

Technical Solution Sheet 7.04

7: Mechanical Services (including duct fixing)

Flexible Ducting for Heating, Cooling and Ventilation

AIM

The aim of this technical solution sheet is to outline the requirements of [AS 4254-2012 Ductwork for air-handling systems in buildings Part 1: Flexible duct](#) as a result of the 2012 amendments to the standard and to assist practitioners in determining the correct minimum insulation R-value for ductwork installed in buildings to which *the Building Code of Australia* (BCA) applies.

PLUMBING REGULATIONS 2008

The *Plumbing Code of Australia* (PCA) is adopted by and forms part of the *Plumbing Regulations 2008*. Part E1 of the PCA specifies both the objectives and performance requirements related to the installation of heating, ventilation and air-conditioning systems. The Deemed-to-Satisfy provisions include both the BCA and [AS 4254-2012 Ductwork for air-handling systems in buildings Part 1: Flexible duct](#) and [AS 4254 Ductwork for air-handling systems in buildings Part 2: Rigid duct](#).

BACKGROUND

The BCA sets out the minimum R-value of insulation required for ductwork taking into account both the intended climate zone and the type of system to be installed. [AS 4254](#) was amended and republished in 2012 into two parts [AS 4254-2012 Part 1: Flexible duct](#) and [Part 2: Rigid duct](#). The major changes to [AS 4254.1](#) are as follows:

- Flexible Duct Compliance Report Summary has been modified and become mandatory. (Normative Appendix A)
- Mandatory requirements for labelling of ductwork have been included
- Improved installation requirements, including details on hanger supports and load distribution systems
- Prescribes the maximum distance of 12 meters of any diameter duct in any given duct run between air terminal devices.

Q: How do I determine the correct insulation R-value of duct work for a residential building?

A: *The National Construction Code Series Volume Two- Building Code of Australia- Class 1 and 10a buildings* set out the minimum R-value that the ductwork must achieve. (see Table 1) To establish the correct ductwork insulation R-value required, you will need to establish both the type of system to be installed and the climate zone the installation will take place. (See Figure1)

Q: How do I provide adequate support for flexible ductwork?

A: Flexible ductwork is to be supported in accordance with [AS 4254.1](#) Section 2 Clause 2.5.3 Hangers support and load distribution systems including the following:

- Hangers shall be adequately attached to the building structure.
- Support spacing's shall not be greater than 1500mm apart and shall not have greater

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than 40mm/m of sag per support spacing. (See Figure 2)

- The hanger or saddle in contact with the flexible duct shall be a minimum width of 25mm. A semi-rigid, fire resistant, load-distributing support material a minimum width of 75mm, shall be in contact with the flexible duct for at least a quarter of its circumference. (See Figure 3)
- Air terminal devices and branch take offs shall be independently supported
- Flexible duct work installed in sub-floor situations shall be supported such that no part of the flexible duct is in contact with the ground. (See Figure 4)

Q: Does flexible ductwork require labelling?

A: As of 1 May 2013 [AS 4254.1-2012](#) is referenced in the PCA and mandates the labelling of flexible ductwork.

Labelling Shall-

- be repeated along the total length of the ductwork at 1000mm intervals;
- be legible for the flexible duct's service life; and have characters at least 10mm high.

The labelling shall include the following:

- Name of manufacturer
- Compliance with [AS 4254.1-2012](#)
- The R-value of the flexible duct (see Figure 5)

