Plumbers, Gasfitters and Drainlayers Board

Level 8, 70 The Terrace
P O Box 10655, Wellington 6140
Tel 0800 743 262, 04 494 2970
www.pgdb.co.nz

Plumbing information sheet No.5a

Cold Water Pipe Sizing, Testing and Commissioning

Introduction

The aim of this technical solution is to clarify the requirements for sizing, testing and commissioning of a cold water plumbing installation.

This information sheet is part 'a' of a two part guidance document. See *plumbing information sheet No. 5b* for further guidance on cold water pipe sizing.

G12 – Water Supplies

NZBC G12 provides the mandatory objective, function and performance requirements for water supplies in NZ. *G12/VM1* cites *AS/NZS 3500.1* sections 2 & 3 and Appendix C: Sizing method for supply piping for dwellings.

Note: Appendix C is cited in G12/VM1 1.0.1 a). In AS/NZS 3500.1 Appendix C is an 'informative' appendix, however, it is included in G12 as a verification method. Appendix D is an 'informative' appendix and is not cited in G12.

Pipework Systems

There is an increasing variety of materials and products for the supply of cold (and heated) water. It is important when using unfamiliar products to ensure that pipe sizing is correct for adequate performance of the installation.

Before the plumber installs pipework, it is important that they ensure the installation design meets mandatory the NZBC requirements.

Cold Water Pipe Sizing Method

In order to follow the method outlined in Appendix D you will need to know the following:

The index length: The length in metres from the water meter to the most disadvantaged outlet.

The height in metres: The height in metres above the water meter/inlet connection point.

The pressure available at the outlets. AS/NZS 3500.1 (Clause 3.3.2) requires a minimum pressure of 50 kPa (5m head) at the most disadvantaged outlet.

The available pressure: If the water authority will specify the minimum pressure available, use that figure.

Flow rates and loading units. AS/NZS 3500.1 (Table 3.2.1) specifies flow rates and loading units of fixtures and appliances. (note there are slight variances between AS/NZS 3500.1 and Table 3 of G12/AS1)

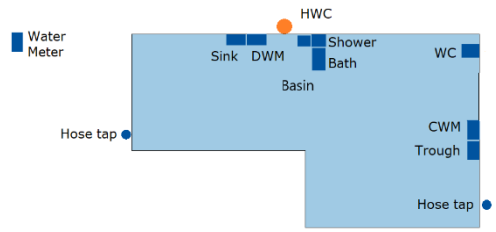
Note: For sizing piping to supply multiple dwellings, use Appendix C.

Steps

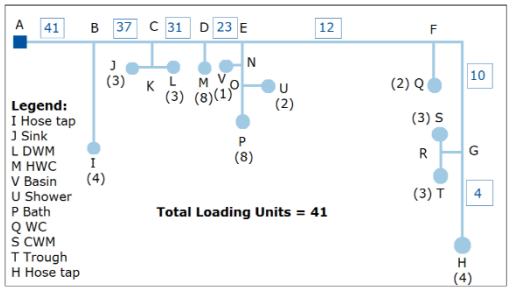
1. Draw a sketch of the installation

The sketch should include the fixtures, their loading units and pipe sections identified by lettering

For example a typical fixture installation



The sketch could look like



2. Determine the index length.

In this case we will use 50m

3. Determine the available pressure

4. Determine the pressure drop

Pressure drop		*= Hm – Hs – Hx*
Where Hm metres		*= minimum available head*
		= In this case 48m
	Hs	*= height of the highest outlet*
		= In this case 8m
	Hx	*= minimum head required at any outlet*
		=in this case 5m
Therefore:		
Pressure drop		*= Hm – Hs – Hx*
		= 48 – 8 – 5
		= 35m head (343 kPa)

Note: Consider the Equivalent Pipe Sizes

The nominal pipe work sizes (DN) must be checked against AS/NZS 3500.1 Appendix A to ensure the correct size for material other than copper. Failure to do this may result in pressures, flow rates and velocities not complying with the mandatory requirements of the NZBC.

Figure 1. Testing procedure

