

#### **GUIDE TO THE USE OF AS 1684**

# Simplified Tie-down Details for Coupled Roofs N1 & N2 Sheet Roofs and N3 Tile Roofs

3

User Guides are available from WoodSolutions.com.au

June 2012

(The Code clause and table references given below apply to Part 2 and Part 3 unless specifically noted)

#### **Background**

AS 1684.2, Clause 9.6.1 states that "continuity of tie-down shall be provided from the roof sheeting (sheeting in this sense also applies to roof tiles) to the foundations". For 'pitched' coupled roofs, where there is net uplift that cannot be resisted by nominal nailing alone, the code requires specific tie-down fixings to be installed. From Tables 9.2 and 9.5, it can be seen that these specific tie-downs are required

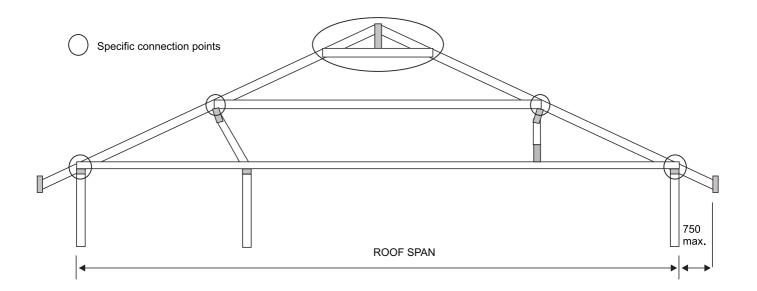
for N1, N2, N3 and N4 sheet roofs and N3 and N4 tile roofs. This guide only covers N1 & N2 sheet roofs and N3 tile roofs.

Simplified details for a limited range of building spans and member and tie-down spacings are provided in this Guide Note and accompanying sheets for the following conditions:-

Roof Span	Maximum Overhang	Roof Type	Rafter Spacing	Wind Classification		
				N1	N2	N3
Upto	750	Sheet	900	Sheet 3.1	Sheet 3.5	NGA
9000			1200	Sheet 3.2	Sheet 3.6	NGA
		Tile	450			Sheet 3.9
			600			Sheet 3.10
9000 to	750	Sheet	900	Sheet 3.3	Sheet 3.7	NGA
12000			1200	Sheet 3.4	Sheet 3.8	NGA
		Tile	450			Sheet 3.11
			600			Sheet 3.12

#### Notes:

- 1. = no specific tie-down required
- 2.  $\overline{NGA} = \text{no guide available}$
- 3. The details provided are suitable for timber with Joint Strengths J1 to J4 and JD4 and JD5.



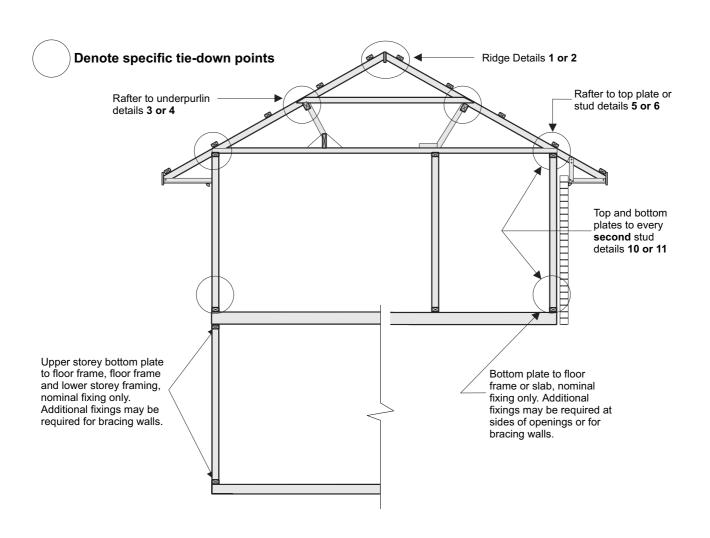


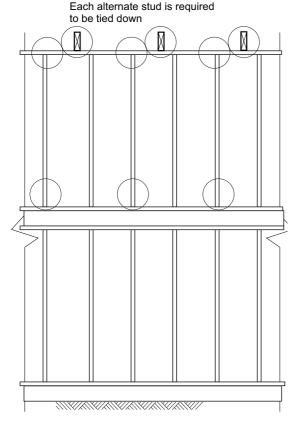


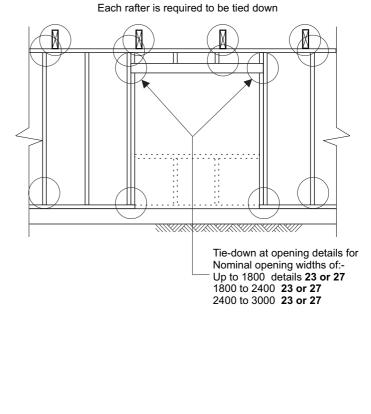


Sheet 3.1

(Roof Span up to 9000 mm, Rafters @ 900 crs, Collar Ties @ 900 crs, O/hang 750 mm max)

