

WHAT TO DO WHEN UTILITY RELOCATION IS NOT AN OPTION



8th St Bridge - Sioux Falls, SD

INTRODUCTION

Bridges have long been major utility corridors providing reliable routes over waterways. Yet, because they're among the oldest—and often most neglected—components of our infrastructure, bridge rehabilitation projects can be monumental in both scope and expense for any utilities situated on, under, or around them.

In 2020, the City of Sioux Falls initiated the planned rehabilitation of its historic 8th St. Bridge. Crews removed the roadbed, sidewalks, guardrails, and approach slabs for hydro-blasting, drainage upgrades, waterproofing, and surface repairs. As is common with projects of this nature, the city's engineers required that all existing utilities be removed from the bridge during construction, posing a complex challenge for utility providers.

CHALLENGE

The existing 14-way concrete encased duct bank, squeezed between the road surface and the bridge deck, provided a primary telecommunication route to the entire east side of the city and beyond. When the route was threatened by necessary bridge work, multiple ideas were considered—but each came with its own set of extreme obstacles:

- 1. Drill Under the River:** Sioux Falls' quartzite bedrock makes deep horizontal drilling nearly impossible.
- 2. Use Another Bridge:** Other bridges lacked duct capacity and longer reroutes were prohibitively expensive.
- 3. Build a New Central Office:** This would take years and cost millions of dollars.

Each traditional option carried high risk, high cost, or lengthy delays—necessitating a more creative approach.



Temporary Cable Suspension System

SOLUTION

With no viable options to meet the looming construction schedule or budget constraints, Congruex was asked to evaluate the project and propose an alternative solution. After completing civil analyses, subsurface investigations, and a thorough inventory of the client's facilities, Congruex developed a plan to raise and suspend the existing facilities approximately 10 feet above the bridge deck. In coordination with the agency, their project team, and the general contractor, Congruex also laid out a plan and schedule that would keep the project on track.

Collaborating with our structural engineering team, Congruex designed a temporary cable suspension system capable of creating a 320-foot clear span to support the existing cables, as well as additional cables from another carrier. Engineered to remain in place for more than a year, the support system was built to withstand seasonal temperature swings, snow and ice, and sustained winds of up to 120 mph.

RESULTS

Protecting these high-value telecom facilities was paramount—particularly given that some cables dated back to the 1950s and remained live throughout the project. Safely removing them from the roadbed and concrete encasement required meticulous excavation and concrete removal, including the demolition of an entire manhole. This allowed splice cases to be temporarily suspended and still remain accessible for service. Simultaneously constructing and raising the cable suspension system and associated facilities called for precise coordination and execution.

Following a winter storm with 85 mph wind gusts, the project's site superintendent reported that the support system barely moved, thanks to our solution.

Congruex's innovative approach to solving utility conflicts turned what seemed like a costly if not impossible problem into an affordable and executable solution.

From consulting and engineering to construction, we have the specialized expertise to tackle the toughest utility conflicts.

To learn more, visit <https://www.congruex.com/terra-technologies> or call (303) 808-1256.