

A STUDY IN SERVICE LIFE

Decatur County, KS

INTRODUCTION

Throughout NCSPA's long history, numerous corrugated steel pipe (CSP) installations have been the subject of routine critical evaluation to establish accurate, predictable service life guidelines. This study of an aluminized type 2 (ALT2) installation in Decatur County, KS, was conducted with a coupon sampling at the 50-year mark to examine soil resistivity, water resistivity and overall condition of the pipe to determine the remaining projected service life.

CONCLUSION

Based on conservative pit penetration extrapolations from the Decatur County study, the projected service life of 16 gage ALT2 CSP **will exceed 100 years** in this environment.

SITE AND LABORATORY SUMMARIES

Site Location

Decatur County, KS, Site 14

Sampling

Soil samples were procured from the A and B positions contacting the pipe; no water was present; trepans were procured from the 6 o'clock position on all pipe ends

Parameters

East ALT2 End

Soil Resistivity: 1890 ohm.cm; pH 6.5; chlorides 40 ppm; sulfates 25 ppm

Water Resistivity: No water was available at this site

West ALT2 End

Soil Resistivity: 2070 ohm.cm; pH 6.6; chlorides 20 ppm; sulfates 30 ppm

Water Resistivity: No water was available at this site

CSP Condition Observations

This site included two parallel 36" culverts of 12 gage pipe. The north ends (inlet) were aluminized, while the south ends were galvanized. Both ends looked good. Aluminized end still has good free aluminum coating intact; previous trepan holes had not corroded further on either end; samples were taken at the 6 o'clock position.

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National Corrugated Steel Pipe Association

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East ALT2 End

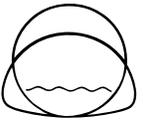


East ALT2 Water Side



East ALT2 Soil Side





Trepan Evaluation

East ALT2 coupons were bead blasted to remove loose oxides and images were recorded of the remaining surface (see images on previous page). Coupons show lite pitting is present on the soil side and on the water side, very close to the peak.

Micrometer readings were taken after bead blasting using a ball micrometer (general thickness) and a point micrometer (deepest pit depth).

Starting Thickness: 0.110"

Micrometer Results – Ball: 0.110", 0.109", 0.109" **Point:** 0.106" (0.004" deep)

West ALT2 coupons were bead blasted to remove loose oxides and images were recorded of the remaining surface (see images on right). Coupons show lite pitting is present, scattered on both the water side and soil side surfaces.

Micrometer readings were taken after bead blasting using a ball micrometer (general thickness) and a point micrometer (deepest pit depth).

Starting Thickness: 0.110"

Micrometer Results – Ball: 0.107", 0.108", 0.108", 0.109" **Point:** 0.105" (0.005" deep)

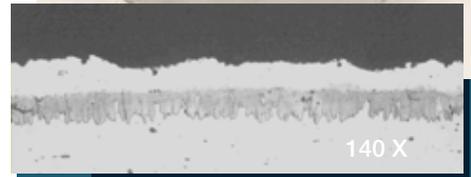
All site and lab information and testing provided by AK Steel.
(Type 2 Aluminized at this site was produced by what is now AK Steel Corp.)



West ALT2 End



West ALT2 Water Side



West ALT2 Soil Side

