

## CASE STUDY

# Colman Dock

Seattle, Washington

**HISTORY**

The Washington State Ferry System transports vehicle and passenger traffic throughout the Puget Sound and San Juan Islands. As a part of the Washington State Department of Transportation, Washington State Ferries move tens of millions of travelers throughout the region, each year, running ten routes, serving twenty ferry terminals.

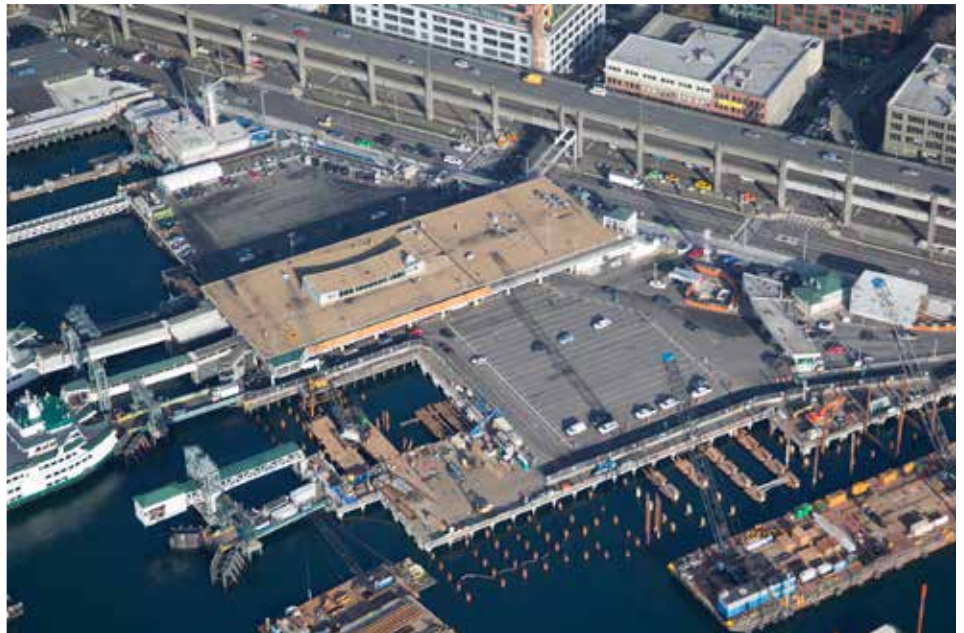
Colman Dock is a critical hub extending into Elliott Bay on the Seattle waterfront. It is an important, high-use facility central to the Washington State Ferry System. Colman Dock, also known as Pier 52, has a long and storied history in the Seattle area. Originally built by Scottish engineer, James Colman, in 1882, it met its demise in 1889, along with most of the city, in the Great Seattle Fire. The dock was quickly rebuilt, but continued a tumultuous history, with freighter accidents, rivaling shipping companies, and a gangplank collapse in 1912, that killed a woman and child.

**PROBLEM**

Time has taken its toll on the Colman Dock once again. Aging timber piles that currently support the pier are in need of replacement. The facility, as it stands today, is seismically vulnerable and there are increased safety concerns arising from the convergence of vehicles, bicycles, and pedestrian traffic that all utilize the dock.

The need to rebuild and modernize the facility to meet the growing needs of the region and address today's seismic standards culminated in the SR 529 Seattle Multimodal Terminal at Colman Dock.

The Washington State Department of Transportation awarded the CMGC project to Hoffman Pacific LLC, a joint venture between Hoffman Construction and Pacific Pile & Marine,



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**PROJECT PARTNERS**

Owner

Washington State Ferry Service – Seattle, WA

General Contractor

Hoffman Pacific LLC, A Joint Venture – Seattle, WA

Pile Driving Contractor

Pacific Pile and Marine – Seattle, WA

**PRODUCTS**

Pipe Piles: 24", 30", and 36" Pipe Piles (42,000 Linear Feet)

**PROJECT TIME FRAME**

May 2017 through February 2020



to rebuild the historic ferry terminal at Colman Dock. The plan includes phased reconstruction to keep the terminal active during the rebuilding of the multimodal terminal, which includes replacing the existing timber trestle portion of the dock with a new concrete and steel trestle.

**SOLUTION**

Pacific Pile & Marine turned to Nucor Skyline for their steel foundation needs on this project. One of the many reasons Nucor Skyline was chosen for this project is that Skyline operates a steel mill located 128 miles from the site in Longview, WA where they are able to manufacture the piles full length, make changes to any unforeseen pile design, and deliver the piles turn-keyed to the site, offering considerable value to Pacific Pile & Marine and the project. Nucor Skyline has also successfully completed work on many projects in the greater Seattle area and has an excellent working relationship with the Washington State Department of Transportation.

The project will take place in four phases. Phase 1 was completed in February of 2018. There are restricted work windows due to environmental restrictions to minimize the

interference with the marine life. The permitted in-water window for this project is August 1 through February 15 each season. That meant that there was a very short time frame for the piles to be produced and delivered to the job site. Between September 1 and February 15, Pacific Pile & Marine crews successfully installed 167 steel piles to support the passenger-only dock and one-third of the trestle that will support the new ferry terminal building. Pile installation utilized two Demag 2500 crawler cranes with 550-ton (ST) lifting capacity. Later in the project, Pacific Pile & Marine will use their Pacific Lifter with a 1,000-ton (ST) lift capacity to set concrete deck panels and a pedestrian bridge. The Pacific Lifter is currently the largest crane barge in Western North America.

With Nucor Skyline's local facility, both Hoffman Pacific and the Department of Transportation were confident that Skyline would be able to manufacture and produce the products needed in a timely manner, and since the mill is geographically in the vicinity, there would be no transportation issues. Skyline was able to manufacture and deliver all the piles needed for Phase 1 within a 120 day period. This would not have been feasible without the mill located

in such close proximity to the job site.

The materials needed for all phases of the Colman Dock project will be manufactured at Skyline's facility in Longview, WA.

Nucor Skyline will produce over 42,000 linear feet (12,802 linear meters) of steel pipe piles for the framework of the dock, which will include 24" (609.6mm), 30" (762mm), and 36" (914.4mm) pipe piles. Each of the piles will be fitted with driving shoes to ease the construction process, as the piles are driven into the sedimentary soils of the Puget Sound. The majority of the piles, some 37,000 linear feet (11,000 linear meters), will be 36" x 1.00" (914.4mm x 2.54cm) pipe piles.

The replacement of nearly 7,400 tons (ST) of creosote-treated timber piles from Elliott Bay with the locally-manufactured steel pipe piles will provide opportunities for remediation of contaminated sediments in the area.

Not only will the new pipe piles allow for storm water treatment for all new and replaced areas of the trestle, but they meet seismic standards for building in the area and will improve the safety of the structure.