







info@ibs.co.nz

Contents

1.0	Purpose of Document
	1.1 General
	1.2 Supporting Information
2.0	Product Information
	2.1 Use of IBS RigidRAP [®]
	2.2 OSB3 Explained
	2 3 IBS BigidBAP® Explained 3
	2.4 Wall Underlay
	2.5 CodeMark Explained
	2.6 IBS RigidRAP [®] Advantages
	2.7 Restricted Building Work
	2.8 Install Service Penetration
	2.9 Install Window Opening
	2.10 Designer/Installer Skill Level
	2.11 Health and Safety 4
	2.12 Handling and Storage 5
	2.13 Sawing, Drlling, Shaping 5
	2.14 IBS RigidRAP® Measurements
	2.15 IBS RigidRAP® Comparison
20	Proving Floment
ວ.ບ	Dracing clement
J.U	3.1 Scope of Use
J.U	3.1 Scope of Use 6 3.2 Limitations 6
J.U	3.1 Scope of Use63.2 Limitations63.3 Wall Bracing System7
3.U	3.1 Scope of Use63.2 Limitations63.3 Wall Bracing System73.3.1 Bracing Capacity7
3.0	3.1 Scope of Use 6 3.2 Limitations 6 3.3 Wall Bracing System 7 3.3.1 Bracing Capacity 7 3.3.2 System #1 8
3.0	3.1 Scope of Use 6 3.2 Limitations 6 3.3 Wall Bracing System 7 3.3.1 Bracing Capacity 7 3.3.2 System #1 8 3.3.3 System #2 8
3.0	3.1 Scope of Use 6 3.2 Limitations 6 3.3 Wall Bracing System 7 3.3.1 Bracing Capacity 7 3.3.2 System #1 8 3.3.3 System #2 8 3.3.4 System #3 9
3.0	3.1 Scope of Use 6 3.2 Limitations 6 3.3 Wall Bracing System 7 3.3.1 Bracing Capacity 7 3.3.2 System #1 8 3.3.3 System #2 8 3.3.4 System #3 9 3.3.5 System #4 9
3.0	3.1 Scope of Use 6 3.2 Limitations 6 3.3 Wall Bracing System 7 3.3.1 Bracing Capacity 7 3.3.2 System #1 8 3.3.3 System #2 8 3.3.4 System #3 9 3.3.5 System #4 9 3.3.6 System #5 10
3.0	3.1 Scope of Use 6 3.2 Limitations 6 3.3 Wall Bracing System 7 3.3.1 Bracing Capacity 7 3.3.2 System #1 8 3.3.3 System #2 8 3.3.4 System #3 9 3.3.5 System #4 9 3.3.6 System #5 10 3.3.7 System #6 10
3.0	3.1 Scope of Use 6 3.2 Limitations 6 3.3 Wall Bracing System 7 3.3.1 Bracing Capacity 7 3.3.2 System #1 8 3.3.3 System #2 8 3.3.4 System #3 9 3.3.5 System #4 9 3.3.6 System #5 10 3.3.7 System #6 10 3.3.8 System #7 11
3.0	3.1 Scope of Use 6 3.2 Limitations 6 3.3 Wall Bracing System 7 3.3.1 Bracing Capacity 7 3.3.2 System #1 8 3.3.3 System #2 8 3.3.4 System #3 9 3.3.5 System #4 9 3.3.6 System #5 10 3.3.7 System #6 10 3.3.8 System #8 11 3.3.9 System #8 11
3.0	3.1 Scope of Use 6 3.2 Limitations 6 3.3 Wall Bracing System 7 3.3.1 Bracing Capacity 7 3.3.2 System #1 8 3.3.3 System #2 8 3.3.4 System #3 9 3.3.5 System #4 9 3.3.6 System #5 10 3.3.7 System #6 10 3.3.8 System #8 11 3.3.9 System #8 11 3.3.10 System #9 11 3.3.11 Lintel Tie Down Details 12
3.0	3.1 Scope of Use 6 3.2 Limitations 6 3.3 Wall Bracing System 7 3.3.1 Bracing Capacity 7 3.3.2 System #1 8 3.3.3 System #2 8 3.3.4 System #3 9 3.3.5 System #4 9 3.3.6 System #5 10 3.3.7 System #6 10 3.3.8 System #8 11 3.3.10 System #9 11 3.3.11 Lintel Tie Down Details 12 3.3.12 Top Plate Connections 12
3.0	3.1 Scope of Use 6 3.2 Limitations 6 3.3 Wall Bracing System 7 3.3.1 Bracing Capacity 7 3.3.2 System #1 8 3.3.3 System #2 8 3.3.4 System #3 9 3.3.5 System #4 9 3.3.6 System #5 10 3.3.7 System #6 10 3.3.8 System #8 11 3.3.10 System #9 11 3.3.11 Lintel Tie Down Details 12 3.3.13 Fixings 12
3.0	3.1 Scope of Use 6 3.2 Limitations 6 3.3 Wall Bracing System 7 3.3.1 Bracing Capacity 7 3.3.2 System #1 8 3.3.3 System #2 8 3.3.4 System #3 9 3.3.5 System #4 9 3.3.6 System #5 10 3.3.7 System #6 10 3.3.8 System #8 11 3.3.9 System #8 11 3.3.10 System #9 11 3.3.11 Lintel Tie Down Details 12 3.3.12 Top Plate Connections 12 3.3.13.1 Bottom Plate Fixings 12 3.3.13.1 Bottom Plate Fixings 12
3.0	3.1 Scope of Use 6 3.2 Limitations 6 3.3 Wall Bracing System 7 3.3.1 Bracing Capacity 7 3.3.2 System #1 8 3.3.3 System #2 8 3.3.4 System #3 9 3.3.5 System #4 9 3.3.6 System #5 10 3.3.7 System #6 10 3.3.8 System #7 11 3.3.9 System #8 11 3.3.10 System #9 11 3.3.11 Lintel Tie Down Details 12 3.3.12 Top Plate Connections 12 3.3.13.1 Bottom Plate Fixings 12 3.3.13.2 Bottom Plate Details 13
3.0	3.1 Scope of Use 6 3.2 Limitations 6 3.3 Wall Bracing System 7 3.3.1 Bracing Capacity 7 3.3.2 System #1 8 3.3.3 System #2 8 3.3.4 System #3 9 3.3.5 System #4 9 3.3.6 System #5 10 3.3.7 System #6 10 3.3.8 System #7 11 3.3.9 System #8 11 3.3.10 System #9 11 3.3.12 Top Plate Connections 12 3.3.13.1 Bottom Plate Fixings 12 3.3.13.2 Bottom Plate Details 13 3.3.14 Mechanical Connections 14

