

#### TESTING OF WATER LINES

After placing all harnessing and all valve support concrete, sufficient backfill shall be placed prior to filling the pipe with water and field testing to prevent lifting of the pipe. When local conditions require that the trenches be backfilled immediately after the pipe has been laid, the testing shall be carried out after backfilling has been completed but prior to placement of the permanent surface. At least seven (7) days shall elapse after the last valve support or hydrant block has been cast (Type I Portland Cement) prior to testing, unless high early strength concrete (Type III) is used, in which case three (3) days shall elapse.

All testing will be performed in accordance with the AWWA C600, current revision. Pressure Test: After the pipe has been laid, all newly laid pipe or any valved section thereof shall be subjected to a hydrostatic pressure of at least 1.5 times the working pressure at the point of testing.

Test pressure restrictions. Test pressures shall:

- not be less than 1.25 times the working pressure at the highest pressure point along the test section;
- not exceed pipe or thrust restraint design pressures;
- be of at least 2-hour duration;
- not vary by more than + 5 psi;
- not exceed twice the rated working pressure of the valves or hydrants when the pressure boundary of the test section includes closed gate valves or hydrants;
- not exceed the rated pressure of the valve.

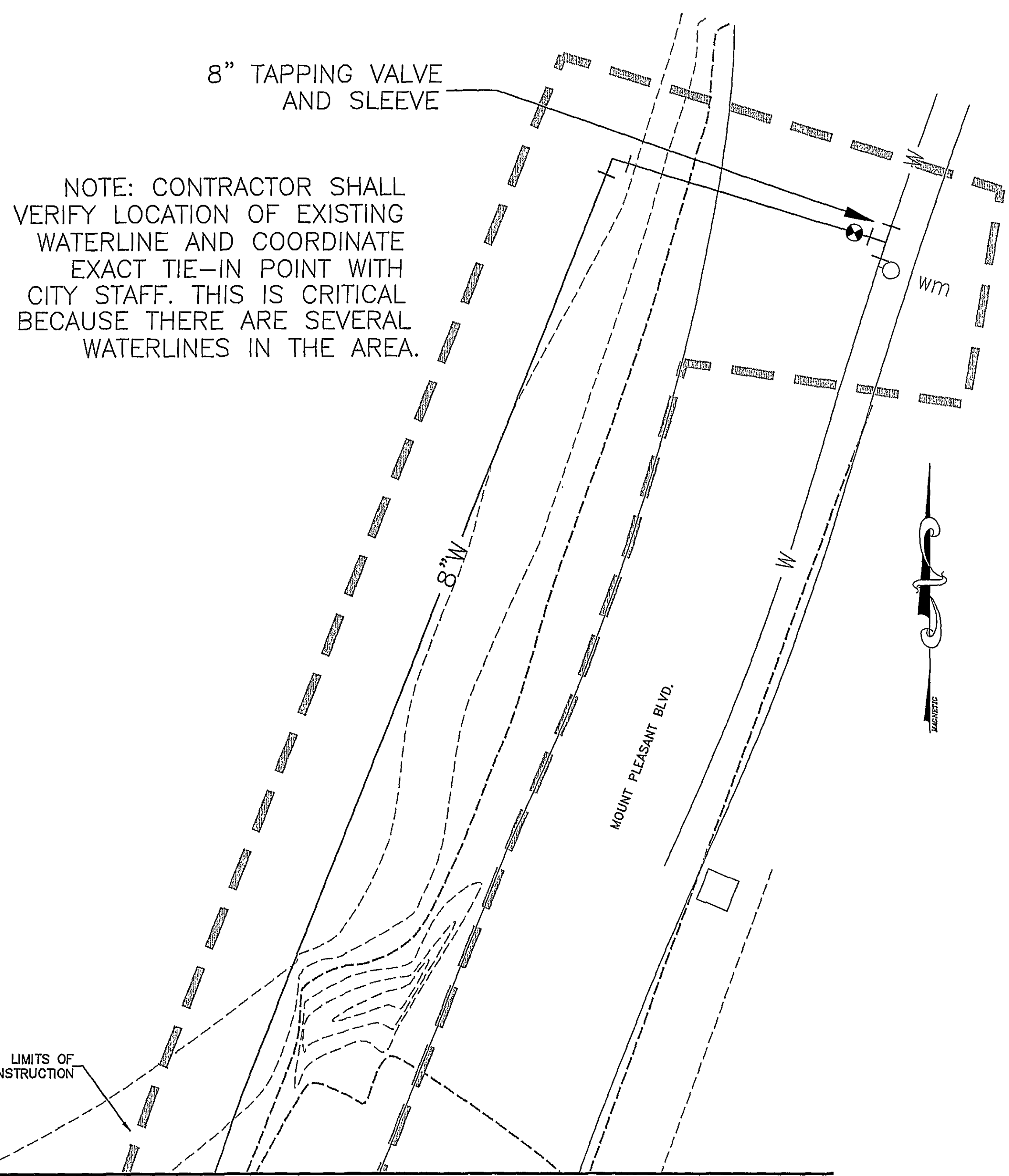
Each valved section of pipe shall be filled with properly disinfected water slowly and the specified test pressure shall be applied by means of a pump connected to the pipe in a manner satisfactory to the Engineer. Before applying the specified test pressure, air shall be expelled completely from the pipe, valves, and hydrants. All exposed pipe, fittings, valves, hydrants and joints shall be examined carefully during the test. Any damaged or defective pipe, fittings, valves, or hydrants that are discovered following the pressure test shall be repaired or replaced with sound material and the test shall be repeated until it is satisfactory to the Engineer.