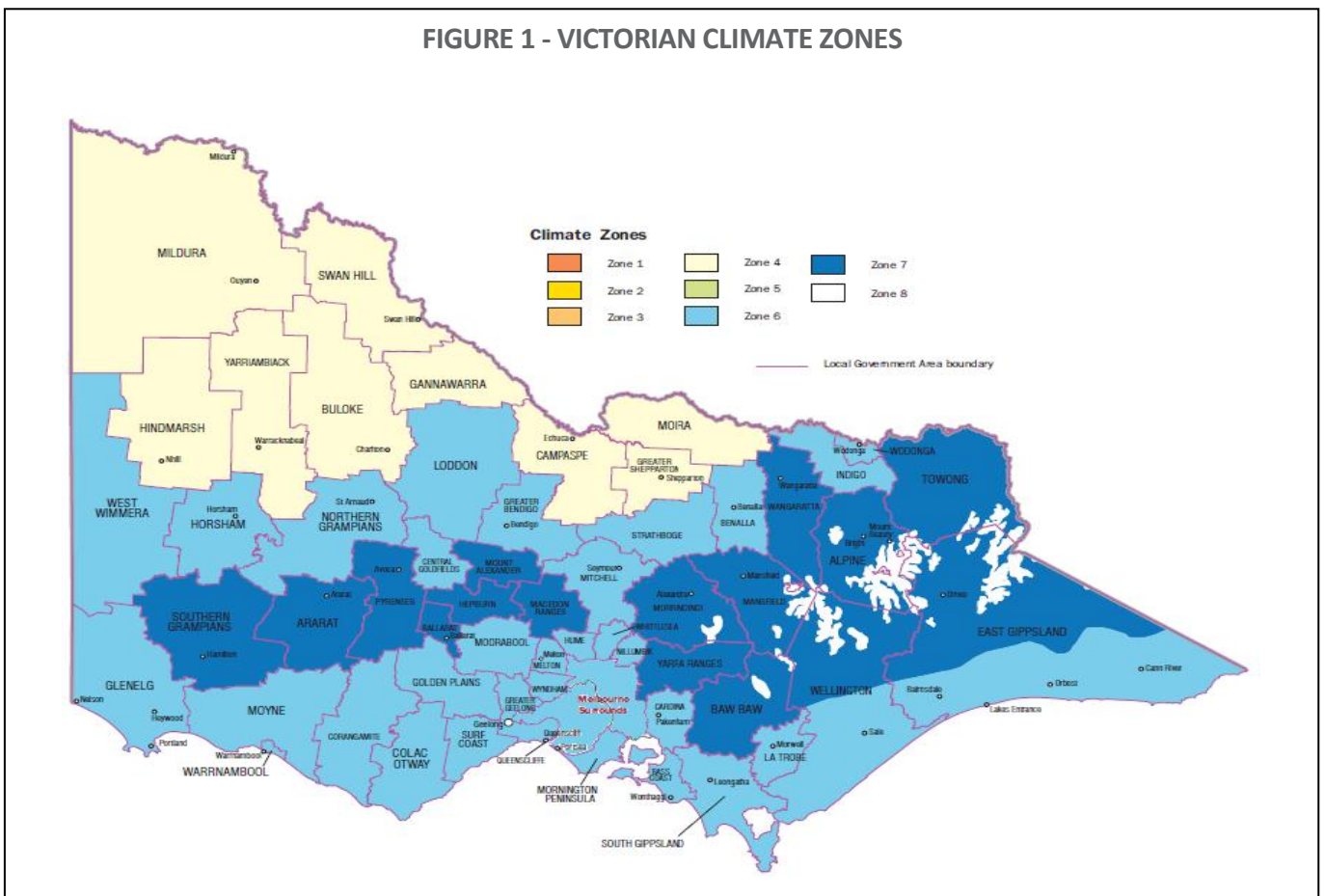
Q: Are there any installation requirements when flexible duct work changes direction?

A: Flexible duct work shall extend straight for 100mm from the connection to an air terminal device prior to any change of direction.

(see Figure 6 a)

Flexible duct work shall be installed with a minimum bend radius to flexible duct diameter of 1 to 1. (see Figure 6 b)

FIGURE 1 - VICTORIAN CLIMATE ZONES



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TABLE 1 - MINIMUM MATERIAL R-VALUE DUCTWORK

Ductwork Element	Minimum material R-Value for ductwork and fittings in each climate zone				
	Heating-only system or cooling-only system including an evaporative cooling system		Combined heating and refrigerated cooling system		
	1, 2, 3, 4, 5, 6 and 7	8	1, 2, 3, 4, 5, 6 and 7	2 and 5	8
Ductwork	1.0	1.5	1.5 (see note)	1.0	1.5
Fittings	0.4				

