Department of Building and Housing
Te Tari Kaupapa Whare

Timber Treatment Requirements

Notes for Builders

STANDARDS NEW ZEALAND
Paerewa Aotearoa

Contains summary information from NZS 3602:2003 Timber and wood-based products for use in building

FEBRUARY 2005

Timber treatment requirements

Notes for Builders

Contents

Index of figures

Introduction

This booklet is designed as a quick guide to the use of treated radiata pine and Douglas fir in New Zealand buildings. It helps builders use the right level of treated timber in the right place. [1]

Making sure timber is adequately protected against damage caused by moisture and against insect attack is vital to the durability of buildings as required by the Building Code. We encourage you to read this booklet carefully and to refer to it when in doubt. Please remember, the requirements set out in this guide are minimum requirements; you may use a higher level of treatment.

To find out more about the Building Code please read the section in the back of this document called 'How the Requirements are Set' (on page 15). If you need further advice on timber treatment, please contact your local council.

Safety and Health

Timber treatments consist of chemicals that may be harmful. Important measures to take when using treated timber are:

- reduce contact by wearing gloves, goggles and a dust mask
- don't burn off-cuts or cook with them
- dispose of waste in an approved landfill
- wash your hands before using the toilet, smoking or eating
- wash work clothes separately
- ventilate work spaces as much as you can
- **working with solvent damp timber is not advised – solvent damp timber should be allowed to properly dry off before use**

[1] Note: For other commonly used timbers, refer to NZS 3602:2003. To use timbers not included in the Standard, proof of durability will need to be provided as an alternative solution for a building consent.

Timber Treatment

Where timber treatments might be used (from NZS 3640:2003 Chemical Preservation of Round and Sawn Timber)

Hazard class	Exposure	Service conditions
H1.1	Protected from the weather, above ground	Protected from the weather, always dry
H1.2	Protected from the weather, above ground, but with a possibility of exposure to moisture	Protected from weather, but with a risk of moisture content conducive to decay
H3 (AS/NZS 1604)	Exposed to the weather, above ground	Periodic wetting, not in contact with the ground
H3.1	Exposed to the weather, above ground	Periodic wetting, not in contact with the ground
H3.2	Exposed to the weather, above ground or protected from the weather but with a risk of moisture entrapment	Periodic wetting, not in contact with the ground, more critical end uses
H4	Exposed to the weather, in ground or in fresh water	Ground contact, or conditions of severe or continuous wetting
H5	Exposed to the weather, in ground or in fresh water	Ground contact, or conditions of severe or continuous wetting, where uses are critical and where a higher level of protection than H4 is required

Branding

The brand shall identify:

(a) The plant responsible for preservative treatment of the timber by means of a plant number or trade name

(b) The preservative type using the following code numbers:

CCA oxide	01
CCA salt	02
Boron	11
TBTO	56
Copper naphithenate	57
Copper azole	58
TBTN	62
IPBC	63
Propiconazole + tebuconazole	64
Permethrin	70
Alkaline copper quaternary	90

Identifying Timber Treatments

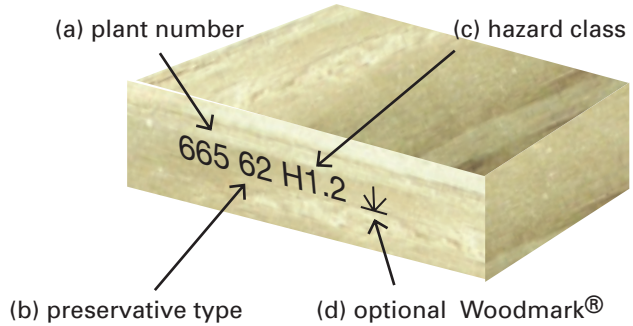
How treated timber is identified

Biological hazard	Typical uses
Borer	Interior finishing timber – see NZS 3602
Borer, fungal decay	Wall framing – see NZS 3602
Decay fungi and borer	Plywood - see NZS 3602
Decay fungi and borer	Cladding, fascia, joinery - see NZS 3602
Decay fungi and borer	Decks, pergolas, external beams, posts not in ground
Decay fungi and borer	Fence posts, landscaping timbers not requiring a building consent
Decay fungi and borer	House piles and poles; crib walling; posts in ground for decks, verandahs, pergolas

