PROJECT PROFILE

Perry Creek Conduit

Condition Assessment and Vibration Study | Sioux City, IA

CLIENT

Chistensen Brothers, Inc.

BACKGROUND

The Perry Creek Conduit is a buried reinforced concrete culvert, which runs generally in the north-south direction, just east of Wesley Way. The conduit channels Perry Creek into the nearby Missouri River.

Prior to the construction of a highway entrance ramp from 3rd Street to Wesley Way in Sioux City, Iowa, directly over an existing concrete conduit, WJE was asked to conduct a condition documentation survey and to install equipment to monitor vibrations and crack widths.

SOLUTION

WJE was retained by Christensen Brothers as a vibration consultant to perform a condition assessment of the conduit structure, recommend appropriate safe vibration limits, develop a vibration control plan, and monitor vibrations. All work was performed in accordance with Iowa Department of Transportation Special Provisions.

The preconstruction condition assessment survey consisted of field drawings and digital photographs. Crack width gages were installed and monitored. Based on the visual condition assessment, WJE made vibration limit recommendations.

Vibrations were monitored continuously with two Instantel MinimatePlus seismographs mounted to the roof structure of the conduit within the work zone. The recording units of the seismographs were mounted in steel enclosures, and power was supplied by batteries and solar panels. The seismographs were accessed remotely via cellular modems, which allowed for automatic alert protocols via e-mail and text messaging.

A post-construction condition documentation survey was performed and compared with the preconstruction conditions to verify that the condition of the structure had not been affected by the construction activity.

WJE ENGINEERS ARCHITECTS MATERIALS SCIENTISTS