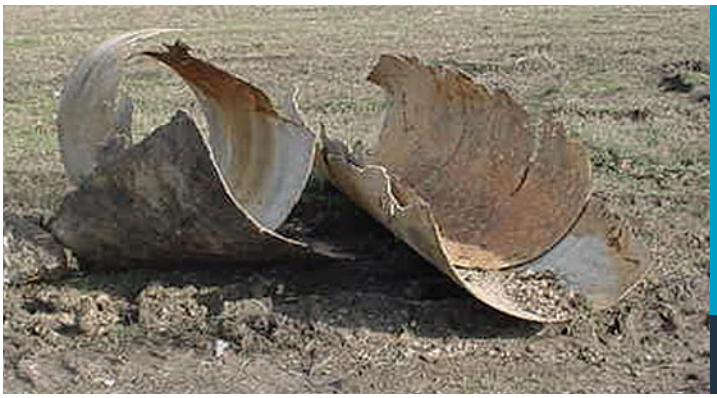

ROWLETT, TEXAS ENCOUNTERS UNEXPECTED SEWER LINE REPAIR

by Michael Luckenbill
South Central Regional Engineer

Rowlett, Texas is a city of over 50,000 residents situated on beautiful Lake Ray Hubbard in northeast Dallas County, approximately 20 miles from downtown Dallas. The City is convenient to much of the shopping and entertainment in the Dallas / Ft. Worth Metroplex and offers an escape to the quiet, relaxed atmosphere of lakeside living. As one of the top ten metropolitan cities showing the largest population and housing growth rates from 1990 to 2000, the City of Rowlett is still able to offer affordable housing, thriving business opportunities, and a friendly hometown atmosphere. This atmosphere was challenged on January 19, 2004 when a 36-inch ductile iron gravity sewer pipeline broke after heavy rains. As we all know, any 36-inch line break is major, but this line carried 60% of the City's sewage. A few months later, on April 25, 2004, there was another heavy rainstorm and a second failure of the same line. To make matters worse, these two failures occurred in the State Highway 66 (SH66) portion of the alignment instead of the portion within the golf course. As SH66 is a major artery through Rowlett, the traffic disruption from these catastrophic failures was significant.

The City of Rowlett hired the engineering firm of Wiss, Janey, Elstner Associates (WJE) to determine the cause of the pipe breaks, which occurred only six years after the line was placed into service. The WJE's final report states that hydrogen sulfide corrosion was the likely cause. WJE did not find significant corrosion when it examined the outside of the pipe. The upper portions of the inside of the pipe, however, were heavily corroded, especially the area above the water line. Metallurgical testing further confirmed the likelihood of hydrogen sulfide corrosion: the corrosion deposits had high levels of sulfates.

The City also arranged for a video inspection of the line. The video firm was only able to check half of the line because debris in the line made further inspection impossible. Of the 50% the video firm was able to inspect, the majority of the cement mortar lining originally in the pipe was no longer present, and the iron pipe underneath the cement mortar lining was in a state of advanced corrosion.

With the results of the video inspection and the WJE report, it is understandable that the City decided to replace the line, which is almost a mile in length. This time, however, the City chose PVC pipe.

To recover the cost of replacing the system, on December 21, 2004 the City filed a lawsuit against the design engineer that specified the original ductile iron pipe. The City alleged that the design engineer failed to (1) "use mitigation techniques to inhibit the initial formation of sulfides in the wastewater", (2) "design piping to control or contain released hydrogen sulfide

DR25, AWWA C905 PVC pipe was specified as the replacement pipe because it was readily available.

Fred Valenta, with JC Utilities, admires the 36-inch PVC pipe being used to replace the ductile iron pipe.

gas", and (3) "specify a type of pipe more resistant to hydrogen sulfide." The case generated a significant public record before the parties settled out of court earlier this year. The firm and its alleged successor agreed to pay the City $2 million.

Not surprisingly, the engineering, easement acquisition, and construction for the replacement PVC pipe project progressed more quickly than the legal case. A new engineering firm prepared the plans for replacing the 36-inch line. The City acquired easements for the new alignment for the replacement line, and by the summer of 2006, nearly 4,000 feet of ductile iron pipe had been replaced with solid-walled, corrosion resistant, PVC pipe. With the successful completion of the replacement project, the City can look forward to unlimited corrosion-free service from PVC pipe… the product of choice for sanitary sewers.

The replacement PVC pipe was laid in a new alignment.

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