NASH STANDARD
Residential and Low-rise Steel Framing
Part 2: Design Solutions 2014

First published: 2014

AMENDMENT A : 2015

The 2014 edition of the NASH Standard Residential and Low-rise Steel Framing Part 2: Design Sc
follows, and the amendment should be inserted in the appropriate places.

SUMMARY: This amendment applies to Sections 1, 2, 3, 5, 6, 7, 8; Clauses 1.5, 3.1.1, 3.2.2.2, 3.3.3, 5.4, 6.3.2, 7.1.2, 7.8 c), 7.14 c), 8.2.1; Tables 2.1, 2.2, 5.1, 5.2, 7.12, 7.17, 7.33, 7.37, B5, F2, F4, J1, J2, J3; Figures 2.5, 7.1, 7.14, 7.29, D1; Appendix B, D, F1.3, F2.1, and F2.2.

SECTION 1.5 SNOW DESIGN

Add the following Note to Section 1.5

'Note: This clause covers sub alpine altitudes in Classifications AN and AC in accordance with AS/NZS 1170.3.'

Table 2.1 Wind classification N1 to N4 – batten span and spacing for TH4055

Delete existing Note from Table 2.1
And replace with

'Notes:
1. *For tiled roofs, typical batten spacing is 330 mm*
2. *For sheet roofs, spanning capacity of cladding may govern batten spacing*
3. *AS4055 defines edge areas as areas of roofs within 1200 mm of all edges. Edges include hips, ridges, fascias and barges.'*

Table 2.2 Wind classification C1 and C2 – batten span and spacing for TH4075

Add additional Note to Table 2.2

'3. 'AS4055 defines edge areas as areas of roofs within 1200 mm of all edges. Edges include hips, ridges, fascias and barges.'

Fig. 2.5 RHS members less than half the web depth

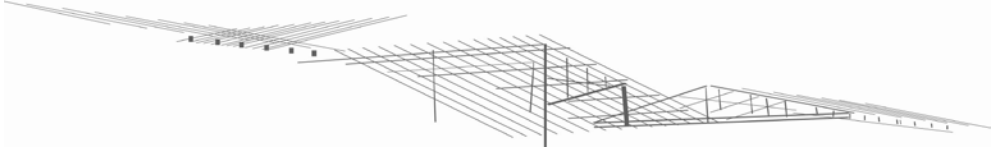
Delete title from Fig. 2.5
And replace with

'Fig. 2.5 Web holes in RHS members less than half the web depth'

Clause 3.1.1 Scope

Add at the end of the clause

'Where noggings are required to resist wind load from the cladding, the nogging and the connection must be designed in accordance with NASH Standard Part 1.'



Clause 3.2.2.2 Plate selection

Add the following words to the end of the first sentence

'and the members above and below the plate must be aligned in accordance with the requirements of Appendix A2.4.'

Clause 3.3.3 Internal walls

Add at end of first sentence

'and fixed with vertically slotted wall brackets.'

SECTION 5.4 SUB FLOOR SUPPORTS

Table 5.1 Floor area supported by stumps (m^2)

Add additional Notes to Table 5.1

'3. The floor area is the ground floor area supported by the stump together with any floor area from the first storey.
4. The floor area does not include any allowance for roof loads.'

Add new Table 5.2 Floor loads supported by cantilevered stumps

'Table 5.2 Floor area and lateral load supported by cantilevered stumps

Stump size	Load	Stump height (mm)						
		≤ 600	900	1200	1500	1800	2100	2400
75 x 75 x 4.0 SHS	Floor area (m^2)	30	-	-	-	-	-	-
	Racking force (kN)	2.0	-	-	-	-	-	-
89 x 89 x 3.5 SHS	Floor area (m^2)	30	30	-	-	-	-	-
	Racking force (kN)	3.2	1.4	-	-	-	-	-
100 x 100 x 4.0 SHS	Floor area (m^2)	40	40	40	-	-	-	-
	Racking force (kN)	5.2	2.3	1.3	-	-	-	-
125 x 125 x 4.0 SHS	Floor area (m^2)	50	50	50	-	-	-	-
	Racking force (kN)	10.5	4.7	2.6	1.7	-	-	-
150 x 150 x 5.0 SHS	Floor area (m^2)	70	70	70	70	70	70	70
	Racking force (kN)	22.6	10.0	5.7	3.6	2.5	1.8	1.4

