



ALUMINIZED STEEL TYPE 2 CORRUGATED STEEL PIPE

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75 Years Minimum Service Life — And Still Counting

Strength of steel, corrosion resistance of Aluminum

Corrugated steel pipe manufactured from Aluminumized Steel Type 2 offers the corrosion resistance and surface characteristics of aluminum with the strength and economy of corrugated steel pipe.

The product is fabricated from steel coils that have been hot dip coated in a bath of commercially pure aluminum. The coating has uniform thickness on both sides of the sheet, with a strong metallurgical bond

between the metals. The aluminumized Type 2 material meets AASHTO specifications M274 and ASTM A 929.

The coils are then fabricated into helically corrugated pipe meeting the requirements of AASHTO specification M36 and ASTM A 760. Helically corrugated steel pipe has been a standard of the construction industry for decades. Pipe is fabricated with lock seams and each pipe end can be reformed to provide at least two annual corrugations for secure soil tight joints with hugger connecting bands.



96", 12 gauge Aluminumized Steel Type 2 was utilized for this pre-fabricated underground detention system. Corrosion resistance of AST2 gives designers assurances of a system that will satisfy long service life expectations

Ideal For Storm Sewers

Aluminumized Steel Type 2 corrugated steel pipe is an ideal material for municipal storm sewers or any normal drainage project. Aluminumized Steel Type 2 pipe offers a durable and economical alternate to reinforced concrete pipe. Features include light weight, long lengths, and joints that have pull-apart resistance and the ability to adjust to yielding foundations.

Pipe and pipe arch are available in six corrugations (2-2/3"x1/2", 3"x1", 6"x1", and the combination of **Hydra-Cor's** three separate configurations) and in all standard diameters and in 18 gauge

through 10 gauge.

Long-term field testing

Based on extensive data from actual field installations dating back 43 years, Aluminumized Steel Type 2 is a superior product for storm sewer and drainage projects. It has a better corrosion resistance than galvanized structures and displays better abrasion resistance.

Prior to 1953, Aluminumized Steel Type 2 and galvanized steel culverts were exposed in sites across the U.S. These sites represented a variety of service conditions

including farm field drainage, fresh water swamps, alkali soils, and erosive applications. Test installations were sampled after eight years and again after 24 years. Weight loss data analyzed at all sites indicate Aluminumized Steel Type 2 provided significant additional corrosion resistance.

In addition to the careful sampling and evaluation accomplished during this 24 year program, simple visual inspection revealed that:

- The appearance of Aluminumized Steel Type 2 was clearly superior to that of

conventional metallic coating - The condition of the Aluminumized Steel Type 2 pipe inverts, a critical point in durability, was excellent. In 1952-53, an additional 135 composite culverts of Aluminumized Steel Type 2 and galvanized were installed in 20 states. Based on the current conditions of the pipes available, the data indicates a minimum 75 year service life for 16 gauge Aluminumized Steel Type 2 pipe when installed in the recommended environment. Many independent studies have been performed that confirm these studies.

Excellent Barrier Protection

Aluminum forms a passive aluminum oxide film that adds to the service life by providing good barrier protection. This passive film forms rapidly and maintains better protection over a wider environmental range than zinc reaction product films. The aluminum oxide passive film is effective in both hard and soft water.

The passive oxide film will endure as long as the free aluminum coating layer lasts. When this layer is eventually penetrated, there is an underlying hard, thick aluminum-iron alloy layer that provides further corro-

sion protection plus some significant abrasion protection.

Based on field studies of 42-43 year installations, Aluminized Steel Type 2 service life is estimated to be 75 years minimum at 16 gauge in the 5-9 pH and greater than 1,500 ohm-cm resistivity ranges.

In some cases, the pH/resistivity ranges may be exceeded somewhat as is the case in arid regions where moisture availability is generally a controlling factor, and satisfactory service life may be realized at soil resis-

tivities below the 1,500 ohm-cm lower limit. In wetter climates, satisfactory service life may be realized at soil pH values below the 5.0 lower limit when resistivities are relatively high.

In general, however, environments outside the recommended pH/resistivity ranges should be subjected to additional testing to see if conditions conducive to accelerated corrosion actually exist. For example, low resistivity waters and soils may contain excessive concentrations of corrosive chloride and sulphate salts. In addition, any dark, or light gray, blue or

olive colored clay constituents observed in a heterogeneous soil should be isolated for pH measurement since these sometimes contain water soluble heavy metal salts. These constituents induce strong acidification necessitating the use of a bituminous coating to ensure normal soilside behavior.

Environments that are far outside the recommended pH/resistivity ranges should be avoided, including acid mine water, seawater, brackish water, and sanitary or industrial sewage.

42- and 43-year old Aluminized Steel Type 2 coupons taken from pipe inverts around the United States



Marshall County, IA
Installed 1952
Inspected 1995



Lafayette County, MO
Installed 1952
Inspected 1995



Snohomish County, WA
Installed 1952
Inspected 1995



Morgan County, IL
Installed 1952
Inspected 1995



Bernalillo County, NM
Installed 1952
Inspected 1995



Oklahoma County, OK
Installed 1953
Inspected 1995



San Benito County, CA
Installed 1953
Inspected 1995



Decatur County, KS
Installed 1953
Inspected 1995

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