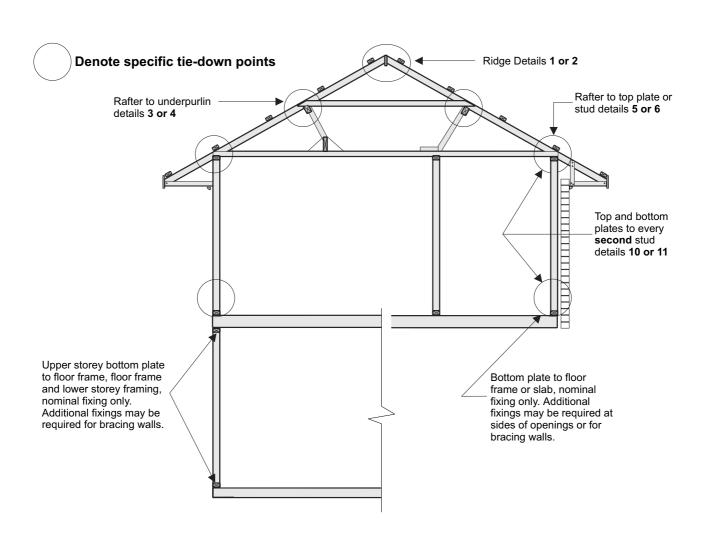


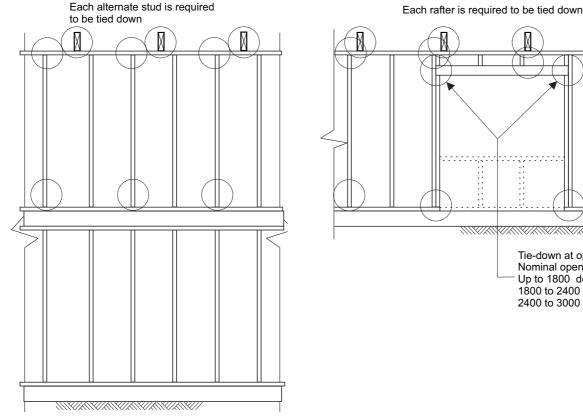




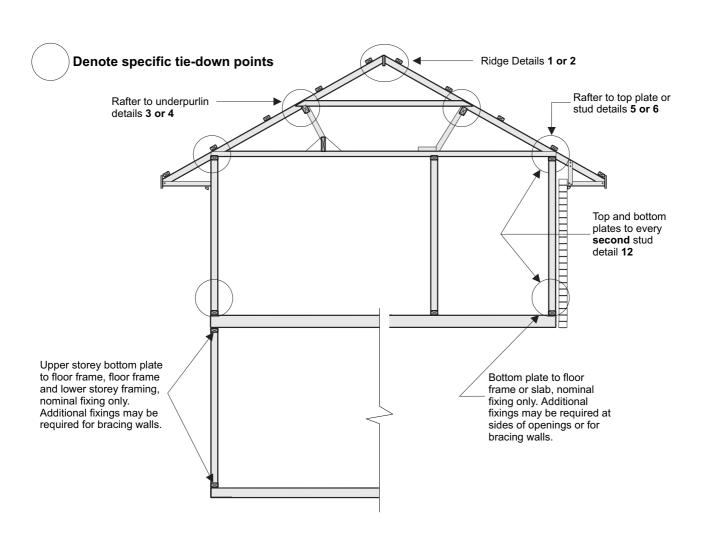
#### Sheet 3.2 AS 1684 - Part 2 - SIMPLIFIED TIE-DOWN - N1 SHEET ROOF

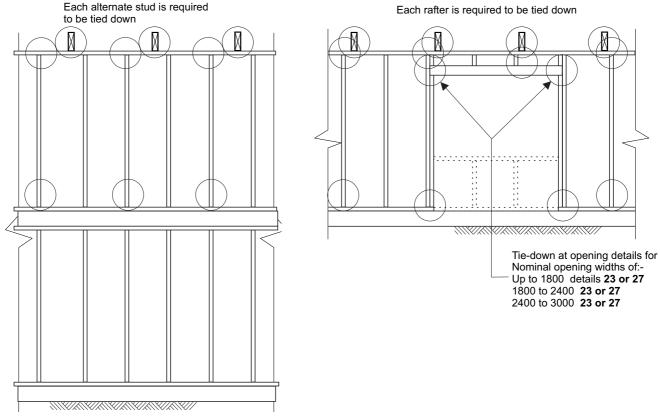
(Roof Span up to 9000 mm, Rafters @ 1200 crs, Collar Ties @ 1200 crs, O/hang 750 mm max)



