

Cherokee Culvert Company, Inc.

10/10 POLYMER COATED CORRUGATED STEEL PIPE

In 1977, the Southeastern Corrugated Steel Pipe Association, in cooperation with the Georgia Department of Transportation, conducted an intensive survey into the performance of corrugated steel culvert pipe. This study included over two hundred and fifty installations covering all districts within the state. All areas of potential debilitating corrosion were closely examined to determine not only the overall performance of galvanized steel pipe, but measures that may be taken to enhance the durability of the material. They concluded that of all pipes inspected, most of which had been in service for more than forty years, none had signs of significant soildside corrosion. In their recommendations for service life predictions, it is noted that soildside corrosion is negligible. This study proved that standard 2 oz./ft.² galvanized culvert pipe has a very conservative soildside service life estimate in excess of fifty years. A Federal Highway study performed in 1991, including installations nationwide, drew these same conclusions. Both indicated that the area of invert enhancement should be addressed since this is the predominant area of metal loss in nearly every case study.

Protection Where You Need It

Invert deterioration of corrugated steel pipe is determined by the "corrosion-erosion" cycle. The protective coating is eventually abraded away from the substrate, causing oxidation of the carbon steel. Abrasion further removes this corroded material and the process repeats itself until the invert is consumed. While this process does take a considerable amount of time, it is the leading cause of invert deterioration in corrugated steel pipe installations. Invert treatments such as bituminous paved inverts have successfully addressed some of these problems. Any bituminous material applied after pipe fabrication, however, is considered a sacrificial coating. While it does protect the pipe, it, too, is eventually abraded, exposing the underlying galvanized steel. Polymer coated corrugated steel pipe is fabricated with its protective coating on both the pipe interior and exterior, protecting the underlying steel with one of the most abrasion resistant barrier coatings within this industry. This may be accomplished at a cost comparable to the materials you are currently utilizing for storm drain and culvert applications.



Trenchcoat™ Protection Designed For Today's Manufacturing Methods

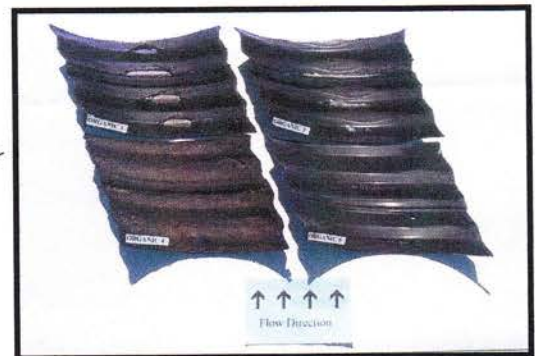
Trenchcoat™ is a special coating formulated by the Dow Chemical Corporation for use with corrugated steel pipe. It is an ethylene acrylic sheet which is bonded to a standard 2 oz./ft.² galvanized culvert sheet by approved laminators. These coils are supplied to corrugated steel pipe manufacturers and the sheet material is formed into the finished product. Special emphasis has been placed on the coating's ability to withstand the abuses associated with modern helical pipe fabrication methods. These stresses include corrugating, curving, lockseaming, cutting, and reforming of pipe ends. Microscopic examination of samples taken from commercially available corrugated steel pipe show that the polymer suffers no adverse effects from the combination of these manufacturing processes. There is no cracking or side shifting of the coating when the helices of the finished product create cross tension stresses in the pipe. The bond between the galvanized sheet and the coating remains strong and no delamination of the polymer is evident. In fact, procedures designed to test the limits of this adhesion, showed that the polymer was so tightly bonded to the sheet that when removed, the polymer coating pulled the galvanizing off the steel substrate. This tough coating, combined with its excellent adhesion, ensures that all of the protection arrives intact on the jobsite, taking full advantage of this superior corrugated steel pipe coating.

Corrosion and Abrasion Testing Proven In Testing and Field Application

Exhaustive research has been performed on polymer coated corrugated steel pipe to determine what type of service life extension is associated with its use. Chemical testing has shown it virtually inert to all agents commonly found in a storm sewer, or culvert application. While we do not promote it as a sanitary sewer piping material, it is perfectly acceptable, and utilized for this purpose. Standing water, regardless of its corrosive nature, has no effect on the coating. In fact, field application environmental parameters included pH levels at 2.4, far too aggressive for other types of corrugated metal pipe. Regardless, the protective coating suffered no debilitating effects.

In 1996, the Ocean City Research Center, in New Jersey, conducted tests on various metal pipe coatings to determine which provided the best protection to the underlying steel. These tests were designed to destroy each coating in order to provide an idea as to the limits of each material's performance. While abusive testing such as this rarely occurs in field application, and certainly not consistent with Georgia's conditions, each coating under identical duress proved polymer's superiority.

Based on the exceptional performance of polymer coated corrugated steel pipe when subjected to extreme corrosion and abrasion testing, along with over thirty years of successful field performance, a conservative add-on service life of c.s.p. coated with this material is 80 years.



Accelerated abrasion testing performed at Ocean City Research Center included 25 tons of 3/4" trap rock passed through the pipe over a two week period. Polymer coated c.s.p. (bottom right test section) proved far superior.

Protection Against Ultraviolet Damage

Many storm drainage systems and especially culvert applications require the pipe to be constantly exposed to potentially harmful ultraviolet rays. It is important to remember that polymer does not react to the sun's damaging rays like polyethylene. Installations of corrugated steel pipe coated with polymer material have been exposed (with beveled ends) to direct sunlight for over thirty years. The thick 10 mil coating has suffered no cracking, peeling, or delamination.



*If you are tired of installing messy asphalt coated pipe with paved inverts,
make a change to polymer coated corrugated steel pipe.*

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