4.0	Rigid Air Barrier	
	4.1 General	14
	4.2 Non-Structural Rigid Air Barrier	14
5.0	Internal Lining	15
6.0	Available Details	15
7.0	Finishing	15
8.0	Quality Assurance	16
9.0	Additional Resources	16
10.0	Technical Properties	16
10.1	1 OSB Technical Properties	16
10.	2 RigidRAP Technical Properties	17
11.0	Limitations	17

1.0 Purpose of Document

1.1 GENERAL

This document is intended for designers and installers to ensure that IBS RigidRAP[®] (rigid air panel) is specified and installed correctly.

1.2 SUPPORTING INFORMATION

- This document must be read in conjunction with the:
- IBS Product Specification for IBS RigidRAP®
- IBS Maintenance and Warranty for IBS RigidRAP®

All other information is available at www.ibs.co.nz.

2.0 Product Information

2.1 USE OF IBS RigidRAP®

IBS supply IBS RigidRAP[®] for use:

• As an internal or external wall bracing element when used in conjunction with a specific fixing system.

• In exterior wall construction as an alternative to light or heavyweight wall wrap or where a rigid air barrier is required.

• As an internal wall substrate where high impact use is envisaged.

2.2 OSB3 EXPLAINED

OSB3 (oriented strand board 3) is a moisture resistant, structural wood panel. Engineered in Germany from environmentally sustainable sourced softwood, it consists of three layers of wood strands bonded together with heatcured adhesives. Each layer is orientated at right angles to the adjacent layer creating a strong, dimensionally stable panel that resists delamination and warping. The absence of natural imperfections such as knots provides certainty of performance.

2.3 IBS RigidRAP® EXPLAINED

IBS RigidRAP[®] has been manufactured specifically for NZ, for use as a bracing element and/or rigid air barrier. It comes laminated with a BRANZ appraised watertight wall underlay.

As an OSB3 panel, manufactured in accordance with EN13986:2004, it is suitable for use in humid conditions where the panel in-service moisture content does not exceed 20%.

Compliance with the NZ Building Code (NZBC) is established through Product Certification (CodeMark).

IBS RigidRAP[®] meets all the requirements of Table 23 (clause E2 - external moisture) from the compliance document for the NZ Building Code.

IBS RigidRAP $^{\ensuremath{\$}}$ is 8mm thick and supplied in the following panel sizes:

- 2440 mm x 1196 mm x 8 mm
- 2745 mm x 1196 mm x 8 mm
- 3050 mm x 1196 mm x 8 mm

2.4 WALL UNDERLAY

Wall underlay is a synthetic wall underlay. The product consists of a micro-porous water resistant polypropylene film laminated between two layers of spunbonded polypropylene.

2.5 IBS RigidRAP® CODEMARK EXPLAINED

IBS is the certificate holder of CodeMark for IBS RigidRAP[®]. CodeMark is third party certified, allowed for under the Building Act 2004. This means that under law, a Building Consent Authority must accept the specification of IBS RigidRAP[®] (the panel and the installation details) as complying with the NZ Building Code, providing that all conditions of the certificate have been met.

Achieving CodeMark also focuses on the quality of IBS RigidRAP[®] panels and the quality and competence of the support provided by IBS. This means that designers and installers can use IBS RigidRAP[®] with confidence that, providing all instructions are followed, IBS RigidRAP[®] will result in building work complying with the NZ Building Code.



2.6 IBS RigidRAP® ADVANTAGES

IBS RigidRAP[®] is a practical alternative to traditional flexible building wraps. The installation of IBS RigidRAP[®] allows the builder to enclose the exterior of the building quickly providing the following advantages:

- Reduces building time
- Provides rapid moisture protection of the building
- Allows for interior construction to continue
- Provides a greater level of site security
- Reduces structural timber movement

2.7 RESTRICTED BUILDING WORK

In some applications Restricted Building Work (RBW) provisions will apply. It is the responsibility of the designer and installer to ensure that they have met their obligations under these provisions.

2.8 INSTALL SERVICE PENETRATION

Refer to IBS RigidRAP[®] approved selection of flexible flashing tapes - see 3.4.

Flashing of pipe and service penetrations shall be carried out in accordance with the following:

• Pipe penetrations through IBS RigidRAP[®] must have a minimum of 5° slope to the outside.

• Flexible flashing tape must be installed like a bandage with a minimum of 25 mm cover around the pipe and 100 mm minimum surface adhesion to IBS RigidRAP[®] panel surrounding the penetration.

2.9 INSTALL WINDOW OPENING

Refer to IBS RigidRAP[®] approved selection of flexible flashing tapes - see 3.4.

Flashing window openings shall be carried out in accordance with WANZ Guide to E2/ASI (6), substituting building wraps for IBS RigidRAP[®].

• Cut the flashing tape for the sill at least 200 mm wider than the opening.

• Fit the tape with the inner edge of the tape flush with the inside line of the framing and extend 100 mm up and down each jamb edge.

• Ensure the tape is well adhered to the surfaces and fitted tightly to each corner.

• Fully tape all window opening edges.

NOTE: All window tapes should be used in accordance with the manufacturer's installation guide.



2.10 DESIGNER/INSTALLER SKILL LEVEL

Where IBS RigidRAP[®] is specified and/or installed the designer/installer should have the appropriate skills, knowledge of the product and access to all IBS RigidRAP[®] technical information (reference www.ibs.co.nz).

2.11 HEALTH AND SAFETY

When installing IBS RigidRAP[®] take all steps to ensure your safety and the safety of others.

• Ensure that when cutting or drilling IBS RigidRAP® that there is adequate ventilation or mechanical dust extraction.

- Ensure IBS RigidRAP[®] is well supported when cutting or drilling the panel.
- Appropriate close fit clothing should be worn at all times

• Wear eye, ear and footwear protection when working with IBS RigidRAP[®].

Site considerations

- Selection of the right equipment for working from a height
- Safe working with ladders and stepladders
- Maintain a clear unobstructed work area

For further information refer to:

- The Absolutely Essential Health and Safety Toolkit
- Worksafe New Zealand Quick Guide

2.12 HANDLING AND STORAGE

Correct storage and handling in transport is essential for the protection of IBS RigidRAP[®]. The following simple principles should be taken into account:

• Strapping and shrink wrap should be removed

immediately upon arrival at the installer's storage area or on site.

• IBS RigidRAP[®] should be laid flat on timber bearers. The spacing's between the timber should be no more than 800 mm.

• If several pallets are stacked on top of each other ensure the storage bearers are in true alignment.

• When stored outside ensure there is sufficient clearance between the ground and IBS RigidRAP® to prevent moisture transfer and allow air circulation. Cover with a waterproof tarpaulin.

• IBS RigidRAP[®] must not be exposed to the weather for more than 90 days.

• When manually handling IBS RigidRAP[®] ensure the panels are lifted in the central third.

• IBS RigidRAP[®] should be allowed to climatise to the site conditions for 48 hours prior to installation.

2.13 SAWING, DRILLING, SHAPING

IBS RigidRAP[®] panels may be sawn and shaped in the same way as solid wood, although carbide tipped cutters are recommended.

If panels are to be installed in a visible location, ensure clean-cut edges with sharp tools, using a backing block to minimize break out. The feed rate should be slower than for solid wood.

2.14 IBS RigidRAP[®] SHEET MEASUREMENTS

Length (mm)	Width (mm)	Thickness (mm)	Weight (kg)
2440	1196	8	16.9
2745	1196	8	18.6
3050	1196	8	20

2.15 IBS RigidRAP® COMPARISON

	Bracing Units (BU/m) Bas	Bracing Units (BU/m) Based on 2400 x 1200 Sheet Size		
Product	Wind	Earthquake		
Plywood 7 mm	123	139		
Cement Board 6 mm	125	102		
OSB3 8 mm	131	107		

3.0 Bracing Element

3.1 SCOPE OF USE

IBS RigidRAP[®] may be used as a bracing element within the following scope:

In wind zones:

• Up to and including extra high.

• Up to 2.5 kPa ULS where the building is specifically engineered.

Building scope

• New buildings: with timber wall framing complying with NZ Building Code .

• In conjunction with the GIB HandiBrac® method or a Strap Bracing system.

• In conjunction with LVL System - staples, Mitek CPC 80 and SPAX screws.

• In conjunction with LVL System - staples, Simpson Strong-Tie DTT2Z and type 17 screws.

• In conjunction with concrete and timber subfloor

applications that comply with the NZ Building Code.

• With all cladding types that comply with NZBC.

• In conjunction with a drained and ventilated nominal 20mm cavity system.

• With aluminium joinery complying with the NZBC

IBS RigidRAP® has not been tested as a structural bracing element in conjunction steel framing.
IBS RigidRAP® may be used as a bracing element in existing buildings, however in these cases IBS makes no claim as to the bracing value that will be achieved. If IBS RigidRAP® is to be installed as a bracing element in existing timber framed buildings the following scope applies:
Existing timber framed buildings where the designer and/ or installer have assured themselves that the existing

building is suitable for the intended building work.
Existing concrete and timber sub-floor structures where the designer and/or installer have assured themselves that the existing building is suitable for the intended building work.

3.2 LIMITATIONS

• Allow a minimum of 4 mm between panel joints to accommodate dimension movement.

• Maximum spacings of wall studs must not exceed 600 mm centres.

• Curved walls, minimum radius 2.5 m are allowable, the IBS RigidRAP[®] panels must be fixed horizontally onto framing studs with spacing and stud centres dependent on the radius.

• A proprietary 'Z' flashing must be installed at mid floor level where IBS RigidRAP® is installed on multi levels. Serviceability of the joints may be affected if - at the time the timber framing is installed - its moisture content is greater than 18%.

• For wall heights greater than 3050 mm horizontal wall joints are permitted, provided the panel joint is over solid blocking of the same gauge as the studs.

• All joints, other than mid floor level, (vertical and horizontal) must be sealed with an IBS approved selfadhesive "flashing tape" as specified in section 3.4. IBS recommend 150 mm flashing tape or a proprietary Z flashing for horizontal joins.

• A hole 100 x 100 mm maximum within an envelope of 100 mm from top and vertical edges and 200 mm from the bottom of the IBS RigidRAP® panel will not affect the bracing capacity. Multiple holes of this size are permitted provided the centre lines of the holes are not closer than 600 mm.

• Steel fixings and fastenings must be in accordance with table 4.1, NZS 3604: 2011.

• IBS RigidRAP[®] must be allowed to acclimatise for at least 48 hours prior to installation.

• Do not install IBS RigidRAP[®] if the building paper has delaminated from the OSB sheet.

When specifying IBS RigidRAP[®] as a bracing element, the designer must take into account site specific conditions and the building with respect to, but not limited to, the following:

- Environmental (exposure) zone
- Wind zone
- Wall bracing table for wind and EQ demand
- Structural design loads
- Structural framing requirements
- Preparation of substrate
- External envelope

• Other materials likely to affect the performance of IBS RigidRAP®

3.3 IBS RigidRAP® WALL BRACING SYSTEM

3.3.1 BRACING CAPACITY

The following table provides the bracing value for the different systems:

Table 1	Concrete Slab		Timber Floor	
System	Wind	EQ	Wind	EQ
SYSTEM 1: OSB - 300 mm x 2400 mm wall with GIB HandiBrac [®] Fixing 30 mm x 2.5 mm Galv clouts	49 BU/m	58BU/m	49 BU/m	58 BU/m
SYSTEM 2: OSB - 400 mm x 2400 mm wall with GIB HandiBrac [®] Fixing 30 mm x 2.5 mm Galv clouts.	70 BU/m	79 BU/m	70 BU/m	79 BU/m
SYSTEM 3: OSB - 600 mm x 2400 mm wall with GIB HandiBrac [®] Fixing 30 mm x 2.5 mm Galv clouts	76 BU/m	81 BU/m	76 BU/m	81 BU/m
SYSTEM 4: OSB - 1200 mm x 2400 mm wall with GIB HandiBrac [®] Fixing 30 mm x 2.5 mm Galv clouts	131 BU/m	107 BU/m	131 BU/m	107 BU/m
SYSTEM 5: OSB - 2400 mm x 2400 mm wall with GIB HandiBrac [®] Fixing 30 mm x 2.5 mm Galv clouts	108 BU/m	89 BU/m	108 BU/m	89 BU/m
SYSTEM 6: OSB - 1200 mm x 2400 mm wall without GIB HandiBrac [®] Fixing 30 mm x 2.5 mm Galv clouts	93 BU/m	78 BU/m	93 BU/m	78BU/m
SYSTEM 7: OSB - 400 mm x 2400 mm wall with GIB HandiBrac [®] GIB standard 10 mm board on the inside Fixing 30 mm x 2.5 mm Galv clouts	94 BU/m	104 BU/m	94 BU/m	104 BU/m
SYSTEM 8: OSB - 600 mm x 2400 mm wall with GIB HandiBrac [®] GIB standard 10 mm board on the inside Fixing 30 mm x 2.5 mm Galv clouts	130 BU/m	130 BU/m	120 BU/m	120 BU/m
SYSTEM 9: OSB - 1200 mm x 2400 mm wall with GIB HandiBrac [®] GIB standard 10 mm board on the inside Fixing 30 mm x 2.5 mm Galv clouts	150 BU/m	150 BU/m	130 BU/m	130 BU/m

NOTE:

• For all bracing systems no product substitution is allowed. Installation must be in accordance with these instructions. If these requirements are not met, IBS provides no assurance that the bracing capacity (claimed in this design and installation guide) will be achieved.

• The allowable racking resistances for the IBS RigidRAP[®] systems are applicable to frames lined with IBS RigidRAP[®] on one side only.

• Panels must always be installed vertically if used as bracing sheet. Sheets can be installed horizontally if not used as a bracing element.

• All IBS RigidRAP systems have been tested with no nogs or dwangs

• Stud sizes and centres will vary depending on height load and loads ref: NZS3604:2011.

The systems may be used on walls of lengths different to those in TABLE 1 but is limited to:

• Wall lengths no greater than twice the tested system length.

• For walls greater than the tested system length multiply the length of the wall on a pro-rata basis, up to double the length of the system.

• A wall height less than 1.5 meters should be referred to a specific engineer design.

• A wall height less than 2.4 meters should be rated as if they are 2.4 meters high.

Panels higher than IBS RigidRAP[®] 2440 mm must be fixed top plate to bottom plate. When walls are higher than 2440 mm, IBS RigidRAP[®] 2745 or 3050 mm sheets can be used.
A part sheet can be used but must be nogged and nailed as per specification.

3.3.2 SYSTEM #1

SYSTEM 1 IBS RigidRAP $^{\rm 8}$ 300 x 2400 MM WALL USING GIB HANDIBRAC $^{\rm 8}$ - FIG 1

Wall construction:

- 90 x 45 MSG8 studs.
- 8 mm IBS RigidRAP[®] panel one side.
- 30 x 2.5 mm galv clouts at 150 mm centres around the perimeter.
- GIB HandiBrac[®] hold down brackets fixed to each end-toend studs and to bottom plate with concrete hold downs as per manufacturer's specifications.
- Tested on a concrete floor with M12 hold-down bolts.

300 mm 12 mm in from edge FIG 1 Corner nail in 25 mm from each edge 2400 mm 150 mm 🗌 GIB HandiBrac® GIB HandiBrac® installed in the installed in the internal corner internal corner

3.3.3 SYSTEM #2

SYSTEM 2 IBS RigidRAP $^{\rm 0}$ 400 x 2400 MM WALL USING GIB HANDIBRAC $^{\rm 0}$ - FIG 2

Wall construction:

- 90 x 45 MSG8 studs.
- 8 mm IBS RigidRAP[®] panel one side.
- 30 x 2.5 mm galv clouts at 150 mm centres around the perimeter.
- GIB HandiBrac[®] hold down brackets fixed to each end-toend studs and to bottom plate with concrete hold downs as per manufacturer's specifications.
- Tested on a concrete floor with M12 hold down bolts.



3.3.4 SYSTEM #3

SYSTEM 3 IBS RigidRAP $^{\rm *}$ 600 x 2400 MM WALL USING GIB HANDIBRAC $^{\rm *}$ - FIG 3

Wall construction:

- 90 x 45 MSG8 studs.
- 8 mm IBS RigidRAP[®] panel one side.
- 30 x 2.5 mm galv clouts at 150 mm centres around the perimeter.
- GIB HandiBrac[®] hold down brackets fixed to each end-toend studs and to bottom plate with concrete hold downs as per manufacturer's specifications.
- Tested on a concrete floor with M12 hold down bolts.





3.3.5 SYSTEM #4

SYSTEM 4 IBS RigidRAP® 1200 x 2400 MM WALL USING GIB HANDIBRAC® - FIG 4

Wall construction:

- 90 x 45 MSG8 studs (600 centres) plates.
- 8 mm IBS RigidRAP[®] panel one side.
- 30 x 2.5 galv clouts at 150 mm centres around the perimeter.

• GIB HandiBrac[®] hold down brackets attached to each end studs and to the bottom plate with concrete holddowns as per manufacturer's specifications.

• Tested on a concrete floor with M12 hold down bolts.

3.3.6 SYSTEM #5

SYSTEM 5 IBS RigidRAP[®] 2400 x 2400 MM WALL USING GIB HANDIBRAC[®] - FIG 5

Wall construction:

- 90 x 45 MSG8 studs (600 mm centres) plates.
- 8 mm IBS RigidRAP[®] panel one side.

• 30 x 2.5 mm galv clouts at 150 mm centres around the perimeter.

• GIB HandiBrac[®] hold down brackets fixed to each end-toend studs and to bottom plate with concrete hold downs as per manufacturer's specifications.

• Tested on a concrete floor with M12 hold-down bolts.



3.3.7 SYSTEM #6

SYSTEM 6 IBS RigidRAP $^{\odot}$ 1200 x 2400 MM WALL - FIG 6

Wall construction:

- 90 x 45 MSG8 studs (600 mm centres) plates.
- 8 mm IBS RigidRAP[®] panel one side.
- 30 x 2.5 mm galv clouts at 150 mm centres around the perimeter.
- No hold down brackets



3.3.8 SYSTEM #7

SYSTEM 7 IBS RigidRAP* 400 x 2400 MM WALL USING GIB HANDIBRAC* AND GIB BOARD - FIG 7

Wall construction:

- 90 x 45 MSG8 studs.
- 8 mm IBS RigidRAP® panel one side.

• 30 x 2.5 mm galv clouts at 150 mm centres around the perimeter.

• GIB HandiBrac[®] hold down brackets fixed to each end-toend studs and to bottom plate with concrete hold downs as per manufacturer's specifications.

- GIB standard 10 mm board on the inside.
- Tested on a concrete floor with M12 hold down bolts.



SYSTEM 8 IBS RigidRAP® 600 x 2400 MM WALL USING GIB HANDIBRAC® AND GIB BOARD - FIG 8

Wall construction:

• 90 x 45 MSG8 studs.