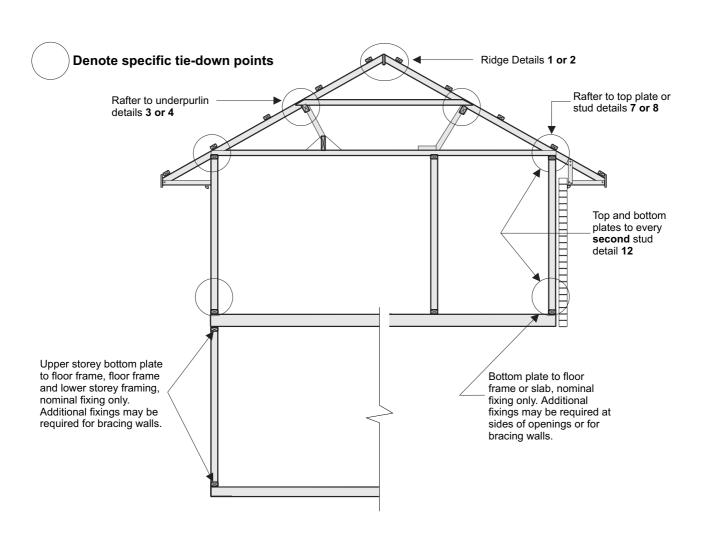


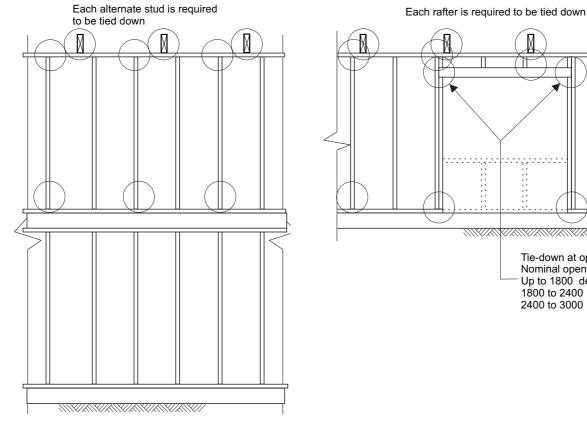
(Roof Span up to 9000 - 12000mm, Rafters @ 900 crs, Collar Ties @ 900 crs, O/hang 750 mm max)





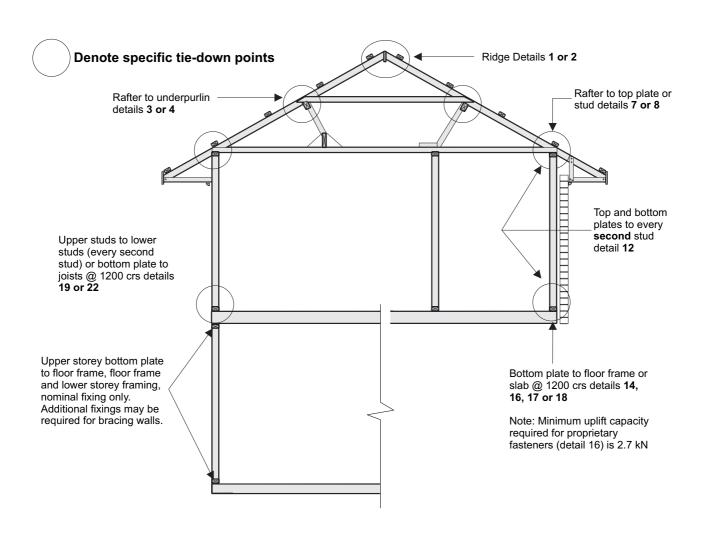
(Roof Span up to 9000 - 12000mm, Rafters @ 1200 crs, Collar Ties @ 1200 crs, O/hang 750 mm max)

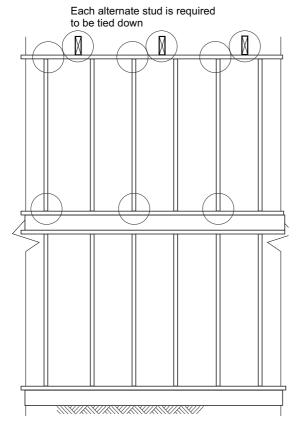


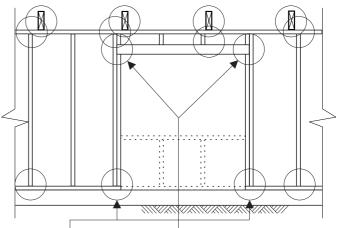


Tie-down at opening details for Nominal opening widths of:-Up to 1800 details 23 or 27 1800 to 2400 23 or 27 2400 to 3000 24 or 27

(Roof Span up to 9000 mm, Rafters @ 900 crs, Collar Ties @ 900 crs, O/hang 750 mm max)





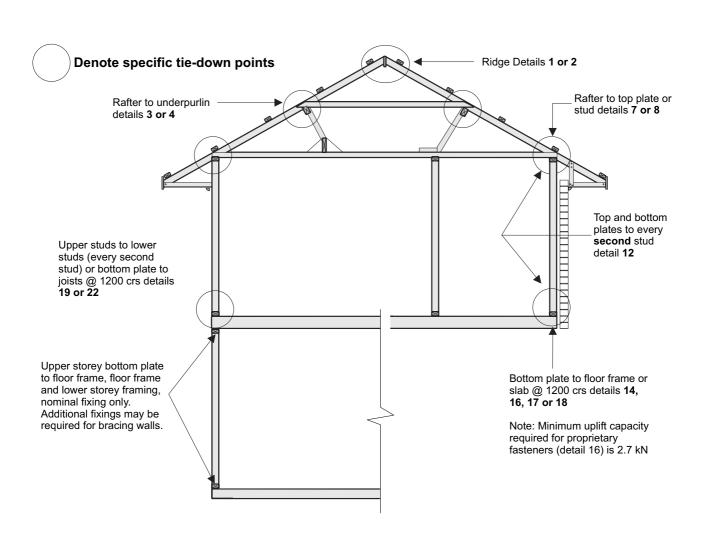


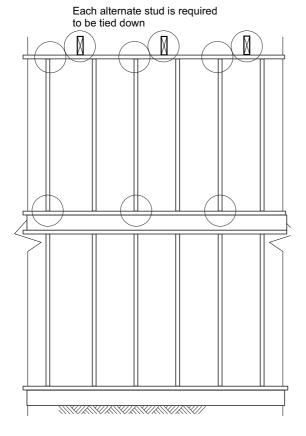
Each rafter is required to be tied down

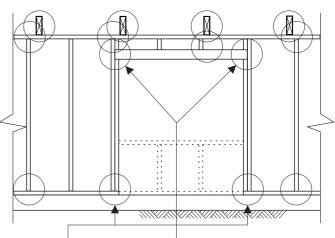
Optional bottom plate to slab or floor frame at sides of openings details for opening widths (uplift capacity required for detail 16 is shown in brackets):Up to 1800 (4.7 kN)