Hazard class	Methods of identification	
H1.1	End branding	
H1.2	Permethrin plus TBTO, TBTN or IPBC	Blue
	Boron	Pink
H3 (AS/NZS 1604)	Face branding	
H3.1	H3.1 framing shall be face branded along the length at 1500 mm centres only on its face or edge. TBTO / TBTN	No added colour or, if coloured green, the colour is to be distinctly different from the green of the H3.2 preservative treatment (colour green 368).
H3.2	No added colour, the natural colour of treated timber is varying shades of green/brown.	
H4		
H5		

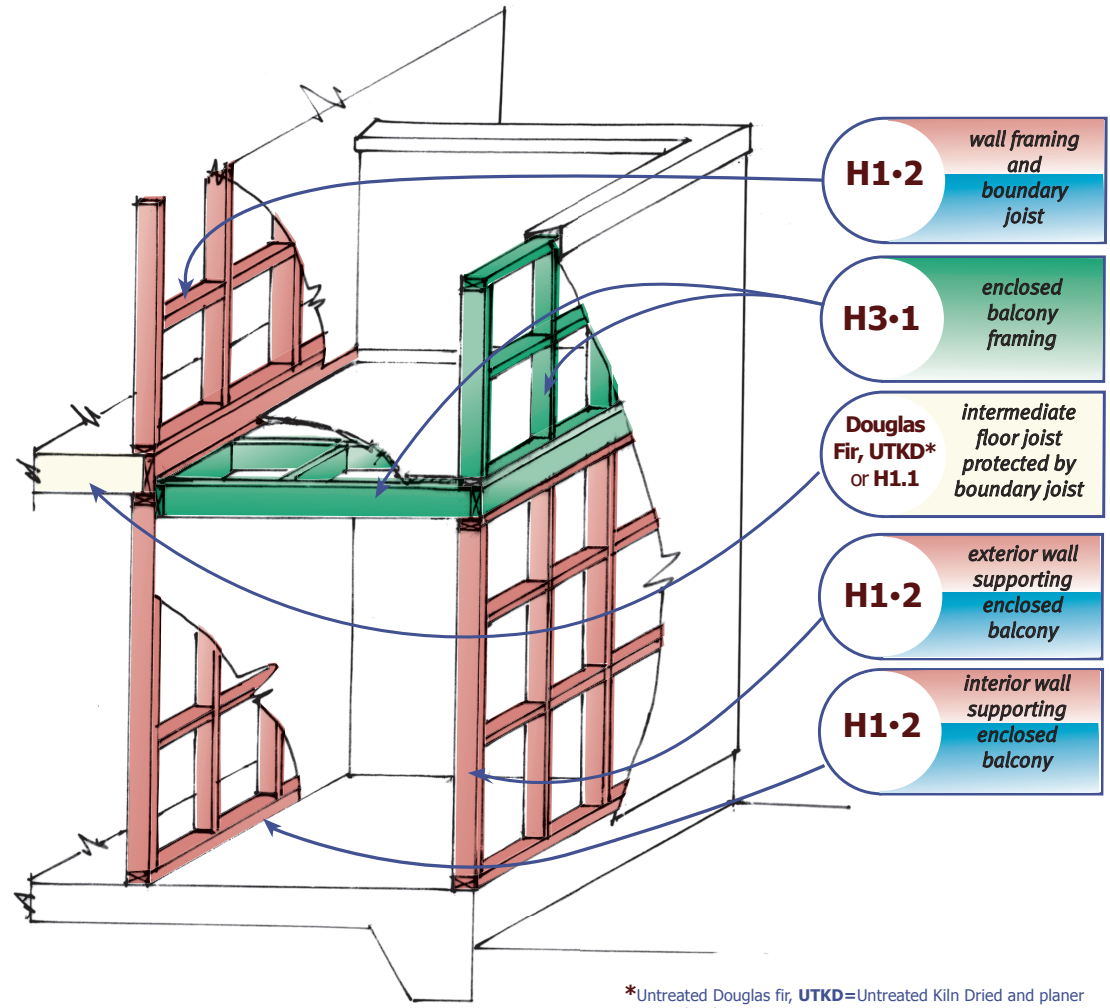
(c) The hazard class for which the timber has been treated;
(d) Woodmark® (optional)

The sequence of the information in the brand shall be (a) plant number, (b) preservative code number, and (c) hazard class number as in the example, right.



