

## **SECTION 05 56 00**

### **METAL CASTINGS**

#### PART 1 – GENERAL

##### 1.1 DESCRIPTION

A. Scope:

1. CONTRACTOR shall provide labor, materials, equipment, and incidentals as shown, specified, and required to furnish and install metal castings.
2. Castings include metal items that are not part of miscellaneous metal fabrications or metal systems in other Specifications Sections.

B. Coordination:

1. Review installation procedures under this and other Sections and coordinate installation of items to be installed with or before metal castings Work.

##### 1.2 REFERENCES

A. Standards referenced in this Section are:

1. ANSI A14.3, Safety Requirements for Fixed Ladders.
2. ASTM A48/A48M, Specification for Gray Iron Castings.
3. ASTM A126, Specification for Gray Iron Castings for Valves, Flanges, and Pipe Fittings.
4. ASTM C478, Specification for Precast Reinforced Concrete Manhole Sections.

##### 1.3 QUALITY ASSURANCE

A. Qualifications:

1. Manufacturer: Shall have at least five years experience manufacturing products substantially similar to those required and shall be able to submit documentation of at least five installations in satisfactory operation for at least five years each.

B. Component Supply and Compatibility:

1. Obtain all frame, lid or cover, grate, and manhole step products included in this Section regardless of component manufacturer, from a single castings manufacturer.
2. Obtain all hydrostatic pressure relief valve products included in this Section regardless of component manufacturer, from a single castings manufacturer.
3. Castings manufacturer shall review and approve or prepare all Shop Drawings and other submittals for all components furnished under this Section.
4. Components shall be constructed for specified service conditions and shall be integrated into overall assembly by castings manufacturer.

## 1.4 SUBMITTALS

- A. Action Submittals: Submit the following:
  - 1. Shop Drawings:
    - a. Fabrication and installation of all casting assemblies. Include plans, elevations, and details of sections and connections. Show anchorage and accessory items. Include setting drawings for location and installation of castings and anchorage devices.
  - 2. Product Data:
    - a. Copies of manufacturer's catalog information for the products proposed for use, specifications, load tables, dimension diagrams, anchor details, and installation instructions.
  
- B. Informational Submittals: Submit the following:
  - 1. Certificates:
    - a. Furnish certification, signed by authorized officer of CONTRACTOR and notarized, stating that all components are furnished by the same manufacturer.
    - b. Manufacturer's certification that the casting or lot of castings was made, sampled, tested and inspected in accordance with ASTM A48.
  - 2. Qualifications Statements: Submit qualifications for the following:
    - a. Manufacturer, when required by ENGINEER.

## 1.5 DELIVERY, STORAGE AND HANDLING

- A. Packing, Shipping, Handling, and Unloading:
  - 1. Deliver products to the Site to ensure uninterrupted progress of the Work. Deliver anchorage materials to be embedded in concrete in ample time to prevent delaying the Work.
  - 2. Comply with Section 01 65 00, Product Delivery Requirements.
  
- B. Storage and Protection:
  - 1. Protect materials from corrosion and deterioration.
  - 2. Comply with Section 01 66 00, Product Storage and Handling Requirements.

## PART 2 – PRODUCTS

### 2.1 MATERIALS

- A. Round Manhole Frame with Solid Lid:
  - 1. Material: ASTM A48/A48M, Class 35 B.
  - 2. Products and Manufacturers: Provide one of the following:
    - a. R-1530, manufactured by Neenah Foundry Company.
    - b. E-1920, manufactured by East Jordan Iron Works, Inc.
    - c. Or equal.

- B. Round Manhole Frame with Vented Lid:
  - 1. Material: ASTM A48/A48M, Class 35 B.
  - 2. Products and Manufacturers: Provide one of the following:
    - a. R-1654, manufactured by Neenah Foundry Company.
    - b. E-1850, manufactured by East Jordan Iron Works, Inc.
    - c. Or equal.
  
- C. Round Manhole Frame with Open Grate:
  - 1. Material: ASTM A48/A48M, Class 35 B.
  - 2. Products and Manufacturers: Provide one of the following:
    - a. R-1792-GG, manufactured by Neenah Foundry Company.
    - b. V-3610-3, manufactured by East Jordan Iron Works, Inc.
    - c. Or equal.
  
- D. Round Manhole Frame with Solid Bolted Lid:
  - 1. Material: ASTM A48/A48M, Class 35 B.
  - 2. Products and Manufacturers: Provide one of the following:
    - a. R-1916-C2, manufactured by Neenah Foundry Company.
    - b. E-1561, manufactured by East Jordan Iron Works, Inc.
    - c. Or equal.
  
- E. Round Manhole Frame with Solid Lid – Flush Top:
  - 1. Material: ASTM A48/A48M, Class 35 B.
  - 2. Products and Manufacturers: Provide one of the following:
    - a. R-6060, manufactured by Neenah Foundry Company.
    - b. 1625, manufactured by East Jordan Iron Works, Inc.
    - c. Or equal.
  
- F. Catch Basin Frame with Grate:
  - 1. Material: ASTM A48/A48M, Class 35 B.
  - 2. Products and Manufacturers: Provide one of the following:
    - a. R-2501, manufactured by Neenah Foundry Company.
    - b. E-1045 M2, manufactured by East Jordan Iron Works, Inc.
    - c. Or equal.
  