1800 to 2400 (5.8 kN) 2400 to 3000 (7.0 kN) Tie-down at opening details for Nominal opening widths of:-Up to 1800 details 23 or 27 1800 to 2400 24 or 27 2400 to 3000 24 or 27

(Roof Span up to 9000 mm, Rafters @ 1200 crs, Collar Ties @ 1200 crs, O/hang 750 mm max)





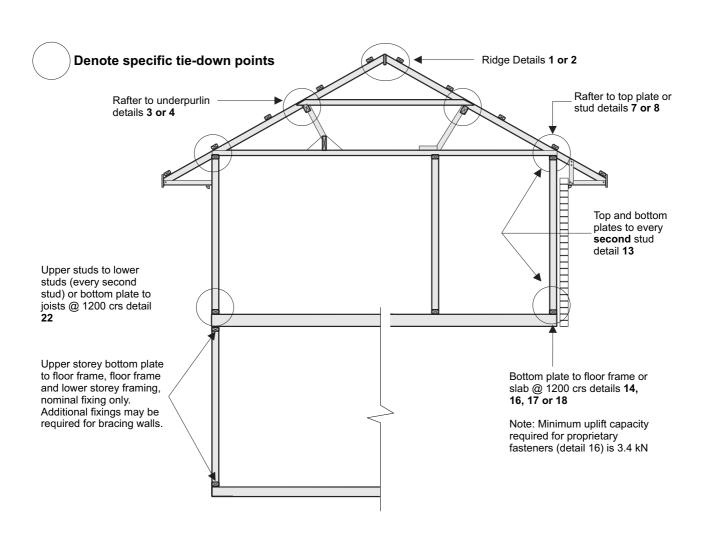


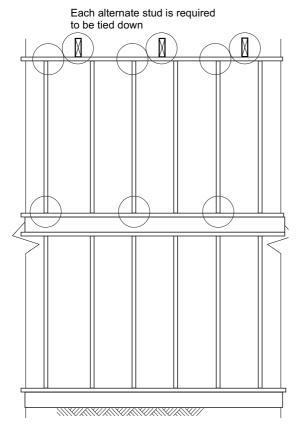
Each rafter is required to be tied down

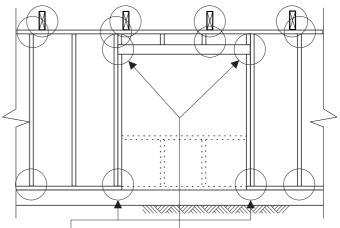
Optional bottom plate to slab or floor frame at sides of openings details for opening widths (uplift capacity required for detail 16 is shown in brackets):Up to 1800 (4.7 kN)
1800 to 2400 (5.8 kN)
2400 to 3000 (7.0 kN)

Tie-down at opening details for Nominal opening widths of:-Up to 1800 details 23 or 27 1800 to 2400 24 or 27 2400 to 3000 25 or 27

(Roof Span up to 9000 - 12000 mm, Rafters @ 900 crs, Collar Ties @ 900 crs, O/hang 750 mm max)





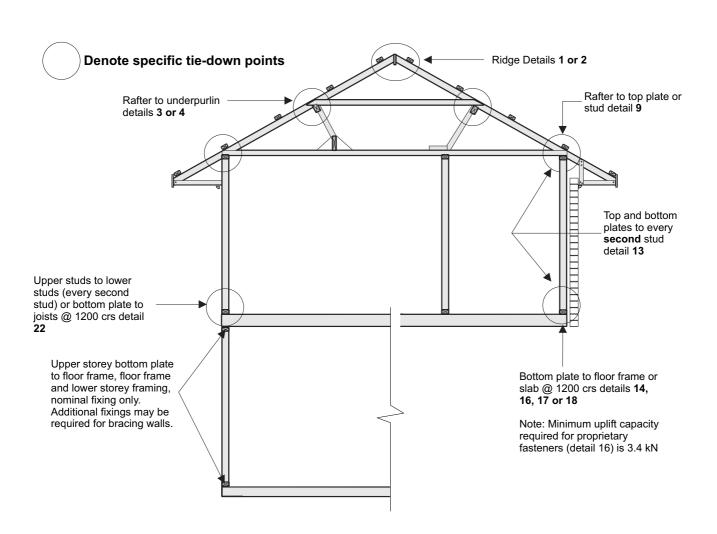


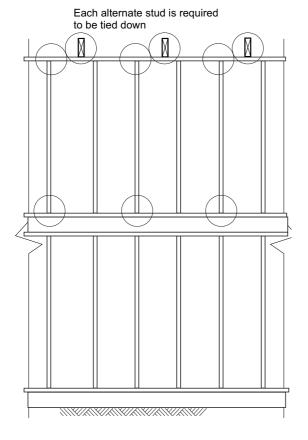
Each rafter is required to be tied down

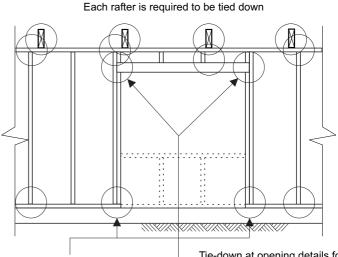
Optional bottom plate to slab or floor frame at sides of openings details for opening widths (uplift capacity required for detail 16 is shown in brackets):- Up to 1800 (6.0 kN) 1800 to 2400 (7.4 kN) 2400 to 3000 (8.9 kN)

