

CASE STUDY / WEST BLUE RIVER INTERCEPTOR SEWER

# DESIGN-BUILD REPAIRS AN ENVIRONMENTAL CATASTROPHE

Following a major break in the West Blue River Interceptor Sewer in Kansas City, Missouri, an emergency solution was needed. To stop the damaged system from spilling wastewater directly into Brush Creek, a scenic waterway, the city turned to our team's design-build approach to save time, money and resources.



# A PERMANENT FIX FOR AN EMERGENCY SITUATION

Design-build repairs an emergency sewer failure in less than four months.

## CHALLENGE

Over the years, soil erosion was quietly compromising the stability of structural piers supporting the West Blue River Interceptor Sewer in Kansas City, Missouri. In July 2016, one of the piers failed, causing the sewer pipe to collapse and dump 850 gallons of sewage per minute directly into Brush Creek, three miles east and downstream of the city's iconic Country Club Plaza. On-call responders established a bypass pumping system to stop sewer flow into the creek, but the solution was only temporary and expensive — costing the city approximately \$70,000 a month to operate.

The clock was ticking. The Kansas City Water Services Department knew a permanent solution was needed quickly to replace the temporary system, which still overflowed into the creek whenever it rained.

## SOLUTION

Kansas City Water Services turned to the Leath & Sons and Burns & McDonnell design-build team to design and construct the permanent repairs. In order to replace an entire aerial portion of the interceptor sewer, running approximately 375 linear feet, and build a new support system as quickly as possible, a design-build project delivery method was utilized.

While a typical design-bid-build process may take 12-14 months for a repair of this scale, design-build offered a significant reduction to the overall timeline.

Using this model, we developed a preliminary design and a guaranteed maximum cost proposal within one week. A new 72-inch steel sewer pipe was installed over Brush Creek. The new pipe connects to the existing concrete arched sewer at junction structures at both ends of the creek crossing. Our team also designed an improved pier system with five piers rather than the existing nine, reducing the number of structures within the creek and floodway. The piers were drilled approximately 11-feet into the bedrock of the creek to enhance stability of the replacement pipe and eliminate potential pier failure from future soil erosion.

## RESULTS

Substantial completion of the design and construction of the sewer repairs was reached in 105 days. Thanks to the design-build model and careful coordination, planning and communication between the client, Leath & Sons, and our team, the pipeline was back in full service in December 2016 — saving the city money and restoring Brush Creek's water quality.

## PROJECT STATS

### CLIENT

Kansas City Water Services Department

### LOCATION

Kansas City, Missouri

**375**

**LINEAR FEET OF SEWER INTERCEPTOR REPLACED**

**105**

**DAYS TO COMPLETE THE PROJECT**

**REDUCED THE AERIAL SEWER SUPPORT SYSTEM BY**

**4**

**PIERS**

**OVER \$630K**

**ESTIMATED COST SAVINGS COMPARED TO TRADITIONAL DESIGN-BID-BUILD MODEL**