

NASH STANDARD

Residential and Low-rise Steel Framing

Part 1: Design Criteria 2005

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AMENDMENT C : September 2011

The 2005 edition of the NASH Standard Residential and Low-rise Steel Framing Part 1: Design Criteria 2005 is amended as follows, and the amendment should be inserted in the appropriate places.

SUMMARY: This amendment applies to Sections 1.1, 1.2, 6.1, 7.1, 7.2; Clauses 1.4.1, 2.3.1, 3.2.2.1, 7.3.1; Tables 2.3.2(a), 3.2.2.2, 3.2.3.2, 3.5.4, 7.3(a), 7.3(b); Appendices B2, E4.

SECTION 1.1 SCOPE AND APPLICATION

Add the following new paragraph after the first paragraph:

'This Standard may be used as a means of demonstrating compliance with the Requirements of the Building Code of Australia Volume 1 Part B1 and Volume 2 Part 2.1.'

SECTION 1.2 REFERENCED DOCUMENTS

Delete

'Building Code of Australia Volume 1 & 2'

'AS 1163 – 1991 Structural steel hollow sections'

'AS 2870 – 1996 Residential slabs and footings – Construction'

'AS/NZS 3679.1 – 1996 Structural steel – Hot-rolled bars and sections'

'AS/NZS 1170 Structural design actions Part 2: 2002 Wind actions'

And replace with

'National Construction Code Series, Volumes 1 & 2 (Building Code of Australia, Volume 1, Class 2-9 Buildings and Volume 2, Class 1 and 10 Buildings)

'AS/NZS 1163: 2009 Cold-formed structural steel hollow sections'

'AS 2870 – 2011 Residential slabs and footings'

'AS/NZS 3679.1 – 2010 Structural steel – Hot-rolled bars and sections'

'AS/NZS 1170 Part 2: 2011 Wind actions'

Clause 1.4.1 General

Delete current Note 3

And replace with

'3. In accordance with AS 1170.4, Class 1 buildings (houses, town houses, row houses, etc) designed in accordance with this Standard are not required to be designed for earthquake actions where the quantity $k_p Z \leq 0.11$. Localities that fall outside this criterion include areas near Goulburn NSW, Newcastle NSW, Cradock SA, Meckering WA, Port Hedland



WA, Broome WA, Bundaberg QLD, Tennant Creek NT and some isolated desert areas of Australia. Refer to AS 1170.4 for more details of high earthquake hazard areas.

For housing where $k_p Z > 0.11$, for other classes of buildings and for buildings with Importance Level higher than 2, refer to AS 1170.4.'

Clause 2.3.1 Design for strength

Add the following note below the listed action combinations:

'Note: Where wind pressures acting on two or more surfaces of an enclosed building contribute simultaneously to a structural action effect in a member, action combination factors $K_{c,e}$ and $K_{c,i}$ (AS/NZS 1170.2) may be applicable to external and internal pressure coefficients respectively.'

Table 2.3.2(a) – Serviceability response limits – trusses & rafters

Delete 'Note:'

And replace with

'Notes:

1. For cantilevers, the limit of response may be taken as twice that of mid-span deflection.
2. For precambered trusses or rafters, the nett deflection response of the truss or rafter should be assessed against the limit of response.
3. Differential deflections between adjacent members should be checked to ensure they comply with Clause D2.3.2.'

Clause 3.2.2.1 Design for strength

Make the following changes to notes below the listed action combinations:

Delete Note 1 and replace with the following:

'1. Where wind pressures acting on two or more surfaces of an enclosed building contribute simultaneously to a structural action effect in a member, action combination factors $K_{c,e}$ and $K_{c,i}$ (AS/NZS 1170.2 Clause 5.4.3 and Table 5.5) may be applicable to external and internal pressure coefficients respectively.'

Add a third note as follows:

'3. Windows and doors, including garage roller doors, should be designed to withstand the same ultimate wind actions as the wall in which they are installed. Manufacturers should provide product installation details to achieve appropriate performance.'

Table 3.2.2.2 Serviceability response limits – external walls, single/upper storey

Add following Note at bottom of the table

'Note: These limits have been used satisfactorily with brick veneer and ceramic tiled walls.'

Table 3.2.3.2 Serviceability response limits – external walls, lower of 2 storey

Add following Note at bottom of the table

'Note: These limits have been used satisfactorily with brick veneer and ceramic tiled walls.'



Table 3.5.4 – Serviceability response limits for upper and lower storey wall plates

In the Serviceability Parameter column:

Delete 'Mid-span'

And replace with 'Maximum'.

