

Material Specification – 33

MANHOLE RINGS, COVERS, AND RISERS

1. GENERAL

Manhole rings, covers, and risers shall be manufactured in accordance with the following requirements.

2. MATERIALS

Manhole rings, covers, and risers shall be made of grey CI in accordance with ASTM A 48, Class 35B or DI in accordance with the requirements of ASTM A 536, Grade 65-45-12.

Composite manhole covers shall be made of a fiber-reinforced polymer with 45% to 70% fiber reinforcement utilizing a thermoset resin matrix. Composite material shall withstand harsh corrosive environments and provide protection against ultraviolet radiation. The surface of the covers shall be non-skid. A locking mechanism suitable to Denver Water shall be provided.

3. DESCRIPTION

Manhole rings, covers, and risers shall be heavy duty rated for AASHTO H 20 highway loading and shall be designed, manufactured, and tested in accordance with AASHTO M306.

4. FINISH

The horizontal seating and vertical facing surfaces common to the ring and cover shall be machine finished to ensure nonrocking and full bearing for the entire width and circumference of the bearing surface to permit interchangeability with castings of the same design. The vertical face common to the ring and cover shall be beveled.

5. LABELING

Covers shall be labeled with the name or symbol of the Manufacturer, country of origin, and date of manufacture to be located at the Manufacturer's option. In addition, the cover shall contain the owner's name, Denver Water, in 1 1/2-inch high lettering that is centered and recessed on the exposed face.

6. QUALITY CONTROL

The Manufacturer shall submit a written statement that the inspection and all specified tests have been completed and that results comply with the requirements of these Standards. A copy of the certification shall be provided to Denver Water, if requested. The report shall include material data that is traceable to the originating foundry, traceable test bars that match, the name of the Manufacturer, and the date of the pour.

7. APPROVED MANUFACTURERS

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| Composite |
| EJ |

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|------------------------|
| CI and DI |
| D&L Foundry |
| Deeter Foundry, Inc. |
| EJ |
| Neenah Foundry Company |
| Sigma Corporation |
| Star Pipe Products |

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