Examples of Timber Treatment*

Figure 1
Enclosed balcony
(supported by framed walls)

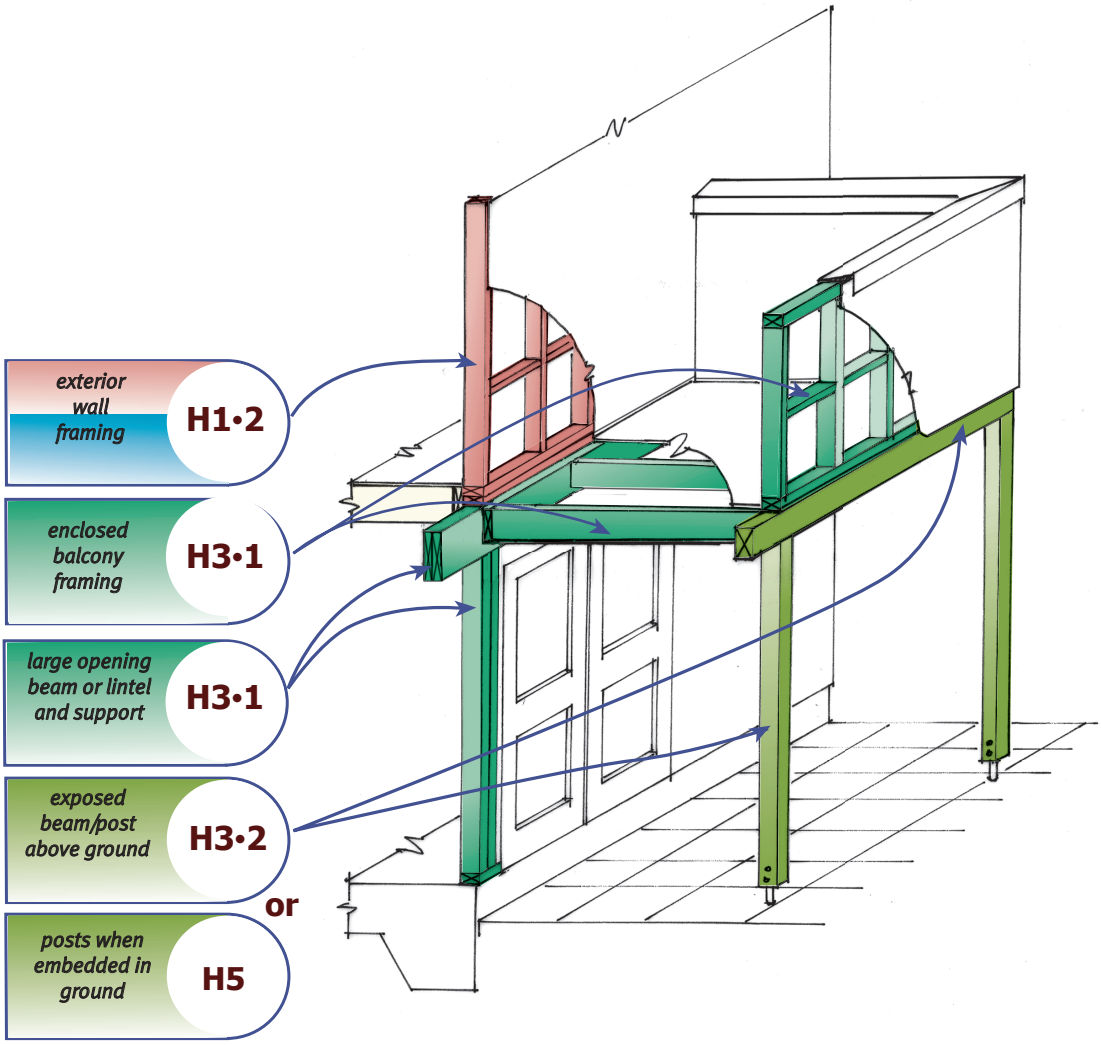


*Untreated Douglas fir, **UTKD**=Untreated Kiln Dried and planer gauged radiata pine

