Center site will correlate with the work performed by Brookfield Property under West Street to the World Financial Center.

- Substantially Complete Structure for VSC / Hub Interface Area - Complete

The structure which provides for the VSC / Hub Interface is complete and work to install utilities and bring the Greenwich and Liberty Street areas up to the Memorial Plaza grade level is underway. This area is a key location that connects the Vehicular Security Center with the Hub's Greenwich Street Corridor below grade. In addition, the structure will provide for emergency egress from the Memorial Plaza following the public opening on 9/11/11.

- Platform A Construction Complete\* - Incomplete

The PATH station's Platform A will be the first permanent platform for the new WTC Transportation Hub. Work for this original October 2008 assessment milestone was re-sequenced in 2009 in order to incorporate work on Platform B concurrently, making the overall build-out more efficient. The original plan had construction of Platform B beginning after Platform A was complete. The WTC Transportation Hub team has developed and implemented a revised logistics plan that calls for work on both platforms to occur simultaneously, but the original completion dates were also pushed back to the end of 2012/early 2013. In the meantime, the PATH system at the WTC site remains fully operational and will remain so throughout construction.

## **WTC Vehicular Security Center and Tour Bus Parking Facility**

- Start Secant Wall Installation in Eastern Portion of Site - Complete

The secant wall installation signifies the first major construction in the eastern portion of the Vehicular Security Center in the area around Greenwich Street following the delayed turnover of the former Deutsche Bank site. The wall forms the perimeter structural support or "bathtub" which allows excavation to begin in the area. The secant wall is nearing completion and initial excavation in the eastern portion of the site has already begun.

- Relocate Existing Utilities in Eastern Portion of Site - Complete

Several existing utility lines were relocated within the eastern portion of the Vehicular Security Center site immediately following the turnover of the Deutsche Bank site. This work was completed so that secant pile installation could start in this area at the earliest possible time.

- Start Ramp Structure Steel Erection\* - Complete

Per the October 2008 Assessment, work for this milestone was to occur in the 2<sup>nd</sup> Quarter of 2011. However, this milestone depended on the LMDC completing deconstruction of the 130 Liberty Street building by August 2009, per LMDC's

assessment commitment. As a result of the 130 Liberty Street deconstruction delays, and delayed site turnover to the Port Authority beginning in March 2011, we had to develop revised means and methods and resequence the work. Erection of VSC superstructure steel in the western portion of the site was scheduled to begin in the 3<sup>rd</sup> quarter of 2011 and in fact was started on August 2<sup>nd</sup>. Steel erection commenced along the southern edge of the structure to ensure that there is no impact to the entranceway of the Memorial Plaza following the 10<sup>th</sup> anniversary.

## **One World Trade Center**

- Steel Erection to the 75<sup>th</sup> Floor - Substantially Complete

Steel had risen to the 72<sup>nd</sup> floor level by the end of the second quarter and is currently being erected to the 86<sup>th</sup> floor continuing to steadily rise at a pace of one floor per week. The harsh winter weather caused the minor delay of this milestone, but we remain on track to top out steel by the end of the 1<sup>st</sup> Quarter 2012. This steel represents the structural steel framing which makes up the "Skeleton" of the building." The 84<sup>th</sup> floor rises approximately 1,030 feet above street level, currently making One World Trade Center the tallest building in Lower Manhattan and the 3<sup>rd</sup> tallest building in New York City. The recent favorable weather has enabled the building to return to an approximate floor per week rate of construction.

- Concrete Core to the 65<sup>th</sup> Floor - Substantially Complete

The concrete core had reached the 63<sup>rd</sup> floor level by the end of the Quarter and is currently being placed on the 74<sup>th</sup> floor level following the steel. This represents the interior concrete core, which is critical to the structural stability of the building. This minor delay will not impact the overall scheduled completion of the building.

- Concrete Floor Slab to the 70<sup>th</sup> Floor - Substantially Complete

Concrete floor slab had reached the 68<sup>th</sup> floor by the end of the quarter and is currently at the 76<sup>th</sup> floor level and is following the steel erection at a floor per week pace. After the placement of the concrete, other critical trades like spray-on fireproofing and curtain wall installation can begin. This minor delay will not impact the overall schedule completion of the building.

