

Client

City of Boca Raton

Scope of Services

Preparation of construction drawings and technical specifications, permitting, bidding, and engineering services during construction.

Contact

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Start Date

March 2019

Completion Date

May 2023

Construction Cost

\$3.07 million

Key MBC Staff

Frank A. Brinson, P.E.
Andrew Barba, P.E.
Mathew Marsh, P.M.P

Key Features

Pressure filter system provides pretreatment of membrane feed water for 40-mgd NF process.

Benefit to City

System removes particulate and colloidal foulants, extending life of cartridge filters and NF membrane elements. The expansion project provided improved process efficiency and reliability and reduction in change-out frequency of cartridge filter elements.

Membrane Pretreatment Pressure Filter System Expansion

Boca Raton, Florida



Background

The City of Boca Raton maintains and operates a membrane softening water treatment facility with a capacity of 40 million gallon per day (mgd). The existing pressure filter system included four two-cell steel pressure filter vessels upstream of the cartridge filters and the membrane process. Prior to implementation of this project, the pressure filters were the capacity-limiting component of the membrane softening water treatment process. The original designed hydraulic loading rate on the pressure filters has proven to be difficult to maintain for extended periods of time due to excessive filter backwash frequencies and associated filter cell down-time.

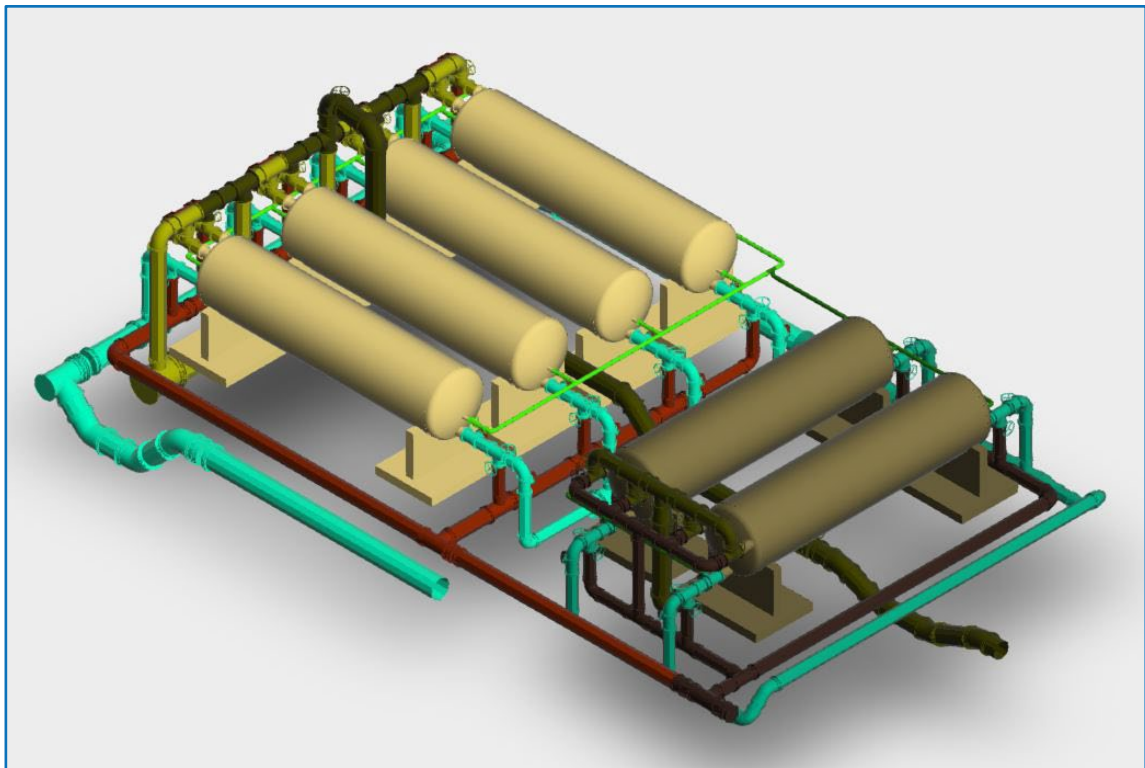
The City desired to expand the capacity of the existing pressure filter system through the addition of two new 10-foot diameter by 41-foot long, two-cell steel pressure filters that are similar in design to the existing pressure filters, with all required internals, face piping, fittings, valves, electric valve operators, electrical systems, instrumentation, and controls. The expansion allows the membrane softening process to maintain consistent operation at the design capacity of 40 mgd and provides additional redundancy to the pressure filter system. Unlike the existing pressure filters, these new filters include media retaining launders that prevent the loss of media during filter backwashing.

The Project

MBC was authorized to provide professional engineering services for the design, permitting, and bidding of the addition of two pretreatment pressure filters including all civil, mechanical, instrumentation and controls, and electrical upgrades required for a complete and operating system. MBC's scope of works for the project included the following:

- Preparation of construction drawings, technical specifications, and opinions of probable construction cost at the 30%, 70%, and 100% stages of design development.
- Procurement of a Permit to Construct Public Water System Components from the Florida Department of Health in Palm Beach County Permit (FDHPBC).
- Bidding services.
- Engineering services during construction including contract administration, review of shop drawings, pay applications, and other submittals, responding to Contractor's requests for information, periodic project meetings and site visits, resident project representative (RPR) services, milestone inspections, start-up, testing, operator training, and close-out.

The contract for construction of the project was awarded to RJ Sullivan Corporation with a Notice to Proceed issued September 9, 2021. The project is scheduled to be complete in August 2023.



3D model showing integration of the new filters into the existing system.