



DSI References

Reference Details

Owner World Trade Center Properties, LLC/Port Authority of New York and New Jersey, USA +++
General Contractor Collavino Construction Company, Ontario, Canada +++
Construction Manager Tishman Construction Corp. of NY, USA +++
Architect Skidmore, Owings & Merrill LLP, USA +++
Engineers WSP Cantor Seinuk and Schlaich Bergemann and Partner LP, USA

DSI Unit DSI USA, BU Post-Tensioning, New Jersey, USA
DSI Scope Supply of 170t of #20, Ø63mm DYWIDAG Bars, 16t Ø65mm DYWIDAG Post-Tensioning Bars, Tensioning Jacks and design assistance



Freedom Tower, USA: A Building as a Symbol for Freedom

Right after 9/11, DSI USA was involved in stabilizing measures on Ground Zero. In 2001/2002, DSI supplied a great variety of high quality DYWIDAG Strand Anchors out of their factory in Toughkenamon, Pennsylvania, that were used to stabilize the excavation at Ground Zero.

The new Freedom Tower is being built in the Northwestern area of Ground Zero. For the foundation work, DSI delivered high quality DYWIDAG bar anchors that were installed early in 2008. On April 27th 2006, construction works began on Freedom Tower, which is being built on Ground Zero according to construction plans prepared by Daniel Libeskind and David Childs. Due to the traumatic experience of 9/11 that has impacted New York as no other experience, the tower has a symbolic significance reaching far beyond the city. That significance became apparent during the planning stages.

Even the planned height of 1,776feet (541,32m) has a historic significance: it is a reminder of the American Declaration of Independence signed in 1776. The building is to become an unmistakable sign of resistance against terrorism, with a spire lit at night designed to match the Statue of Liberty's torch.

The fear of future attacks is also the reason for the comprehensive security measures that are of paramount importance during the construction of the building: the tower is erected on a nearly 60m deep foundation with a steel-titan compound designed to resist even severe explosions. The walls are going to consist of 90cm thick concrete with a steel armor.

Important building infrastructure, such as elevators, staircases and utility shafts are located in the interior in order to be protected from a possible collapse. The tower is going to have a useable area of approximately 250,000m² and is going to be limited to only 69 floors for security reasons. The outer structure of the Freedom Tower is erected using the steel frame method. Elevator shafts inside the Freedom Tower are erected using conventional reinforced concrete and employing the climbing formwork method.

Due to the design of the structure, the elevator shafts carry strong forces. Consequently, a horizontal massive 35.0 x 5.0 x 2.0m girder is being installed at a height of approximately 30m above ground. As a specialist for quality and security, DSI USA was charged with the supply of DYWIDAG Bar Tendons for the construction of this statically important girder.

The high quality 65mm DYWIDAG Bar Tendons are installed in 9 layers of two tendons each. In addition to the high strength 65mm Bar Tendons, 96 #20 DYWIDAG Bars for Horizontal Reinforcing as well as 168 #20 DYWIDAG Bars for Vertical Reinforcing in diameters of 63mm are installed inside the girder.

In addition, DSI is expecting to make future contributions to the successful construction of the Freedom Tower by supplying more products and systems as work on the building progresses.

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