

CASE STUDY

Hicksville LIRR Garage

Below-grade Commuter Parking Garage – Hicksville, New York

HISTORY

In the Town of Oyster Bay, 30 miles east of New York City, sits the 175-year-old Hicksville train depot on the Long Island Rail Road. The bustling Hicksville station welcomes nearly 150 trains and over 16,000 commuters per day. In 2008, its primary 1,500-space parking facility was shuttered after an inspection revealed cracked T-beams causing the structure to collapse on itself.

PROBLEM

The town's proposal called for 4 levels of commuter parking – 2 below grade – on the original 3-acre footprint located within a dense suburban neighborhood. Completion of the project needed to be in a timely manner to minimize the disruption for commuters.

SOLUTION

Below-grade construction can be costly when conventional methods are implemented. To decrease the overall time and material expenses, as well as utilize the existing footprint, the project partners decided on the steel sheet pile wall system as both the excavation support and the perimeter foundation wall that would transmit axial loads into the ground.

Nucor Skyline, having proven the economic benefits of the steel sheet pile system for below-grade parking structures in other parts of the country, provided design guidance, aided with the project layouts and supplied over 700 tons of AZ 19-700 steel sheeting for the Hicksville location. The AZ 19-700 product met ASTM E119 and has achieved a 4-hour fire rating for loaded, bare steel.

Borings at the job site revealed a soil



composition of well-granulated topsoil and fine-to-medium dense sand. In mid-winter, the general contractor, Scalamandre Construction, drove the sheet piles using a crawler crane with a fixed mast and an ABI variable moment. The driving settings were reduced to minimize vibration and noise to the surrounding neighborhood.

The contractor installed 50 linear feet of wall per day (a total of 1,200 linear feet was driven), a rate twice as fast as using slurry wall.

The sheet pile – at a length of 37 feet – was supported below-grade by a grouted soil anchor and received additional support from a W12x65 continuous waler.

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PROJECT PARTNERS

Contractor

Peter Scalamandre and Sons, Inc.
Freeport, New York

Engineers

Professional Systems Engineering
Lansdale, Pennsylvania

Sidney B. Bowe & Son
Mineola, New York

Architect

Angelo Francis Corva & Associates
West Hempstead, New York

PRODUCT

700 tons of AZ 19-700
(ASTM A572 Grade 50)

The column loads were transferred through a reinforced concrete cap built atop the steel sheet pile. Additionally, modifications of the sheet piles were created to allow for penetration of drainage utility pipes.

The entire \$65 million project, started in December 2009 and wrapped up just 15 months after the start of construction. The parking facility, complete with LED lights and VFD ventilation system opened for commuters in March of 2011 at the desired capacity of 1,500 parking spots and shaved off an average of 20 minutes to the daily commute of area residents in and out of New York City.