Tie-down at opening details for Nominal opening widths of:-Up to 1800 details 24 or 27 1800 to 2400 25 or 27 2400 to 3000 25 or 27

(Roof Span up to 9000 - 12000 mm, Rafters @ 1200 crs, Collar Ties @ 1200 crs, O/hang 750 mm max)







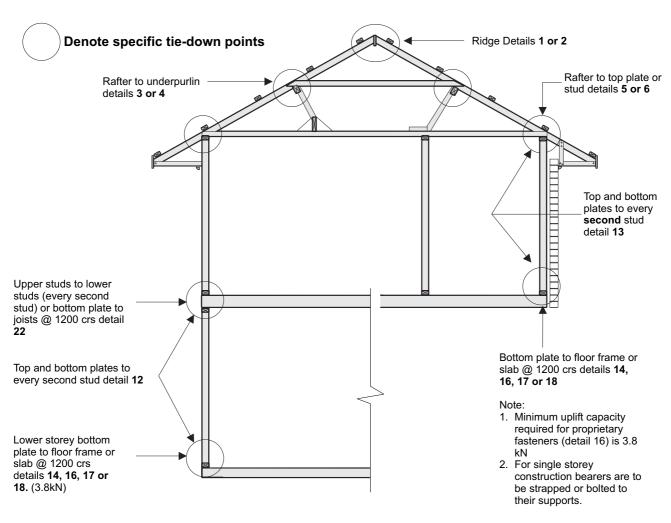
Optional bottom plate to slab or floor frame at sides of openings details for opening widths (uplift capacity required for detail 16 is shown in brackets):- Up to 1800 (6.0 kN) 1800 to 2400 (7.4 kN) 2400 to 3000 (8.9 kN)

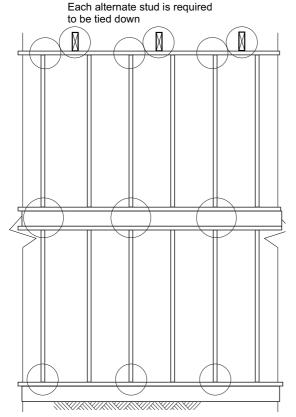
Tie-down at opening details for Nominal opening widths of:-Up to 1800 details 24 or 27 1800 to 2400 25 or 27 2400 to 3000 25 or 27

## AS 1684 - Part 2 - SIMPLIFIED TIE-DOWN - N3 TILE ROOF

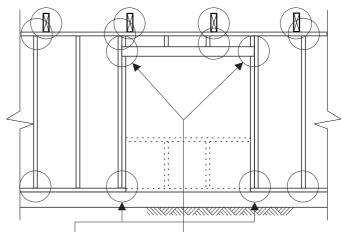
Sheet 3.9

(Roof Span up to 9000 mm, Rafters @ 450 crs, Collar Ties @ 900 crs, O/hang 750 mm max)





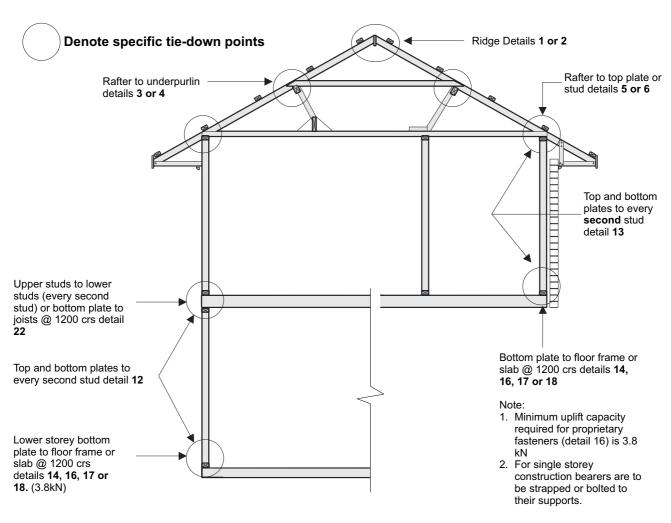


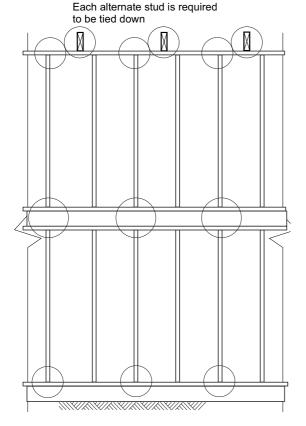


Optional bottom plate to slab or floor frame at sides of openings details for opening widths (uplift capacity required for detail 16 is shown in brackets):- Up to 1800 (6.0 kN) 1800 to 2400 (7.4 kN) 2400 to 3000 (8.9 kN)

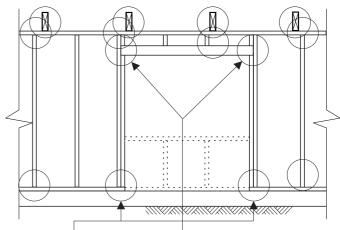
Tie-down at opening details for Nominal opening widths of:Up to 1800 details **24 or 27**1800 to 2400 **25 or 27**2400 to 3000 **25 or 27** 

