

Chapter 4

FLOOR AND SUBFLOOR SYSTEMS

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4.1. SCOPE AND GENERAL

This chapter covers the design of floor and subfloor systems. Floor components include flooring, joists and bearers. Subfloor components include stumps, posts, piers and footings. Subfloor components are used to support suspended floor systems. For subfloor terminology refer to Appendix A. A typical floor system is shown in Figure 4.1 and typical floor joists and bearers are shown in Figure 4.2.

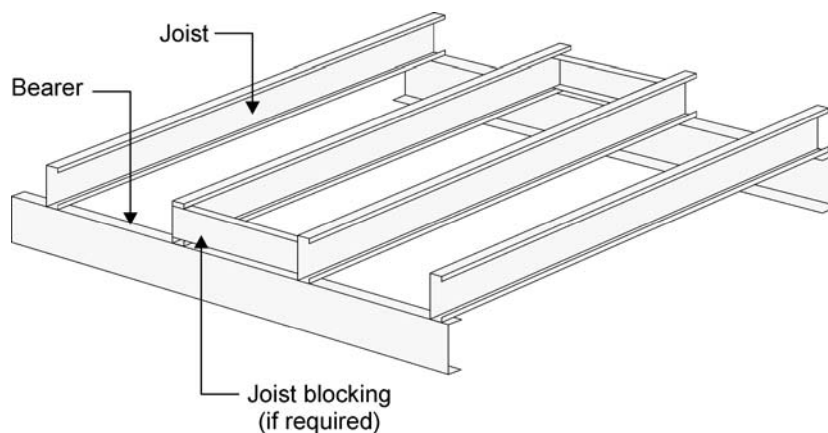


Fig. 4.1(a) Typical joist over bearer floor framing system

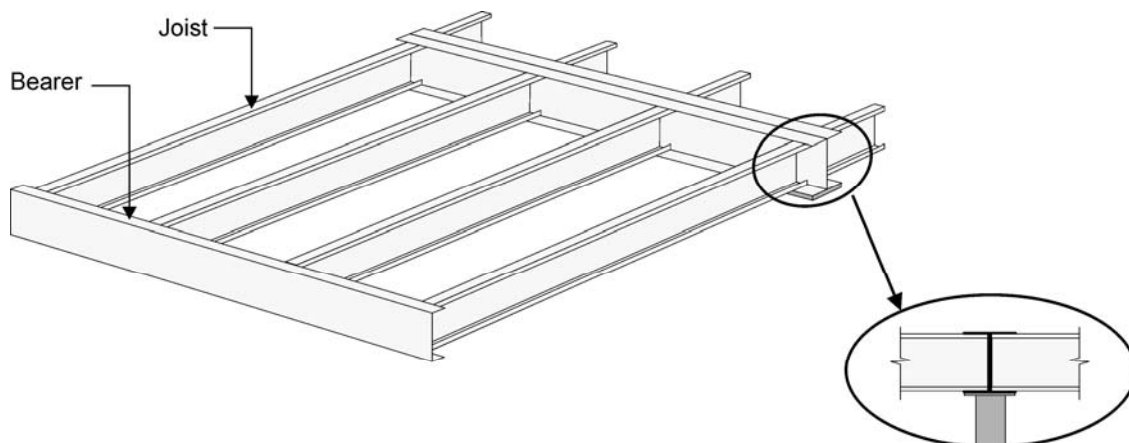


Fig. 4.1(b) Typical in line floor framing system

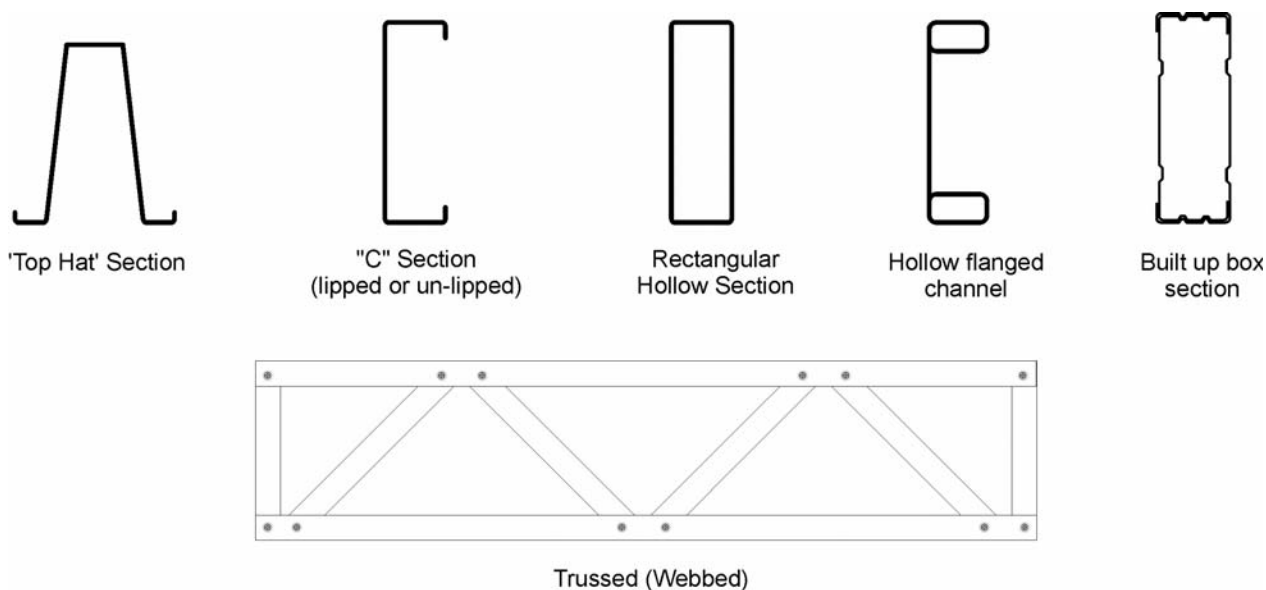


Fig. 4.2 Typical floor joists and bearers

4.2. STRUCTURAL PERFORMANCE

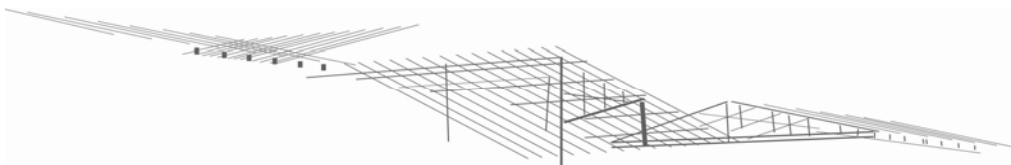
- The floor should support applied distributed and concentrated loads. Floor loads will normally include fittings, furniture and people. In some cases additional loading may be applied to the floor by heavy items such as pianos, libraries, fish tanks, waterbeds or spa baths.
- In addition to floor loads, floor members may also be required to support additional loads applied through walls or columns. These loads can include the weight of the walls, upper storey floors, roofs and additional roof loads such as solar hot water heaters. In some instances there may be vertical loads on floor members resulting from wind loads applied to the roof.
- Additional point loads may be applied to floor members at bracing reaction points. The floor members should also carry any horizontal loads from the base of the walls through to the substructure. This may require blocking of joists to prevent overturning.
- The key areas to consider for strength will be member bending and local bearing. In the case of trussed members the strength and stiffness of connections will also need to be considered.



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NASH Handbook

Design of Residential and Low-rise Steel Framing



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- Mean that a design, material or building solution complies with the Building Code of Australia (BCA);
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Preface

