

SIZING WATER SERVICE LINES AND METERS

Sample Calculations

- Proposed commercial office building
- 20,000 SF of landscape with Spray type irrigation system
- System pressure at Building 80 psi

Instructions for Completing Town of Burlington Water Meter Right-Size Application

1. Determine Estimate Demand using Water Customer Data Sheet
 - Based on Combined Fixture Value Total and Type of Occupancy use either Figure 4-2 or 4-3 to select Water Demand in Gallons Per Minute (gpm).
 - Adjust Water Demand using Pressure Factor from Table 4-1.
 - Calculate Customer Peak Demand. (Water Demand x Pressure Factor)
 - Calculate Irrigation Demand
 - Add any Fixed Load demands if applicable.
 - Calculate Total Fixed Demand.
2. Applicant to propose Meter Type, Size, and supporting documentation for meter selection adequate for the Calculated demand.
3. For new construction submit Plumbing Permit fixture count as part of the submission.

Table 4-1 Pressure Adjustment Factors

Working Pressure at Meter Discharge (psi)	Pressure Adjustment Factor
35	0.74
40	0.80
50	0.90
60	1.00
70	1.09
80	1.17
90	1.25
100	1.34

Adapted from AWWA Manual M22 table 4-1

WATER PRESSURE
80 psi @
BUILDING.

SIZING WATER SERVICE LINES AND METERS

**Town of Burlington
Water Customer Data Sheet**

Customer: BURLINGTON Phone: _____
 Building Address: 25 CENTER ST Map/Lot: _____
 Type of Occupancy: OFFICE BUILDING
(Apartment, Hotel, Shopping Center, etc.)

Fixture	Value @ 60 PSI		Number of Fixtures	Total Value
Bathtub	8	x		
Bedpan Washers	10	x		
Bidet	2	x		
Dental Unit	2	x		
Drinking Fountain - Public	2	x	<u>3</u>	<u>6</u>
Kitchen Sink	2.2	x	<u>3</u>	<u>6.6</u>
Lavatory	1.5	x	<u>44</u>	<u>66</u>
Showerhead (Shower Only)	2.5	x	<u>4</u>	<u>10</u>
Service Sink	4	x	<u>3</u>	<u>12</u>
Toilet - Flush Valve	35	x	<u>49</u>	<u>1715</u>
- Tank Type	4	x		
Urinal - Pedestal Flush Valve	35	x	<u>6</u>	<u>210</u>
- Wall Flush Valve	16	x		
Wash Sink (Each Set of Faucets)	4	x		
Dishwasher	2	x	<u>3</u>	<u>6</u>
Washing Machine	6	x		
Hose (50 ft Wash Down) - 1/2 in.	5	x		
- 5/8 in.	9	x		
- 3/4 in.	12	x		
Combined Fixture Value Total				<u>2031.6</u>

Water Flow Demand from Fig. 4-2 or 4-3: 150 Press. Factor from Table 4-1: 1.17 (80 psi)

Customer Peak Demand From (Fig. 4-2 or 4-3) x (Press. Factor Table 4-1) = 175.5 gpm

Add Irrigation	<u>200</u> Sections*	x (1.16 or 0.40)**	= <u>232</u> gpm
	<u>0</u> Hose Bibs	x Fixture Value x _____ Press. Factor	= _____ gpm

Added Fixed Load = _____ gpm

TOTAL FIXED DEMAND 20,000 SF
100 SF / SECTION = **407.5** gpm

* 100 ft² area = 1 section
 ** Spray Systems- Use 1.16; Rotary systems- Use 0.40 = 200 SECTIONS

