PART 1 - GENERAL

1-1. SCOPE. This section covers hydrostatic tightness testing of concrete structures. Final cleaning and disinfection of concrete structures is covered in another section and shall be performed after acceptance of the testing specified herein.

Tightness testing, cleaning, and disinfection of steel storage reservoirs and tanks, steel elevated tanks, prestressed concrete storage reservoirs, and piping systems are covered in other sections.

1-2. GENERAL. Unless otherwise specified, testing shall be completed prior to placement of backfill, cleaning and disinfection, and prior to the installation of equipment in the structure.

All testing work shall be performed by Contractor in the presence of Engineer. Engineer shall be notified at least 5 days in advance of the time at which testing will be performed.

1-2.01. Testing Schedule and Procedure. A testing schedule and test procedure shall be submitted to Engineer for review and acceptance not less than 30 days prior to commencement of testing. The schedule shall indicate the proposed time and sequence of testing for each structure. A testing procedure shall be provided to indicate the limits of the area to be tested, define the method of isolation, the position and use of valves during testing, the location of temporary bulkheads, and the procedure to be followed in performing the testing.

1-2.02. Water. Water for testing will be furnished as stipulated in the temporary facilities section. Water shall be conserved through collection and reuse in subsequent tests. Following completion of testing work, the water shall be disposed of in a manner acceptable to Engineer and, unless otherwise permitted by Engineer, shall not be allowed to enter other parts of the system.
PART 2 - PRODUCTS

2-1. TEST EQUIPMENT. All necessary connections between the structure to be tested and the water source or other test medium, together with pumping equipment, any necessary metering devices, pressure or vacuum gauges, and all other equipment, materials, and facilities required to perform the specified tests and dispose of the test medium after completion of testing, shall be provided by Contractor. Contractor shall provide all required temporary flanges, valves, bulkheads, bracing, blocking, and other sectionalizing devices that may be necessary to perform the testing. All temporary devices shall be removed upon satisfactory completion of testing.

2-2. ALLOWABLE WATER LOSS. The maximum allowable water loss, excluding evaporation and precipitation, and the test duration, shall not be less than specified in the Tightness Testing of Structures schedule.

Water loss due to evaporation and water gain due to precipitation during the test period shall be determined and added to or subtracted from, respectively, the maximum allowable loss value in surface elevation specified herein. A partially filled plastic pan or tub of dimension similar to the proportions of the basin shall be placed in the basin and monitored to account for evaporation or rainfall.

It is intended that all liquid-containing concrete structures shall be free from visible leaks. Repairs shall be made to visible leaks regardless of any amount the total measured loss may have been below the specified maximum allowable loss during the tightness test. Damp spots on exterior wall surfaces will be considered visible leaks if water can be picked up on a facial tissue. Damp spots on wall footings will be permitted. All visible leaks which have not spontaneously plugged or demonstrated a definite decrease in the rate of leakage over a maximum period of 28 days shall be located and repaired by and at the expense of Contractor in a manner acceptable to Engineer.

Each leak which is discovered during the correction period shall be located and repaired to the satisfaction of Owner by and at the expense of Contractor.

PART 3 - EXECUTION

3-1. HYDROSTATIC TEST PROCEDURES. The procedure and sequence of testing shall be subject to review and acceptance by Engineer.
Unless otherwise specified, tightness testing shall be performed after all pipe sleeves have been installed but before backfilling or the interior waterproofing material or coating has been applied or exterior dampproofing material has been applied.

Exposed concrete surfaces of the tank, including the floor shall be cleaned of all foreign material and debris prior to the test. Standing water in or outside the tank that would interfere with the observation of the exposed concrete surfaces of the tank shall be removed. The concrete surfaces and concrete joints shall be thoroughly inspected for potential leakage points. Areas of potential leakage shall be repaired prior to filling the tank with water.

Adjacent structures having common walls shall be tested individually at different times to permit examination of the dividing walls for leaks.

Pipe connections or openings to structures, if not provided with drip tight valves, shall be temporarily plugged during testing. Where slide gates, sluice gates or similar devices are located, Contractor shall provide bulkheads or the means to make them drip tight, and measure any leakage.

Unless otherwise specified, each structure to be tested shall be filled with potable water at a uniform rate not to exceed a depth of 4 feet per hour to the level specified in the Tightness Testing of Structures schedule, and allowed to stand for at least 3 days prior to tightness testing. During this period, sufficient water shall be added to maintain the water level to the elevation specified.

Measurements of water level and loss will be taken by Engineer each day over the test period. If the measured drop in water level, excluding water loss due to evaporation, exceeds the allowable amount specified in the Tightness Testing of Structure Schedule, the structure shall be drained, repaired, cleaned, refilled, and retested to the satisfaction of Engineer.

Regardless of test results, if any visible leaks or indications of leaks are found, the structure shall be drained, repaired, and retested to the satisfaction of Engineer.

Testing shall be considered void and the basin shall be retested in the event of excessive evaporation or precipitation.

Additional requirements with respect to specific structures are defined in the following subparagraphs.
3-1.01. **Concrete Clearwell.** Not used.

3-1.02. **Filter Boxes.** Not used.

3-1.03. **Reservoir.** Not used.

3-1.04. **Basins and Flume.** Not used.

3-1.05. **Wash Water Holding Basin.** Not used.

3-1.06. **Wash Water Recovery Basin.** Not used.

3-1.07. **Carbon Slurry Tanks.** Not used.

3-1.08. **Pump Wet Pit.** The wet pit shall not be tightness tested until after construction of the top slab. The wet pit shall be filled with potable water for testing.

3-1.09. **Ozone Contact Basin.** Not used.

3-1.10. **Disposal of Test Water.** Contractor shall verify there is no residual chlorine or other undesirable product in the test water to be discharged. If necessary a neutralizing chemical treatment shall be provided to condition the water prior to disposal. Contractor shall be responsible to determine a suitable location and method for disposing of the used test water. Water discharged to overland disposal or to a sewer system shall be discharged at flow rates and locations acceptable to the local governing agencies and in compliance with applicable rules and regulations.

3-2. **PNEUMATIC TEST PROCEDURES FOR OZONE CONTACT BASINS.** Not used.

3-3. **STRUCTURES TO BE TESTED.** The structures listed in the Tightness Testing of Structures Schedule shall be tightness tested by filling with water to the indicated elevation and conducting the test for the duration specified in the schedule. The drop in water surface elevation shall not exceed the value specified in the schedule over the indicated test duration, excluding evaporation and precipitation.

End of Section
Schedule 13750-S01

TIGHTNESS TESTING OF STRUCTURES SCHEDULE

<table>
<thead>
<tr>
<th>Structure</th>
<th>Water Surface Elevation (feet)</th>
<th>Hydrostatic Testing</th>
<th>Test Duration (days)</th>
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<td>Pump Station Wetwell</td>
<td>6058</td>
<td>0.125 (inches)</td>
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(1) Excludes evaporation and precipitation.

End of Schedule