

SECTION 05012 – WATER CASTINGS

PART 1 - GENERAL

1.01 SUMMARY

- A. This specification covers ductile iron castings for water structures and valve box lids and covers. Unless otherwise specified, all castings for water structures shall have a clear opening of 30 inches and hinged covers.

1.02 DESCRIPTION

- A. This specification is for water ductile iron castings. Prior to the Contractor supplying castings, all manufacturers shall be approved as suppliers for the City of Kansas City, Missouri (City) and shall be able to demonstrate that there is an acceptable quality control program at the producing foundry.

1.03 SPECIFICATION MODIFICATIONS

- A. It is understood that throughout this section these Specifications may be modified by appropriate items in Section 01015 – Specific Project Requirements or as otherwise indicated on the Contract Drawings.

1.04 RELATED SECTIONS

- A. Section 01000 – General Project Requirements.
- B. Section 01015 – Specific Project Requirements.
- C. Section 01300 – Submittals.
- C. Section 02641 – Water Valves.
- D. Section 03608 – Concrete Vaults.

1.05 CODES AND STANDARDS

- A. The publications listed below form a part of this specification to the extent referenced. The publications are referred to within the text by the basic designation only. The version of the codes and standards in effect at the time of the Notice to Bidders shall be used, except as noted on the Drawings or in the Specific Project Requirements section of these specifications.
- B. American Association of State Highway and Transportation Offices (AASHTO):
 - AASHTO M306 (Latest Revision) – Drainage, Sewer, Utility, and Related Castings.
 - Standard Specifications for Highway Bridges.
- C. American Society for Testing and Materials (ASTM) International:
 - ASTM A536 Standard Specification for Ductile Iron Castings.
 - ASTM A615 Standard Specification for Deformed and Plain Carbon-Steel Bars for Concrete Reinforcement.
 - ASTM C478 Standard Specification for Precast Reinforced Concrete Manholes Sections.
- D. U.S. Environmental Protection Agency: Material Safety and Data Sheet.
- E. Federal Register: 29 CFR 1910.1200 Hazard Communications.
- F. Federal Standards:
 - FED-STD-123 Marking for Domestic Shipment (Civilian Agencies).
- G. United States Customs Service:
 - Custom Regulation Chapter 1, Part 134, Article 19, U.S.C. 1304.

1.06 CONTACTOR SUBMITTALS

- A. Submit the following in accordance with Section 01300 – Submittals:
 - 1. Certified shop drawings for all castings, product data, manufacturer's catalog cut sheets, specifications and installation details.
 - 2. Casting identification and location:
 - (a) Iron Casting submittals shall include a certification of conformance in accordance with AASHTO M306 (Part 9, Certification) and HS-25 loading.
 - (b) A foundry certification shall be furnished stating that samples representing each lot have been tested, inspected and are in accordance with this specification.
 - 3. A manufacturer's affidavit certifying that the furnished castings comply with the provisions of these specifications, regardless of whether or not the purchaser has an inspector at the plant.
 - 4. All submittals shall be approved by the City before castings are ordered by the Contractor.

1.07 QUALITY ASSURANCE

- A. The Contractor is responsible for the quality assurance and quality control of the work.
- B. The Manufacturer shall guarantee items to be free of defects.
- C. Manufacturer shall have a quality control process in place and shall provide a copy of their "Quality Control Manual."
- D. The manufacturer shall keep records of all tests, MSDS sheets, foundry, lot records, product liability insurance and any customs documentation control data for a period of 3 years. The supplier agrees to furnish copies of records within two weeks after the receipt of request for such records.

1.08 PRODUCT DELIVERY, STORAGE AND HANDLING

- A. Product delivery, storage and handling shall be done in accordance with this section and section 01000 – General Project Requirements, paragraph PRODUCT DELIVERY, STORAGE AND HANDLING.
- B. Check materials upon arrival. Identify and segregate as to types, functions, and sizes. Store materials off of the ground in a manner affording easy accessibility and not causing excessive rusting or coating with grease or other objectionable materials.
- C. Unless otherwise specified on the purchase order, cleaning, preservation, and packaging of castings shall be in accordance with the manufacturer's commercial practice. Packing and marking shall also be adequate to ensure acceptance and safe delivery by the carrier for the mode of transportation employed.
- D. If the number of the defective items exceeds two and one half percent of the lot, the purchaser will reject the remaining quantity in the lot and the supplier will redeliver the remaining quantity of the lot.
- E. All castings shall be marked in accordance with the requirements of Federal Standard No. 123 and with Chapter 1, Part 134 of the United States Customs Service Regulations, including 19 U.S.C. 1304 paragraph, as applicable. Failure to conform to the above requirements will be just cause for rejection of castings.