Figure 2

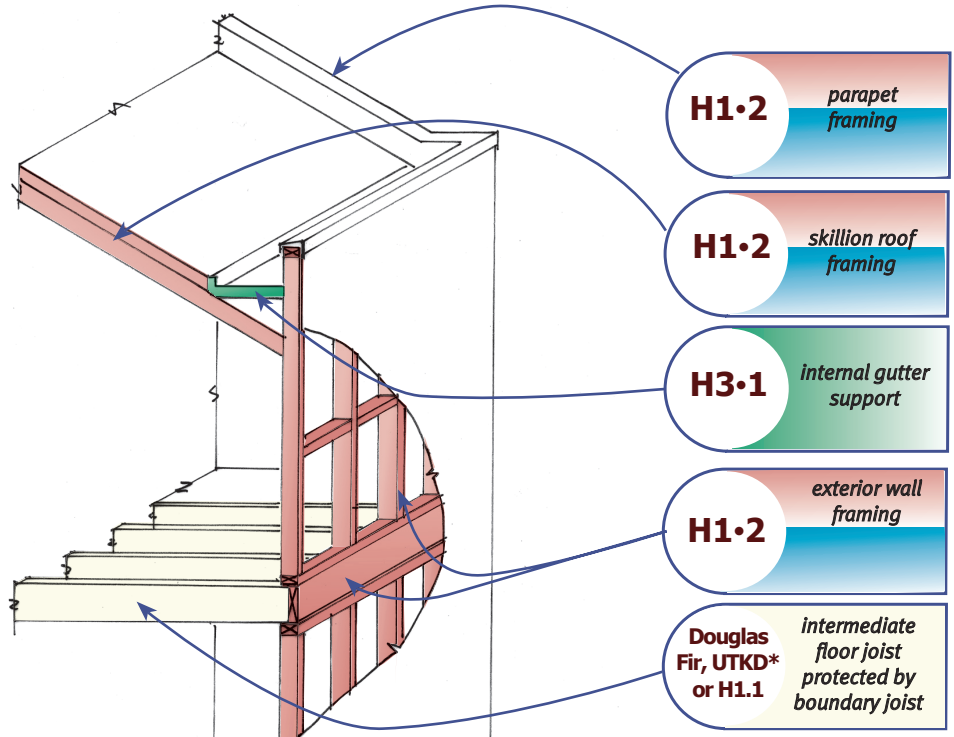
Enclosed balcony supported by posts and beams

(higher treatment for critical structural elements)



*Please note, these drawings are not intended as construction drawings. They illustrate some of the requirements of NZS 3602:2003 only.

Figure 3
Parapet and exterior wall

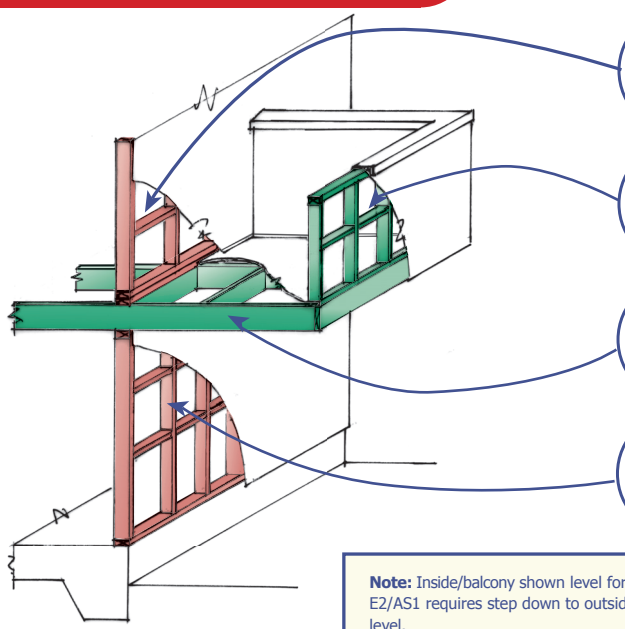


*Untreated Douglas fir, **UTKD**=Untreated Kiln Dried and planer gauged radiata pine

Note: Where there are no boundary joists – all joists must be H1.2.

