

2.08 PIPE CONNECTIONS

- A. Flexible, Watertight Gasket:** Comply with ASTM C 923.
- B. Non-Shrink Grout:** Comply with Section 6010, 2.04.
- C. Waterstop:** Provide elastomeric gasket that surrounds pipe and attaches with stainless steel bands and is designed to stop the movement of water along the interface between a pipe and a surrounding concrete collar.
- D. Concrete Collar:** Comply with Section 6010, 2.02 and 2.03.

2.09 MANHOLE OR INTAKE ADJUSTMENT RINGS (Grade Rings)

- A. Use one of the following materials for grade adjustments of manhole or intake frame and cover assemblies:
 1. Reinforced Concrete Adjustment Rings: Comply with ASTM C 478. Provide rings free from cracks, voids, and other defects.
 2. High Density Polyethylene Adjustment Rings: Comply with ASTM D 1248 for recycled plastic.
 - a. Test and certify material properties by the methods in the following table.

Table 6010.02: Test Methods

Property	Test Method	Acceptable Value
Melt Flow Index	ASTM D 1238	0.30 to 30 g/10 min.
Density	ASTM D 792	0.94 to 0.98 g/cm ³
Tensile Strength	ASTM D 638	2,000 to 5,000 lb/in ²

- a. Do not use polyethylene grade adjustment rings when they are exposed to HMA pavement or heat shrink infiltration barriers.
 - c. When used in a single configuration, provide tapered adjustment ring with thickness that varies from 1/2 inch to 3 inches.
 - d. Install adjustment rings on clean, flat surfaces according to the manufacturer's recommendations with the proper butyl rubber sealant/adhesive.
3. Expanded Polypropylene Adjustment Rings: Comply with ASTM D 4819 for expanded polypropylene when tested according to ASTM D 2375.
 - a. Use adhesive meeting ASTM C 920, Type S, Grade N5, Class 25.
 - b. Provide finish rings with grooves on the lower surface and flat upper surface.
 - c. Do not use when heat shrinkable infiltration barrier is used.
- B. Ensure the inside diameter of the adjustment ring is not less than the inside diameter of the manhole frame or not less than the inside dimension of the intake grate opening.

2.10 CASTINGS (Ring, Cover, Grate, and Extensions)

- A. Gray Cast Iron:** AASHTO M 306.
- B. Load Capacity:** Standard duty unless otherwise shown on the casting figures.
 1. **Standard Duty:** Casting certified for 40,000 pound proof-load according to AASHTO M 306.
 2. **Light Duty:** Casting certified according to requirements of AASHTO M 306 for a 16,000 pound proof-load (HS-20). 40,000 pound proof-load is not required.