

Dura-FlowTM

Smooth Lined Corrugated Steel Pipe

Introduction

Dura-Flow pipe, a smooth interior corrugated steel pipe, combines a standard corrugated steel exterior shell with a hydraulically smooth liner. The liner is continuously attached to the exterior shell along the lock seam. Smooth lined corrugated steel pipe has been available in the industry since the 1970's. It is currently approved by AASHTO, ASTM, Federal Highway Administration, the Corp's of Engineers and several DOT's, including Michigan and Indiana.



Hydraulics

Dura-Flow, wall roughness is the same as for other smooth barrel pipes, such as concrete, clay tile, cast iron, and dual wall plastic, except that the longer joint spacing reduces the joint turbulence and corresponding losses. A conservative tested Manning's coefficient of .012 is used for Dura-Flow pipe. Other coefficients and hydraulic criteria customarily used for smooth concrete pipe under specific site conditions are also applicable.

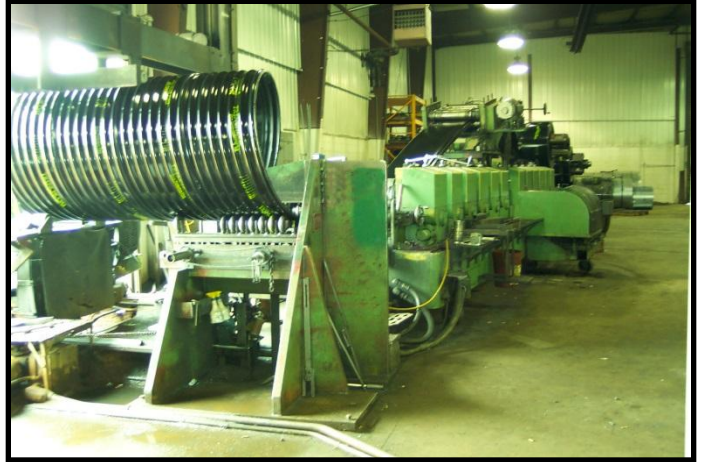
Dura-Flow, with its long lengths and light weight, is superior to concrete in many difficult situations such as steep slopes, poor subsurface drainage, high fills and weak soils.

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Dual Wall Corrugated Steel Pipe

Durability

Dura-Flow is available with either a plain galvanized coating or with Dow's Trenchcoat protective coating. Trenchcoat polymer coating is laminated to both sides of a coil and provides exceptional protection against corrosion and abrasion. Trenchcoat is approved by many DOT's including Michigan and Indiana. Trenchcoat exceeds the requirements for a 70-year service life.



Structural Design

The height of cover for Dura-Flow is based on the combined sum of shell and the liner to equal the base metal thickness of an equivalent corrugated steel pipe. AASHTO Standard Specifications for Highway Bridges as well as, ASTM A-796 regulate the required wall thickness. In no case will the shell be less than 60% of the thickness of the equivalent pipe for design purposes as shown in below.

Equivalent Standard Corrugated Steel Pipe	Wall Thickness of Corrugated Shell	Wall Thickness of Smooth Interior Liner
0.079	0.064	0.047
0.109	0.079	0.047
0.138	0.109	0.052
0.168	0.109	0.064

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Foundation

The preparation of the foundation is critical to the service life and performance of the pipe. All pipe must be placed on stable earth or well graded granular material. The bed should be free of rock formations, protruding stones, roots and other foreign matter.



Backfill

Backfill material shall be a granular material free of organic or frozen matter, which is easily graded, free draining and easily compacted. Backfilling shall be placed and compacted under the haunches of the pipe and continue symmetrically on both sides in 6" to 8" lifts compacted to a 90% Standard Procter density (AASHTO T-99).



Backfill must be placed and fully compacted to the minimum cover level over the structure before the pipe is subjected to highway or light construction loads.

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Construction Loads

Frequently, heavy construction loads are required to pass over the installed corrugated steel structure during completion of site work. Protection of the structure may be required, depending on the axle loads of the equipment. Place at least four feet of cover over top of pipe for most applications.

Pipe Span, in.	Minimum Cover (ft) for Indicated Loads (thousands of pounds)			
	18-50	50-75	75-110	110-150
36-72	3.0	3.0	3.5	4.0
78-120	3.0	3.5	4.0	4.0
126-144	3.5	4.0	4.5	4.5

For complete information

Call your ***St. Regis Culvert representative.***