Notes:
1. *Cantilevered stump is a stump that is cast into a concrete footing, which has been designed to resist vertical and lateral loads*
2. *The axial load and lateral load may be applied together*
3. *The foundation must be designed to resist the axial and lateral loads*
4. *This table does not allow for impact from vehicles. Where impact is considered to be likely, the posts should be designed for the impact load*
5. *Minimum grade of SHS is C350*
6. *Soil to be kept away from post. Refer to NASH Standard Part 2 :Design Solutions Appendix B Fig B1(a)*
7. *Refer to Section 6 for calculation of racking forces*
8. *Roof loads to be designed in accordance with NASH Standard Part 1'*

Clause 6.3.2 Spacing of bracing walls

Add at end of clause
'The ceiling must be a minimum of 10 mm plasterboard fixed in accordance with AS/NZS 2589.'

SECTION 7 CONNECTION DESIGN INCLUDING TIE DOWN

Clause 7.1.2 General requirements

Add following at end of clause.

'This Standard only covers concrete screw anchors.

Notes:
1. *Design guidance for other types of concrete anchors is given by Australian Engineered Fasteners and Anchors Council (AEFAC) www.aefac.org.au*
2. *Care should be taken when using expanding anchors near slab edges.'*

Fig. 7.1

Replace Fig. 7.1 with the following

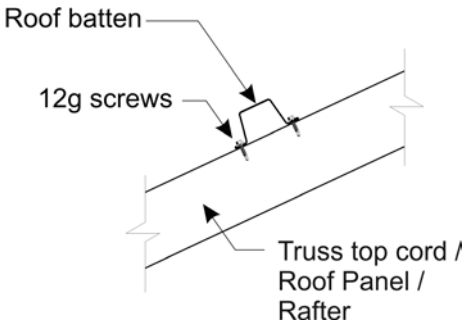


Fig. 7.1 Roof batten connection

Tables

In the following tables, make the indicated change to the connection types:

'Table 7.12 – Types 4A to 4C, replace 'M12 x 100' with 'M10 x 75'
Table 7.17 – Types 5A to 5E, replace 'M12 x 100' with 'M10 x 75'
Table 7.33 – Types 11A to 11C, replace 'M12 x 100' with 'M10 x 75'
Table 7.37 – Types 12A to 12E, replace 'M12 x 100' with 'M10 x 75'

Figure 7.14

Delete Fig.7.14 title and replace with 'Concrete screw anchor to concrete floor'

Clause 7.8 c)

Replace wording 'masonry' with 'concrete'

Clause 7.14 c)

Replace wording 'masonry' with 'concrete'

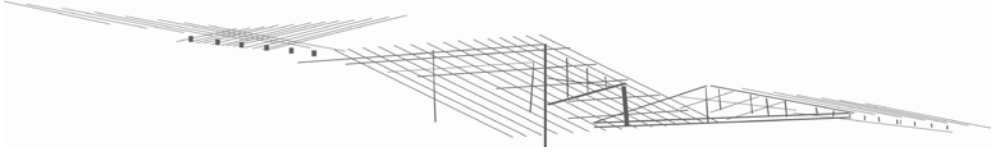


Fig. 7.29 Masonry anchor detail, bottom plate to concrete floor, lower storey

Delete title
Replace with ‘Fig. 7.29 Concrete anchor detail, bottom plate to concrete floor, lower storey’

In Figure diagram delete ‘or chemical anchor’

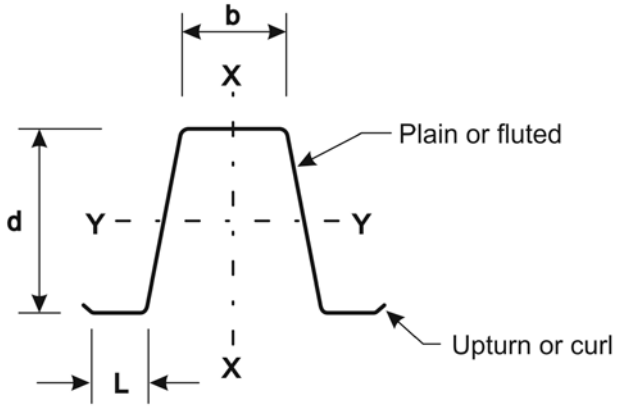
APPENDIX B – DURABILITY DESIGN

Table B5 Protective coating specifications for screws and bolts

Delete Note 2
Replace with
‘2. Concrete anchors should have a minimum coating of 25 microns of zinc or equivalent’

APPENDIX D – TOP HATS

Replace Figure D1 with new figure with ‘d’ and ‘b’ interchanged.



