

Know

You Should



A Message from the American Concrete Pipe Association

Bulletin No. 121

Installation Anomalies? You Be The Judge

In recent years the concrete pipe industry has been making every effort to improve the designers' knowledge and understanding of the proper installation of concrete pipe. These efforts were spawned from the results of the SPIDA (Soil Pipe Interaction and Design Analysis) studies of the late 1970's and early 80's.

The research resulted in the development of four new standard installations. ACPA Design Data 40 replaced the historical Marston-Spangler beddings used in the indirect design method and now the ACPA *Concrete Pipe Design Manual* has been revised to incorporate these new installations.

The HDPE pipe industry has fallen short in its effort to promote quality installation procedures. The details provided in ASTM D 2321, "Underground Installation of Thermoplastic Pipe for Sewers and Other Gravity-Flow Applications," are not widely known by the engineering and contracting communities. Of greater concern, the procedures outlined in D 2321 are not being implemented during the construction process.

Case studies published by the HDPE pipe industry highlight projects as quality installations or premier projects. Inspection of several of these projects has proven otherwise. Examples are as follows:

The City of Dundas, Minnesota

12" to 36" diameter HDPE pipe. Completed in 1997.

- 30" and 36" diameter lines have deflection of 13% (4" and 4 1/2" respectively).
- 30" line failed allowing debris into the line.
- Inconsistent grade.
- Deep corrugation growth.
- Cracked liner.
- The 60" concrete outfall line (1987) which this project empties into is in excellent condition.



RCP Pipe Installed in 1987



HDPE Pipe Installed in 1997

continued on back

The City of Croswell, Michigan

60" diameter HDPE pipe promoted as fast, easy, cost effective and structurally solid. Completed in 1997.

- Pipe has deflected 17% (10").
- Cracks are present.
- Joint separation.
- Buckling.

Jefferson City, Missouri / Cole County DPW Maintenance Yard

42" diameter HDPE pipe. Completed in 1994.

- Pipe has deflected 7% (3") at the end.
- Interior lining has split.
- Joint separation.
- Grade problems.

Olathe, Kansas / Great Mall of the Great Plains

12" to 48" diameter HDPE pipe for a stormwater management system. Completed in 1997.

- 48" diameter pipe has deflected 12.5% (6").
- Pipe flotation.
- Joint separation on 48" Pipe.
- Corrugation growth.
- Buckling.
- Grade problems.

Excessive deflection can be a result of improper installation and/or product quality and pipe profile geometry. The problems cited above may not all be related to installation. Excessive deflection can lead to bad joints, grade problems, poor hydraulic performance, stress related problems, and surface (ground or pavement) irregularities. More importantly, though, is the fact that most of these problems are an indicator of future failure.

Specify an engineered and time proven product with verified installation methods: Concrete Pipe.