(Roof Span up to 9000 mm, Rafters @ 600 crs, Collar Ties @ 1200 crs, O/hang 750 mm max)





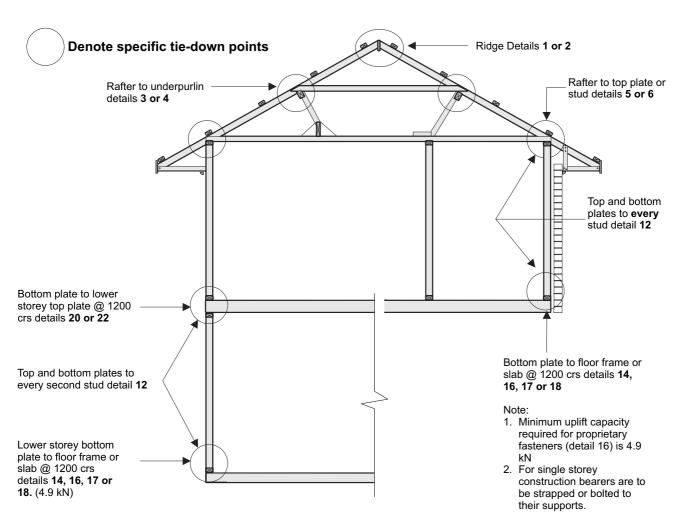


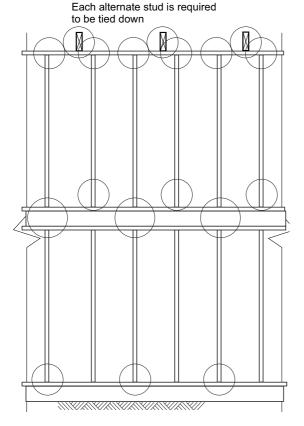


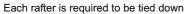
Optional bottom plate to slab or floor frame at sides of openings details for opening widths (uplift capacity required for detail 16 is shown in brackets):Up to 1800 (5.9 kN)
1800 to 2400 (7.3 kN)

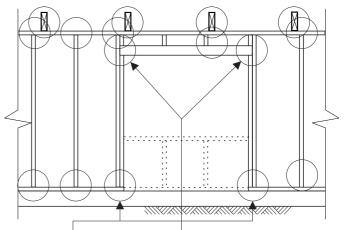
1800 to 2400 (7.3 kN) 2400 to 3000 (8.9 kN) Tie-down at opening details for Nominal opening widths of:-Up to 1800 details 24 or 27 1800 to 2400 25 or 27 2400 to 3000 25 or 27

(Roof Span up to 9000 - 12000 mm, Rafters @ 450 crs, Collar Ties @ 900 crs, O/hang 750 mm max)







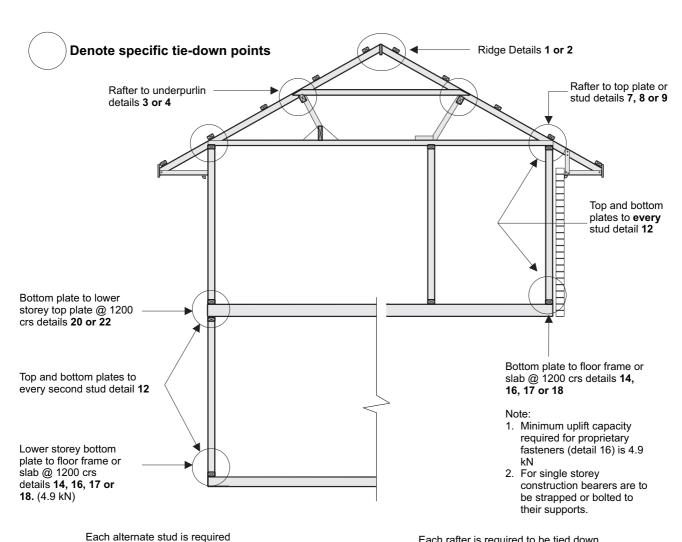


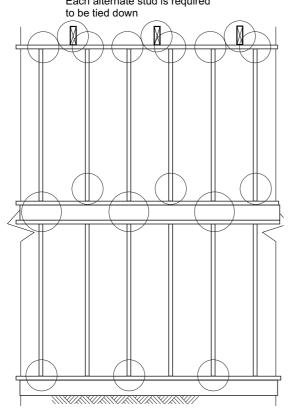
Optional bottom plate to slab or floor frame at sides of openings details for opening widths (uplift capacity required for detail 16 is shown in brackets):- Up to 1800 (7.5 kN) 1800 to 2400 (9.4 kN) 2400 to 3000 (11 kN)

Tie-down at opening details for Nominal opening widths of:-Up to 1800 details 25 or 27 1800 to 2400 25 or 27 2400 to 3000 27

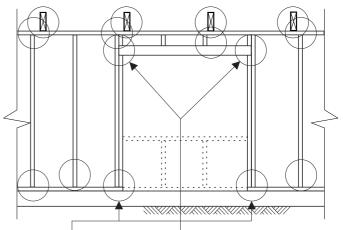
#### **Sheet 3.12** AS 1684 - Part 2 - SIMPLIFIED TIE-DOWN - N3 TILE ROOF

(Roof Span up to 9000 - 12000 mm, Rafters @ 600 crs, Collar Ties @ 1200 crs, O/hang 750 mm max)