Figure 4-5 Water customer data sheet Adapted from AWWA Manual M22

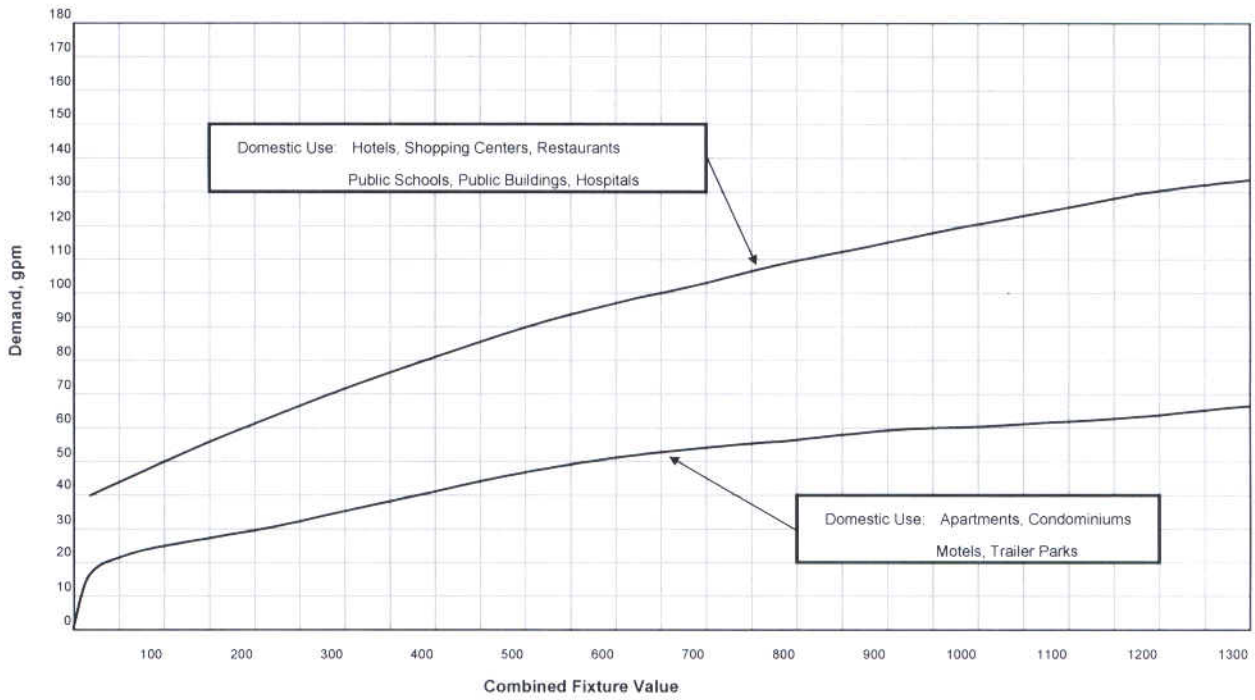


Figure 4-2 Water flow demand per fixture value - low range

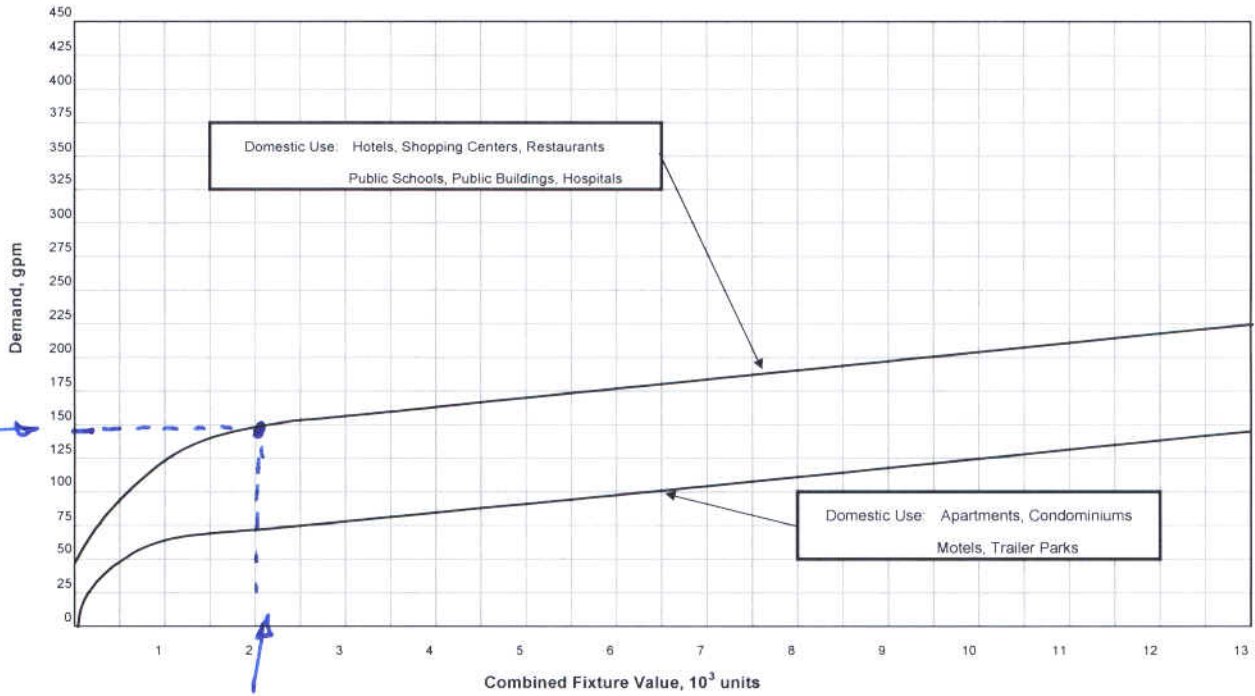


Figure 4-3 Water flow demand per fixture value - High range



Town of Burlington Department of Public Works

25 Center Street
Burlington, MA 01803

Neptune Water Meter Components

Register	E-Coder absolute encoder
Water Meters	T-10 Positive Displacement TRU/FLO Compound HP Turbine
Meter Interface	R450 (MIU)

Neptune Water Meter Operating Characteristics

Meter Type	Max. Operating Capacity (gpm)	Max. Rate for Continuous Flow (gpm)	Operating Range (gpm)	Low Flow (gpm)
Positive Displacement				
5/8"	20	10	1 - 20	1/8
3/4"	30	15	2 - 30	1/4
1"	50	25	3 - 50	3/8
1 1/2"	100	50	5 - 100	3/4
2"	160	80	8 - 160	1
Compound				
2"	200	100	1/2 - 200	1/8
3"	450	225	1/2 - 450	1/8
4"	1000	500	1 - 1000	1/2
6"	2000	1000	1 1/2 - 2000	3/4
Turbine				
2"	250	100	4 - 200	N/A
3"	560	225	5 - 450	N/A
4"	1500	600	10 - 1200	N/A
6"	3100	1250	20 - 2500	N/A

MAX DEMAND 407 gpm
 SELECT 3" COMPOUND.
 MAX CAPACITY 450 gpm

