



Make things happen. **HOBAS®**

IOWA TOWN CHOOSES ONCE-IN-A-LIFETIME SOLUTION

Council Bluffs has a population of only about 60,000 but welcomes more than 10 million visitors a year. They arrive by plane, train, car or bus and in the dynamic city needs to accommodate them.

Obviously, infrastructure is vital to Council Bluffs and the city's buried infrastructure is just as important as the highways, bridges and railroads. Like any modern city, Council Bluffs needs efficient, reliable sewers to remain vibrant and growing.



"Doing it right" in this case could have been incredibly expensive and disruptive, given the size of the line and the dewatering that would be necessary to control the ground water and prepare the site for new pipe installation. Dewatering alone would have cost approximately \$35 per linear foot (approx. 30 cm) of pipe. But the city placed a priority on making this project fail-safe in the future. They wanted a new line that would last 50 to 100 years, so they considered every method.



One of the city's largest sewer outfall lines was at stake, a combination of DN 1200 and DN 1100 concrete pipe that carried approximately two-thirds of the city's wastewater. The pipes were cracked, had offset joints and were corroding away from the inside. In some places, the 15 cm wall thickness had deteriorated to only a couple of centimeters.

"We have some real challenges with regard to sanitary sewer flows," admitted Gregory Reeder, P.E., City Engineer for Council Bluffs. "We have a high water table and very flat terrain in some areas." To illustrate the problem, he noted that the new sewers in Council Bluffs often have as little as 2 cm fall every linear 30 m. There are areas where the sewage just sits there in the pipe from time to time. That creates hydrogen sulfide which attacks the concrete pipes. In some places the pipes sit underwater which creates installation issues.

In 1998-99, the city began exploring repair and replacement options, but finding the right solution was complicated. The pipe's size, burial depth and high ground water made the project extremely difficult and potentially very expensive. Engineers also had to consider the fact that the line runs under an interstate highway, a street and a levee.

Reeder, the City Engineer, explained that watertight joints were extremely important for this project since deep sewer repairs can cost \$ 50,000 to \$ 100,000: "We knew much of the line would be under the water table and we didn't want the joints taking on groundwater. But with larger diameter pipes, your options are limited. We looked at a lot of alternatives but we kept coming back to a product called HOBAS CC-GRP Pipe Systems. Of all the products we looked at, theirs was the most corrosion resistant and their joints are extremely water-tight."

After careful analysis, the city opted to conduct a series of five projects to replace the old sewer with a new DN 1500, PN1 line made with HOBAS SewerLine®. In total, the city now has almost 5.1 km of new sewer line ranging from DN 1100 to 1500, much of it parallel to the old sewer but in a more efficient layout and designed to accommodate future growth.

HOBAS CC-GRP (centrifugally cast, glass fiber reinforced plastic) Pipe Systems, which come in sizes up to 2.8 m in diameter, are produced in a precise, computercontrolled process that creates a pipe of high strength and corrosion resistance without add-on linings, coatings or cathodic

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protection. It has excellent long-term hydraulic characteristics due to the smooth, non-corroding interior surface and is highly resistant to abrasion.

Another reason Council Bluffs chose HOBAS is the fact that the pipe can be jacked under existing structures. Because the old line ran under several of them, finding a non-disruptive solution was important.

Gene Lea, president of B&L Construction Company in Omaha, Nebraska, was an early proponent of HOBAS pipe. His company was the low bidder for all five Council Bluffs projects. From a cost-efficiency standpoint Lea and his installation team benefited from the fact that HOBAS CC-GRP Pipes come in Company 6 m lengths. Concrete pipes, which are also heavier, typically come in lengths of 2.5 or 3.7 m. The installation time could be reduced with HOBAS Pipes since less joints were needed.

In addition to this, HOBAS FWC Couplings are easy to install. "You can cut the pipes to shorter lengths in the field and utilize the push-together FWC couplings. It's very simple. That gives you a lot of installation flexibility. Plus, the joints are absolutely watertight" said Lea. The pipe was enveloped in sand so no special backfill was needed.

The construction of the new HOBAS SewerLine® stretched over five years. In retrospect, the engineers said that they would do only one thing differently about the project – utilize HOBAS Tee Base system for all the manholes, this resists hydrogen sulfide attacks.

"HOBAS pipe was an excellent choice for Council Bluffs," said Reeder, "just about any other option runs a much greater risk of failure in the future. We wanted this to be a once-in-a-lifetime solution."

Overview	
Year of Construction	2000-2004
Construction time	5 years
Length of Pipes Laid	5.1 km
Pressure Class	PN 1
Diameter	DN 1100 – 1500
Stiffness Class	SN 6500
Installation Method	Open trench, jacking
Application	SewerLine®
Client	Council Bluffs
Contractor	B&L Construction Company
Advantages	Extreme water-tight couplings High corrosion resistance Easy installation Long service life