PART 2 - PRODUCTS

2.01 DUCTILE IRON CASTINGS

- A. Castings shall be manufactured and tested in accordance with ASTM A536 and AASHTO M306-10 HS-25 loading.

2.02 WORKMANSHIP AND FINISH

- A. Castings shall be of uniform quality, free from all defects, holes, shrinkage, cracks and any other surface defect. Ductile iron castings shall be ground smooth and well cleaned by shot blasting. Runners, risers, fins, and other cast-on pieces shall be removed.
- B. As-cast dimensions may vary by one half the maximum shrinkage possessed by the metal or $\pm 1/16$ in/ft.
- C. As-cast weight may vary by ± 5 percent from the drawing/specification weight.
- D. For traffic service castings, bearing surfaces between rings and covers or grates and frames shall be cast or machined with such precision to prevent rocking.
- E. Circular frames and covers shall be furnished with machined horizontal bearing surfaces unless otherwise specified in the standard details.
- F. In other matters of workmanship and finish, the castings shall conform to any points agreed upon by the City and the manufacturer/supplier.

2.03 WATER VAULT FRAMES AND COVERS

- A. Frames and covers shall be as specified and shall be of the type suitable for the application. The frames and covers shall be circular and the covers with vent holes.
- B. Markings – See Figure 1 at the end of this section for approved markings.
- C. The minimum clear opening shall be 30 inches for all castings for water structures.
- D. All covers shall have provisions for ease of opening, such as concealed pick holes.
- E. Unless specified in Section 01015 – Specific Project Requirements or noted on the contract drawings, a locking mechanism is not required.
- F. Approved manufacturers:
 - 1. Clay & Bailey.
 - 2. Sigma Municipal Castings.
 - 3. EJ.
- G. Models:
 - 1. The approved manufacturers shall submit their model in accordance with this Section and Section 01300 – Submittals for review and approval.

2.04 AIR RELEASE VAULT FRAMES AND COVERS

- A. Frames and covers shall be as specified and shall be of the type suitable for the application. The frames and covers shall be circular and the covers with vent holes.
- B. Markings – See Figure 2 at the end of this section for approved markings.
- C. The minimum clear opening shall be 30 inches for all castings for water structures.
- D. All covers shall have provisions for ease of opening, such as concealed pick holes.
- E. All frames and covers shall be “Traffic Rated” in accordance with AASHTO M306 HS-25 Loading.
- F. Unless specified in Section 01015 – Specific Project Requirements or noted on the contract drawings, a locking mechanism is not required.
- G. Acceptable Manufacturers/Model include the following (or approved equal):
 - 1. Air Release Vault Frame and Cover as manufactured by East Jordan.

2.05 VALVE BOX LIDS AND COVERS

- A. Valve box lids and covers shall be as specified and shall be of the type suitable for the application. The valve box lid and cover shall be circular and the covers indented at the twelve (12) o'clock, three (3) o'clock, six (6) o'clock and nine (9) o'clock positions for ease of removal.
- B. Markings – See Figure 3 at the end of this section for approved markings.
- C. Approved manufacturers:
 - 1. Clay & Bailey.
 - 2. Sigma Municipal Castings.
 - 3. Star Pipe Products.
 - 4. EJ.
 - 5. MacLean Highline.
 - 6. Pentek Access Boxes.
- D. Models:
 - 1. The approved manufacturers shall submit their model in accordance with this Section and Section 01300 – Submittals for review and approval.

2.06 TEST STATION LIDS AND COVERS

- A. Test station lids and covers shall be as specified and shall be of the type suitable for the application. The valve box lid and cover shall be circular and the covers indented at the twelve (12) o'clock, three (3) o'clock, six (6) o'clock and nine (9) o'clock positions for ease of removal.
- B. Markings – See Figure 4 at the end of this section for approved markings.
- C. Approved manufacturers:
 - 1. Clay & Bailey.
 - 2. Sigma Municipal Castings.
 - 3. Star Pipe Products.
 - 4. EJ.
 - 5. MacLean Highline.
 - 6. Pentek Access Boxes.
- D. Models:

The approved manufacturers shall submit their model in accordance with this Section and Section 01300 – Submittals for review and approval.

