

Morning Creek Phase II “Find and Fix” Design-Build I/I Reduction

Fulton County, Georgia



BCC's innovative “find and fix” methodology realized a 22-47% I/I reduction, a \$2.9 million capital cost savings/ plant capacity expansion deferment and a \$200,000 estimated savings.

BCC's Role in Project

Design-Build Lead

Project Value

Total: \$4.68 million

Project Dates

Start: May 2005

Completion: December 2006

Brown and Caldwell
is the parent company of
Brown and Caldwell
Constructors (BCC)

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The Morning Creek Phase II Inflow and Infiltration (I/I) Reduction project was part of an innovative and critical multiyear program to rehabilitate nearly 2,000 miles of sewer lines in Georgia's Fulton County. The project included: assessment, repair prioritization, sewer repair and documentation of I/I reduction; thereby, meeting a consent decree deadline, reducing SSOs, improving water quality, delaying costly plant expansions, and satisfying anticipated regulatory requirements within the CMOM framework. As part of this program, Brown and Caldwell Constructors (BCC) performed three of these contracts: Morning Creek Phase I I/I Reduction, Morning Creek Phase II I/I Reduction, and Wolf Creek I/I Reduction.

Design-Build and Find and Fix Approach Allowed for Fast-Track Completion

The traditional approach for I/I projects is to conduct comprehensive sanitary sewer evaluation service (SSES). Typically, separate contracts are required to first evaluate the system in a comprehensive manner, and second to conduct rehabilitation and repairs across the whole system. BCC used an alternative design-build “find and fix” approach that **allowed the county to work with one entity for both engineering and construction, and as a result get project results more quickly.**

BCC provided the engineering evaluation and prioritization of the sewer repairs and rehabilitation, while directing contracting partners. These subconsultants used a full range of sewer repairs and rehabilitation methods including CIPP lining of sewers and manholes, manhole raising, sewer replacement, spot repairs and improving access to easements.

Scope and Methodology

BCC's scope for Phase II included 13 sewersheds spanning a total of 18.5 square miles. The total pipeline length is approximately 150 miles, with over 3,800 manholes. The purpose of the following activities was to isolate the basins with the greatest I/I contributions and identify

those portions of the system at the sub-basin level needing repairs:

- Closed Circuit Television (CCTV) was performed on 200 pipe segments representing over 40,000 feet of pipe and associated video logs were created and analyzed.
- Smoke testing was performed for 170 manholes and 41,500 feet of pipe.
- Over 800 manholes were visually inspected, photographed, and had their condition assessed.
- 13 flow monitor devices were installed and one relocated halfway through the year.

In addition, BCC used InfoNet to integrate GIS, CCTV, smoke tests, manhole surveys and inspections to quickly identify needed repairs. **Because InfoNet is a GIS-based decision support tool, it assisted BCC in developing specific work orders for repairs noted and it helped prioritize those efforts. InfoNet sped up analysis, thus saving costs.** It also integrated with hydraulic models such as InfoWorksCS, which was also used to quantify the I/I before and after repairs, and thus assess performance.

A 22- 47 Percent I/I Reduction and \$2.9 Million Capital Cost Savings

Construction activities began January 2006 and were completed in December 2006. The construction work resulted in the following: 65 manholes were raised out of the floodplain; 87 frames and covers were replaced with monolithic frames and covers; 110 manholes were CIPP lined; two mechanical spot repairs (Link Pipes) were installed; one external point repair was made; one manhole was demolished and the missing section replaced with 36 inch ductile iron pipe; 3,389 feet of 8-inch vitrified clay pipe was replaced with 10-inch HPDE via pipe bursting; and 3,944 feet of medium-diameter (18-, 20- and 21-inch) and 2,653 feet of large-diameter (24- and 36-inch) pipe were CIPP lined.

Total I/I reductions are estimated to be as follows:

- Subbasins MC60 and MC61, peak flow RDII reductions of 47 percent and GWI reductions of 8 percent
- Subbasins MC50 and MC51, peak flow RDII reductions of 34 percent
- At meter MC45, peak flow RDII reductions of 22 percent and GWI reductions of 9 percent
- Manhole demolition in DC05 led to a GWI reduction of 71 percent

Benefits

- Fast-track delivery
- 22 -47 percent flow reduction
- \$2.9 million capital cost savings/deferment of plant capacity expansion
- \$200,000 estimated savings over traditional SSES/Design/Bid/Build approach