

Dartmouth College Thayer Garage

Hanover, New Hampshire



HISTORY

Dartmouth College is constructing a new Center for Engineering and Computer Science that will also house the Magnuson Center for Entrepreneurship and Electron Microscope Facility. The expanded engineering and computer science programs will increase access to faculty through lower student-faculty ratios, allow students to integrate engineering and the liberal arts, and increase research and entrepreneurship opportunities for undergraduate and graduate students.

The new building is being funded wholly from philanthropy and developed in partnership with engineering and computer science to maximize the interface between the computational and physical elements of these similar fields.

A number of related improvement projects are underway in close coordination with construction of the Center for Engineering

and Computer Science building, including a 340-vehicle parking garage and loading dock below the new building.

PROBLEM

HB Fleming, Inc. was contacted by the general contractor of the project and, in turn, reached out to Raymond Piling and Nucor Skyline for the steel sheet pile excavation support needed for the below-grade parking garage portion of the project.

The steel sheet pile wall provided lower labor costs than a beam and lagging wall and eliminated the need to pour concrete during the winter for a soil nail wall.

“Raymond Piling and Nucor Skyline were key partners in delivering a cost effective driven sheet pile excavation support system that was able to eliminate winter concrete and reduce labor costs of a soldier pile and lagging wall.”

– Dale Lawrence, Project Manager, HB Fleming, Inc.

Because there are pre-existing buildings nearby on campus, a high frequency, variable moment vibratory hammer was used to reduce the vibration concerns of driven sheet pile on the other buildings. Dry sandy and silty soils made it difficult to drive long sheets; however, the use of a Bauer RTG RG19T pile driver helped to install the sheets through the dry soil.

SOLUTION

The final building will have seven floors, including three floors of below-grade parking. The remaining four floors will house engineering and computer science classrooms, labs, and offices.

CASE STUDY

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Nucor Skyline manufactured and shipped over length sheets directly to the site to avoid splicing sheets on-site. These 70-foot long sheets were cold-rolled and therefore, more economical and provided a cost savings over hot-rolled sheet piles. Multiple lengths of sheet pile were furnished, reducing the costs associated with extra steel on the project.

Nucor Skyline also fabricated custom corners to seal the excavation support from groundwater and soil.

Sheet piles were driven using an RTG RG19T pile driving rig with an MR150 AVM vibratory hammer. The piles were threaded using an 80-ton Lind-Belt 138 crane.

PROJECT PARTNERS

Owner

Dartmouth College – Hanover, NH

General Contractors

Turner Construction – New York, NY

Driving Contractor

HB Fleming Inc. – South Portland, ME

PRODUCT

Sheet Pile: SKZ 20 and SKZ 14 produced in lengths from 30 - 70 feet (610 tons)

PROJECT TIME FRAME

January 2019 through present