- G. Curb Inlet Frame Grate and Curb Box:
  - 1. Material: ASTM A48/A48M, Class 35 B.
  - 2. Products and Manufacturers: Provide one of the following:
    - a. R-3067, manufactured by Neenah Foundry Company.
    - b. E-7030 M52, manufactured by East Jordan Iron Works, Inc.
    - c. Or equal.
  
- H. Valve Box Frame and Lid:
  - 1. Material: ASTM A48/A48M, Class 35 B.
  - 2. Products and Manufacturers: Provide one of the following:
    - a. R-7506-F, manufactured by Neenah Foundry Company.
    - b. 3671, manufactured by East Jordan Iron Works, Inc.

- c. Or equal.
- I. Heavy-Duty H-20 Trench Frame with Solid Cover:
- 1. Material: ASTM A48/A48M, Class 35 B.
  - 2. Products and Manufacturers: Provide one of the following:
    - a. R-4990-FX, Type D Cover, manufactured by Neenah Foundry Company.
    - b. 6956, manufactured by East Jordan Iron Works, Inc.
    - c. Or equal.
- J. Heavy-Duty H-20 Trench Frame with Grated Cover:
- 1. Material: ASTM A48/A48M, Class 35 B.
  - 2. Products and Manufacturers: Provide one of the following:
    - a. R-4990-FX, Type A Cover, manufactured by Neenah Foundry Company.
    - b. 6956, manufactured by East Jordan Iron Works, Inc.
    - c. Or equal.
- K. Floor-type Hydrostatic Pressure Relief Valves:
- 1. Provide floor-type hydrostatic pressure relief valves suitable for installation in cast-in-place concrete foundations as shown or indicated on the Drawings.
  - 2. Products and Manufacturers: Provide one of the following:
    - a. R-5000, Type C, manufactured by Neenah Foundry Company.
    - b. F-1493-T, manufactured by Clow Valve Company.
    - c. Or equal.
  - 3. Cover and grate shall be removable but shall be constructed so that neither can be separated from valve body due to groundwater pressure around the structure served by the valve.
  - 4. Material:
    - a. Cover, body, and grate shall be cast iron complying with ASTM A126, Class B.
    - b. Seats shall be Nitrile (Buna-N) rubber, bonded to the cover, mating with machined bronze seat in the body.
  - 5. Provide length equal to thickness of concrete foundation slab shown or indicated on the Drawings.
- L. Wall-type Hydrostatic Pressure Relief Valves:
- 1. Wall-type hydrostatic pressure relief valves shall be suitable for installation in cast-in-place concrete walls as shown or indicated on the Drawings.
  - 2. Products and Manufacturers: Provide one of the following:
    - a. R-5000, Type C, manufactured by Neenah Foundry Company.
    - b. F-1493, manufactured by Clow Valve Company.
    - c. Or equal.
  - 3. Material:
    - a. Flap gate and body shall be of cast iron complying with ASTM A126, Class B.
    - b. Body seat ring and hinge pin shall be of furnished of machined bronze.

- c. Gate shall be provided with a neoprene rubber seat cemented and mechanically retained in place by retainer plate.
4. Provide length equal to thickness of concrete wall shown or indicated on the Drawings.

M. Manhole Steps:

1. Provide manhole steps as shown on the Drawings. Comply with requirements of ASTM C478 and ANSI A14.3.
2. Products and Manufacturers: Provide one of the following:
  - a. R-1982-F, manufactured by Neenah Foundry Company.
  - b. 8512, manufactured by East Jordan Iron Works.
  - c. Or equal.
3. Material: Cast gray iron.

## 2.2 FABRICATION

A. Fabrication, General:

1. Castings shall be of uniform quality, free of sand holes, gas holes, shrinkage cracks, and other surface defects.
2. Castings shall be ground smooth and well-cleaned by shot blasting in the shop.
3. Design and fabricate round frames and covers to prevent rocking and rattling under traffic loads that will be imposed in actual use.
4. Fabricate castings true to pattern so that component parts fit together.
5. Each casting shall be identifiable and, depending on its size, shall indicate the following: name of producing foundry, ASTM material designation, individual part number, and cast or heat date. Castings shall include all lettering shown or indicated on the Drawings.

## 2.3 FINISH

- A. Cast Iron: Coat with casting manufacturer's standard asphaltic paint.

## PART 3 – EXECUTION

### 3.1 INSPECTION

- A. Examine conditions under which Work is to be performed and notify ENGINEER in writing of conditions detrimental to proper and timely completion of the Work. Do not proceed with installation until unsatisfactory conditions are corrected.

### 3.2 INSTALLATION

- A. Comply with casting manufacturer's printed instructions and the Contract Documents. Where castings are installed on precast concrete, fabricated fiberglass, or other fabricated products, install casting in accordance with requirements of manufacturer of product on which casting will be installed.

- B. Set castings accurately to required location, alignment, and elevation, plumb, level, true and free of rack, measured from established lines and levels. Where applicable, brace temporarily or anchor temporarily in formwork.
  
- C. Manhole Steps:
  - 1. Install gray cast iron manhole steps as shown on the Drawings. Comply with requirements of ASTM C478 and ANSI A14.3.
  - 2. Vertical separation of steps shall be uniform at maximum of 12 inches on centers. Steps shall project evenly from walls.

+ + END OF SECTION + +