• 8 mm IBS RigidRAP® panel one side.

• 30 x 2.5 mm galv clouts at 150 mm centres around the perimeter.

• GIB HandiBrac[®] hold down brackets fixed to each end-toend studs and to bottom plate with concrete hold downs as per manufacturer's specifications.

- GIB standard 10 mm board on the inside.
- Tested on a concrete floor with M12 hold down bolts.



3.3.10 SYSTEM #9

SYSTEM 9 IBS RigidRAP® 1200 x 2400 MM WALL USING GIB HANDIBRAC® AND GIB BOARD - FIG 9

Wall construction:

- 90 x 45 MSG8 studs (600 mm centres) plates.
- 8 mm IBS RigidRAP[®] panel one side.
- 30 x 2.5 mm galv clouts at 150 mm centres around the perimeter.

• GIB HandiBrac[®] hold down brackets fixed to each end-toend studs and to bottom plate with concrete hold downs as per manufacturer's specifications.

• GIB standard 10 mm board on the inside.

• Tested on a concrete floor with M12 hold down bolts.

3.3.11 LINTEL TIE DOWN DETAILS

Where the uplift does not exceed 7.5kN, the following strap fixing detail may be used as an alternate to 7.5kN strap fixing detailed in NZ3604, fig 8.12.



3.3.12 TOP PLATE TO RAFTER OR TRUSS CONNECTIONS

RAP sheathed wall frames transfer these uplift loads to the bottom plates; the IBS RigidRAP® acting in tension as a continuous cycle rod. Refer to NZS3604:2011 Table 8.18 for uplift connections between top plate and roof framing. Rafter/truss spacing is determined by the loaded dimensions.

Top plate / stud mechanical fixings

Uplift top plate/stud mechanical connections in accordance with NZS3604: 2011 up to 7.5kN can be omitted where IBS RigidRAP[®] and fixings are installed (top and bottom plates) at a maximum spacing of 75 mm.

Allowable uplift resistance (kN/rafter)	Fastener spacing (mm) top and bottom plates
7.5	75
8.5	40



Bottom plate to floor or sub floor connection as per NZS 3604:2011

3.3.13 FIXINGS 3.3.13.1 GENERAL

Fixing	Exposure Zone
Type 304 S/ Steel, Gauge 8 x 25 Surefix Screws	All exposure zones
45 x 2.5 S/Steel Annular Grooved Nails	All exposure zones
30 x 2.5 Galv Clouts, round head or D-Head	Exposure zone B & C only

3.3.13.2 BOTTOM PLATE FIXING

Bottom plate fixing	Exposure zone
GIB HandiBrac [®]	Steel fixing as per table 4:1
Use supplied hold-down bolts	NZS3604:2011

3.3.13.3 BOTTOM PLATE FIXING DETAILS BASE DETAIL



Bottom plate detail to concrete or timber floor (with 25 mm x 1 mm strap)

GIB HANDIBRAC® INSTALLATION - CONCRETE FLOOR



Position IBS RigidRAP[®] as close as practicable to the internal edge of the bottom plate.



Position IBS RigidRAP® at the stud/plate junction

GIB HANDIBRAC® INSTALLATION - TIMBER FLOOR





Position IBS RigidRAP[®] in the centre of the perimeter joist or bearer.



Position IBS RigidRAP® in the centre of the floor joist or full depth solid block.

3.3.14 MECHANICAL CONNECTIONS (UPLIFT & HOLD DOWN)

Connections	Exposure zone
Cyclone ties (304-2B Stainless Steel) Nails SS 30 mm x 3.15 mm in diameter	All exposure zones
1 x 25 - Sheet Brace Strap (304-2B Stainless Steel) Nails SS 6/30 x 3.15 diameter nails per strap end for 6kN capacity, 2 straps for 12kN	All exposure zones
GIB HandiBrac® https://www.gib.co.nz/products/ fasteners-and-brackets/gib- handibrac/	All exposure zones
Cyclone Ties (G300 Z275 Galvanised Steel) Nails 30 mm x 3.15 mm in diameter	Exposure zones B & C only
1 x 25-Sheet Brace strap (G300 Z275 Galvanised Steel) Nails 6/ 30 x 3.15 diameter nails per strap end for 6kN capacity, 2 straps for 12kN	Exposure zones B & C only
Mitek angle bracket CPC80 - 1.55, G300, Z275, 16 x 30 mm x 3.15 mm dia. 8/Type 17, 14g x 35 hex head	Exposure zones B & C only
Simpson Strong-Tie DTT2Z - 1.74mm, G-185, 8 x 6mm dia x 40 screws, M12 galv. threaded rod, ChemSet	Exposure zones B & C only

3.4 JOINT SEALING AND WINDOW TAPE FOR IBS RigidRAP $^{\circledast}$

The following tapes may be used to seal panels:

Approved Joint and Window Tape (minimum face cover 50 mm)			
Hydro Tape (masons 75 mm)	www.mpb.co.nz/product/hydrowindow- tape		
SUPER-STICK (Marshall Innovations)	www.mwnz.com/super_stick		
TESCON EXTORIA IBS-OS (Pro Clima)	www.proclima.co.nz/tescon- extoraweathertightness		
Watertight	www.technoinsulation.com/window- flashing-tapes		
FlameFlash	www.technoinsulation.com/window- flashing-tapes		
3M™ All Weather Flashing Tape 8067	www.3mnz.co.nz		

The tape is to be installed in accordance with the specific supplier instructions.

