



## HYDROSTATIC TESTING OF WATER MAINS

As a minimum, all water mains shall be tested in accordance with the Hydrostatic Testing Requirements of ANSI/AWWA C600.

- A. The test pressure shall not be less than 1.25 times the stated working pressure of the pipeline measured at the highest elevation along the test section and not less than 1.5 times the stated working pressure at the lowest elevation of the test section. **If the calculated test pressure is less than 175 psi, then a minimum test pressure of 175 psi shall be used for the test.** Loss of water pressure during test shall not exceed 5 psi in a 2 hour period. If pressure loss exceeds 5 psi, then the volume of water to refill the line to obtain the starting test pressure shall be measured (this is the allowable leakage). Allowable leakage cannot exceed the standard as determined below.
- B. Where practicable, pipelines shall be tested between line valves or plugs in lengths of not more than 1500 feet. All hydrant valves shall be open so that the hydrants are included in the pressure test. If services are installed, testing shall be conducted up to the curb stop.
- C. The pipe shall be slowly filled with water and the specified test pressure shall be applied by means of a pump connected to the pipe in a manner satisfactory to the water company. The pump, pipe connection, and all necessary apparatus including the gauges shall be furnished by the contractor. Before applying the specified test pressure, all air shall be expelled from the pipe. If permanent air vents are not located at all high points, the contractor shall install corporation cocks at such points so the air can be expelled as the line is filled with water. After all the air has been expelled, the corporation cocks shall be closed and the test pressure applied.
- D. Duration of test shall not be less than two hours.
- E. Where leaks are visible at exposed joints and/or evident on the surface where joints are covered, the contractor shall repair the joints, retighten the bolts, relay the pipe, or replace the pipe until the leak is eliminated--regardless of total leakage as shown by the hydrostatic test. Polyethylene encasement damaged from repairs must also be properly repaired or replaced to the satisfaction of the water company.
- F. All pipe, fittings and other materials found to be defective under test shall be removed and replaced at the contractor's expense. All pipe and fitting must have a pressure rating higher than the test pressure.
- G. Lines which fail to meet test requirements shall be repaired and retested as necessary until test requirements are complied with.
- H. The water company will provide water for testing and disinfecting the water mains; however, the contractor will be responsible for piping or hauling the water if necessary. The contractor shall not operate any valves on existing water mains. This shall be done by the water company.

- I. No pipe installation will be accepted if the leakage is greater than that determined by the formula:

$$L = \frac{SD(P)^{1/2}}{133,200}$$

in which L is the allowable leakage, in gallons per hour; S is the length of pipeline tested, in feet; D is the nominal diameter of the pipe, in inches; and P is the average test pressure during the leakage test, in pounds per square inch gauge. Allowable leakage at various pressures and pipe sizes are shown in the Table below (from AWWA C600 - Table 6A):

**Allowable Leakage Per 1,000 Feet of Pipeline\* in GAL/HR**

Avg. Test Pressure psi	3"	4"	6"	8"	10"	12"	14"	16"	18"	20"	24"	30"	36"	42"	48"
250	0.32	0.43	0.64	0.85	1.07	1.28	1.50	1.71	1.92	2.14	2.56	3.21	3.85	4.49	5.13
225	0.30	0.41	0.61	0.81	1.01	1.22	1.42	1.62	1.82	2.03	2.43	3.04	3.65	4.26	4.86
200	0.29	0.38	0.57	0.76	0.96	1.15	1.34	1.53	1.72	1.91	2.29	2.87	3.44	4.01	4.59
175	0.27	0.36	0.54	0.72	0.89	1.07	1.25	1.43	1.61	1.79	2.15	2.68	3.22	3.75	4.29
150	0.25	0.33	0.50	0.66	0.83	0.99	1.16	1.32	1.49	1.66	1.99	2.48	2.98	3.48	3.97

\*If the pipeline under test contains sections of various diameters, the allowable leakage will be the sum of the computed leakage for each size.

**TEST FORM (to be completed by tester)**

Project: \_\_\_\_\_ Tester: \_\_\_\_\_ Date: \_\_\_\_\_

Location of Mains Tested: \_\_\_\_\_

	LENGTH (FT)	DIAMETER (IN)	ALLOWABLE LEAKAGE (GAL/HR)
Section			
Section			
Section			
TOTAL (GAL/HR)	XXXXXXXXXXXXXXXXXX	XXXXXXXXXXXXXXXXXX	GAL/HR
TOTAL GALLONS	XXXXXXXXXXXXXXXXXX	XXXXXXXXXXXXXXXXXX	GAL.

*Minimum Test Pressure = 175 PSI or greater*

Test Start: ½ Hour Pressure: \_\_\_\_\_ Refill amount (in gallons): \_\_\_\_\_  
 1 Hour Pressure: \_\_\_\_\_ Refill amount (in gallons): \_\_\_\_\_  
 1-1/2 Hour Pressure: \_\_\_\_\_ Refill amount (in gallons): \_\_\_\_\_  
 2 Hour Pressure: \_\_\_\_\_ Refill amount (in gallons): \_\_\_\_\_

TOTAL LEAKAGE \_\_\_\_\_ GALLONS

PASSED \_\_\_\_\_ FAILED \_\_\_\_\_

I certify under penalty of law that I am the person authorized to fill out this form and the information contained herein is true, accurate and complete to the best of my knowledge and belief:

\_\_\_\_\_ (Signature of Tester)

\_\_\_\_\_ (Signature of WWC Witness)

COMMENTS: