

Panelbrace

WALL BRACING SYSTEMS TM



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BRANZ Appraisal No.779 (2018)
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Panelbrace

WALL BRACING SYSTEMS TM

A world leader in environmentally responsible MDF production.

Nelson Pine Industries is one of Australasia's leading forest products companies. Established in 1986, Nelson Pine Industries is one of the world's largest single site producers of medium density fibreboard. GoldenEdge MDF is exported to markets around the world.

From the beginning the products of Nelson Pine Industries New Zealand have led the world in meeting the needs of kitchen and furniture manufacturers, joinery companies and builders.

Using the advanced technology of the Küsters continuous press, we produce superior quality MDF and offer an unsurpassed range of board densities and thicknesses.

175,000 hectares of sustainable radiata pine forests provide Nelson Pine Industries with the superior quality raw material needed to manufacture our product range.

Sustainable radiata pine forests reach maturity in around 25 years compared with 200 years for tropical hardwoods.

Nelson Pine Industries takes the environment seriously with production processes in place that minimise dust, water use, effluent and noise. We have developed techniques which have reduced the amount of water required in the production process by two thirds despite having trebled the output of GoldenEdge MDF.

About 70% of the energy used on site is generated by burning wood waste in high efficiency furnaces. The remainder is from electricity.

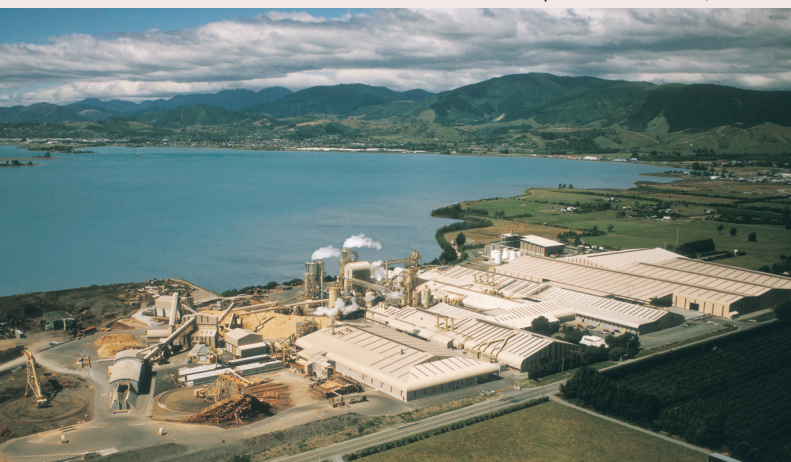
Since the mid 1980s we have been leading the way in significantly reducing formaldehyde levels of GoldenEdge MDF.

In February 2003 a new Japanese Industrial Standard (F☆☆☆☆) was introduced for a zero emissions MDF.

Two months later Nelson Pine Industries became the first Australasian MDF producer to achieve certification to the F☆☆☆☆ standard.

F☆☆☆☆ is also known as Super EO.

The Nelson Pine Industries plant at Richmond, Nelson



GoldenEdge MDF Panelbrace Wall Bracing Systems are a range of wall bracing systems based on 9 mm and 12 mm GoldenEdge Regular MDF used to resist earthquake and wind loads on timber frame buildings designed and constructed in accordance with NZS 3604: 2011.

Bracing System Components

GoldenEdge Regular MDF Sheets

GoldenEdge Regular MDF is 9mm and 12mm thick in sheets 1200x2400mm. The sheets have square edges to all four sides. The nominal density is 725 kg/m³.

Sheet Fasteners

- 40 x 2.8mm hot-dipped galvanised fibre cement nails.
- 8g x 40mm, gold-passivated countersunk, coarse-thread woodscrews.

Fasteners and Connections

- Coach screws 12mm x 150mm and 50 x 50 x 3mm washer hot-dipped galvanised for fixing to timber floors.
- Cast-in bolts M12 x 150 mm minimum and 50 x 50 x 3mm washers for fixing to concrete floors. Proprietary fixings with a minimum characteristic strength of 15kN may be used.
- BOWMAC® screw bolt - M10 x 140mm screw anchor, with a blue painted hex-head.
- Galvanised or stainless steel strap 25 x 0.9mm top and bottom plate connections.
- Strap fixings 30 x 2.5mm hot-dipped galvanised or stainless steel flat-head nails.
- GIB HandiBrac®, a galvanised steel 90 x 65 x 54 x 2.0mm thick angle bracket, supplied with 5 Type 17 screws 14g x 35mm.

Note: For corrosion protection requirements refer to NZS 3604: 2011 Section 4.

Pack Sizes

- 9mm - 70 sheets per pack
- 12mm - 50 sheets per pack

Paint System Specification

All visible GoldenEdge Regular MDF surfaces including edges, must be finished with three coats of polyurethane or a paint system comprising a primer/sealer and two top coats.

Durability

GoldenEdge Panelbrace Wall Bracing Systems have a serviceable life of at least 50 years providing they remain dry in service and are maintained in accordance with BRANZ Appraisal No.779 (2013).

Design Considerations

GoldenEdge MDF Panelbrace Wall Bracing Systems are for use in dry, internal, protected locations of thermally insulated buildings which are heated, intermittently heated and predominantly unheated in accordance with NZS 3602 Section 110, Table 1E and Section 205. The internal environment must be such that the moisture content of the supporting timber framing does not exceed 18%.

GoldenEdge MDF Panelbrace Wall Bracing Systems must be located within the building thermal envelope and must either be exposed to view or be in locations easily accessible for inspection.

GoldenEdge MDF Panelbrace Wall Bracing Systems must not be located in any high moisture environment or in areas subject to water splash. They must not be used in areas such as bathrooms, toilets, laundries or kitchens. GoldenEdge Regular MDF sheets must not be used in saunas or steam rooms.

GoldenEdge MDF Panelbrace Wall Bracing Systems must not be exposed to temperatures of 50°C or greater for prolonged periods. Refer to appliance and fitting manufacturers for installation details.

Prevention of Fire Occurring

Separation or protection must be provided to GoldenEdge Regular MDF from heat sources such as stoves, heaters, flues and chimneys. Part 7 of NZBC Acceptable Solutions C/AS1 to C/AS6 and NZBC Verification Method C/VM1 provide methods for separation and protection of combustible materials from heat sources.

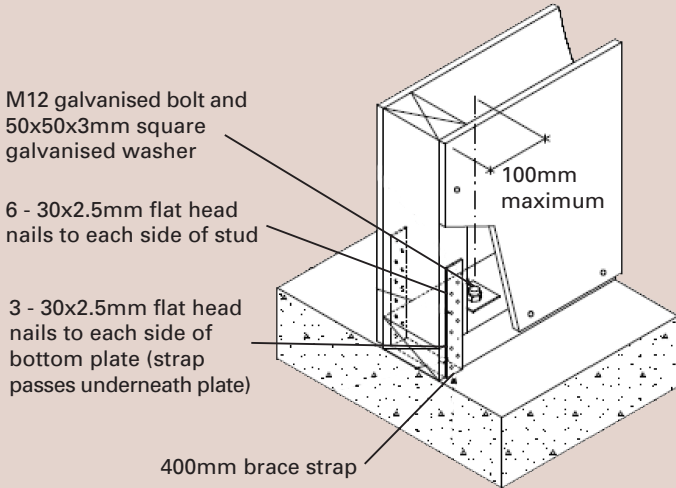
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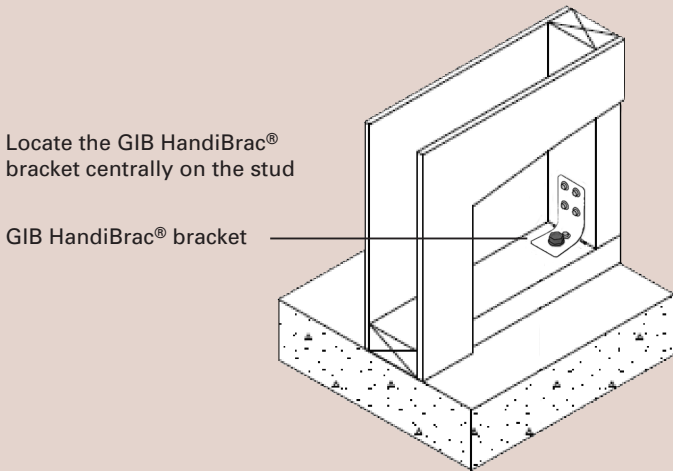
Panel Hold-Downs

The bottom plate in bracing system Type NP6 is fixed to the floor framing in accordance with NZS 3604: 2011 Table 8.19, which is either 2/100x3.75mm hand-driven nails or 3/90 x 3.15mm power-driven nails, at maximum 600mm centres.

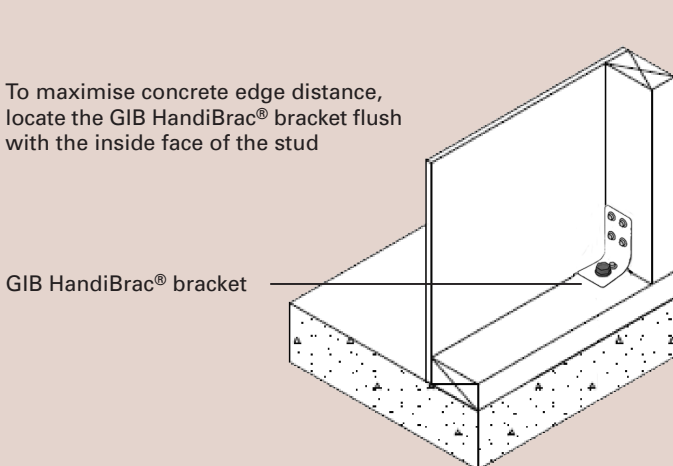
**Figure 2: Systems NP4 and NP12
 Concrete Floors – Internal Walls – End Straps**



**Figure 3: Systems NP4 and NP12
 Concrete Floors – Internal Walls – GIB HandiBrac®**

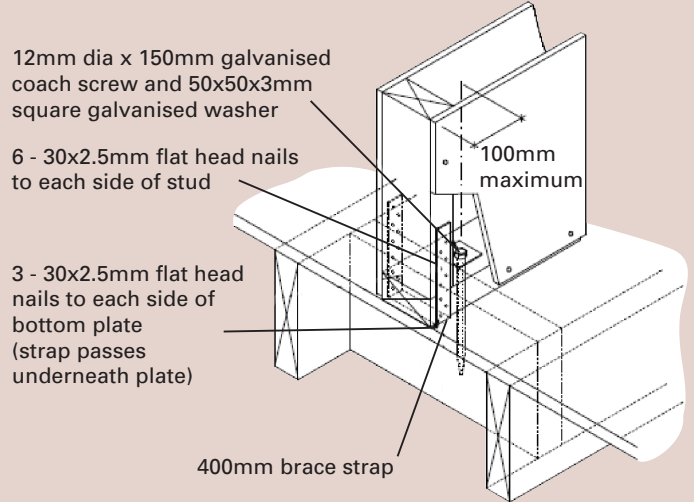


**Figure 4: Systems NP4 and NP12
 Concrete Floors – External Walls – GIB HandiBrac®**

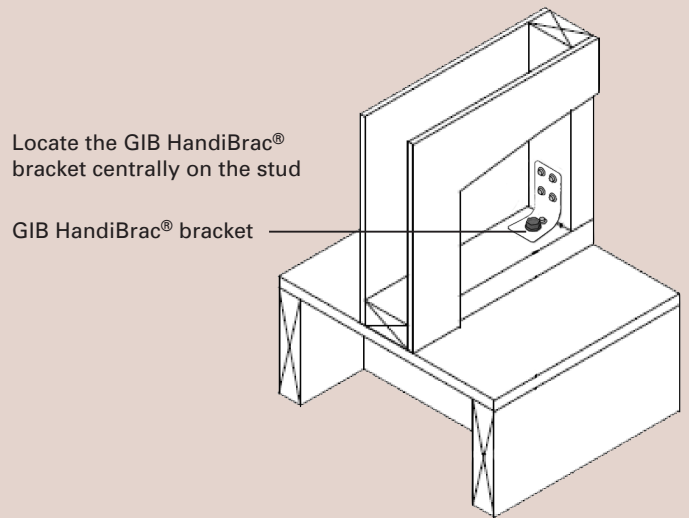


Types NP4 and NP12 requires the use of end straps and a suitable hold-down anchor (see Figure 2) at each end of the bracing element. Alternatively the GIB HandiBrac® may be used instead of straps, but a suitable hold-down anchor with a characteristic or design strength of 12kN (for timber floors) and 15kN (for concrete floors) is required. Within the length of the bracing element, intermediate fixings to the bottom plate are to be in accordance with NZS 3604.

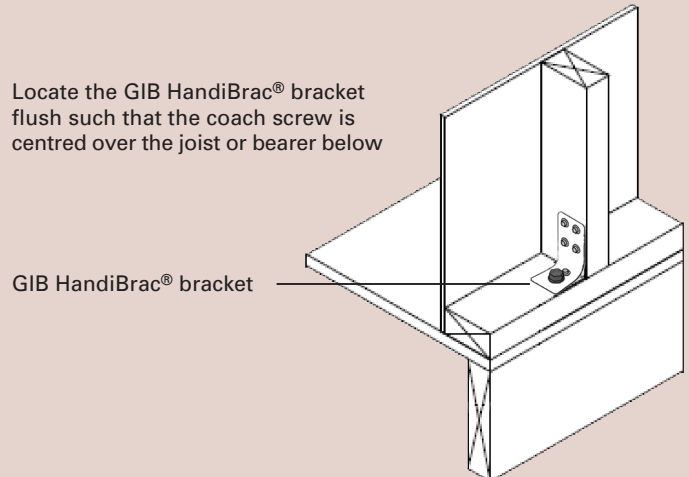
**Figure 5: Systems NP4 and NP12
 Timber Floors – Internal Walls – End Straps**



**Figure 6: Systems NP4 and NP12
 Timber Floors – Internal Walls – GIB HandiBrac®**



**Figure 7: Systems NP4 and NP12
 Timber Floors – External Walls – GIB HandiBrac®**



Bracing Design

Bracing Demand

NZS 3604: 2011 Section 5 contains design procedures and a manual calculation method for calculating bracing demand. Refer to NZS 3604: 2011 Bracing Demand Tables 5.5 - 5.10 for 2 kPa floor loads and Tables 14.1 - 14.3 for 3 kPa floor loads. The bracing ratings given in Table 1 are for manual calculations. The bracing units are derived from the BRANZ P21 test method based on a wall height of 2.4 m.

Bracing Ratings

GoldenEdge MDF Panelbrace Wall Bracing Systems provide bracing ratings (BU/m) as given in Table 1. The bracing ratings values are based on the timber framed walls being lined on one face only.

Table 1: GoldenEdge MDF Panelbrace Bracing Ratings

Type	Minimum length (m)	Lining	Other Requirements	BU/m	
				W	EQ
NP4	0.4	9 or 12mm GoldenEdge Regular MDF one side	Panel hold-downs	95	105
NP6	0.6	9 or 12mm GoldenEdge Regular MDF one side	n/a	80	70
NP12	1.2	9 or 12mm GoldenEdge Regular MDF one side	Panel hold-downs	150*	135

Notes: * Timber Floors - A limit of 120 BU/m applies to NZS 3604: 2011 timber floors.

For wall heights greater than 2.4 m, the bracing rating is calculated by multiplying the appropriate value shown in Table 1 by a factor $f=2.4/H$ where H is the wall height in metres. Walls lower than 2.4 m shall be rated as if they were 2.4 m high.

Braced wall elements longer than those given in Table 1, shall have their bracing capacity determined by multiplying the bracing rating given in Table 1 by the length of the wall. The end studs of the bracing element must be provided with hold down details as required by Table 1.

Framing

Timber framing grade, spacing and construction must comply with NZS 3604: 2011. Timber treatment must comply with NZBC Acceptable Solution B2/AS1.

Nelson Pine Industries Ltd recommends the use of kiln-dried stress-graded framing timber. The minimum actual framing dimensions are 90 x 45 mm for external walls and 75 x 45 mm for internal walls.

Joints in the top plates of bracing panels must be tied together as required by NZS 3604: 2011 with 3 kN and 6 kN top plate connectors using 25 x 0.9 mm galvanised mild steel strap, 3 nails each side of joint for 3kN and 6 nails each side of joint for 6kN.

Openings in Bracing Elements

Small openings of 90 x 90 mm or less may be placed anywhere except within 90 mm of the edge of the bracing element.

Handling and Storage

The method of manufacturing MDF ensures a balanced construction, resulting from the uniform distribution of fibres throughout the thickness of the board. The maintenance of this inherent flatness is dependent upon the correct storage and handling procedures. Please consult the recommendations set out on the Nelson Pine Industries Ltd website for the protection, storage and handling of the MDF.

Installation

The building must be closed in and weathertight prior to the installation of the GoldenEdge MDF Sheets.

Cutting

GoldenEdge Regular MDF can be cut with a fine tooth saw (either hand or power). Cut edges can be tidied up by using a plane or sandpaper.

Sheet Fixing

GoldenEdge Regular MDF sheets are fixed vertically. Adjoining sheets require an approximate 2 mm gap between them to allow for movement. Full sheets must be used wherever possible. Fixings must be no closer than 10 mm from the sheet edge and no closer than 18 mm from the top and bottom edges of the sheet. Fixings are driven at right angles to the sheet until the head is flush with the sheet surface for nail fixings or countersunk approximately 0.5 mm for screw fixings.

Fixings must not be over-driven.

GoldenEdge Regular MDF sheets are fixed at 150 mm centres around the perimeter of the sheets and at 300 mm centres to intermediate studs. Fixing to dwangs/noggings is not required.

Finishing

Prior to painting the sheets must be cleaned down, and any nail/screw holes filled. GoldenEdge Regular MDF sheets are finished with three coats of polyurethane or a paint system comprising a primer/sealer and two top coats.

Product Warranty

GoldenEdge carries a 12 month warranty against faulty materials or workmanship by the manufacturer to the extent of replacement of the product but not including any indirect or consequential loss subject to the provisions of the Consumer Guarantees Act 1993.

WARNING

This warranty applies only when the product has been used in accordance with the recommendations. Any defect must be advised to the manufacturer within 21 days of determination or from the day such defects should have become known.

Nelson Pine Industries Ltd reserves the right to change specifications contained in this publication without notice.

This is a reconstituted wood panel made from wood, resin and wax. This must be handled in accordance with safe work practices. Exposure to wood dust and/or formaldehyde may cause irritation to the eyes, respiratory system and skin, and may cause sensitisation by inhalation resulting in asthma, and by skin contact resulting in dermatitis.

Wood dust is classified as a known carcinogen. Repeated inhalation of wood dust over many years may cause nasal cancer. Formaldehyde is classified as a probable carcinogen.

Storage

Storage areas containing large quantities of this product must be adequately ventilated.

Safe Work Practice

Work areas must be well ventilated and kept clean. Sawing, sanding and machining equipment must be fitted with dust extractors to ensure that dust levels are kept within standards laid down by Worksafe Australia, Worksafe New Zealand, or the specific country of use. If not, a dust mask conforming with AS/NZS 1715 and AS/NZS 1716 and eye protection conforming with AS/NZS 1337 must be worn.

Offcuts, shavings and dust must be disposed of in a manner which avoids the generation of dust and in accordance with the requirements of local waste disposal authorities.

In end use applications all product surfaces exposed to occupied space must be sealed.

Further Information

Refer to the Material Safety Data Sheet for this product available from Nelson Pine Industries Ltd, their Distributors and Resellers.

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