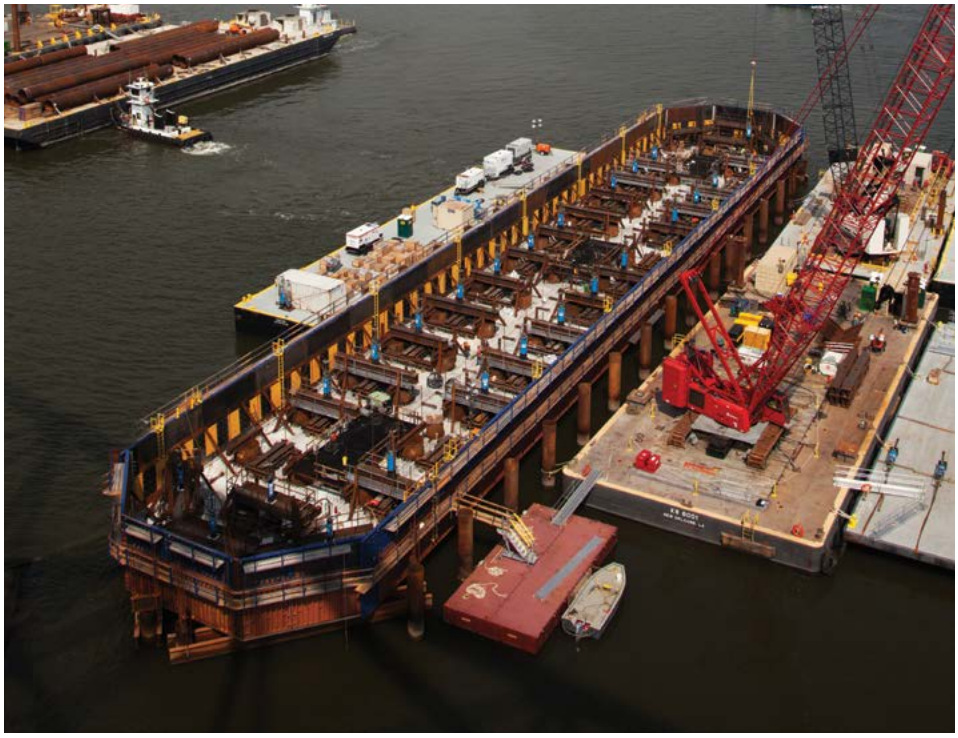
FOUNDATION Series

Main Span Pile Caps

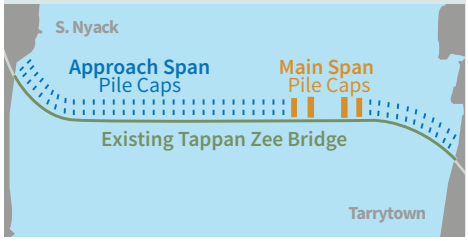
These reinforced concrete bases are longer than a football field



» The main span pile caps consolidate the strength of dozens of piles into a single structure.

Main Span Location

The main span pile caps are located above the deep-water navigation channel on the eastern side of the river. These caps work in conjunction with the more numerous but smaller approach span pile caps to support the weight of the bridge.



Foundation Piles

The main span pile caps rest atop and unify dozens of steel tubes, called piles, providing a robust base to evenly distribute the weight of the bridge. Scores of foundation piles support each main span pile cap, most of them extending hundreds of feet below the river's surface.

Assembly

The piles are surrounded by hundreds of steel panels and concrete slabs to create an empty "tub" above the river, measuring more than a dozen feet deep and hundreds of feet long. Their massive size requires an open-air assembly, however the tubs must be moved to a lower point in the river to properly support the new bridge.

Lowering

To lower these massive structures with exact precision, crew members utilize a computer-guided jack system. This ensures that all corners are lowered precisely and in sync. The operation factors in the flow of the Hudson River tide and takes an entire day to complete due to the sheer enormity of the pile caps.

Reinforcement

Once the tubs are lowered and drained, both the hollow piles and pile caps are filled with steel-reinforced concrete. This is accomplished with interwoven networks of steel bars, called rebar, that are encased in concrete. More than 30,000 tons of rebar will be used throughout the construction process.

Towers

The towers are built with more steel reinforcements, which are then enclosed in a temporary casing, called a form. Concrete is slowly poured into the form, and when it is fully cured, the form is removed and moved upward for the next section of the tower.