Water Treatment Plant Transfer Pumping Upgrades

Boca Raton, Florida

Client
City of Boca Raton

Scope of Services
Professional engineering services for design development, preparation of construction contract documents, permitting, and bidding.

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Start Date
09/2020

Completion Date
7/2025

Key MBC Staff
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Key Features
Project includes a comprehensive renovation of Buildings 5 and 6, and upgrades to the transfer pumping system in Building 7.

Benefit to the City
Renewal and repair of aged equipment for upgraded operational flexibility, redundancy, and reliability.

Background

The City of Boca Raton is supplied with potable water from the Glades Road Water Treatment Plant, a 70 million gallon per day (mgd) facility that utilizes a 30 mgd capacity conventional lime softening process in parallel with a 40 mgd nanofiltration (NF) process. The treated finished water from these two processes is blended and pumped to the on-site finished water storage tanks using two transfer pumping systems located in Building 5 and Building 7. Each building currently houses three vertical turbine transfer pumps for a total of six transfer pumps.

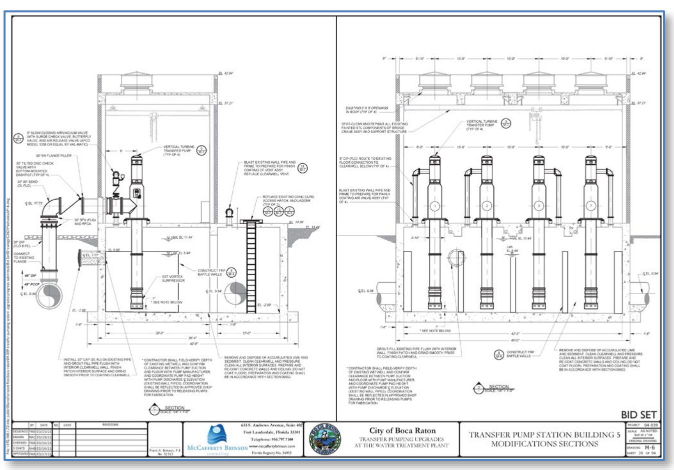
Building 5 was originally constructed in 1981 along with the installation of two vertical turbine transfer pumps with space for two additional future pumps. The pumps transfer flow from a below-grade clearwell to on-site finished water storgage. Power and controls for Building 5 are provided by the electrical room in Building 6. Buildings 6 and 7 were constructed in 1991 under a project that also included the addition of a third transfer pump in Building 5. Building 7 houses three transfer pumps which were installed in 2001. The pumping systems and structures in Buildings 5 and 6 described above are in need of rehabilitation and upgrade.

The Project

In general, the project involves the replacement and upgrade of mechanical, electrical, structural, architectural, and plumbing systems within Buildings 5, 6 and 7. The project includes replacing pumps, motors, valves, and piping. Additionally, the project involves upgrading electrical systems, such as MCCs, feeder cables, and switchgear; and enhancing SCADA monitoring with temperature and vibration sensors. Structural improvements include hurricane hardening doors and windows, replacing roofs, repairing concrete curbs, and coating interior walls and floors. The project will also enhance pedestrian staff access, upgrade drainage and ventilation systems, improve exterior aesthetics with new stucco and paint, and ensure compliance with hurricane-rated and plumbing standards.

The scope of MBC's services on the project includes the following:

- Replacement of the mechanical components of the transfer pump system in Building 5 including three pumps, motors, and all piping components and accessories between the existing pump suction and the discharge risers, with the addition of a fourth pump.
- Replacement of all valves in Building 5 and 7, including isolation valves, check valves, and air valves.
- Replacement of sample pump(s) and piping with a drain connection to the sewer system.
- Relocation of the ammonia injection system for continued plant operations during construction.
- Elimination of the dump valve, actuator, and wiring; plugging of the pipe entrance into the clearwell, and demolition of the exterior vault, grate, and actuator.
- Replacement of chemical pipe trench covers with heavier-duty ones to support lawn care equipment.
- Upgrading of the crane system in Building 5 by replacing the manual hoist and bridge mechanism while retaining the steel I-beams.



Design of the project was substantially completed in November 2021. Due to the large volume of ongoing construction at the water treatment plant and the fact that smooth sequencing of construction activities in the project will be facilitated by improvements under a preceding project (*Four-Log Virus Treatment Upgrades*), the City delayed commencement of construction of the project until mid-2026. The project was advertised for bidding in February 2026, and construction is expected to commence in the third quarter of 2026.