

# Polypropylene Pipe vs. RCP

Data based on 600 mm (24") diameter CSA B182.12 and ASTM F2881 polypropylene and ASTM C76, B-Wall reinforced concrete pipes.

	Polypropylene Pipe (PP)	Reinforced Concrete Pipe (RCP)
<b>Joint integrity</b>	Extended bell and spigot joint with standard rubber gasket exceeds 7.6 m (25') of head pressure per ASTM D3212.	Bell and spigot joints when gasket is specified exceeds 7.6 m (25') of head pressure per ASTM C1628. Unspecified joints normally are not leak resistant.
<b>Maximum cover</b>	Compacted Class I Backfill = 11.2 m (37') 95% SPD Class II Backfill = 7.9 m (26') 95% SPD Class III Backfill = 5.8 m (19') 95% SPD Class IV Backfill = 4.2 m (14') (See Technical Note 2.04)	Type 1 Installation, Class IV pipe = 10.6 m (35') Type 1 Installation, Class III pipe = 7.0 m (23') Type 2 Installation, Class III pipe = 5.1 m (17') Type 3 Installation, Class III pipe = 4.2 m (14') (See ACPA Fill Height Tables, Resource #16-201 [Revised 08/13])
<b>Minimum cover height</b>	95% SPD Class III Backfill - 0.3 m (1') (See Technical Note 2.04)	Type 1, 2, 3, 4 Installation - 0.3 m (1') (Class IV pipe is required) (See ACPA Fill Height Tables, as above)
<b>Installation rate</b>	61 m/day (200') per day per RS Means	30 m/day (100') per day per RS Means
<b>Allowable backfill</b>	Based on installation requirements, Class I, II, III, or IV backfills may be used. High plasticity soils (MH & CH) are not recommended (See ASTM D2321)	Based on installation requirements, Category I, II, or III backfills may be used. High plasticity soils (MH & CH) are not recommended (See ASTM C1479).
<b>Number of joints</b>	9 joints per 61 linear meters (200') of pipe (based on 6 m (20') standard pipe length. 4 m (13') lengths available upon request)	24 joints per 61 linear meters (200') of pipe (based on 2.4 m (8') standard pipe length)
<b>Product weight</b>	99 kg (220 pounds) per 6 m (20') stick of pipe	961 kg (2,120 pounds) per 2.4 m (8') of pipe
<b>Corrosion resistant</b>	Unaffected by salts, most chemicals, and "hot" soils (See Technical Note: 4.01)	Salt and chemicals like hydrogen sulfide can degrade steel and concrete (see Design Manual "Sulfide and Corrosion Prediction and Control)
<b>Design service life</b>	100 years (Based on FDOT analysis)	100 years (Based on FDOT analysis)

# National Specifications

	Specification	Description
<b>Polypropylene (PP) pipe manufacturing standards</b>	CSA B182.12	Profile Polypropylene (PP) Storm Sewer Pipe and Fittings.
	ASTM F2881	Material specification for 12"-60" (300-1500 mm) dual wall polypropylene (PP) pipe with variable pipe stiffness for non-pressure storm sewer applications.
	AASHTO M330	12"-60" (300-1500 mm) polypropylene (PP) pipe & fittings used in surface and subsurface drainage systems
<b>Reinforced Concrete Pipe (RCP) manufacturing standards</b>	ASTM C76	Reinforced Concrete Culvert, Storm Drain, and Sewer Pipe
	AASHTO M170	Reinforced Concrete Culvert, Storm Drain, and Sewer Pipe
	ASTM C361	Reinforced Concrete Low-Head Pressure Pipe
	ASTM C655	Reinforced Concrete D-Load Culvert, Storm Drain and Sewer Pipe
	ASTM C1417	Manufacture of Reinforced Concrete Sewer, Storm Drain and Culvert Pipe for Direct Design
	BNQ 2622-126	Concrete Pipes, Monolithic Lateral Connections and Related Parts Intended for Evacuation of Sanitary Wastewater and Storm Water
<b>PP joints</b>	CSA B182.12	Profile Polypropylene (PP) Storm Sewer Pipe and Fittings.
	ASTM D3212	Joints for Drain & Sewer Plastic Pipes using Flexible Elastomeric Seals (lab test)
	BNQ 1809-300	Construction Work - Drinking Water and Sewer Lines - General Technical Specification
<b>RCP joints</b>	ASTM C443	Joints for Concrete Pipe and Manholes, Using Rubber Gaskets (lab test)
	ASTM C1628	Joints for Concrete Gravity Flow Sewer Pipe, Using Rubber Gaskets (lab test)
	BNQ 2622-126	Concrete Pipes, Monolithic Lateral Connections and Related Parts Intended for Evacuation of Sanitary Wastewater and Storm Water
	BNQ 1809-300	Construction Work - Drinking Water and Sewer Lines - General Technical Specification
<b>PP installation</b>	CSA B182.11	Recommended Practice for the Installation of Thermoplastic Drain, Storm, and Sewer Pipe and Fittings
	ASTM D2321	Underground Installation of Thermoplastic Pipe for Sewers and Other Gravity-Flow Applications
	AASHTO Sect. 30	Thermoplastic Pipe - Installation Standard
	BNQ 1809-300	Construction Work - Drinking Water and Sewer Lines - General Technical Specification
<b>RCP installation</b>	ASTM C1479	Standard Practice for Installation of Precast Concrete Sewer, Storm Drain, and Culvert Pipe Using Standard Installations
	AASHTO Sect. 27	Concrete Culverts - Installation Standard
<b>PP in-field inspection</b>	ASTM F2487	Standard Practice for Infiltration & Exfiltration Acceptance of Installed HDPE Pipe
	ASTM F1417	Standard Test Method for Installation Acceptance of Plastic Gravity Sewer Lines using Low-Pressure Air*
	BNQ 1809-300	Construction Work - Drinking Water and Sewer Lines - General Technical Specification
<b>RCP in-field inspection</b>	ASTM C969	Practice for Infiltration and Exfiltration Acceptance Testing of Installed Precast Concrete Pipe Sewer Lines
	ASTM C924	Practice for Testing Concrete Pipe Sewer Lines by Low-Pressure Air**
	BNQ 1809-300	Construction Work - Drinking Water and Sewer Lines - General Technical Specification

\*Recommend use of rolling joint tester, unless pipes are cracked or porous. Testing full lengths of pipe using air pressure is extremely dangerous.

