

Item No. 312
Frames, Grates, Rings and Covers

312.1 Description

This item shall govern furnishing and installation of frames, grates, rings and covers for portland cement concrete manholes and other structures indicated on the Drawings. Rings and covers for polymer concrete manholes and structures shall meet the requirements of Item No. 303 “Polymer Concrete Manholes.”

312.2 Submittals

The submittal requirements of this specification item must include manufacturer, model number, description, painting requirements and characteristics of frames, grates, rings, covers, height adjustment insert and nuts and bolts required for completion of the work.

312.3 Standards

The applicable provisions of the following standards shall apply as if written here in their entirety:

A. ASTM International (ASTM) Standards:

ASTM A27	Specifications for Steel Castings, Carbon, for General Application
ASTM A36	Specification for Structural Steel
ASTM A48	Specification for Gray Iron Castings
ASTM A536	Specification for Ductile Iron Castings

312.4 Materials

- A. The Contractor shall submit descriptive information and evidence that the materials and equipment the Contractor proposes for incorporation in the Work is the kind and quality that satisfies the specified functions and quality. New Braunfels Utilities Standard Products Lists (SPLs) form a part of these Specifications. Contractors may, when appropriate, elect to use products from the SPLs; however, submittal to the Engineer or designated representative is still required. If the Contractor elects to use any materials from these lists, each product shall be completely and clearly identified by its corresponding SPL number when making the product submittal.

- B. The purpose of the SPLs is to expedite the review by the Engineer or designated representative and, if necessary, New Braunfels Utilities Products Committee of Contractor product submittals. The SPL’s should not be interpreted as being a pre-approved list of products necessarily meeting the requirements for a given construction Project. Items contained in the SPL cannot be substituted for items that are shown on the Drawings, called for in the specifications, or specified in the Bidding Requirements, Contract Forms and Conditions of Contract, unless approved by the Engineer or designated representative in conjunction with New Braunfels Utilities Standard Products Committee. The Standard Product List current at the time of plan approval will govern.

C. Welded Steel

1. Welded steel grates and frames shall conform to the number; size, dimensions and details indicated on the Drawings and shall be welded into an assembly in accordance with those details. Steel shall conform to the requirements of ASTM A36/A36M.

D. Castings

1. Castings, whether Carbon-Steel, Gray Cast Iron or Ductile Iron shall conform to the shape and dimensions indicated on the Drawings and shall be clean substantial castings, free from sand or blowholes or other defects. Surfaces of the castings shall be free from burnt on sand and shall be reasonably smooth. Runners, risers, fins and other cast on pieces shall be removed from the castings and such areas ground smooth. Bearing surfaces between manhole rings and covers or grates and frames shall be cast or machined with such precision that uniform bearing shall be provided throughout the perimeter area of contact. Pairs of machined castings shall be matchmarked to facilitate subsequent identification at installation with the exception of water and wastewater manhole and valve castings. These manhole and valve castings shall be fabricated with such draft, tolerances, bolt hole spacing, etc., that all rings and covers of a particular type or class are interchangeable and match-marking will not be required.
2. Steel castings shall conform to ASTM A27/27M. Grade 70-36 (480-250) shall be furnished unless otherwise specified on the Drawings.
3. Cast iron castings shall conform to ASTM A48, "Specification for Gray Iron Castings," Class 30.
4. Ductile Iron castings shall conform to ASTM A536, "Specification for Ductile Iron Castings." Grade 60-40-18 (415-275-125) shall be used unless otherwise indicated on the Drawings.

E. Manhole Cover Riser Rings

1. Height-adjustment inserts for wastewater manhole rings, which are used for raising standard manhole covers, shall be those models listed in New Braunfels Utilities Standard Products List.

F. Nuts and Bolts

1. Nuts and bolts shall be hex head 5/8" x 2.5" #11 National Coarse Thread, Type 316 stainless steel. For bolted manhole covers, a thin film of an approved "Anti-Seize" compound, approved by the Engineer or designated representative, shall be applied to all bolts.

G. Mortar

1. Unless otherwise specified or approved by the Engineer or designated representative, mortar shall conform to requirements of TXDOT Standard Specification item No. 421, "Hydraulic Cement Concrete."

312.5 Construction Methods

- A. Frames, grates, rings and covers shall be constructed of the specified materials in accordance with the details indicated on the Drawings or in New Braunfels Utilities Standard Details. The Frames, grates, rings and covers shall be placed carefully to the lines or grades indicated on the Drawings or as directed by the Engineer or designated representative.
- B. All welding shall conform to the requirements of the ANSI/AWS Structural Welding Code D1.1. Welded frames, grates, rings and covers shall be given 1 coat of a commercial grade red lead oil paint and 2 coats of commercial grade aluminum paint. All coats shall be a minimum of 1.5 mils, dry.
- C. Painting of gray iron castings will not be required, except when used in conjunction with structural steel shapes.

312.6 Measurement and Payment

Frames, grates, rings and covers will not be measured and payment for furnishing all materials, tools, equipment, labor and incidentals to complete the Work will be included in the Bid Items which constitute the complete structures.

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