APPENDIX F1.3 DESIGN STRENGTH

Change title of Section to ‘DESIGN CAPACITY’

In second paragraph

Replace ‘design strength’ with ‘design capacity’.

Table F2 Design capacities of screws conforming to AS 3566.1

On first line of table change ‘Vs’ to ‘ØV_s’

APPENDIX F2.1 MINIMUM DESIGN CAPACITIES

Delete ‘MINIMUM’ from heading

At the start of the first paragraph

Replace ‘The minimum design capacities’ with ‘The design capacities’

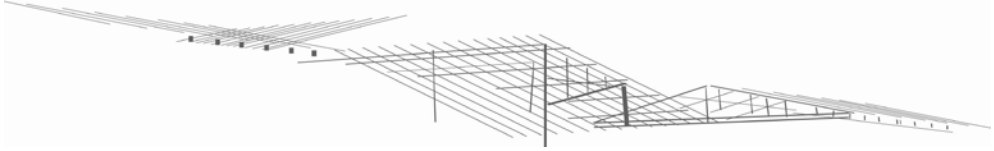


Table F4 Design capacities of screw anchors

Replace Table F4 and Notes with the following

'Table F4 Design capacities of screw anchors

Minimum edge distance	Anchor diameter	Embedment depth	Concrete strength	Design tensile capacity	Design shear capacity perpendicular to edge	Design shear capacity parallel to edge
(mm)	(mm)	(mm)	(MPa)	(kN)	(kN)	(kN)
35	10	75	20	7	2.1	4.2
45	10	75	20	8	3.1	6.2
35	12	95	20	10	2.4	4.8
45	12	95	20	11	3.5	7.0

Notes:

1. *Screw anchors should not be over torqued during installation to avoid damage to the screw and/or concrete*
2. *The design capacities depend on the mechanical and geometric properties of the screw anchors, therefore, the design capacities are product dependent*
3. *Screw anchors with different diameters and lengths are available and can be used subject to their design capacities being provided in accordance with Clause F2.2*
4. *The capacity of screw anchors is sensitive to installation including drill depth, drill hole size and hole cleaning.*
5. *The values given in this table are the design capacities used in this Standard.'*

APPENDIX F2.2 DETERMINATION OF MINIMUM DESIGN CAPACITIES

Delete existing text and replace with

'*Note: Additional guidance on factors influencing the design capacity of concrete screw anchors is given by Australian Engineered Fasteners and Anchors Council (AEFAC) www.aefac.org.au'*

APPENDIX J2 ROOF SYSTEMS

Replace Table J1 with the following new Table J1

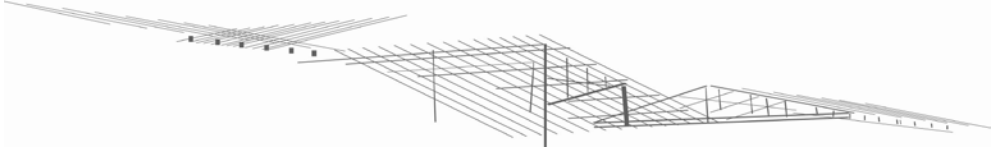
'Table J1 Insulation values for roof systems'

Roof configuration	Insulation	Ventilation	Direction of heat flow	Total R-Value
Pitched METAL roof with FLAT ceiling	R3.5 ceiling batts	Ventilated	Down	4.1
			Up	3.9
		Unventilated	Down	3.9
			Up	4.1
	R4.0 ceiling batts	Ventilated	Down	4.5
			Up	4.4
		Unventilated	Down	4.4
			Up	4.6
	Foil faced R1.3 roofing blanket plus R3.5 ceiling batts	Ventilated	Down	6.2
			Up	5.6
		Unventilated	Down	5.9
			Up	5.8
Pitched TILE roof with FLAT ceiling	R4.0 ceiling batts	Ventilated	Down	4.6
			Up	4.4
		Unventilated	Down	4.4
			Up	4.6
	Single sided foil membrane plus R4.0 ceiling batts	Ventilated	Down	5.7
			Up	5.0
		Unventilated	Down	5.4
			Up	5.2