SECTION 6.1 GENERAL

Delete the existing note and replace with the following:

'Notes:

1. *Temporary bracing may be required during construction (see Appendix A).*
2. *Where wind pressures acting on two or more surfaces of an enclosed building contribute simultaneously to a structural action effect in a member, action combination factors $K_{c,e}$ and $K_{c,i}$ (AS/NZS 1170.2) may be applicable to external and internal pressure coefficients respectively.*

SECTION 7.1 GENERAL

In the first line, replace 'Section 6' with 'Section 8'.

Add to the end of the first paragraph.

'Where testing in accordance with AS/NZS 4600 Section 8 is used, the provisions of Sections 7.2 and 7.3 of this document apply.'

SECTION 7.2 ADDITIONAL REQUIREMENTS FOR PROTOTYPE TESTING

Add the following words to the end of the first sentence:

'produced using controlled processes and identified materials.'

Delete

'a) member strength: 10%'

And replace with

'a) member or connector strength: 10%'

Add the following explanatory notes to the end of the clause:

'Notes:

1. *See Section 5.1 for definitions of connector and connection.*
2. *Where materials are sourced from multiple suppliers, the coefficient of variation of material properties (eg thickness, strength, diameter etc) should be assessed to ensure the above assumptions are applicable.'*



Clause 7.3.1 General

Delete Clause 7.3.1

And replace with

'7.3.1 General

When the design value R_d for a specific product is established by prototype testing, the failure mode must be the same across all test samples. The design value R_d must satisfy either:

$$R_d = (R_{\min} / k_{t-\min}) \quad \text{or} \quad R_d = (R_{\text{ave}} / k_{t-\text{ave}})$$

where

R_{\min} is the minimum value of the test results and $k_{t-\min}$ is the sampling factor as given in Table 7.3(a)

R_{ave} is the average value of the test results and $k_{t-\text{ave}}$ is the sampling factor as given in Table 7.3(b)

Note: Wherever possible, the minimum number of tests should be 3 for members and assemblies and 10 for connectors.

Table 7.3(a) – Sampling factor $k_{t-\min}$ for use with the **minimum** value of the test results

| No of test units | Coefficient of variation of structural characteristics (k_{sc}) | | | | | |
|------------------|---|------|------|------|------|------|
| | 5% | 10% | 15% | 20% | 25% | 30% |
| 1 | 1.20 | 1.46 | 1.79 | 2.21 | 2.75 | 3.45 |
| 2 | 1.17 | 1.38 | 1.64 | 1.96 | 2.36 | 2.86 |
| 3 | 1.15 | 1.33 | 1.56 | 1.83 | 2.16 | 2.56 |
| 4 | 1.15 | 1.30 | 1.50 | 1.74 | 2.03 | 2.37 |
| 5 | 1.13 | 1.28 | 1.46 | 1.67 | 1.93 | 2.23 |
| 7 | 1.11 | 1.23 | 1.38 | 1.56 | 1.76 | 1.99 |
| 10 | 1.10 | 1.21 | 1.34 | 1.49 | 1.66 | 1.85 |
| 20 | 1.06 | 1.13 | 1.21 | 1.29 | 1.39 | 1.50 |
| 100 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |



Table 7.3(b) – Sampling factor k_{t-ave} for use with the **average** value of the test results

| No of test units | Coefficient of variation of structural characteristics (k_{sc}) | | | | | |
|------------------|---|------|------|------|------|------|
| | 5% | 10% | 15% | 20% | 25% | 30% |
| 1 | 1.20 | 1.46 | 1.79 | 2.21 | 2.75 | 3.45 |
| 2 | 1.18 | 1.39 | 1.67 | 2.01 | 2.44 | 2.98 |
| 3 | 1.17 | 1.37 | 1.62 | 1.93 | 2.33 | 2.80 |
| 4 | 1.16 | 1.35 | 1.59 | 1.88 | 2.25 | 2.69 |
| 5 | 1.15 | 1.34 | 1.57 | 1.85 | 2.20 | 2.62 |
| 7 | 1.15 | 1.32 | 1.54 | 1.81 | 2.14 | 2.53 |
| 10 | 1.14 | 1.31 | 1.51 | 1.77 | 2.07 | 2.45 |
| 20 | 1.13 | 1.29 | 1.47 | 1.70 | 1.98 | 2.32 |
| 100 | 1.11 | 1.25 | 1.42 | 1.62 | 1.86 | 2.15 |

APPENDIX B2. LOAD REDISTRIBUTION FACTOR FOR CONCENTRATED LOADS

Correct 'L,s definition' as follows:

'L = span of the beam

s = span of the crossing members'

APPENDIX E4. TYPICAL SELF-WEIGHTS OF ROOF COMPONENTS

Insert the following at the end of Table E4.

| COMPONENT | Self-weight (kN/m ²) |
|---|----------------------------------|
| MISCELLANEOUS | |
| Photovoltaic roof panels (plastic covered or glazed up to 3 mm thick) | 0.15 |
| Solar water heating panels – including water (excluding tanks) | 0.20 |