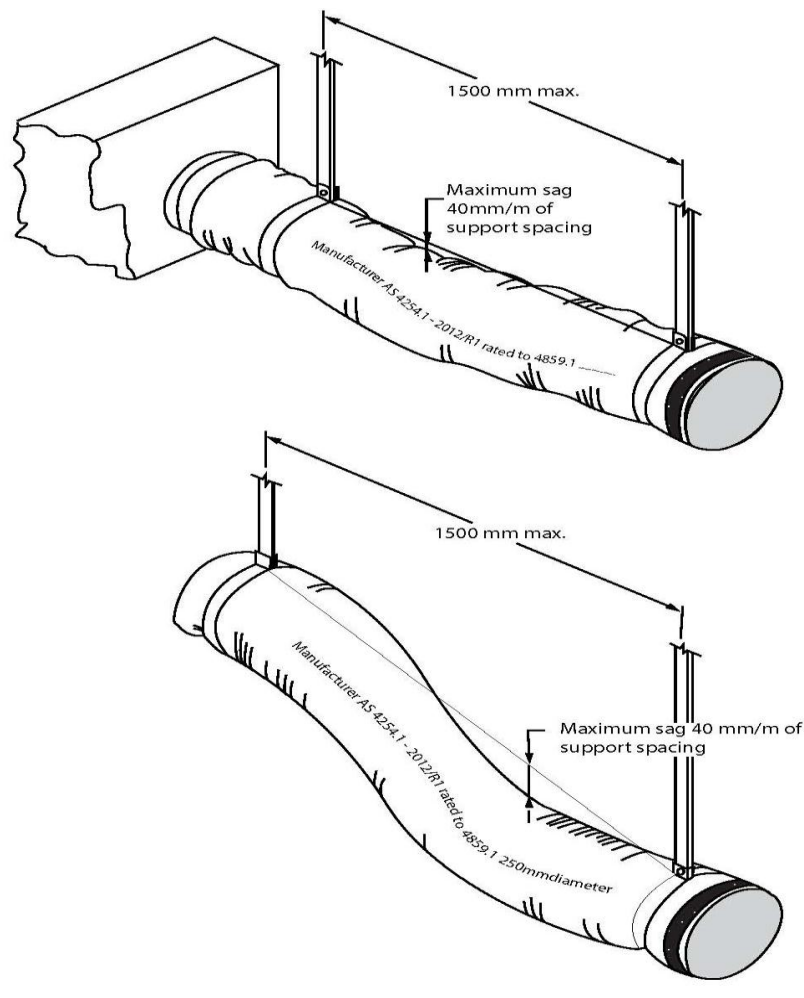
Note:

The minimum material R-Value required for ductwork may be reduced by 0.5 for combined heating and refrigerated cooling systems in climate zones 1, 2, 3, 4, 6 and 7 if the ducts are -

(a) under a suspended floor with an enclosed perimeter; or

(b) in a roof space that has insulation of not less than R0.5 directly beneath the roofing.

FIGURE 2 - FLEXIBLE DUCT SUPPORT SPACING'S



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FIGURE 3 - EXAMPLE HANGING SADDLE AND LOAD DISTRIBUTION SUPPORT SYSTEM

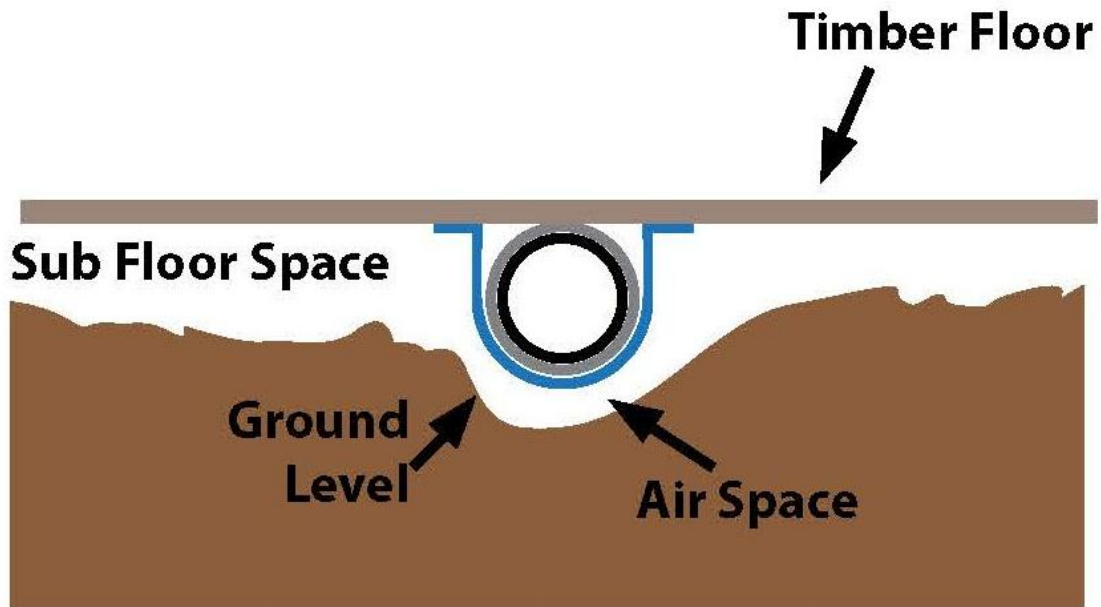
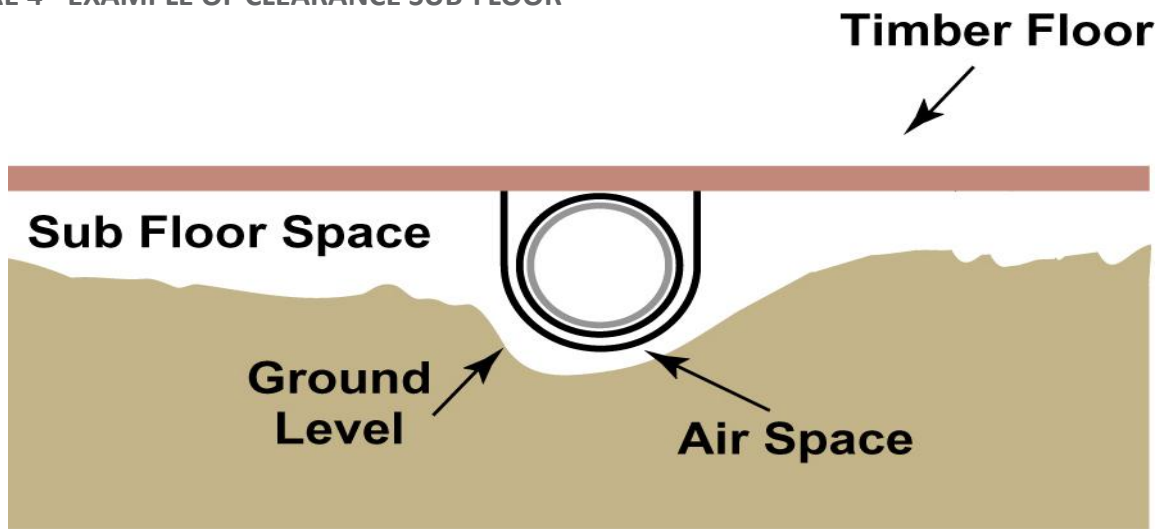