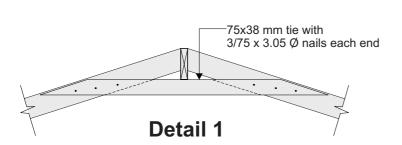


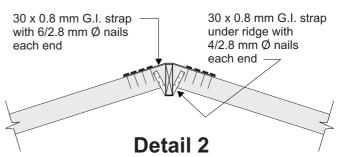


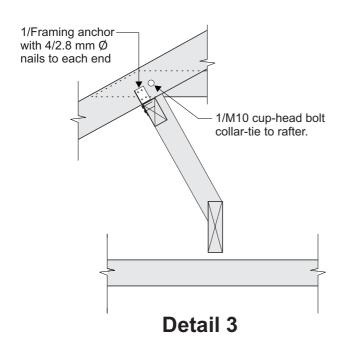


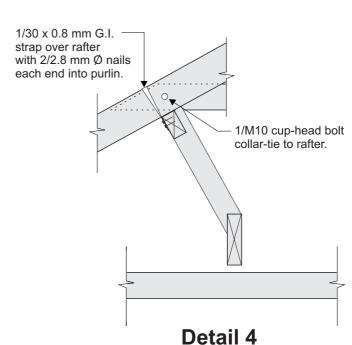
Optional bottom plate to slab or floor frame at sides of openings details for opening widths (uplift capacity required for detail 16 is shown in brackets):-Up to 1800 (7.5 kN) 1800 to 2400 (9.4 kN) 2400 to 3000 (11 kN)

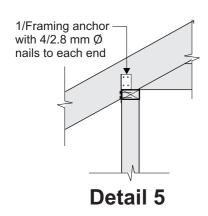
Tie-down at opening details for Nominal opening widths of:-Up to 1800 details 25 or 27 1800 to 2400 **25 or 27** 2400 to 3000 27