Figure 4

Enclosed balcony cantilevered joist



Note: Inside/balcony shown level for simplicity. E2/AS1 requires step down to outside waterproofing level.

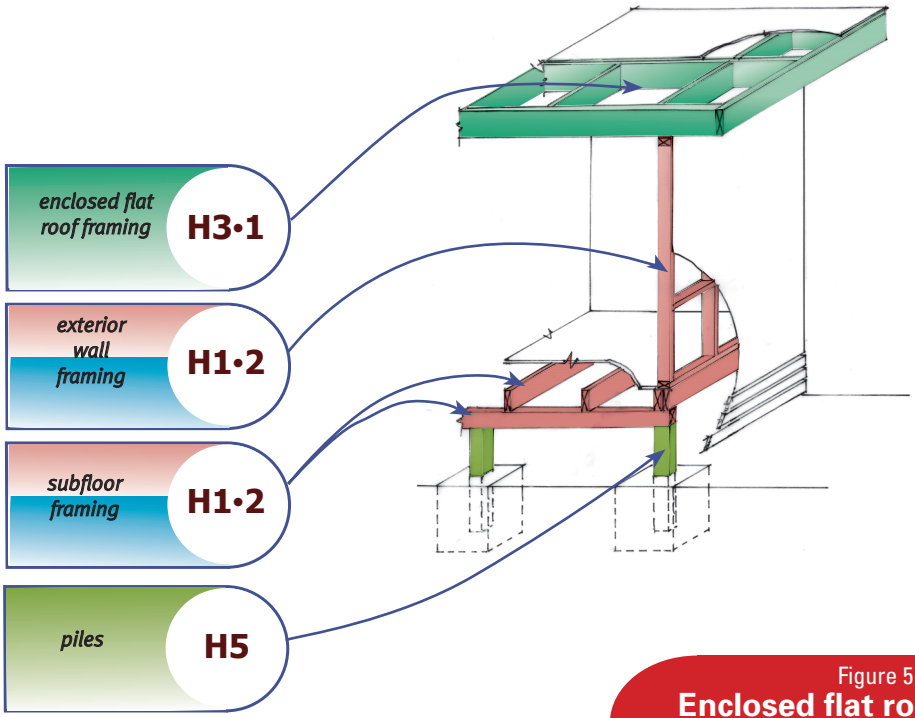
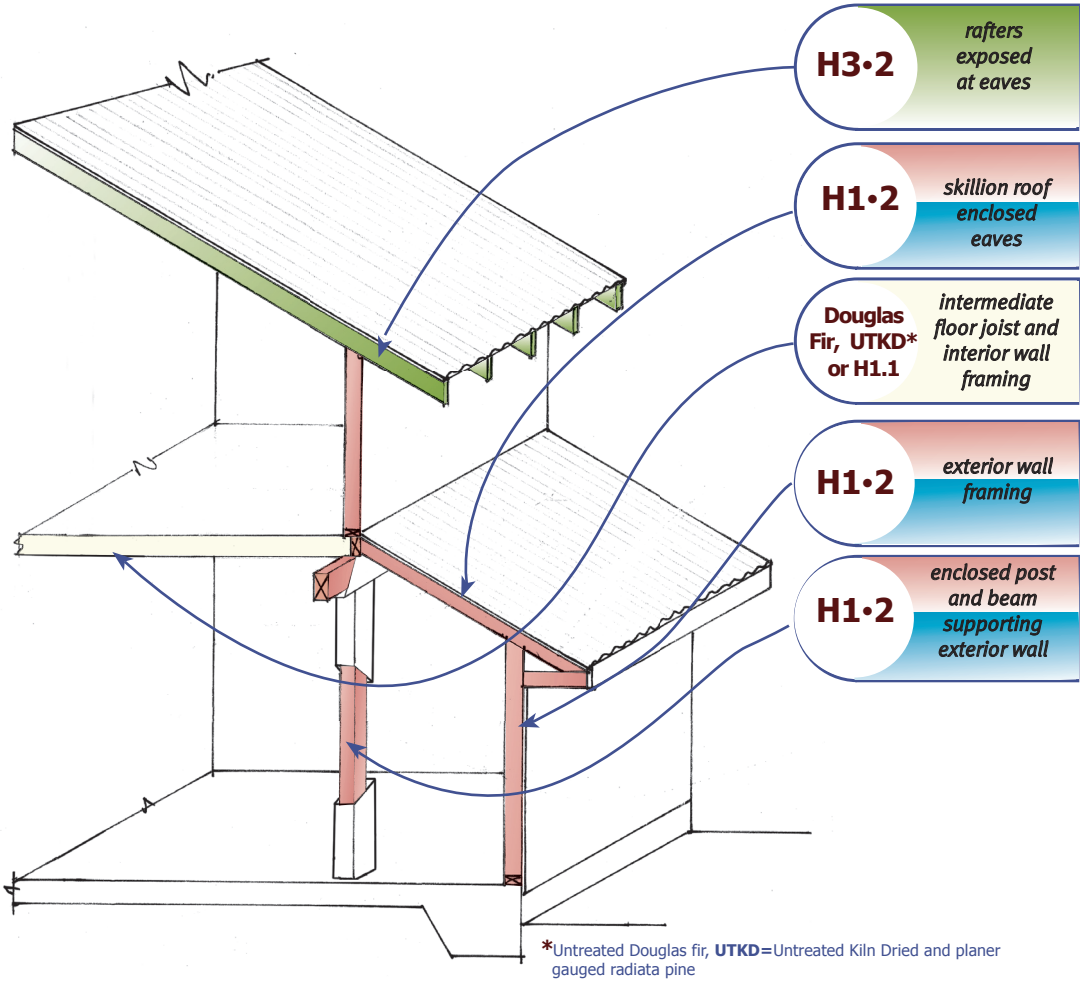


Figure 5

Enclosed flat roof framing

(less than 10^{o})

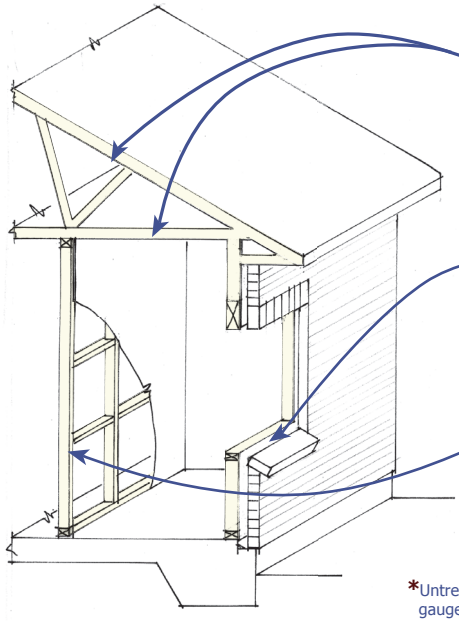
Figure 6
Post and beam



*Untreated Douglas fir, **UTKD**=Untreated Kiln Dried and planer gauged radiata pine

Figure 7

Brick veneer (low risk: single storey with eaves)



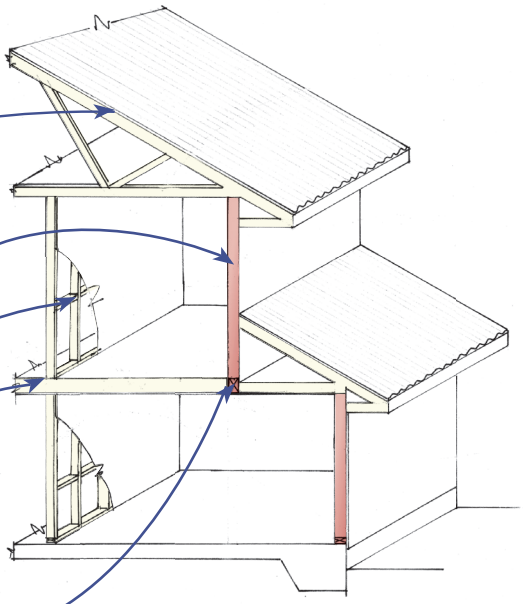
Douglas Fir, UTKD* or H1.1 — *open framed roof space*

Douglas Fir, UTKD* or H1.1 — *exterior wall framing*

Douglas Fir, UTKD* or H1.1 — *interior wall framing*

Note: Two-storey brick is higher risk and requires treated timber.

