

**ROGERS WATER UTILITIES SEWER SYSTEM
ROGERS, ARKANSAS**

**SPECIFICATIONS FOR SANITARY
SEWER MAIN LOW-PRESSURE AIR TEST
REVISED MARCH 2006**

1. **SCOPE**

This specification governs the testing of sanitary sewer mains by the low-pressure air test (time-pressure drop method).

2. **GENERAL REQUIREMENTS**

- a. Sanitary sewer mains less than 18 inch diameter shall be low-pressure air tested for leaks upon the completion of the backfill and compaction operation. Sanitary sewer mains less than 8 inch and greater than 18 inch diameter will be tested for leaks per test method determined/specified by RWU.
- b. The sanitary sewer manholes must passed the manhole vacuum testing process and all sanitary sewer services must be complete with ends capped that are connected to said mains prior to the low-pressure air test.
- c. The low-pressure air test method shall be in accordance with ASTM F1417-92 (Reapproved 2005), except as specified otherwise herein.
- d. The Contractor shall remove all debris, soil and rocks from the sanitary sewer mains and manholes prior to the low-pressure air test by a cleaning ball, high velocity jet, cleaning mandrel or other means.
- e. The Contractor shall furnish all equipment and labor required, including necessary piping/hoses, pneumatic plugs, compression pump, pressure-regulator valve, 9 psi pressure-relief valve, control valves, pressure gauges and second timer or stop watch. The test pressure gauge shall have a maximum range of 0-10 pounds per square inch (psi) and the pressure gauge figure intervals shall be a maximum of 0.25 psi increments.
- f. The required low-pressure air test time shall be based upon the total length and diameter of sanitary sewer main from manhole to manhole (sewer service lines are not included). The minimum low-pressure air test period is 7 minutes and 34 seconds.

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- g. The low-pressure air test shall be performed by the Contractor and witnessed by the Engineer and the RWU personnel. The Engineer shall furnish low-pressure air test reports of sanitary sewer mains to the Contractor and RWU.
- h. The low-pressure air test may be stopped (passed) if no pressure drop/loss has occurred during the first 50 percent of the test period as calculated from the 1.0 psi pressure drop table (not less than the minimum low-pressure air test period of 7 minutes and 34 seconds).

3. **SAFETY PRECAUTIONS**

- a. This low-pressure air test may be dangerous to personnel if, through lack of understanding or carelessness, a line is over pressurized or plugs/caps are installed or restrained improperly. The axial force on an 8 inch plug at the start of a properly conducted test is over 200 pounds. Restraint systems must be designed to handle these forces with adequate safety factors.
- b. No one shall be allowed in the manholes or near a capped pipe during testing. All gauges, piping manifolds and control valves shall be located above ground.
- c. When sanitary sewer mains are tested, it is mandatory that all caps and plugs be braced as an added safety factor.
- d. Do not over pressurize the sanitary sewer main. Do not exceed 9.0 psi.

4. **TEST PROCEDURES**

- a. After cleaning the interior surface of the sanitary sewer main, the Contractor shall place and inflate pneumatic plugs in the sanitary sewer main pipe at both connecting manholes. One of the plugs must have an inlet tap, or other provision for connecting a hose to a portable air control source.
- b. Connect the air hose to the inlet tap and the portable air control source. The air equipment shall consist of necessary valves and pressure gauges to control an oil-free air source and the rate at which airflow into the test section.
- c. Add air slowly to the test section until the pressure inside the sewer pipe reaches 4.0 psi. After the pressure of 4.0 psi is obtained, regulate the air supply so that the pressure is maintained between 3.5 psi to 4.0 psi for at least two minutes to stabilize air/ground temperature conditions.

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- d. Close the air supply valve; release the pressure in the pipe test section to 3.5 psi and the test period is started. Observe the time required for the pressure to drop from 3.5 psi to 2.5 psi. The minimum test time/period is determined from the following 1.0 psi pressure drop table.
- e. All pneumatic plugs shall be removed from both connecting manholes after the test.

5. FAILURE OF LOW-PRESSURE AIR TEST

Any sanitary sewer main/services that fails the low-pressure air test must be repaired. Upon completion of the repairs and the backfill/compaction operation, the sanitary sewer main shall be retested as described in the above test procedures. The Engineer must witness the sewer main repair and backfill operation. The cost of the repair and backfill is incidental to the cost of the project.

6. ACCEPTANCE

The sanitary sewer main shall have passed the low-pressure air test if the pipe test section does not drop below 2.5 psi during the specified test period.

MINIMUM SPECIFIED TIME REQUIRED FOR A 1.0 PSI PRESSURE DROP
FOR SIZES AND LENGTH OF PIPE INDICATED FOR Q=0.0015

Specification Time for Length (L) Shown, Minutes:Seconds

Pipe Dia. (In.)	Minimum Time (Minutes)	Length For Minimum Time (Feet)	Time For Longer Length (Sec.)	100 Ft.	150 Ft.	200 Ft.	250 Ft.	300 Ft.	350 Ft.	400 Ft.	450 Ft.
8	7:34	298	1.520 L	7:34	7:34	7:34	7:34	7:36	8:52	10:08	11:24
10	9:26	239	2.374 L	9:26	9:26	9:26	9:53	11:52	13:51	15:49	17:48
12	11:20	199	3.418 L	11:20	11:20	11:24	14:15	17:05	19:56	22:47	25:38
15	14:10	159	5.342 L	14:10	14:10	17:48	22:15	26:42	31:09	35:36	40:04
16	15:10	149	6.282 L	15:10	15:42	20:56	26:10	31:25	36:39	41:53	47:07
18	17:00	133	7.692 L	17:00	19:13	25:38	32:03	38:27	44:52	51:16	57:41

Previous Specifications

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