- Curtain Wall to the 42<sup>nd</sup> Floor - Complete

This represents the glass curtain wall installation from the 20<sup>th</sup> floor to the 42<sup>nd</sup> floor level. The curtain wall provides weather tight protection which allows interior finish work to begin on the typical office floors. Acceleration of this work to more than a floor per week enabled the milestone to be met.

- Complete Installation of Podium Glass\* - Incomplete

The podium of One World Trade Center is located between street level and the 20<sup>th</sup> floor of the building. As the Port Authority made public earlier this year, we have moved to an alternative podium glass design. Completion of this work in the 2<sup>nd</sup> Quarter of 2011 has been rescheduled to start installation in 2012 in order to improve logistics for other trades operating inside the building to account for the updated design and procurement schedule for the new podium glass design, and to avoid any damage to the glass once it has been installed as the site will still be under heavy construction. Installation of the curtain wall above the 20<sup>th</sup> floor continues and is currently rising at a floor per week. This revised Podium Glass schedule will not impact the overall completion core and shell of the building.

### **Greenwich Street**

- Begin Cortlandt Street Station\* - Complete

Located on the MTA's #1 Subway Line that bisects the WTC site and runs from north to south, this milestone represents starting the installation of concrete for the MTA's Cortlandt Street Station and the connection to the WTC Transportation Hub in coordination with the overall construction schedule of associated projects on the site.

- Substantially Complete Invert Slab Construction in Areas 1 through 10 - Complete

The invert slab is the last major structural element of the Greenwich Street or "top-down" construction. With the completion of the slab, which sits only several inches below the existing MTA's #1 Subway Line, the weight of the subway enclosure can be transferred from the temporary pile support system to the permanent concrete reinforced structure.

### **3<sup>rd</sup> Quarter 2011 Milestone Lookahead**

#### **National September 11 Memorial & Museum**

- Place Concrete Flooring in North and South Galleries

Located within both the north and south footprints and below both pools, the galleries will have multiple uses including exhibit space, classrooms and the housing of most major artifacts. The finished flooring will be concrete which will be polished to obtain a smooth walking surface.

- Complete Fitout Work in Exhibit Space Below the South Fountain

The gallery below the south fountain will contain exhibit space and an education center. In addition to the placement of the flooring, additional fit out work will include electrical, plumbing, wall and ceiling installation. Once complete, the area will be ready for museum exhibit installation to begin.

- Begin Northeast Quadrant Finishes\*

Located over the new PATH station currently under construction, the northeast quadrant is the final phase of the Memorial Plaza to be built. In the 3<sup>rd</sup> quarter, finish work is expected to begin including waterproofing, drainage, irrigation piping and vertical support walls. This is an original 2008 milestone.

- Complete Memorial Plaza (100%) / Fountains / Name Parapets\*

Another 2008 milestone, completion of the north and south pools, installation of the name parapets and delivery of over 140,000 SF of the plaza will be complete in the 3<sup>rd</sup> quarter. Currently, both fountains are in the final commissioning process.

## **WTC Transportation Hub**

- Complete Erection of East Box Girder

The East Box Girder is one of the main structural elements that will support the load of the Path Hall roof. Made up of over 41 steel elements, it weighs approximately 2,200 tons when fully assembled. Once erected, welding will continue on the girder. Completion of the east box girder will enable placement of the remainder of the roof structure over the PATH Hall.

- Complete D15 Wall – North

Similar to the construction of the D15 wall south of the underpass, the D15 wall north will be the permanent separation of the PATH Hall from the Greenwich Street Corridor work. In addition, completion of this work will allow for the continued placement of precast concrete sections over Track 1 of the PATH station.

- Complete Erection of the East/West Truss

The East/West Truss is another crucial element necessary to support the #1 box. Once erected, welding will continue in preparation for final load transfer. With installation on both the east and west sides, it creates a “box around a box” that is supported by the four super columns. This structural element allows for near column free space in the underpass area.

- Start Platform B Construction\*

The second platform to begin construction, Platform B is a critical element to the overall completion of the permanent PATH station. Once this work is complete, Platforms A and B will become the permanent operating tracks of the station while the current temporary tracks are taken off line to allow for permanent construction of Platforms C and D to begin. Elements of this work are already under construction. This was an original 2008 milestone.

- Complete PATH Mezzanine Roof (Deck Over)\*

An original 2008 assessment milestone, this milestone indicates that all metal decking is completed which now forms the PATH Hall roof. Early completion of this work has allowed the concrete placement for the Memorial Plaza necessary to achieve our 9/11/11 commitments.

### **WTC Vehicular Security Center and Tour Bus Parking Facility**

- Substantially Complete Perimeter Walls in Eastern Portion of the Site (Secant and Jet Grout)

In order to “seal off” the eastern portion of the VSC site (the area that formally contained the Deutsche Bank Building) and allow for most of the water in the area to be removed, a combination of over 80 secants and 40 jet grout columns will be installed to create the perimeter wall. Once complete, the excavation and tie back work to enable excavation to rock in the East can begin.

- Substantially Complete Footings and Foundations in the Western Portion of the Site

Through a combination of excavation and blasting, the foundations for the VSC structure in the western portion of the site will be complete in the 3<sup>rd</sup> Quarter.

- Substantially Complete Steel Erection in Blocks 15 and 16 in the Western Portion of the Site

Blocks 15 and 16, made up of over 270 pieces, are located on the Southwestern portion of the site along Cedar Street. Once footings and foundations are complete, installation of the steel will commence signifying the start of the VSC’s superstructure. The schedule for Blocks 15 and 16 is critical, because this steel needs to be in place prior to 9/11/11 to avoid any impact on Memorial visitors accessing the site once Memorial operations begin in September.

### **One World Trade Center**

- Steel Erection to the 82<sup>nd</sup> Floor

This represents the structural steel framing which makes up the building's "Skeleton." The 82<sup>nd</sup> floor rises approximately 1,015’ above street level

- Concrete Core to the 72<sup>rd</sup> Floor

This represents the progress on the interior concrete core that is critical to the structural stability of the building.

- Concrete Floor Slab to the 76<sup>th</sup> Floor

This represents the placement of the concrete slab on the 76<sup>th</sup> floor that is approximately 930' feet above street level. After the placement of the concrete, other critical trades like spray fireproofing and curtain wall can begin.

- Curtain Wall to the 54<sup>th</sup> Floor

This represents the glass curtain wall installation from the 20<sup>th</sup> floor to the 54<sup>th</sup> floor. The curtain wall will provide weather tight protection to allow interior finish work to begin on the typical office floors

- Complete Core shear Wall to the 93<sup>rd</sup> Floor\*

An original 2008 milestone. Current schedule milestones are to have the concrete core to the 72<sup>nd</sup> floor by the end of this Quarter with a projected completion in the 4<sup>th</sup> QTR of 2013.

## **Greenwich Street**

- Transfer Load of the MTA #1 Subway Line Box onto the Permanent Structure in the Areas South of the Underpass (Areas 1 – 10)

This milestone represents the load transfer of the MTA #1 box, south of the under pass, from the temporary piles to the permanent concrete support structure. The timing of this milestone has been determined by the Port Authority's innovative approach of constructing the higher elements of the new #1 line structure first (the "top down" method developed during the 2008 Assessment process) in order to advance the Memorial Plaza schedule.

- Greenwich Street partially Complete for Memorial Access\*

An original 2008 assessment milestone, this milestone identifies partial completion of Greenwich Street to allow for Memorial Access. The original intention was to complete all areas of Greenwich Street south of the underpass to allow Plaza access on 9/11; however, after plans to have pedestrians enter the Plaza from Cedar St. were developed, this milestone now represents having this section of Greenwich Street available for Memorial Plaza emergency egress.

\* These milestones marked with an asterisk represent those original interim milestones that were published as part of the Port Authority's Original 2008 report.