*Untreated Douglas fir, **UTKD**=Untreated Kiln Dried and planer gauged radiata pine



open framed roof space — Douglas Fir, UTKD* or H1.1

exterior wall framing — H1•2

interior framing — Douglas Fir, UTKD* or H1.1

enclosed beam — H1•2

*Untreated Douglas fir, **UTKD**=Untreated Kiln Dried and planer gauged radiata pine

Figure 8

General wall and roof framing

Building Component		Species or type	Minimum treatment required
Foundations and external	Building piles Plywood and timber frame foundations Crib walling Sawn poles House poles Retaining walls - uprights	Radiata pine	H5
External to building envelope	Retaining walls - horizontal members		H4
	Posts, bearers, beams, floor joists, rafters, guardrails, stair stringers		H3.2
	Laminated beams and post Plywood cladding as wall bracing		H3
Sub floor	Jackstuds, subfloor braces, bearers, wall plates, floor joists to the subfloor, blocking etc., subfloor wall studs, walings and battens, wall studs and nogs, diagonal boards	Radiata pine and Douglas fir	H1.2
	Plywood sheet bracing		H1.2
Floors	Interior flooring – plywood except in wet areas with no protection Note: plywood or timber flooring in wet areas may require H3.1 - refer to NZS 3602:2003 for full requirements.		None
	Interior flooring – dressed timber Note: plywood or timber flooring in wet areas may require H3.1 - refer to NZS 3602:2003 for full requirements.		See NZS 3602

Building Component		Species or type	Minimum treatment required
Walls	Timber: • within enclosed decks or balconies • supporting enclosed decks or balconies, where failure could be life threatening eg, post and beam construction • to which shelf angles and lintel angles supporting masonry veneers are fixed • battens behind cladding • in exterior walls where monolithic claddings are fixed to exterior walls – not complying with E2/AS1 • used as weatherboards • for exterior joinery such as window and door frames	Radiata pine	H 3.1
	Timber: • within or beneath a parapet • supporting enclosed decks or balconies • in exterior walls except where otherwise specified eg, where monolithic claddings are fixed to exterior walls – complying with E2/AS1	Radiata pine and Douglas fir	H 1.2
	Plywood exterior wall bracing		H 3
	Timber: • in exterior walls clad with masonry veneer and complying with special conditions (refer to NZS 3602) • in internal wall framing excluding those supporting decks and balconies • midfloor framing excluding boundary joists	Radiata pine KD gauged	None
		Radiata pine Other	H 1.1
		Douglas fir	None
	Internal wall bracing	Plywood	None

Building Component		Species or type	Minimum treatment required
Stairs etc.	External stair timbers, unroofed decking	Radiata pine	H3.2
	Internal stair timbers Interior finishing timbers and shelves	Radiata pine and Douglas fir	None
Roofs	Sarking and framing not protected from solar driven moisture through absorbent claddings materials	Radiata pine	H 3.1
	Enclosed flat roof framing and associated roof supporting members Valley boards and boards supporting flashings or box gutters, and flashings to roof penetrations and upstands to roof decks		
	Enclosed skillion roof framing and associated roof members Note: any roof under 10° is classified as a flat roof, see above	Radiata pine and Douglas fir	H 1.2
	All timber in roofs not otherwise specified above	Radiata pine KD gauged	None
		Radiata pine other	H 1.1
		D. fir	None

Note: This booklet provides a summary of treated radiata pine or Douglas fir requirements. It will not provide enough information for a designer to produce detailed timber specifications but it will assist the builder in on-site situations.

