



Renner, South Dakota Line their leaking Manholes with PERMAFORM®

The manholes located in a small community just north of Sioux Falls called Renner, South Dakota were deteriorated badly from high levels of Hydrogen Sulfide Gas. When this gas is present, unprotected concrete can be corroded in a few short years. The deterioration in these manholes were so bad that it was allowing ground water to infiltrate.

Renner chose to fix these manholes by using a process called PERMAFORM® with T-Lock Plastic Liner. This was the easiest and most economical way because of the high groundwater and many utilities that surrounded the 5 manholes. PERMAFORM® is a unique, patented process for reconstruction of manholes quickly and cost-effectively, involving neither excavation nor stoppage of the flow. Lightweight steel panels are assembled inside the manhole and concrete is poured in between the form and exiting wall. After the concrete has hardened, the formwork is removed leaving a completely sealed, structurally sound, 'manhole within a manhole'. Ameron T-Lock is an extra-tough, specially formulated polyvinyl chloride sheeting that locks mechanically into the interior wall of concrete sewer pipes during rehabilitation, providing a flexible corrosion barrier that will withstand decades of severe service. The 5 manholes were completed in November 2006 by Recon Inc. of Watertown, South Dakota, President Darrin LaQua and Spray Com Utilities Inc. of Sedalia, Missouri, President, Gary Bartley.

Engineer Testimony

"I would like to take this opportunity to express our extreme satisfaction with the PERMAFORM® repair that was performed on 5 manholes in the Renner Sewer District. The final product was a PVC lined manhole that looked like it was manufactured at a pre-cast concrete manufacturer. We were particularly impressed with the newly finished invert bench and the short time it took the field crew to construct the PERMAFORM® manhole and place backfill around the manhole. We will recommend this type of repair again when considering this type of manhole rehabilitation."

Ray Pierson, P.E.
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Steel forms are erected from the flow line in the bottom chamber all the way to the top. During the assembly of the forms prefabricated tubular sections of the T-Lock were fitted around the formwork exterior like skin.



Once in place then entire void between the old deteriorated wall and the plastic covered forms are filled with high-strength ready-mix concrete.



After the concrete has set, the formwork is disassembled. The joints then receive a heat-fused welding strip to completely seal the new concrete from future corrosion. Then the liner is spark tested to ensure there are no defects or pinholes.



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