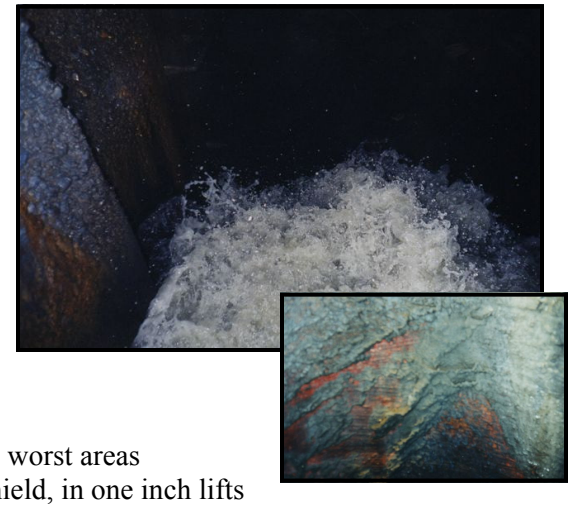
ConMICShield® Technologies, Inc.
biotech armor for concrete

Rehabilitation Incorporates Con[mic]Shield® to Indefinitely Extend Life of Maline Structure in St. Louis

The Problem

The Maline Drop Shaft located near the Chain of Rocks Bridge is just like concrete sewer structures everywhere. They corrode when hydrogen sulfide gas is present. Moderately-high temperatures, long retention times, high biological oxygen demand (BOD) levels, and turbulence contribute to elevated levels of hydrogen sulfide gas which, in turn, provide the food for acid-producing bacteria. The technical name for this process is ***Microbiologically Induced Corrosion (MIC)***. This 40-year-old concrete structure was severely deteriorated from MIC. The upper portion of the walls were mushy with more than two inches of the original wall missing; in the lower half of this 50-feet-deep structure, more than five inches of the walls had corroded away.

The Solution



Eight years ago, St. Louis MSD chose Specialty Sewer Company, now ADS Environmental Services, a licensed Permacast® applicator in the St. Louis area, to provide the quickest and most cost-effective method to restore the structural integrity of this severely-corroded structure and to prevent future corrosion. Specialty Sewer Company partnered with Spray-Com, another licensed Permacast® applicator with extensive experience in deep structures, on the project. A crew of five worked for 32 days and did the following to restore the structure:

- Power washed the walls back to solid material
- Stapled wire mesh to the walls for structural reinforcement of the worst areas
- Applied MS-10,000, a cementitious grout fortified with Con[mic]Shield, in one inch lifts
- Troweled the surface after each layer was applied to ensure a densely-compacted, uniform finish
- Troweled smooth a final one-inch layer once the entire wall was rebuilt to the plumb line

Results

Upon completion of the job, the structural integrity of the Maline Drop Shaft was restored to a better than new condition. Thanks to the addition of Con[mic]Shield to the MS-10,000 repair grout, the drop shaft is permanently protected from future MIC damage. The Con[mic]Shield additive kills the sulfuric acid-producing bacteria; and, since it is molecularly bonded to the cementitious repair grout, it cannot wash off, chip off, delaminate, or pinhole. In the eight years since the restoration of the Maline Drop Shaft incorporating Con[mic]Shield was completed, yearly interior inspections reveal that corrosion has stopped, and only 3/32” of the wall has been lost to abrasion or erosion. This quick and cost-efficient solution to the MIC damage in the Maline Drop Shaft has greatly extended its life in spite of the continued unstoppable and highly-turbulent flows and extremely-high levels of hydrogen sulfide gas.