The Department's Acceptable Solution (B2/AS1) is available from:

Victoria University Book Centre
0800 370 370
www.bookcentre.co.nz/dbh/

Standards can be purchased from:

Standards New Zealand
0800 735 656
sales@standards.co.nz
www.standards.co.nz

How the Requirements are Set

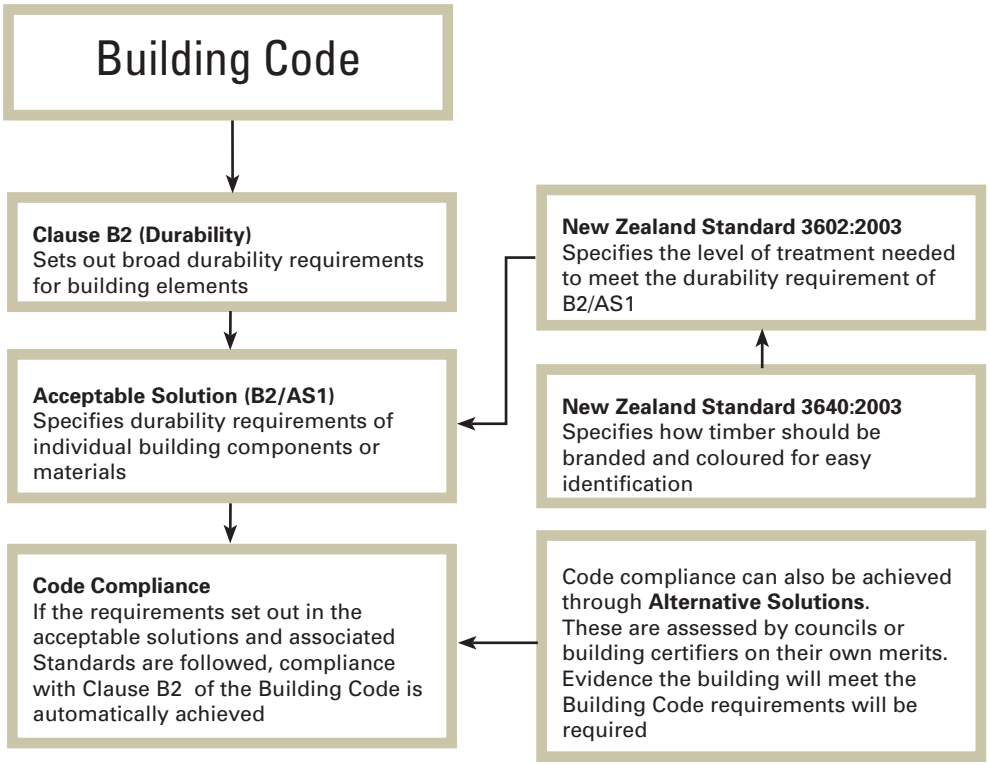
The Department administers the **Building Code**. This sets out a range of performance criteria (35 in total) that buildings must meet. These cover things like managing external moisture, ventilation requirements and fire safety requirements. In this case the relevant part of the Building Code is Clause B2 (Durability) which sets out the broad durability requirements of all building elements needed to comply with the Building Code.

The Department also publishes a range of documents that set out methods which, if followed, mean a building will comply with the relevant clause of the Building Code. In this case the document is called an **Acceptable Solution** (and is technically known as B2/AS1).

The Acceptable Solution cites several **New Zealand Standards**. One of these (NZS 3602:2003 Timber and Wood-based Products for use in Building) sets out what level of treatment is needed for timber in specific situations to achieve the durability requirements.

NZS 3602 refers to another Standard (NZS 3640:2003 Chemical Preservation of Round and Sawn Timber) which contains the Hazard classifications to which timber can be treated; specifies what chemicals are to be used; and specifies how treated timber should be identified to make sure the right timber is used in the right place.

Buildings can be constructed in ways that differ from an Acceptable Solution and still comply with the Building Code. Such **Alternative Solutions** will be considered by councils or building certifiers on their merits when determining code compliance. Evidence that the building will meet the Building Code requirements will be required.



Revised in February 2005 by the
Department of Building and Housing,
and Standards New Zealand

www.dbh.govt.nz www.standards.co.nz

ISBN 0-478-18418-2