Steel framing is commonly chosen for houses and other forms of low-rise construction as it is:

- Cost effective
- Dimensionally stable
- Non combustible
- Termite and borer proof
- Durable
- Strong but lightweight
- 100 percent recyclable
- Consistent in its properties and performance

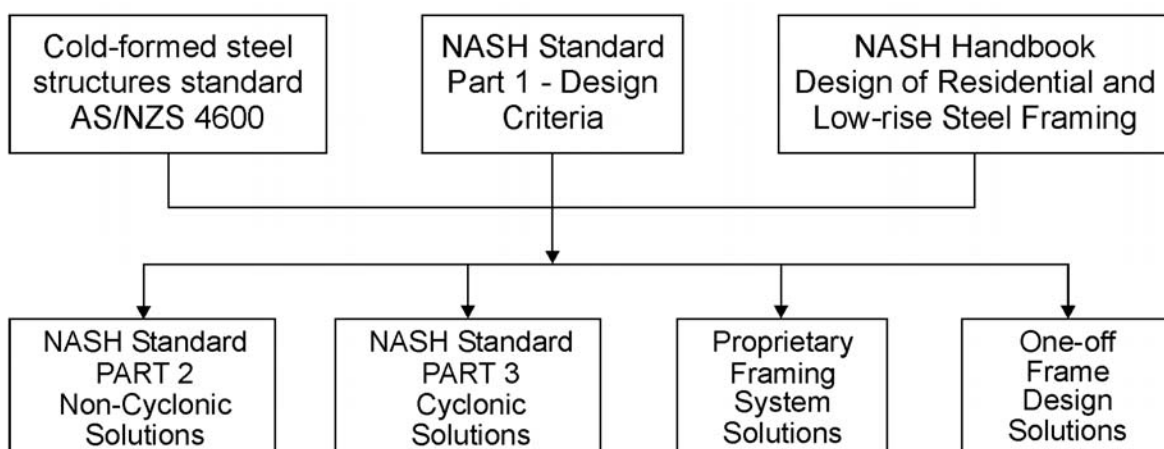
The NASH Standard – Residential and Low-rise Steel Framing Part 1: Design Criteria sets out the design criteria, in terms of structural adequacy and serviceability, for use in the design of low-rise steel framing. This includes houses as well as other low-rise residential and commercial buildings.

This Handbook aims to assist the steel framing designer in the application of the NASH Standard Part 1. However, it does not purport to provide a detailed guide on the use of the Cold-formed steel structures standard AS/NZS 4600 or replace engineering judgement.

The Handbook contains performance data for a number of proprietary components such as screws, rivets, bolts and anchors. This information has been reproduced in Appendices in good faith from information provided by the relevant manufacturers. It has been included to assist the use of the Handbook as a reference for users, but is not exhaustive. Handbook users should contact relevant manufacturers directly for additional performance information.

Two separate Standards (Part 2 & 3) are being developed to provide steel framing span tables and related information and these will be published in due course. The relationship between the Standards and this Handbook is illustrated below.

The NASH web site www.nash.asn.au is regularly updated and provides supplementary information to this Handbook.



National Association of Steel-Framed Housing Inc

NASH is an active industry association centred on light structural framing systems for residential and similar construction. NASH represents the interests of suppliers, fabricators and customers – all those involved in steel framing systems.

NASH's key objectives are to:

- Support the long term growth and sustainability of the steel frame industry.
- Maximise awareness of the steel frame industry in the market place.
- Promote the advantages of steel frames to the building industry and homeowners.

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