



Warehouse No. 10 Water Line Extension | Seneca, South Carolina

Project Highlights

- Watermain Replacement Project
- SC Department of Health and Environmental Control (DHEC) Permitting
- Creation of bid documents (drawings, specifications, bid schedule, and contract)
- Trenchless Construction (horizontal directional drilling)
- Hydraulic investigation
- Construction Stormwater Pollution Prevention Plan (CSWPPP)

Client

Duke Energy Carolinas, LLC

Description

This project involved investigation, preliminary and detailed design, permitting, and construction support services for the installation of a new watermain on behalf of Duke Energy Carolina's Oconee Nuclear Station (ONS).

Project was initiated to provide adequate fire flow protection to their Warehouse, located along Highway 130, near Lake Keowee. The project extended a 10" high-density polyethylene (HDPE) fire line from Boron Water Tower to the east side of Warehouse No. 10. The total length of constructed watermain was approximately 450 feet.

The majority of the water line was installed using directional boring which minimized land disturbances. Proposed pipe came within 5 ft. of an existing building along with passing over a large concrete encased electrical duct bank.

Project Summary

Construction services provided were construction observation, final inspection with regulatory agencies and contract closure.

Pressure testing of the fire lines and water sample testing was required prior to certification of the water line by the Engineer for submittal to SC DHEC for an Approval to Place into Operation.

Unique Aspects

The proposed watermain had a 40 ft. vertical elevation drop from the base of Boron Water Tower to the face of building at Warehouse No. 10. This impacted the hydraulic calculations which had to account for this elevation difference. Final tested water pressure came within the calculated range.

Lessons Learned

Discuss line sizing, fire demand, existing pressure, potential valve and fire hydrant locations along with future plans early in the preliminary design phase. This allows engineers to design piping systems that accommodate client's current and future needs without numerous changes. This practical advice is followed by engineering staff at R&C.

Challenges and Solutions

Challenge: Due to the location, construction stormwater management was a concern by SC DHEC in issuing a permit.

Solution: The limits of disturbance for constructing the water line involved 0.9 ac. This limit was an absolute maximum as it encompassed the entire water line route which was mostly horizontally directionally drilled (HDD). After explaining the assignment to SC DHEC, along with adding

sediment and erosion control measures and assigning a Certified Erosion Prevention and Sediment Control Inspector (CEPSCI), a SWMMM permit was obtained.

Outcome

Duke Energy was very pleased with the fire protection line which enabled them to add fire protection to their existing warehouse. The hydraulic calculations were close to actual pressure conditions tested within the sprinkler system.