All joints and penetrations must be sealed including:

- Vertical and horizontal joints
- External and internal joints
- Penetrations
- Window and door joinery

Where sealing a joint, ensure the IBS RigidRAP[®] joins are centred under the tape joint. Use a 25 mm hard PVC roller to ensure full adhesion.

4.0 Internal Lining

4.1 GENERAL

IBS RigidRAP[®] can be used as a substrate wall panel for internal walls and partitions where additional stiffness is required or where walls are exposed to high impact. The following fixings are recommended:

	Maximum Fastener Spacing		Maximum Fastener Spacing from Board's Edge	
	Centres at edges (on board's perimeter)	Centres at the intermediate supports	Centres at the intermediate supports	Centres at the intermediate supports
Nails/ screws	150 mm	300 mm	12 mm	25 mm

5.0 Rigid Air Barrier

5.1 GENERAL

Applied to the outer face of the exterior framing, IBS RigidRAP[®] will minimise the pressure difference across the wall construction, thereby forming part of a weathertight external envelope.

When installed in accordance with Section 3, IBS RigidRAP® performs the function of a rigid air barrier with bracing capacity.

5.2 IBS RigidRAP[®] AS A NON-STRUCTURAL RIGID AIR BARRIER

Where RigidRAP[®] is to be used as a rigid air barrier without a bracing function then the scope of use is increased to include lightweight steel framing provided that a thermal break is installed.

IBS RigidRAP[®] panels should be nailed off at a minimum of 300 mm centres around the perimeter and through the body of the sheet. Rigidity of the panels will be maximised if the panels are nailed off around the perimeter at 150 mm. All other installation details to be in accordance with section 3 (IBS RigidRAP[®] as a bracing element).

6.0 Available Details

IBS supply a number of details to assist in the specification of IBS RigidRAP[®]. These details are available in dwg, pdf and jpg formats. Details available are as follows:

- 1210 frame layout
- 1211 frame layout brick
- 1212 frame layout sheet plaster
- 1213 frame layout EIFS plaster
- 1214 frame layout weatherboard
- 1220 joints vertical joint
- 1227 joints horizontal
- 1230 corners external corner
- 1231 corners internal corner
- 1250 floor concrete floor edge direct fix
- 1251 floor concrete floor edge cavity

7.0 Finishing

Where used as a bracing element or rigid air barrier, IBS RigidRAP® must not be left exposed for more than 90 days.

A 20 mm ventilated cavity and the cladding/joinery system must be installed that complies with the NZ Building Code. Installation of the cavity, cladding, joinery etc must be in Where all joints (vertical and horizontal) are to be sealed with an IBS approved self-adhesive "flashing tape" (see 3.4), building wrap is not required.

The IBS RigidRAP[®] must be allowed to acclimatise for at least 48 hours prior to installation.

When specifying IBS RigidRAP[®] as a rigid air barrier, the designer must take into account site specific conditions and the building with respect to, but not limited to, the following: • Environmental (exposure) zone

- Wind zone
- Wall bracing table for wind and EQ demand
- Structural design loads
- Structural framing requirements
- Preparation of substrate
- External envelope
- Other materials likely to affect the performance of IBS RigidRAP®

- 1255 floor connections
- 1260 openings lower corner treatment
- 1261 openings upper corner treatment
- 1262 openings window head
- 1263 openings window sill
- 1264 openings window jamb
- 1265 window head
- 1266 window sill
- 1267 window jamb
- 1269 openings pipe
- 1270 wall soffit
- 1281 balustrade

Refer to www.ibs.co.nz.

accordance with the relevant supplier and in accordance with the Building Consent, where applicable.

8.0 Quality Assurance

IBS recommends that installers record the installation of IBSRigidRAP[®]. This may include:

- Packing slips to show evidence of delivery
- Written notes, and
- Meaningful photos

. Additional Resources

For compliance information of IBS RigidRAP[®] refer to:

- IBS Product Specification
- IBS Design & Installation Guide
- IBS CAD drawings

Information to help with the maintenance and warranty of IBS RigidRAP[®] refer to:

- IBS Maintenance and Warranty if IBS RigidRAP®
- www.ibs.co.nz

0.0 Technical Properties

10.1 OSB TECHNICAL PROPERTIES

OSB/3 EN300 - Characterist	ic values	acc. to EN 13986	
		Strand direction Major axis	
	d	Board thickness 8 mm	
Strength valu	es [N/mm²]		
Stresses on board			
Bending	fm,k	18.0	
Compression	fc,90,k	10.0	
Shear	fv,k	1.0	
Plate loading			
Bending	fm,k	9.9	
Tensile force	ft,k	9.9	
Compression	fc,k	15.9	
Shear	fv,k	6.8	
Stiffness valu	es [N/mm²]		
Stresses on board			
Bending modulus of elasticity	Em ^a	4930	
Shear modulus	Gr ^a	50	
Plate loading			
Tensile force modulus of elasticity	Eta	3800	
Compression modulus of elasticity	Ec ^a	3800	
Shear modulus	Gv ^a	1080	
^a The characteristic stiffness values Eos and Gos are calculated as follows: Eos = 0.85 x E, and Gos = 0.85 x E			
R Value	0.083		

