**Recommended Specification Language – Sample**

# SECTION ###

**COMPOSITE MANHOLE RING AND COVER**

**###.# GENERAL:**

All composite moldings shall consist of a thermosetting resin matrix blended and/or combined with reinforcing fiber rovings, short fiber filaments, or equivalent nonmetallic reinforcing structure(s). The thermosetting resin matrix shall be a polyester, vinylester, or a blend of these. The moldings shall be true to pattern in form and dimension and free from cracks, pores, knit-lines, or other defects in locations affecting their strength and value for the service intended.

Before the moldings are removed from the molding operation, they shall be thoroughly deflashed and cleaned at the parting lines, holes, notches and all exposed edges.

Composite frames must have a wall thickness of at least 0.75 inches in sections exposed to traffic and potential traffic wheel impact.

If using a lock, bolt, or latch, these must be independent of the method used to open the cover to ensure the cover can be opened in the event of lock failure.

# ###.# MOLDING PROCESS:

Covers and frames shall be compression molded under high pressures (>0.5 tons/sq inch of x-y surface area) and high temperatures (>200 degrees F).

Metal reinforcements or metal hinges molded within the composite shall not be permitted. Small non-stress bearing pieces of metal may be encapsulated.

Composite covers and frames shall be molded in the USA.

**###.# TESTING AND PERFORMANCE REQUIREMENTS**

Testing shall be performed in accordance with the following inspection criteria unless otherwise specified in the contract or purchase order. The manufacturer/supplier shall be responsible for carrying out all of the required tests and inspections. All testing shall be conducted in the United States. The manufacturer/supplier shall maintain complete records of all such tests and inspections. All testing shall be paid for by the manufacturer/supplier.

Frame and Covers shall be test “Proof Load” in accordance with AASHTO M306.

Heavy Duty: A load of 40,000lbs shall be concentrated on a 9"x 9" block with rubber or fiber backing pad for one minute. During the load testing process, visible cracks or delamination will be cause for rejection (popping noises during this test are normal for composites and do not indicate failure). When load is removed, Permanent Set (Deflection) of more than 1/8"(.125") measured at center of load area will be cause for rejection. Al l testing shall be conducted on a NIST calibrated and Certified load test machine.

Ultraviolet resistance: ASTM G 154 Cycle I for 1OOOhrs. Specimens shall be tested for ultimate flexural strength (ASTM D790), retaining at least 75% of control values for load and deflection at failure.

Coefficient of Friction: Shall be greater than 0.6 when tested in accordance to ASTM C 1028.

Notched Izod Impact: Composite raw material impact results shall be greater than 5 ft.-lbs/inch when tested in accordance to ASTM D256.

Components for locking systems below the cover exposed to the sewer environment shall be made of noncorrosive materials such as nonmagnetic, 316 stainless steel or a polymer.

Covers shall be the types and shall be imprinted as shown on the plans or standard details.

**###.# MARKINGS:**

Covers and Frames shall have the following molded into the substrate of the cover:

* Name (or Abbreviation) Molder
* Country of Origin
* Molding Date
* Indication that Material is Non-metallic