

SECTION 027203
VACUUM TESTING OF WASTEWATER MANHOLES AND STRUCTURES

1. DESCRIPTION

This specification governs all work and materials necessary to perform vacuum testing of new or existing wastewater manholes. Manholes may be tested after installation with all connections (existing and/or proposed) in place. Vacuum testing may be performed prior to or after backfilling by the installer. Final acceptance, in accordance with the requirements of this specification, will consist of vacuum testing of the completed and installed structure (manhole) in place to include manhole/adjustment rings and manhole casting.

2. MATERIALS

Vacuum testing shall consist of a minimum of the following:

- (a) Engine.
- (b) Vacuum Pump.
- (c) Hose.
- (d) Test Head device capable of sealing opening in manhole casting as required.
- (e) Pneumatic Test Plugs - these plugs shall have a sealing length equal to or greater than the diameter of the connecting pipe to be sealed.

3. PROCEDURE

- (a) The test head shall be placed at the top of the manhole in accordance with the manufacturer's recommendations.
- (b) A vacuum of 10 inches of mercury shall be drawn on the manhole, the valve on the vacuum line of the test head closed, and the vacuum pump shut off. The time shall be measured for the vacuum to drop to 9 inches of mercury.
- (c) The manhole shall pass if the time for the vacuum reading to drop from 10 inches of mercury to 9 inches of mercury meets or exceeds the values indicated in Table 1.
- (d) If the manhole fails the initial test, necessary repairs shall be made by an approved method. The manhole shall then be retested until a satisfactory test is obtained.

TABLE 1 - Minimum Test Times for Various Manhole Diameters (ASTM C1244)

Depth (feet)	Diameter (inches)				
	42	48	54	60	72
Time (seconds)					
8	17	20	23	26	33
10	21	25	29	33	41
12	25	30	35	39	49
14	30	35	41	46	57
16	34	40	46	52	67
18	38	45	52	59	73
20	42	50	53	65	81
22	46	55	64	72	89
24	51	59	64	78	97
26	55	64	75	85	105
28	59	69	81	91	113
30	68	74	87	98	121

4. TESTING AND CERTIFICATION

- (a) Testing shall be done by the Contractor and witnessed by the Engineer or his designated representative. All manholes and structures shall be tested as finished and completed for final acceptance.
- (b) ANY DEFECTIVE WORK OR MATERIALS shall be corrected or replaced by the Contractor and retested. This shall be repeated until all work and materials are acceptable.

5. MEASUREMENT AND PAYMENT

Unless otherwise indicated on the Bid Form, vacuum testing of wastewater manholes and structures will not be measured for pay. Such items shall be considered subsidiary to pay items applicable for Fiberglass Manholes, complete and in-place.