PART 3 - EXECUTION

3.01 VAULT FRAMES AND COVERS

- A. The Contractor shall coordinate the installation of the castings with the work of the other trades in order to avoid delays. Install inserts or anchors as required by individual items.
- B. Install items as specified and in accordance with the manufacturer's instructions.
- C. Install items plumb, level, in alignment and anchor securely. All frames shall be anchored at four points.

3.02 CLEANING

- A. Clean all items after installation to remove rust, dirt, oil, grease and other deleterious substances.
- B. Clean all welds, bolted connections and abraded areas and apply the shop coating. Touch up damaged areas with the shop coating.

3.03 WARRANTY

- A. All castings shall have a lifetime warranty against manufacturing defects for all components.

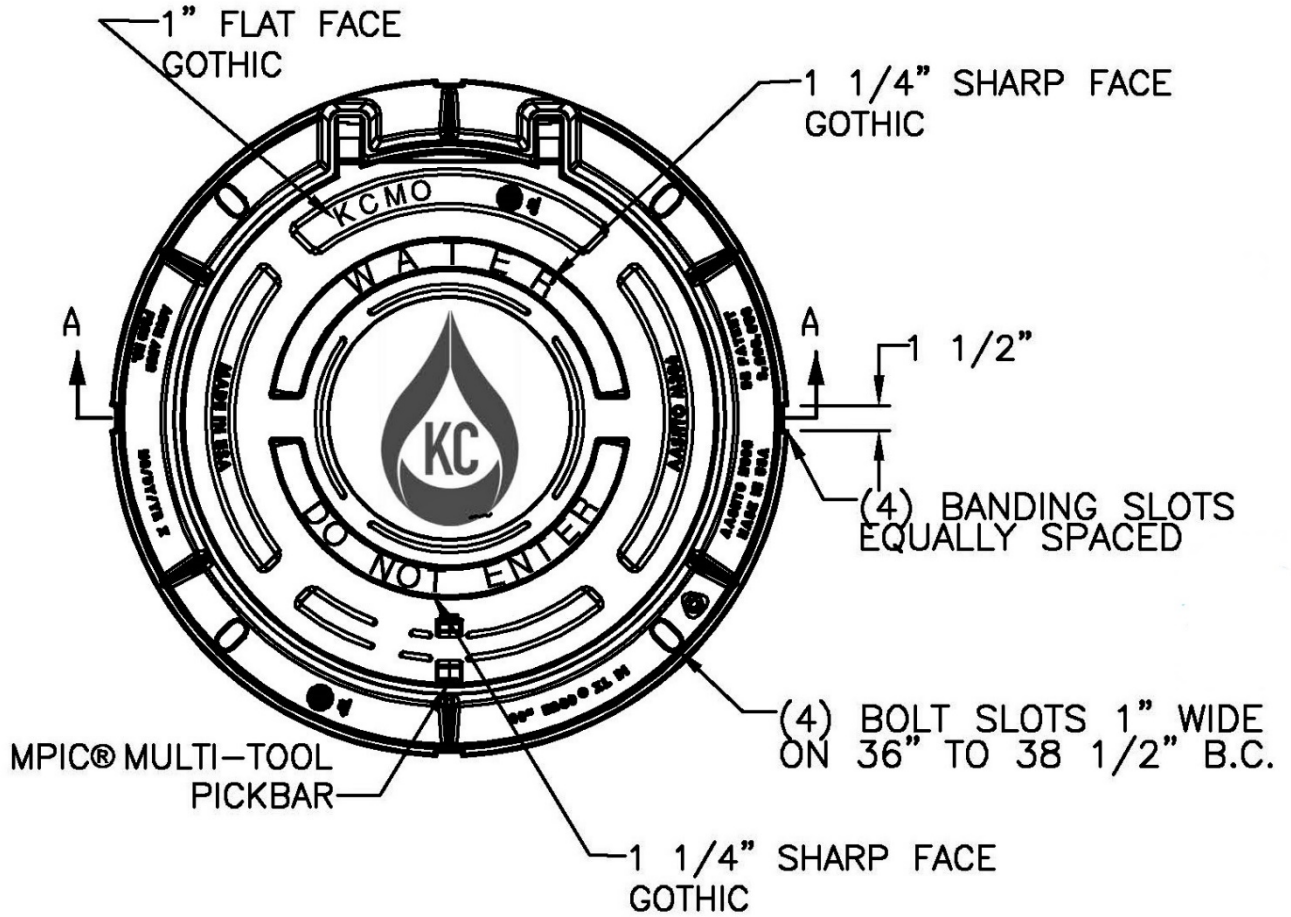


Figure 1: Standard Water Vault Markings

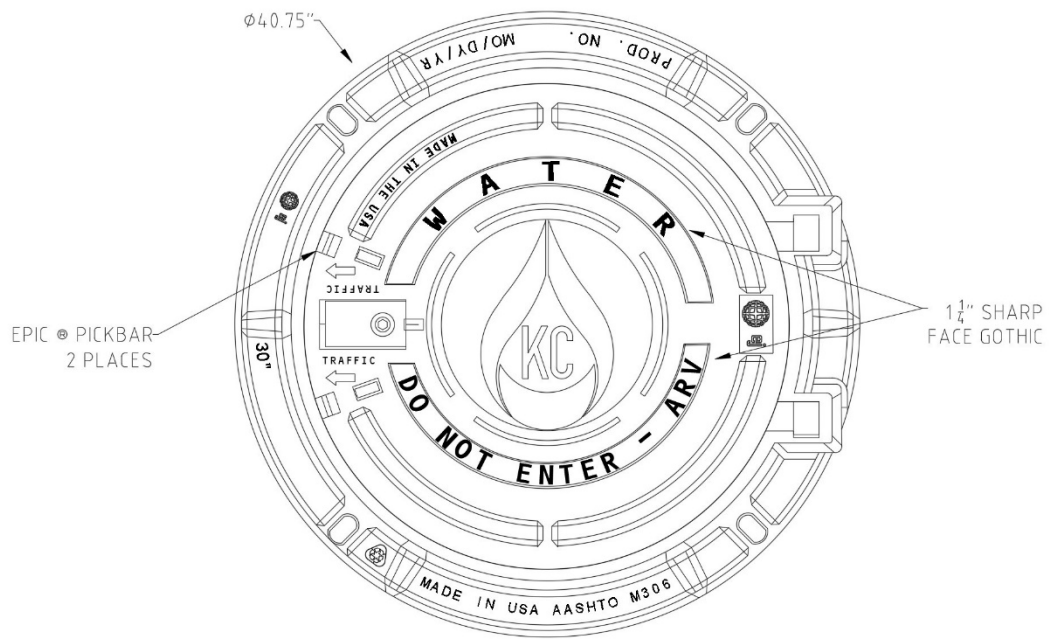


Figure 2: Standard Air Release Vault Markings

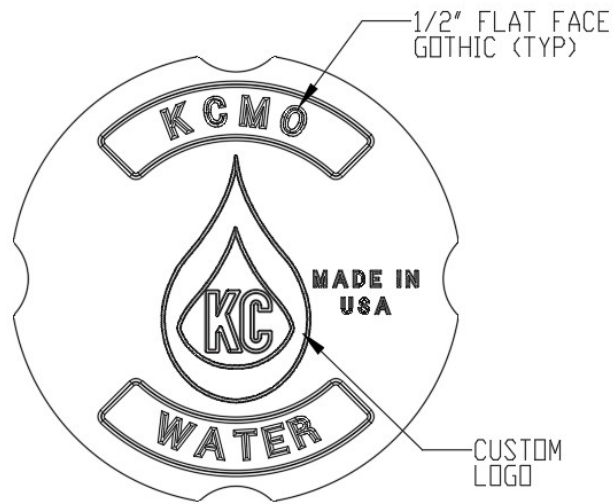


Figure 3: Standard Valve Cover Markings

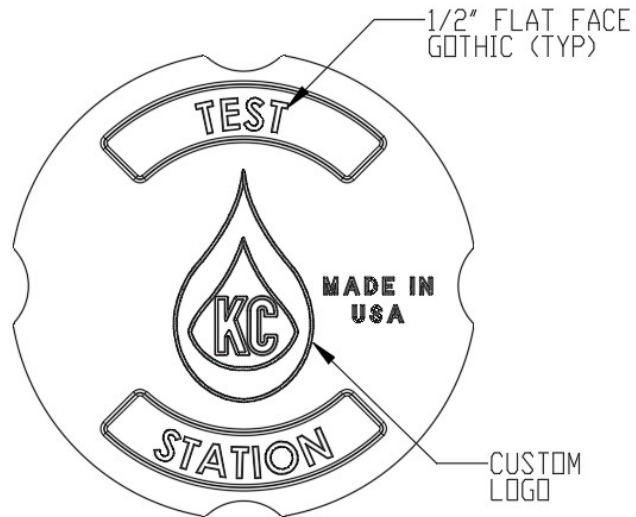


Figure 4: Standard Test Station Cover Markings

END OF SECTION