



Sizing of Water Service and Water Distribution System Piping for Houses

Applicant: _____

Proposed Work: _____

Location of Work: _____

As per the 2012 Ontario Building Code (OBC), s.7.6.3.1.(2), a potable water system shall be designed, constructed and installed to conform to good engineering practice appropriate to the circumstances, such as described in ASHRAE Handbooks and ASPE Data Books.

Part 1 – Hydraulic Load, Fixture Unit Calculation

OBC Div. B Table 7.6.3.2.A. (Modified)

Item	Fixture or Device	Minimum Size of Supply Pipe, inch	Hydraulic Load, fixture units	Quantity	Total Hydraulic Load, fixture units
1.	Bathroom group *(1)*(2)	N/A	3.6		
2.	Bathroom group with more than 3 fixtures	N/A	*(3)		
3.	Bathtub with or without shower head	1/2	1.4		
4.	Bathtub with 3/4 in. spout	3/4	10		
5.	Bidet	3/8	2		
6.	Clothes washer, 3.5 kg	1/2	1.4		
7.	Dishwasher, domestic	3/8	1.4		
8.	Hose Bibb	1/2	2.5		
9.	Lavatory, 8.3 l/m or less	3/8	0.7		
10.	Shower head, 9.5 l/m or less per head	1/2	1.4		
11.	Shower, spray, multi-head, fixture unit per head	*(4)	1.4		
12.	Sink, bar	3/8	1		
13.	Sink, kitchen, domestic, 8.3 l/m or less	3/8	1.4		
14.	Sink, Laundry (1 or 2 compartments)	3/8	1.4		
15.	Water closet, 6 LPF or less with flush tank	3/8	2.2		
16.	Other *(5)				

Total Fixture Units _____

Notes to Table 7.6.3.2.A.:

1. Bathroom group means a group of plumbing fixtures installed in the same room, consisting of one domestic lavatory, one water closet and either one 1/2 inch size bathtub, with or without a shower, or one 1/2 inch size one-headed shower. Include proposed fixtures for rough-in plumbing and optional fixtures.
2. Bathroom group is based on a 1/2 inch size bathtub supply pipe.
3. Add additional fixtures to the fixture load for bathroom group.
4. Refer to the manufacturer's recommendations.
5. For fixture unit values for fixtures with direct flush valves, see OBC Div. B Sentence 7.6.3.2.(4) and OBC Div. B Tables 7.6.3.2.B. and OBC Div. B 7.6.3.2.C. For fixtures not indicated in the Table, refer to OBC Div. B Table 7.6.3.2.D.

Part 2 – Sizing Water Service Pipes

1. Every water service pipe shall be sized according to the peak demand flow but shall not be less than 3/4 in. in size.

2. Where both hot and cold water is supplied to fixtures in residential buildings containing more than one dwelling unit, the water system may be sized in accordance with OBC. DIV. B Table 7.6.3.4. provided,
 - a. the hydraulic loads for maximum separate demands on water distribution system piping are not less than 100% of the total hydraulic load of the fixture units given in OBC. DIV. B Tables 7.6.3.2.A., 7.6.3.2.B., 7.6.3.2.C., and 7.6.3.2.D. for private use,
 - b. the minimum water pressure at the entry to the building is 200kPa, and
 - c. the total maximum length of the water system is 90m.
3. Where both hot and cold water is supplied to fixtures in a house containing only one dwelling unit, the water service pipe is permitted to be a minimum of ¾ in. in size provided,
 - a. A minimum ¾ in. water supply piping located in the basement or lower level is extended to the base of every hot and cold riser that serves a maximum of one bathroom group and to the last water supply branch serving any basement bathroom group, fixture supply or hose bib, and
 - b. The total hydraulic load is not more than 26 fixture units, using the values given in OBC. DIV. B Table 7.6.3.2.A.

OBC Div. B Table 7.6.3.4. (Modified)

Size of Water Pipe, inches	Water Velocity m/s	
	2.4	1.5
	Hydraulic Load, fixture units	
1/2	7	4
¾	16	9
1	31	18
1¼	57	30

Using a velocity of ____ m/s and ____ fixtures units, a Water Service Pipe of ____ inches is proposed.

Designer's signature: _____ Date: _____

If water velocities other than 1.5 m/s or 2.4 m/s are proposed, provide detailed water service calculations along with documentation of the recommended velocities from the manufacturers of the pipe and fittings.

Part 3 – Sizing of Water Distribution System

Water distribution systems shall be designed and installed in accordance with OBC Div. B, Part 7.

Note: Water Service Connections

Once the size of the water service has been established, it is the responsibility of the owner or the agent of the owner to make an application to the Region of Halton for the appropriate water service connection.

The Region's policy for infill lots is to upsize the water service pipe on the public side if there is more than a one trade size difference between the public and the private water service (i.e. if the private side is 1¼ inches than the public side will need to change from a ¾ inch to a 1 inch service). However, in the case of a 1 inch private water service the Region is willing to leave the ¾ inch public water as is.

Customers should be aware that is, as a result of the Town's plan review, the water service pipe needs to be upsized from what the designer originally specified, a fee adjustment for the water service connection permit will have to be paid to the Region.

Received by: _____ Date: _____