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IMPACT TEST REPORT
PROTECTO 401™ CERAMIC EPOXY

March 2, 1995

GM&A has completed a test program on Protecto 401™ Ceramic Epoxy lined pipe coupons. The results of the completed tests are reported herein. They include the following test procedures:

ASTM G-14: Standard Test Method for Impact Resistance of Pipeline Coatings (Falling Weight Test).

Coating System: Protecto 401™ CERAMIC EPOXY (Internal) Lining, Plant applied to the internal surface of ductile iron with a reported age in excess of eighteen months.

The conditions of the test include the following: 48 hour minimum temperature and humidity equilibration within the lab at 73° F (23°C). Coupons were approximately 3 x 6 inch with coating applied at a DFT of 33 to 48 mils (825 to 1175 microns). The weight of the falling impactor was 4 pounds. Continuity was determined with a low voltage, wet sponge holiday detector per ASTM G-62. Four panels were evaluated for the test using a Gardner Model #5510 Impact Tester.

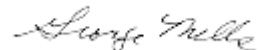
| | | | | |
|--------------------------|-------|-------|-------|-------|
| TOTAL NUMBER OF IMPACTS: | 6 | 6 | 8 | 8 |
| FILM THICKNESS (MILS): | 37-39 | 39-44 | 33-36 | 45-48 |

The impact results using a four (4) pound weight were as follows:

| | | | | | |
|--------------------|---|---|----|---|---|
| Number of Impacts: | 5 | 5 | 14 | 2 | 2 |
| Number of Pass: | 5 | 5 | 9 | 0 | 0 |
| Number of Fail: | 0 | 0 | 5 | 2 | 2 |

RESULTS: The average impact strength of the coating as tested was determined to be 72 inch pounds.

CERTIFIED:



Dr. George Mills

Date: 2 March 1995