FIGURE 4 - EXAMPLE OF CLEARANCE SUB-FLOOR



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FIGURE 5 - FLEXIBLE DUCT LABELLING

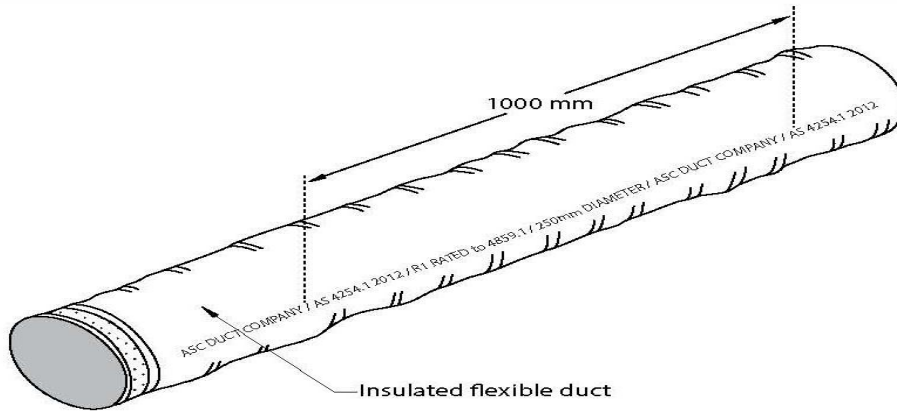
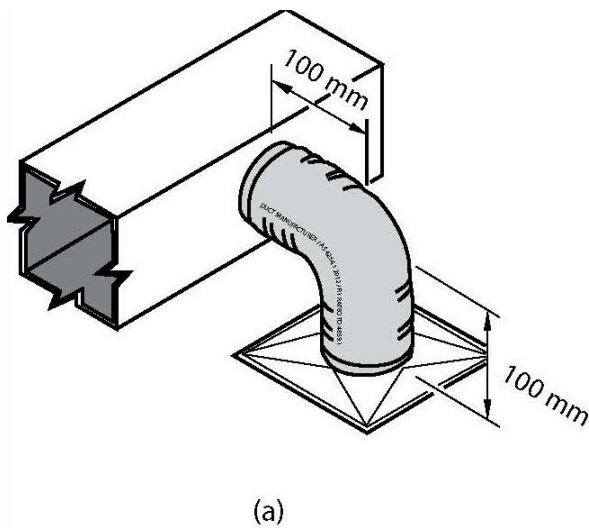


FIGURE 6 - FLEXIBLE DUCT CHANGES IN DIRECTION



Supports before and after sharp bends