General and building physics values							
Bulk density acc. to EN323	m	600 kg/m ³					
Max. deviations in board thickness		± 0.8 mm (ContiFinish®) ± 0.3 mm (sanded)					
Tolerance in length and width		±3 mm					
Perpendicularity acc. to EN 324-2		2 mm/m					
Thermal conductivity acc. to EN 13986	λ	0.13 W/mK					
Water vapour permeability value	μ	200 (moist) / 300 (dry)					
Waste code		03 01 05					
Air tightness at 50 Pa		0,14 [m³/hm²]					
Thickness swelling acc. to EN 317		≤ 15 %					
Coefficient of expansion for 1% change in wood moisture content		0.03 %					
Emissions class		E1 - 100 % Formaldehyde-free binders (< 0.03 ppm)					
Environmental Product Declaration as per ISO 14025 and EN 15084		EPD-KRO-20150067- IBD2-EN					
Service classes acc. to EN 1995-1-1		1+2					
Reaction to fire acc. to EN 13501-1		D-s2, d0					
Declaration of Performance No. acc. to CPR		SKDE_OSB-3_ CPR_2019_044					

10.2 RigidRAP® TECHNICAL PROPERTIES

RigidRAP [®] Technical Data Sheet							
Watertight Roof and Wall Wrap							
Characteristic	Test method			Tolerance			
		Unit	Value	Min.	Max.		
Length	EN 1848-2	m	50	-0	+0,5		
Width	EN 1848-2	m	1,50	-0,005	+0,005		
Straightness	EN 1848-2	-	pass	-	-		
Mass per unit area	EN 1849-2	g/m²	120	-10	+10		
Thickness	EN 1849-2	mm	0,55	-0,1	+0,1		
Reaction to fire (free-hanging)	EN 11925-2	class	F	-	-		
Resistance to water penetration	EN 1928 method A	class	W1	-	-		
Water vapour transmission properties	EN ISO 12572 set C	m	0,020	-0,005	+0,020		
Resistance to penetration of air	EN 12114	m³/(m² x h x 50 Pa)	Max 0,050	-	-		
Tensile properties: Maximum tensile force	EN 12311-1	N/E0 mm	MD 245	-45	+45		
		N/50 IIIII	CD 140	-25	+25		
Tensile properties: elongation	EN 12311-1	06	MD 50	-25	+25		
		70	CD 80	-30	+30		
Resistance to tearing (nail shank)	EN 12310-1	N	MD 120	-35	+35		
		IN	CD 135	-35	+35		
Dimensional stability	EN 1107-2	%	2	-	-		
Stability at low temperature	EN 1109	°C	-40	-	-		
Artificial ageing by long term exposure to the combination of UV radiation and elevated temperature and heat (80°C)	Elongation EN 13859-1 zał. C		MD 40	-20	+20		
		%	CD 55	-20	+20		
	Tensile strength EN 13859-1 zał. C		MD 220	-40	+40		
		N/50 mm	CD 110	-20	+20		
	Resistance to water penetration EN 13859-1 zał. C	class	W1	-	-		
Water vapour transmission (23°C/85%RH)	Lyssy	g/m² x 24h	1400	-200	+200		
Water vapour transmission (38°C/90%RH)	Lyssy	g/m² x 24h	3200	-400	+400		

11.0 Limitations

The information contained in this document is current as at December 2019 and is based on data available to IBS Sustainable Building Products at the current time.

All photographic images are intended to provide a general impression only and should not be relied upon as an accurate example of IBS RigidRAP[®] products installed in accordance with this document.

IBS reserves the right to change the information contained in this document without prior notice. It is your responsibility to ensure that you have the most up to date information available, including at the time of applying for a building consent. You can call toll free on 0800 367 759 or visit www.ibs.co.nz to obtain current information.

IBS has used all reasonable endeavours to ensure the accuracy and reliability of the information contained in this document. However, to the maximum extent permitted by law, IBS assumes no responsibility or liability for any inaccuracies, omissions or errors in this information nor for any actions taken in reliance on this information.



HOME OF SUSTAINABLE BUILDING PRODUCTS

Sustainability covers all facets of business from sourcing, to manufacture, handling of waste and with a focus for long term sustainable products for the industry.

IBS selects products from suppliers that are commited, in the long term, to sourcing and manufacturing their products sustainably. We also look for suppliers and manufactures that have a commitment to fair employment practices.

In New Zealand, IBS looks to minimize waste, recycle and maximise the use of recyclable packaging.

We offer a range of panel prodcuts for use in many different end uses.

Structural Plywood

Decorative Ply

PRIMAaqua

PRIMAalpha Groove

RigidRAP

Hardboard

Softboard

Uncertified Plywood

OSB

Wet Wall Linings

PRIMAflex

CUT Panels

Marine Ply

Panel Brace Line

Formply



Don't hesiate to contact us: sales@ibs.co.nz / 0800 376 759 / www.ibs.co.nz