Replace Table J2 with the following new Table J2

'Table J2 Insulation values for wall systems'

Wall configuration	Insulation	Direction of heat flow	Total R-Value
Fibre cement sheet Steel batten or thermal break 90 mm steel stud 10 mm plasterboard	Single sided foil with R2.5 wall batts	Inwards	2.8
		Outwards	3.0
Fibre cement sheet Steel batten 70/75 mm steel stud 10 mm plasterboard	Double sided antiglare foil with R2.0 wall batts	Inwards	2.8
		Outwards	3.1
110 mm brick veneer 70/75/90 mm steel stud 10 mm plasterboard lining	Single sided foil with R2.5 wall batts	Inwards	3.0
		Outwards	3.2
110 mm brick veneer 70/75/90 mm steel stud 10 mm plasterboard lining	Double sided antiglare foil with R2.0 wall batts	Inwards	3.0
		Outwards	3.3



Replace Table J3 with the following new Table J3

'Table J3 Insulation values for floor systems

Floor configuration	Enclosure wall	Additional insulation	Direction of heat flow	Total R-Value
Timber flooring on steel frame ≤ 600 mm above ground – subfloor enclosed	Single skin masonry	R2.0 batts on permeable membrane	Upwards	2.9
			Downwards	3.0
	Light weight cladding		Upwards	2.8
			Downwards	2.9
Timber flooring on steel frame 600 – 1200 mm above ground – subfloor enclosed	Single skin masonry		Upwards	2.8
			Downwards	2.9
	Light weight cladding		Upwards	2.6
			Downwards	2.8
Timber flooring on steel frame > 1200 mm above ground – subfloor enclosed	Single skin masonry		Upwards	2.7
			Downwards	2.8
	Light weight cladding		Upwards	2.6
			Downwards	2.7
Timber flooring on steel frame – subfloor unenclosed	None		Upwards	2.4
			Downwards	2.5
Timber flooring on steel frame ≤ 600 mm above ground – subfloor enclosed	Single skin masonry	Permeable double sided antiglare foil	Upwards	1.4
			Downwards	2.9
	Light weight cladding		Upwards	1.3
			Downwards	2.8
Timber flooring on steel frame 600 – 1200 mm above ground – subfloor enclosed	Single skin masonry		Upwards	1.3
			Downwards	2.8
	Light weight cladding		Upwards	1.2
			Downwards	2.7
Timber flooring on steel frame > 1200 mm above ground – subfloor enclosed	Single skin masonry		Upwards	1.2
			Downwards	2.7
	Light weight cladding		Upwards	1.1
			Downwards	2.6
Timber flooring on steel frame – subfloor unenclosed	None		Upwards	0.8
			Downwards	1.8

Note: Light weight cladding includes steel sheeting, fibre cement and weatherboard.'

APPENDIX K2 BIBLIOGRAPHY

Replace existing text with the following

- ‘NASH Handbook – Design of Residential and Low-Rise Steel Framing
- ABCB Handbook: Durability in Buildings Including Plumbing Installations
- ABCB Handbook: Condensation in Buildings
- ABCB Handbook: NCC Volume One Energy Efficiency Provisions
- ABCB Handbook: NCC Volume Two Energy Efficiency Provisions
- GJ Hancock Design of Cold-Formed Steel Structures, Australian Steel Institute
- NASH Technical Note 1: Structural Design of Buildings for Northern Australia
- NASH Technical Note 2: Energy Efficiency Measures for Houses
- NASH Technical Note 3: Telecommunications reception in residential and low-rise buildings
- NASH Technical Note 4: Establishing design values by testing
- Insulation Council of Australia and New Zealand (ICANZ) Insulation Handbook Part 1: Thermal Performance
- BlueScope Technical Bulletin 34 Steel House Frames’