



# Monarch Phase II Water and Sewer System Improvements | Union, South Carolina

## • Project Highlights

- Watermain Replacement
- Sanitary Sewer Replacement
- SC Department of Transportation ( SC DOT) Permitting
- Community Development Block Grant (CDBG) Funding
- SC Department of Health and Environmental Control (DHEC) Permitting
- Roadway Crossings and Associated Traffic Management
- Creation of bid documents (drawings, specifications, bid schedule, and contract)
- Temporary Construction Easement obtained

## Client

City of Union

## Description

This project involved investigation, preliminary and detailed design, permitting, bidding assistance and construction support services for the installation of a new watermain on behalf of the City of Union at multiple locations throughout the City.

Outdated galvanized water lines along Williams Street, Oak Street, and Mill Street were replaced with new PVC water lines. The galvanized water lines were at the end of their life span, resulting in numerous breaks and required replacement. Louise Street also had its aged watermain replaced, along with a 350 L.F. extension of 6-inch ductile iron pipe (DIP). Work included removal of old meters which served Monarch Mill Village and connections to existing 6-inch watermain. Water quality was improved with use of PVC in lieu of the existing galvanized lines.

General water system improvements also included replacing sixteen (16) 16-inch gate

valves with 16-inch butterfly valves. Thirteen (13) old or inoperable fire hydrants were replaced, resulting in improved flushing operations of the water system.

A companion sewer system improvements project was undertaken concurrently with the watermain assignment. The sanitary project involved replacing 600 ft. of existing sewer along Brown Street from Monarch Elementary School to Fant Street, including new manholes and service taps.

Work included field survey, coordination with business owners, SC DOT, and utilities owners affected by this project. Final watermain route was confirmed which preceded preparation of construction drawings and technical specifications for agency permitting, bidding, and construction.

R&C prepared bid documents and coordinated advertising for bids. During the bid phase, R&C responded to bidder questions, issued addenda as required, received and reviewed bids, and issued letters recommending Union award to the most favorable bidder.

Construction services provided were review of shop drawings, construction observation, monthly contractor pay request review, final inspections with regulatory agencies, issuance of final certificates for agency approval to operate and contract closure.

Pressure testing of the water 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 sanitary portion of the project travelled along school property for the entire 600 ft. distance. This required special attention in designing and creating specifications to reduce the likelihood of accidents to school children.

## Lessons Learned

When constructing within school zones, non-school working hours are paramount to reduce complaints, traffic congestion, and parents' concerns.

## Challenges and Solutions

**Challenge:** Project was adjacent to Monarch Elementary School, which presented unique challenges regarding working hours and safety.

**Solution:** Due to anticipated construction noise, which may impact students' concentration, work was scheduled for weekend and non-school hours.

Safety concerns required daily backfilling of trenches and disallowed any overnight open trench. Additionally, equipment and material storage was not allowed within sight of the school.

## Outcome

Both the watermain and sanitary sewer were constructed and are in use by local residents and the school.