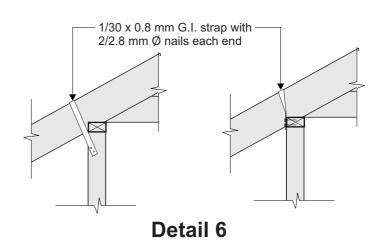


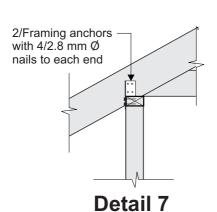


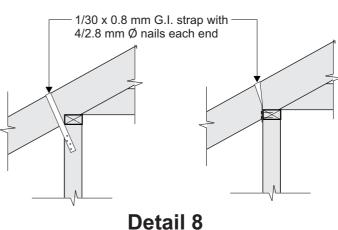


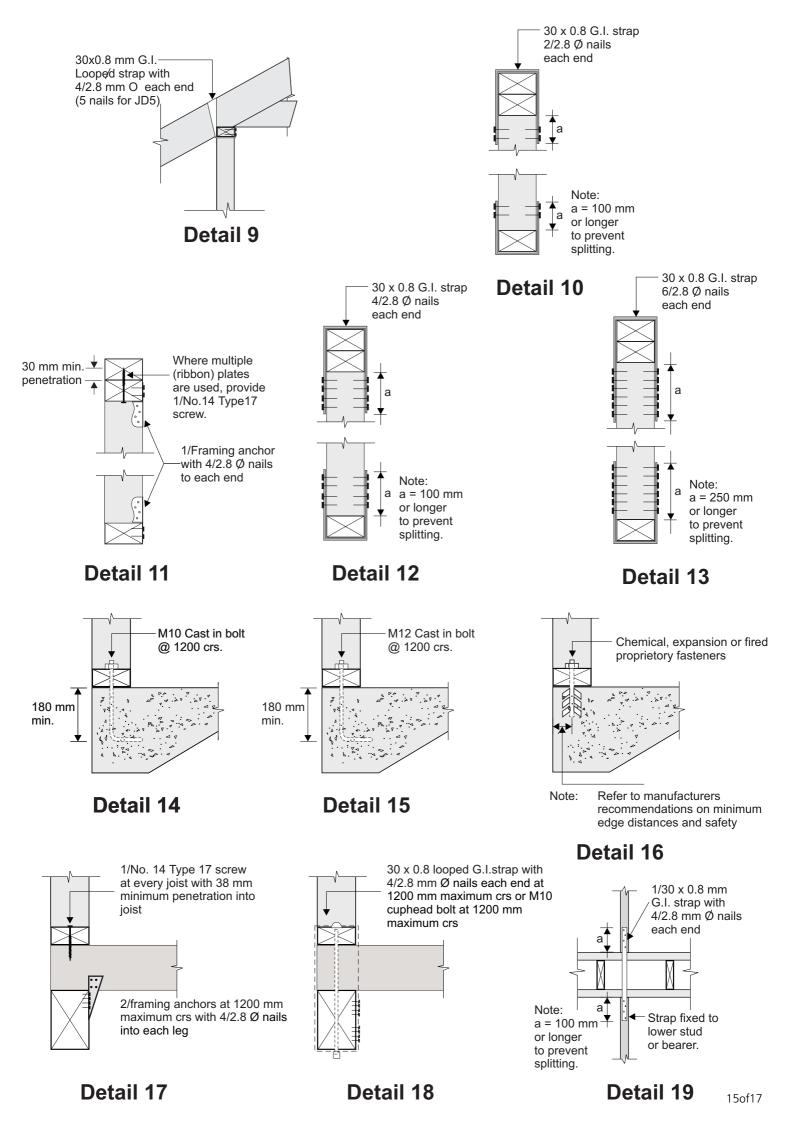


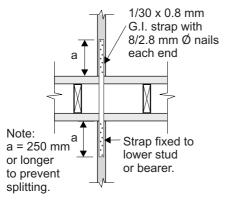




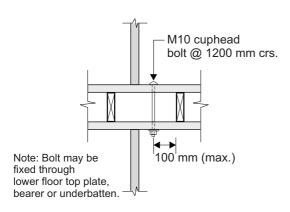




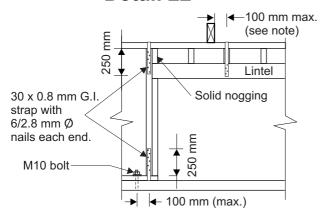




#### **Detail 20**

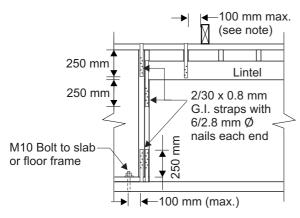


### **Detail 22**



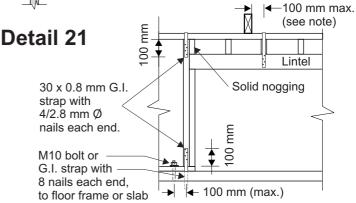
NOTE: The top plate shall be fixed to the lintel within 100 mm of each rafter/truss, or the rafter/truss fixed directly to the lintel with a fixing of equivalent tie-down strength to that required for the rafter/truss.

#### **Detail 24**



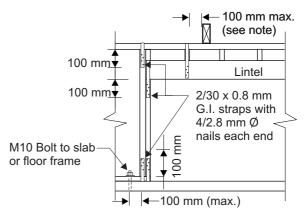
NOTE: The top plate shall be fixed to the lintel within 100 mm of each rafter/truss, or the rafter/truss fixed directly to the lintel with a fixing of equivalent tie-down strength to that required for the rafter/truss.

# 1/No. 14 Type 17 screw at every joist with 38 mm min. penetration into joist.



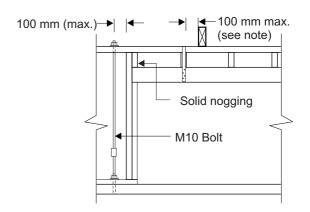
NOTE: The top plate shall be fixed to the lintel within 100 mm of each rafter/truss, or the rafter/truss fixed directly to the lintel with a fixing of equivalent tie-down strength to that required for the rafter/truss.

#### **Detail 23**



NOTE: The top plate shall be fixed to the lintel within 100 mm of each rafter/truss, or the rafter/truss fixed directly to the lintel with a fixing of equivalent tie-down strength to that required for the rafter/truss.

### **Detail 25**



NOTE: The top plate shall be fixed to the lintel within 100 mm of each rafter/truss, or the rafter/truss fixed directly to the lintel with a fixing of equivalent tie-down strength to that required for the rafter/truss.

Detail 26 Detail 27 <sub>16of17</sub>

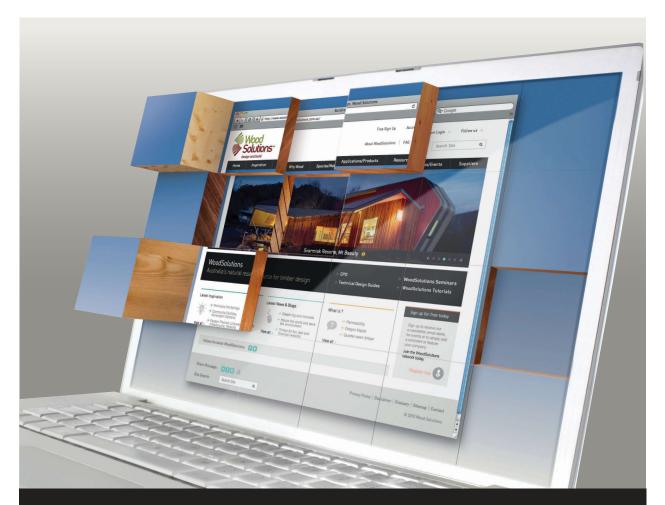


#### GUIDE TO THE USE OF AS 1684

# Simplified Tie-down Details for Coupled Roofs N1 & N2 Sheet Roofs and N3 Tile Roofs

June 2012

User Guides are available from WoodSolutions.com.au



# WoodSolutions.com.au. The knowledge building website.

If you're looking to design or build a commercial, residential or industrial project - discover

WoodSolutions, the website that's designed and constructed for you. WoodSolutions is a world-leading initiative and a one stop source for a huge range of free, non-proprietary information, including:

- Technical Design Guides
- case studies
- workplace technical presentations
- conferences and seminars

- species information
- performance data
- fire information
- durability ratings
- fixings and finishes
- Standards and Codes, and much more.

Developed by the Australian forest and wood products industry, WoodSolutions contains information from industry bodies, manufacturers and suppliers. Visit the WoodSolutions website today and build your knowledge.

Disclaimer: WoodSolutions is resourced by Forest and Wood Products Australia Limited (FWPA). Whilst all care has been taken to ensure the accuracy of the information contained in this publication, Forest and Wood Products Australia Limited (FWPA) and other contributors disclaim, to the full extent permitted by law, all and any liability for any damage or loss, whether direct or indirect, special or consequential, arising directly or indirectly out of use of or reliance on this guide, whether as a result of negligence or otherwise.

