Storm Water Pump Station Is Silent Sentinel

Because of its low-lying location on the New Jersey side of the Hudson River, Hoboken, N.J., has struggled for generations with flooding when extreme wet-weather events combine with high tides. In 1998, the North Hudson Sewerage Authority (NHSA) purchased and took control of the sewer lines within the city and subsequently has worked diligently to upgrade and modernize the city's combined sewer collection system.

The NHSA took a major step to that end when it built a wet-weather pumping station in southwest Hoboken. The 50 million gal-per-day (gpd) pumping station helps prevent street flooding and, in compliance with New Jersey Pollutant Discharge Elimination System (NJPDES) permitting requirements, ends the discharge of solid and floatable materials greater than a half-inch in diameter to the Hudson River.

The pumping station was completed in 2011. Along the way, the NHSA faced multiple complications presented by the age of the system, the underground integration of a large pumping station into an urban transportation hub, rehabilitation of two existing century-old outfall pipes, and the need to accomplish these tasks within tight quarters immediately adjacent to an active New Jersey Transit rail terminal, which included two historic buildings.

CH2M Hill, the NHSA's consulting engineer, spearheaded the successful design and construction of the pump station. The project included the construction of a screening chamber using mechanical bar screens to adhere to NJPDES mandates requiring that no solids or floatables be discharged into the Hudson River. The project also consisted of constructing a wet-weather pump station to alleviate street flooding in the southwest portion of Hoboken, in the H1 drainage area, during storm events that coincide with periods of high tide.

The storm water pump station itself features two high-performance propeller-style submersible pumps manufactured by Flygt, a Xylem brand, supplied and started up by Pumping Services Inc., a Xylem representative in Middlesex, N.J. The two pumps, one of which is redundant, are installed 30 ft below ground, and each 350-hp pump can discharge 50 million gpd. The pump station also has an emergency generator to ensure that it provides continuous service during rain events.

Flygt propeller pumps are designed to transport large volumes of water at low heads. The slim profile of these pumps allows for a considerably smaller pump station footprint than that of non-submersible pumps. Also, Flygt submersible propeller pumps operate directly in the pumped liquid and are easily installed and removed from the pump station because no fastening bolts are required. Because the pumps operate in and are submerged in the pumped liquid, they also run cooler. In addition, the pumps incorporate Flygt N-technology, which features self-cleaning capabilities and sustained high efficiency.

On Oct. 29, 2012, the massive 100-year storm Hurricane Sandy made landfall in New Jersey, causing extensive power outages in Hoboken and surrounding communities. Throughout this tumultuous time and despite the fact that Sandy far exceeded the capacity of the new station, the NHSA's H1 screening and wet-weather pump station operated around the clock, with no interruptions. NHSA Executive Director Dr. Richard J. Wolff attested to the efficacy of the pumping station, saying, "The inundated streets in the southwest portion of the city were cleared of water within 48 hours, at least half the time that it would have taken without the wet-weather pumping station."

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