



Commercial Plumbing Plan Review

Water Calculation Worksheet - Alterations

Introduction:

This worksheet uses the empirical method of SPS 382.40(7)(a) to determine the size of the water supply system by taking into account the pressure losses that occur throughout the water supply system and the flow velocities within the water distribution system. **Fill out the fields highlighted in blue to find the "A" value.**

Address:

CALCULATE THE PRESSURE AVAILABLE FOR UNIFORM LOSS (VALUE OF "A")

1 Available pressure at the point of connection of the new water distribution system supplying new plumbing fixtures psi

2 Pressure loss of water meter (when meter is required) psi
Subtract Line Above from Line 1: psi

3 Pressure at controlling fixture* [SPS 382.40(7)(d)] psi
Subtract Line Above from Line 2: psi

Controlling fixture is:

**Controlling fixture is the fixture with the most demanding pressure to operate properly which includes the following when determining fixture performance; loss due to instantaneous water heaters, water treatment devices, and backflow preventers which serve the controlling fixture.*

4 Difference in elevation between point of connection and the controlling fixture. ft.
(multiply by .434): psi
Subtract Line Above from Line 3: psi

5 Pressure loss due to water treatment devices and backflow preventers which serve the controlling fixture. (Water softeners, filters, etc.)

Pressure loss due to:

5.1 WSFU Downstream of Water Treatment Device WSFU
5.2 Convert WSFU to GPM using Table 382.40-3; or GPM
5.3 Convert WSFU to GPM using Table 382.40-3e*; or GPM
** For individual dwelling units only*
5.4 Refer to manufacturer's graph to obtain pressure loss psi

Note: Enter zero in line 5.4 if no water treatment devices or backflow preventers serve the controlling fixture.

Subtract Line 5.4 from Line 4: psi

6 Pressure loss through tankless water heaters, combination boiler/hot water heaters, heat exchangers which serve the controlling fixture.

Hot water WSFU's:

Convert to GPM [Table 382.40-3]:

Pressure loss (refer to manufacturer's graph to determine loss at the required GPM) psi

Note: Enter zero if no tankless water heaters, or similar devices, serve the controlling fixture.

Subtract Line Above from Line 5: psi

7 Developed length from building control valve to controlling fixture

ft

Multiply by 1.5 ft

Divide Line 6 by Line Above: psi

Pressure Loss Due to Friction

Multiply by 100: "A" Value: psi/100'
of length

Note: "A" Value has been rounded to the next whole number

Water service piping material:

(Copper, Pex, CPVC, Etc.)

Note: The "A" value obtained by using Table 382.40-3e can only be used for an individual dwelling when sizing the water treatment device (water softeners, etc.) and no hose bibbs, hydrants, or high flow fixtures are being served by the water treatment device.

Note: High flow fixtures are defined as fixtures that exceed a flow rate of 4 GPM @ 80 psi, and water velocity not exceeding 8 ft. per second.