

Client
City of Boca Raton

Scope of Services
Preparation of construction drawings and technical specifications, permitting and bidding services.

Contact
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Start Date
03/2019

Completion Date
02/2020

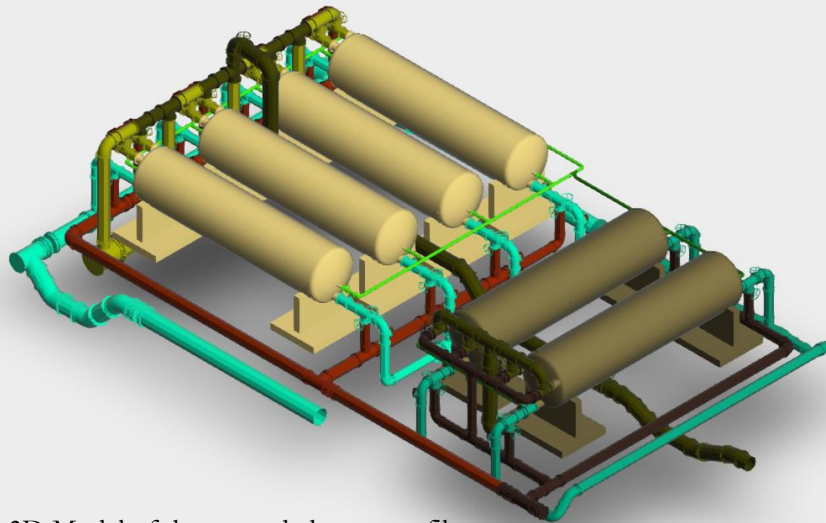
Key MBC Staff
Frank A. Brinson, P.E.
Andrew Barba, P.E.
Robert Landrum, E.I.

Key Features
Project included engineering design, permitting, and bidding services for the addition of two pressure filter units.

Benefit to City
The addition of two new pressure filters will increase operational flexibility by allowing the City to decrease the loading rate across the pressure filter system.

Membrane Pretreatment Pressure Filter System Expansion Design

Boca Raton, Florida



3D Model of the expanded pressure filter system.

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 treatment facility includes four existing two-cell steel pressure filter vessels upstream of the cartridge filters and the membrane process. Currently, the quantity of pressure filters is the limiting factor in the overall capacity 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. When the City utilizes the design loading rate, excessive filter backwashes are required thus requiring the pressure filters to be more frequently removed from service.

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. This will allow the membrane softening process to maintain consistent operation at the design capacity of 40 MGD and will provide additional redundancy to the pressure filter system. Unlike the existing pressure filters, these new filters will include media retaining launders that will mitigate the loss of media during filter backwash.

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 control, and electrical upgrades required for a complete and operating system. MBC's scope of improvements for this project included the following:

- Preparation of Construction Drawings, Technical Specifications, and Opinion of Probable Construction Costs at the 30%, 70%, and 100% stages of design development.
- Prepare and submit necessary construction permit application and supporting documentation to obtain a Florida Department of Health in Palm Beach County Permit (FDHPBC) for Construction of Public Water System Components.
- Bidding services.

The design phase was completed in February 2020, and the FDHPBC approved the permit for Construction of Public Water Systems Components.