

# The Storm Sewer System of Choice Corrugated Steel Pipe (CSP)



## Spiral Rib CSP vs. Polypropylene

Spiral Rib CSP has over 30 years of in-ground performance. With a wide range of diameters, longer lengths, and custom fittings to meet your site conditions, CSP storm sewer systems will be able to save a substantial amount of both time and money.



## PRODUCT COMPARISON

ATTRIBUTE	SPIRAL RIB CSP	POLYPROPYLENE (PP) PIPE
HISTORY	Over 30-Years of proven in-ground performance.	Newer product with only a few years of history.
HYDRAULICS	Smooth interior with external ribs capable of a Manning's "n" of 0.012.	Thin inner wall corrugates under load.
AASHTO MAXIMUM HEIGHT OF COVER <i>(Class II Backfill with 90% Compaction with 30-in. Diameter)</i>	65' cover	17' cover
JOINTS	Semi-Corrugated (Hugger) and Fully Corrugated	Stab joint
PIPE LENGTHS	24' standard lengths (custom lengths available)	20' standard lengths
PIPE STIFFNESS	Steel not affected by heat of the sun.	Gray color absorbs heat and loses stiffness.
LONG-TERM STRENGTH (75-YR. YIELD STRENGTH)	33,000 psi yield	1,000 psi yield
AVAILABLE SHAPES	Round and Pipe Arch	Round
DIAMETERS	up to 102-in.	up to 60-in.
COEFFICIENT OF THERMAL EXPANSION AND CONTRACTION.	Polypropylene has 10 times the thermal expansion of steel.	
MANHOLE JUNCTIONS	Internal manhole risers reduces cost.	Concrete manholes add additional cost.



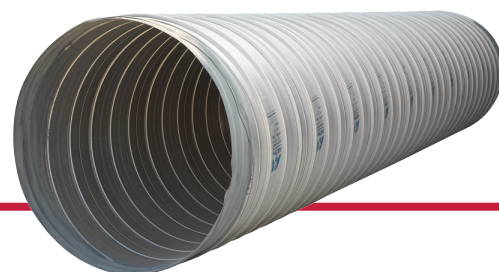
Spiral Rib CSP, Manning's "n" 0.012



24-in. PP interior before dead load applied.



24-in. PP interior after dead load applied.



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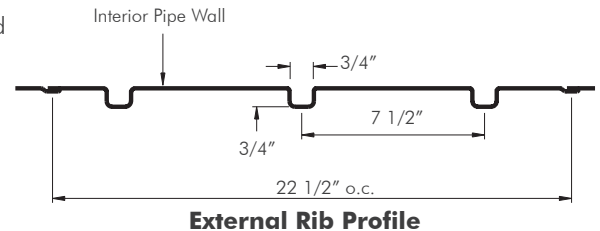
## Spiral Rib CSP vs. Polypropylene

### SUBMITTAL FOR SPIRAL RIB PIPE AS AN ALTERNATE STORM SEWER MATERIAL

Please consider this a formal request for your review and approval of Aluminized Type 2 (ALT2) Spiral Rib Pipe for storm sewer application and inclusion into this project. NCSPA proposes to furnish this pipe as an alternate to the project specified material.

#### ALUMINIZED TYPE 2 SPIRAL RIB PIPE:

1. Significant material cost savings
2. Fast lead times
3. Installation advantages offered by lightweight pipe in long lengths
  - a. 48" spiral rib pipe is 49lbs/ft, coupled with 24 ft lengths means maximum production value (custom lengths also available)
  - b. Utilize lightweight equipment
  - c. All junctions, fittings, manholes, grate inlets, etc. can be handled "in-line" as a fabricated fitting – "Feels like another piece of pipe..."



#### ALUMINIZED TYPE 2 SPIRAL RIB PIPE FOR STORM SEWER

##### 1.0 GENERAL

This specification covers the furnishing, installation, and design considerations for Aluminized Type 2, Spiral Rib Pipe and Pipe-Arch for culverts and storm sewers for the types, sizes, and designations as shown on the plans.

##### 2.0 MATERIAL

The pipe shall be fabricated from an ALUMINIZED Type 2 coil, conforming to the requirements of AASHTO M-274 or ASTM A-929.

##### 3.0 PIPE

The pipe and pipe-arch shall be manufactured to conform to AASHTO M-36 or ASTM A-760. The pipe shall have a helical corrugation pattern, and shall have the sectional properties per AASHTO Section 12.5.4.1 or ASTM A-796

##### 4.0 COUPLING BANDS

Coupling bands for the pipe and pipe-arch shall be made of the same base metal and coatings as the pipe and pipe-arch. Hugger bands and fully corrugated bands for round or pipe-arch shall be a minimum of 18 gage, 12" wide bands with annular corrugations that are spaced to properly index with re-rolled corrugations of the pipe.

##### 5.0 INSTALLATION

The pipe shall be installed in accordance with AASHTO Section 26, Division II or ASTM A-798.

##### 6.0 HYDRAULICS

Values of Coefficient of Roughness (Manning's "n") will not exceed 0.012 or that recognized by other materials.

##### 7.0 STRUCTURAL

Material thickness will be determined based on AASHTO Section 12 and specific loading conditions. For highway loading, minimum Height of Covers are 12", 15" and 18" for up to and including 48" diameter, 54" to 60" and 66" to 72" diameter pipes, respectively. Further consideration can be made for pipes exceeding 72" diameter.

##### 8.0 DURABILITY

Aluminized Type 2 pipe provides a minimum service life of 75 years in the appropriate environment. ( $5.0 \leq \text{pH} \leq 9.0$ ,  $r > 1500$  ohm-cm) Considering the application for use is pavement surface runoff with select backfill, it is anticipated that a minimum service life of 75 years will be achieved.