CLEANING, INSPECTION, AND TESTING OF STRUCTURES

PART 1 - GENERAL

1.01 SECTION INCLUDES

A. Cleaning, inspecting, and testing sanitary sewer manholes.

B. Cleaning and inspecting storm sewer manholes, intakes, and other utility structures.

1.02 DESCRIPTION OF WORK

A. Clean, inspect, and test sanitary sewer manholes.

B. Clean and inspect storm sewer manholes, intakes, and other utility structures.

1.03 SUBMITTALS

Comply with Division 1 - General Provisions and Covenants.

1.04 SUBSTITUTIONS

Comply with Division 1 - General Provisions and Covenants.

1.05 DELIVERY, STORAGE, AND HANDLING

Comply with Division 1 - General Provisions and Covenants.

1.06 SCHEDULING AND CONFLICTS

Comply with Division 1 - General Provisions and Covenants, as well as the following:

A. Notify the Engineer at least 24 hours prior to performing testing.

B. The Engineer must be present to review testing procedures and record results.

1.07 SPECIAL REQUIREMENTS

None.

1.08 MEASUREMENT AND PAYMENT

Cleaning, inspection, and testing of structures are incidental to construction of structures and will not be paid for separately.

PART 2 - PRODUCTS

None.

PART 3 - EXECUTION

3.01 CLEANING

A. Clean all manholes, intakes, and structures by removing sheeting, bracing, shoring, forms, soil sediment, concrete waste, and other debris.

B. Do not discharge soil sediment or debris to drainage channels or existing storm sewer or sanitary sewer system.

3.02 VISUAL INSPECTION

A. Examine structure for:

1. Damage.
2. Slipped forms.
3. Indication of displacement of reinforcement.
4. Porous areas or voids.
5. Proper placement of seals, gaskets, and embedments.

B. Verify that the structure is set to true line, grade, and plumb.

C. Verify structure dimensions and thicknesses.

3.03 REPAIR

Comply with Section 6010 for repairs.

3.04 SANITARY SEWER MANHOLE TESTING

A. General:

1. Use vacuum testing for sanitary sewer manholes, unless exfiltration testing is specified in the contract documents.
2. Conduct the final test after manhole construction is complete, all repairs and connections have been made, and the invert has been installed.

B. Vacuum Test:

1. Applicable only for new manholes isolated from connecting sewer lines.
2. Use manufactured vacuum test equipment meeting the Engineer's approval. Follow the equipment manufacturer's recommended procedures throughout, unless directed otherwise by the Engineer or these specifications.
3. Use extreme care and follow safety precautions during testing operations. Keep personnel clear of manholes during testing.
4. Seal all openings except manhole top access using pneumatic plugs rated for test pressures. Install plugs according to the test equipment manufacturer's recommendations.
5. Brace pipe inverts if backfill material has not been placed around connecting pipes.

3.04 SANITARY SEWER MANHOLE TESTING (Continued)

6. Install the vacuum tester head assembly on the manhole top access, and inflate the seal.

7. Evacuate the manhole to 5 psi or 10 inches mercury (Hg). Close the isolation valve and start the test. Record the starting time.

8. Maintain a vacuum in the manhole for the time indicated in the following table for the diameter and depth of manhole being tested.

9. Test failure is indicated by vacuum loss greater than 0.5 psi or 1 inch mercury (Hg) within the minimum test time indicated in the table below for the depth and diameter of the manhole being tested.

Table 6030.01: Minimum Vacuum Test Times for Various Manhole Diameters

Depth (feet)	Diameter (inches)				
	48	54	60	66	72
	Time (seconds)				
8	20	23	26	29	33
10	25	29	33	36	41
12	30	35	39	43	49
14	35	41	46	51	57
16	40	46	52	58	67
18	45	52	59	65	73
20	50	53	65	72	81
22	55	64	72	79	89
24	59	64	78	87	97
26	64	75	85	94	105
28	69	81	91	101	113
30	74	87	98	108	121

C. Exfiltration Test:

1. Testing may be performed in conjunction with sanitary sewer line testing. Comply with Section 4060.

2. Do not test by this method if water may potentially freeze during the test.

3. Plug the manhole inlet and outlet.

4. Fill the manhole with water to 2 feet above the outside top of the connecting pipe. If ground water is present, fill the manhole to no less than 2 feet nor more than 5 feet above the ground water level. Do not fill above the top of the standard barrel sections.

5. Mark the water level.

6. Allow water to stand in the manhole for 1 hour, then refill to the original water level and begin the test.

7. Determine the allowable drop in water level by using the equation given in Section 4060, 3.03. After 1 hour, measure the drop in water level.

8. Test failure is indicated by water loss greater than the maximum allowable calculated exfiltration.

3.05 TEST FAILURE

If testing fails, reseal the openings, repair the manhole, and retest. An alternate test method complying with these specifications may be used for a retest if desired.

END OF SECTION