A leakage test shall be conducted concurrently with the pressure test. Leakage shall be defined as the quantity of water that must be supplied into the newly laid pipe, or any valved section thereof, to maintain pressure within 5 psi of the specified test pressure after the air in the pipeline has been expelled and the pipe has been filled with water. No pipe installation will be accepted if the leakage is greater than that determined by the following formula:

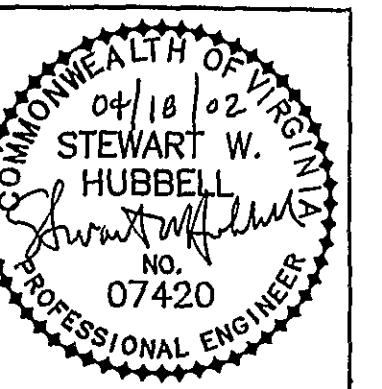
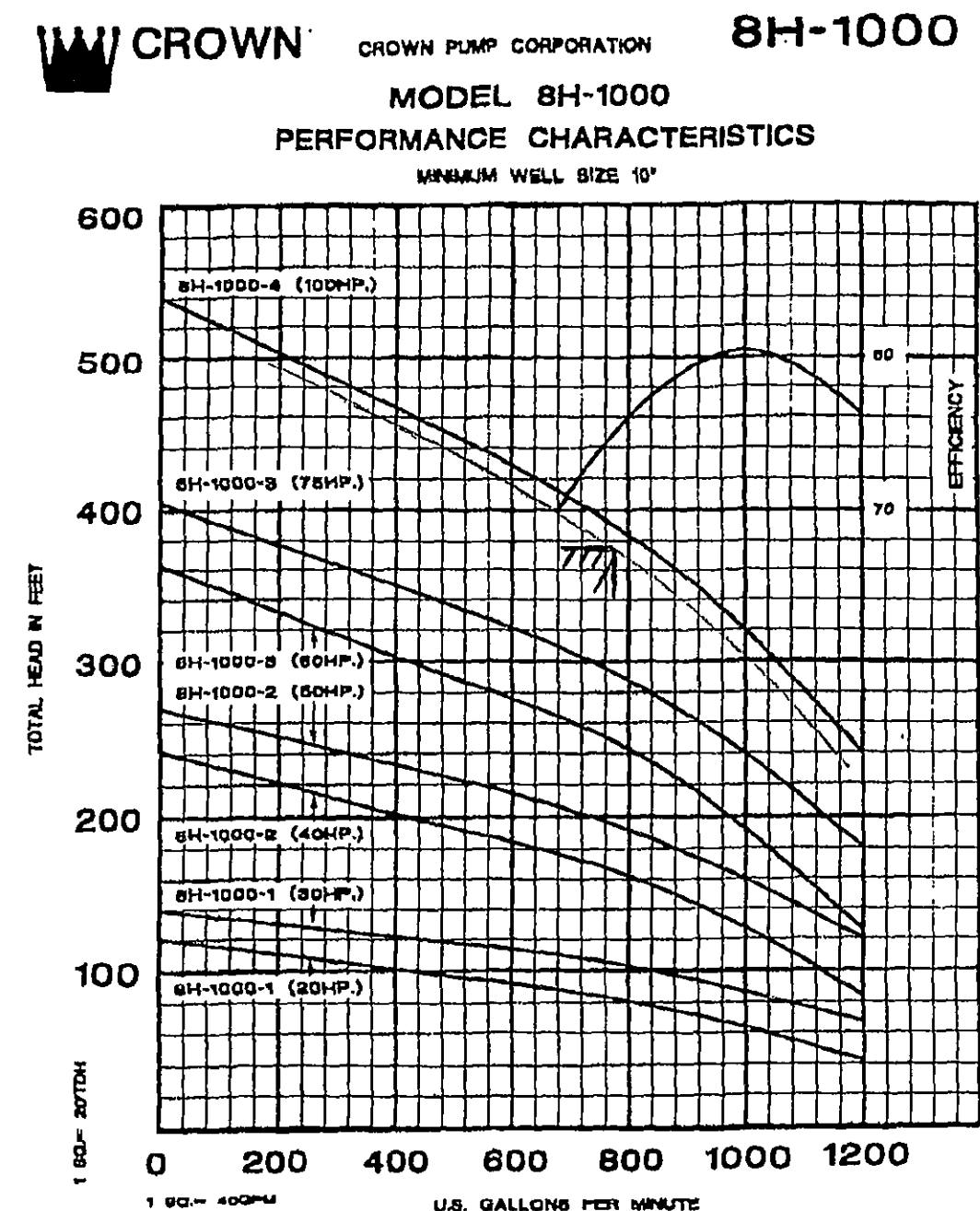
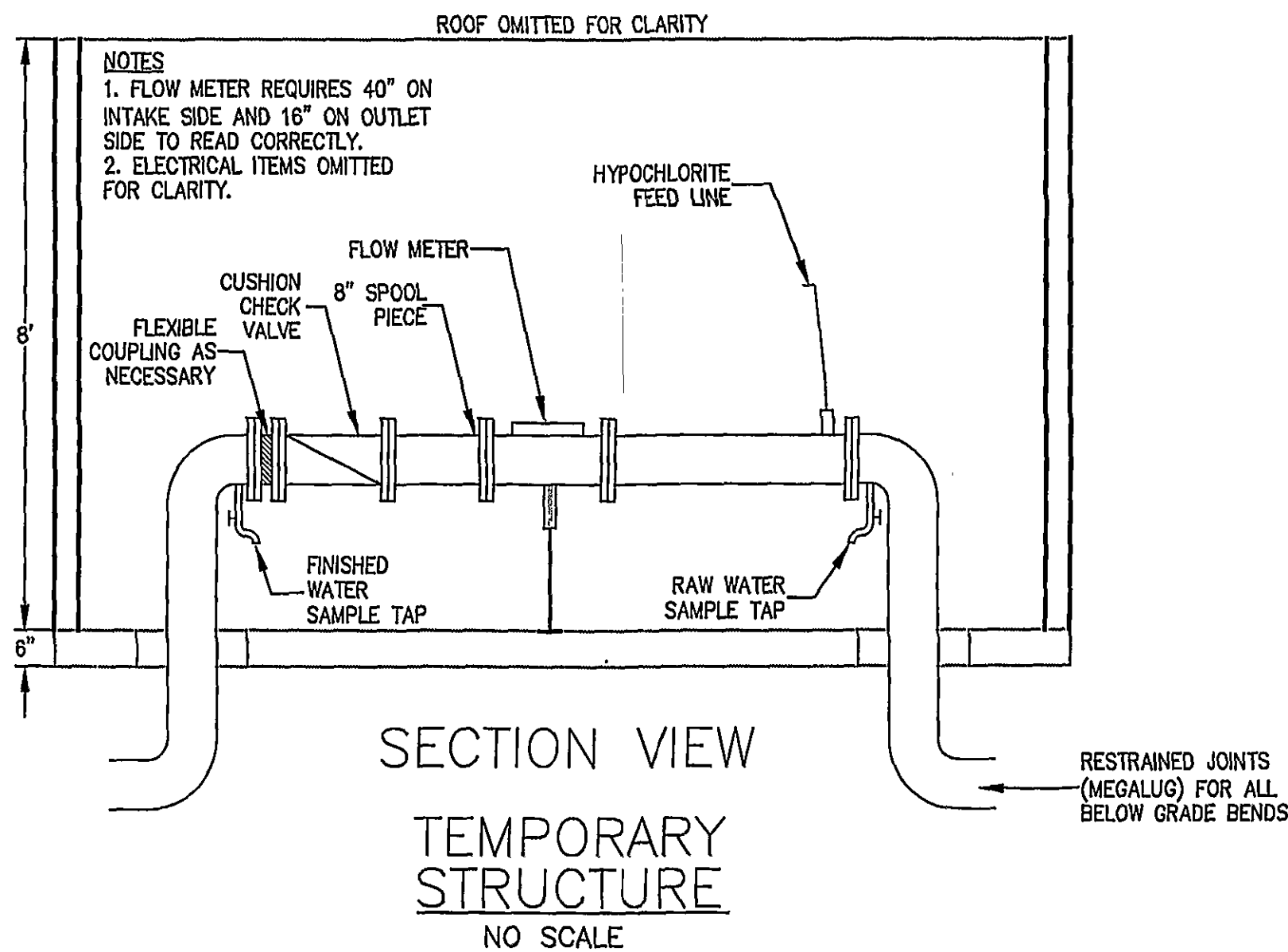
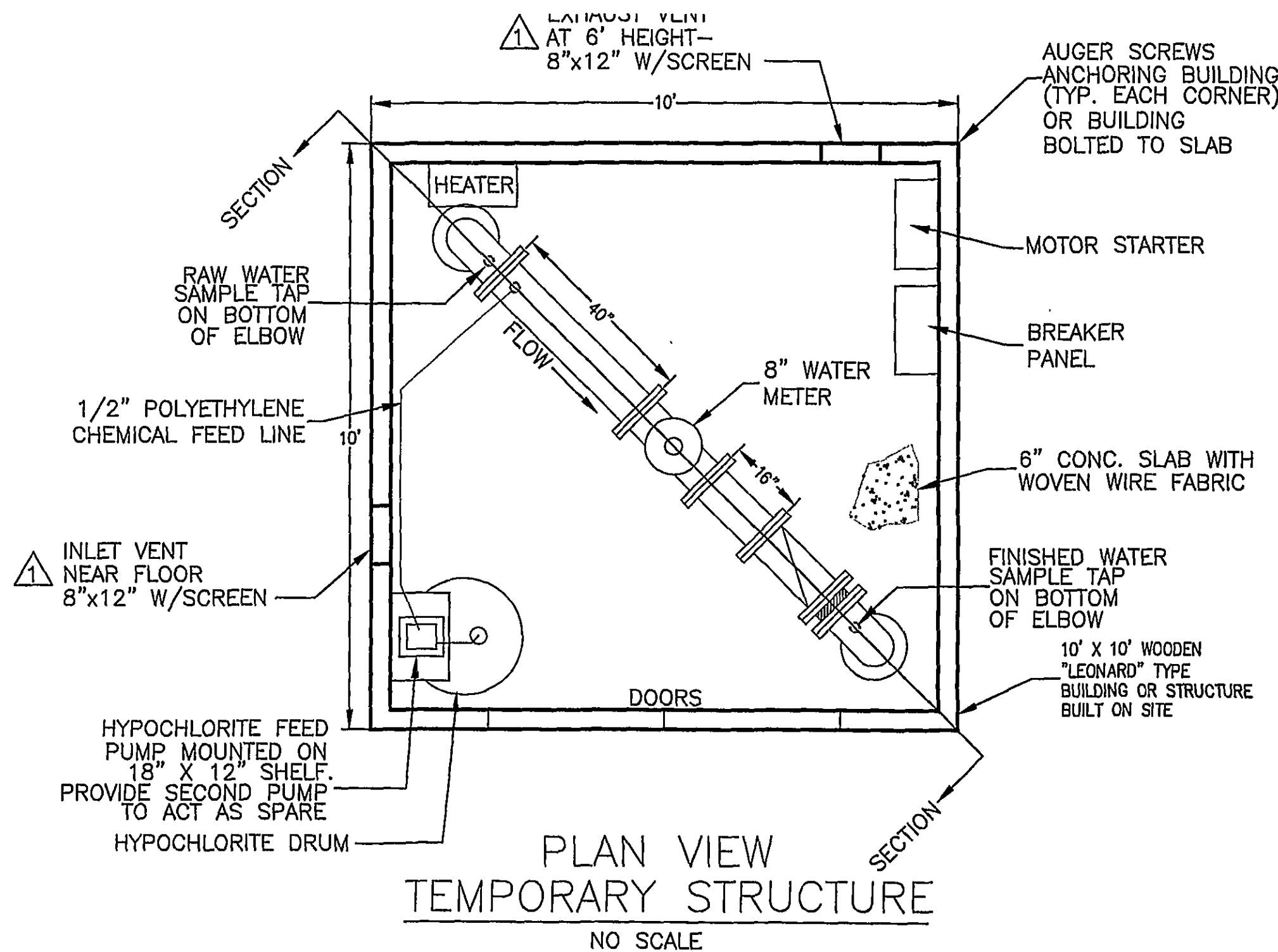
$$L = \frac{SD(P)^2}{133,200}$$

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. When testing against closed metal-seated valves, an additional leakage per enclosed valve of 0.0078 gal/hr/in. of nominal valve size shall be allowed. When hydrants are in the test section, the test shall be made on the basis of allowable leakage. If any test of pipe laid discloses leakage greater than the allowable amount, the Contractor shall, at his own expense, locate and repair the defective material until the leakage is within the specified allowance. All visible leaks are to be repaired regardless of the amount of leakage.

K:\PM\1\029803.04 for Stew.wpd



MATCHLINE: SEE SHEET 4



Date	Revisions
4/16/02	1 REVISED PER VDOT COMMENTS

Issue Date:	Drawn By:	Designed By:	Checked By:	Date:
APRIL, 2001	HAY	HAY	SWH	

**Mattern & Craig**  
CONSULTING ENGINEERS • SURVEYORS  
701 FIRST STREET, S.W.  
ROANOKE, VIRGINIA 24016  
(540) 345-7661  
FAX (540) 345-7661

## MUSE WELL TEMPORARY FACILITY SITE PLAN AND DETAILS

Vertical Scale:	N/A
Horizontal Scale:	1" = 10'
Commission Number:	1869
Sheet No.:	5