



2016 AWARDS FOR ENGINEERING EXCELLENCE

Award of Excellence

World Trade Centre Transportation Hub – The Oculus



Consultant

COWI North America
(COWI Bridge, formerly Buckland & Taylor Ltd.)

Owner

Port Authority of New York and New Jersey

Client

Skanska USA

Category

Transportation & Bridges

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COWI Bridge (formerly Buckland and Taylor Ltd.) were the construction engineers for the highly innovative World Trade Centre Transportation Hub (also known as the Oculus) in Manhattan, New York. This unique structure, designed by world-renowned architect and engineer Santiago Calatrava and the Downtown Design Partnership engineers, pushes the boundaries of structural engineering. The new transportation hub – which will serve over 200,000 members of the travelling public each day with access to NJ PATH trains and 13 subway lines - is dominated by a very high level of architectural detailing. Consequently this made its construction extremely complex.

Skanska USA (Contractor) approached COWI Bridge, and collectively we determined that a sequential erection scheme was the best way to attain the geometric control needed. This innovative application of a segmental erection scheme – more commonly used in bridge erection rather than building erection - meant the project could be completed without extensive falsework. Not only did this save time and money, it meant that the geometry of the structure could be monitored as it was being constructed. This was crucial due to the intricacy of the design.

By using the concept of staged construction, COWI Bridge were able to overcome the extreme challenge of erecting the Oculus (owned by Port Authority of New York and New Jersey). We worked closely with the entire team to also introduce a number of features that improved the erection schedule. The construction phase of the project consisted of close cooperation between erection engineer and contractor.