

STRUCTURES TEST REPORT

ST20473-01-01

RESENE INTEGRA BOTTOM PLATE ANCHOR TESTING

CLIENT

Rockcote Resene Limited T/A Resene Construction Systems
5 Venture Place
Middleton
Christchurch, 8024
New Zealand

All tests and procedures reported herein, unless indicated, have been performed in accordance with the BRANZ ISO9001 Certification



REPORT NUMBER:

ST20473-01-01

ISSUE DATE:

20 May 2025

PAGE:

1 of 21

LIMITATIONS

The results reported here relate only to the item/s tested. The sample(s) is tested as supplied.

TERMS AND CONDITIONS

This report is issued in accordance with the Terms and Conditions as detailed and agreed in the BRANZ Services Agreement for this work.

SCOPE OF LABORATORY CERTIFICATON

This section will contain details on the approach report signatories have taken to clearly present 'out of scope' test and procedure information within this report – if any.

DOCUMENT REVISION STATUS

ISSUE NO.	DATE ISSUED	DESCRIPTION
01	20/05/2025	Initial Issue

SIGNATORIES



Author

Lucy Brosnan
Structural Testing Engineer
Authorised to author this report



Reviewed by

Roger Shelton
Senior Structural Engineer
Authorised to review this report

CONTENTS

DOCUMENT REVISION STATUS	2
SIGNATORIES	3
1. BACKGROUND	5
2. OBJECTIVE.....	5
3. DESCRIPTION OF SPECIMEN	6
3.1 Product description	6
3.2 Specimen construction	8
4. DESCRIPTION OF TEST	10
4.1 Date and location of test	10
4.2 Test set-up	10
4.3 Test procedure	12
5. OBSERVATIONS.....	13
5.1 Tension testing.....	13
5.2 In-plane shear testing	14
5.3 Out-of-plane shear testing.....	15
6. RESULTS	16
6.1 Tension testing.....	16
6.2 In-plane shear testing	18
6.3 Out-of-plane shear testing.....	19
7. REFERENCES.....	21
APPENDIX.....	21

1. BACKGROUND

Resene Construction Systems has an INTEGRA lightweight concrete flooring system used with timber floor framing designed in accordance with NZS3604:2011. See figure below from the INTEGRA flooring system technical manual [1]. The bottom plate is fixed with 150mm x 14g integra screws at 300mm centres. Resene construction systems has engaged BRANZ to test compliance of the Integra screw to NZS3604 [2] clause 7.5.12.3.

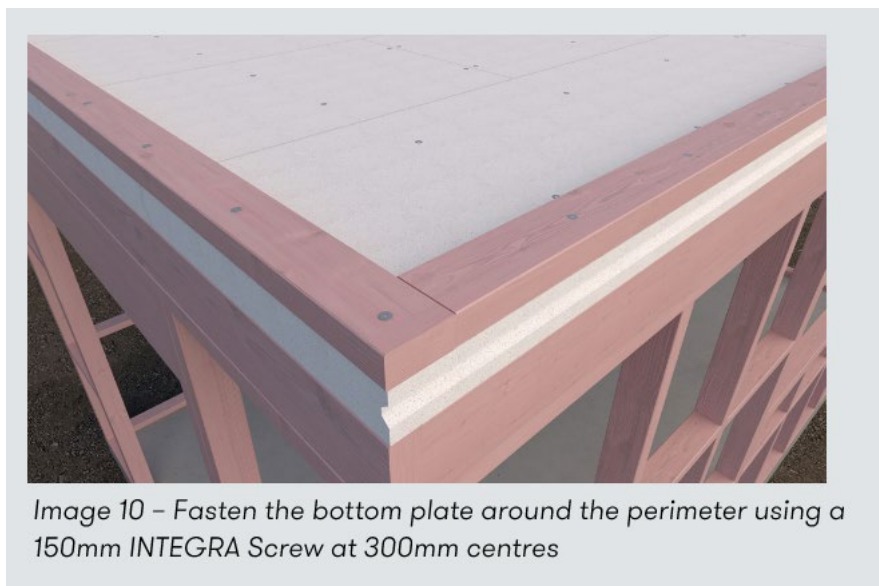


Figure 1 Integra flooring system.

2. OBJECTIVE

To determine the capacity of the 150 x 14g screw as a bottom plate anchor for Resene integra flooring. The anchor will be tested in pullout, in-plane of the wall shear and out-of-plane of the wall shear. Testing and analysis will be in accordance with BRANZ EM1 documentation. Results will be compared to the requirements in clause 7.5.12.3 of NZS3604 for bottom plate anchors which are:

For *external walls*, proprietary anchors shall have a minimum capacity when tested in accordance with 2.4.7 as follows:

- (a) Horizontal loads in the plane of the wall.....2 kN;
- (b) Horizontal loads out of plane of the wall3 kN;
- (c) Vertical loads in axial tension of the fastener.....7 kN.

3. DESCRIPTION OF SPECIMEN

3.1 Product description

The images below show the three types of items received from the client used to form the samples.



Figure 2 integra screw 150mm x 14g countersunk used to fix bottom plate.



Figure 3 14g 100mm screw for fixing integra floor panel to joist.

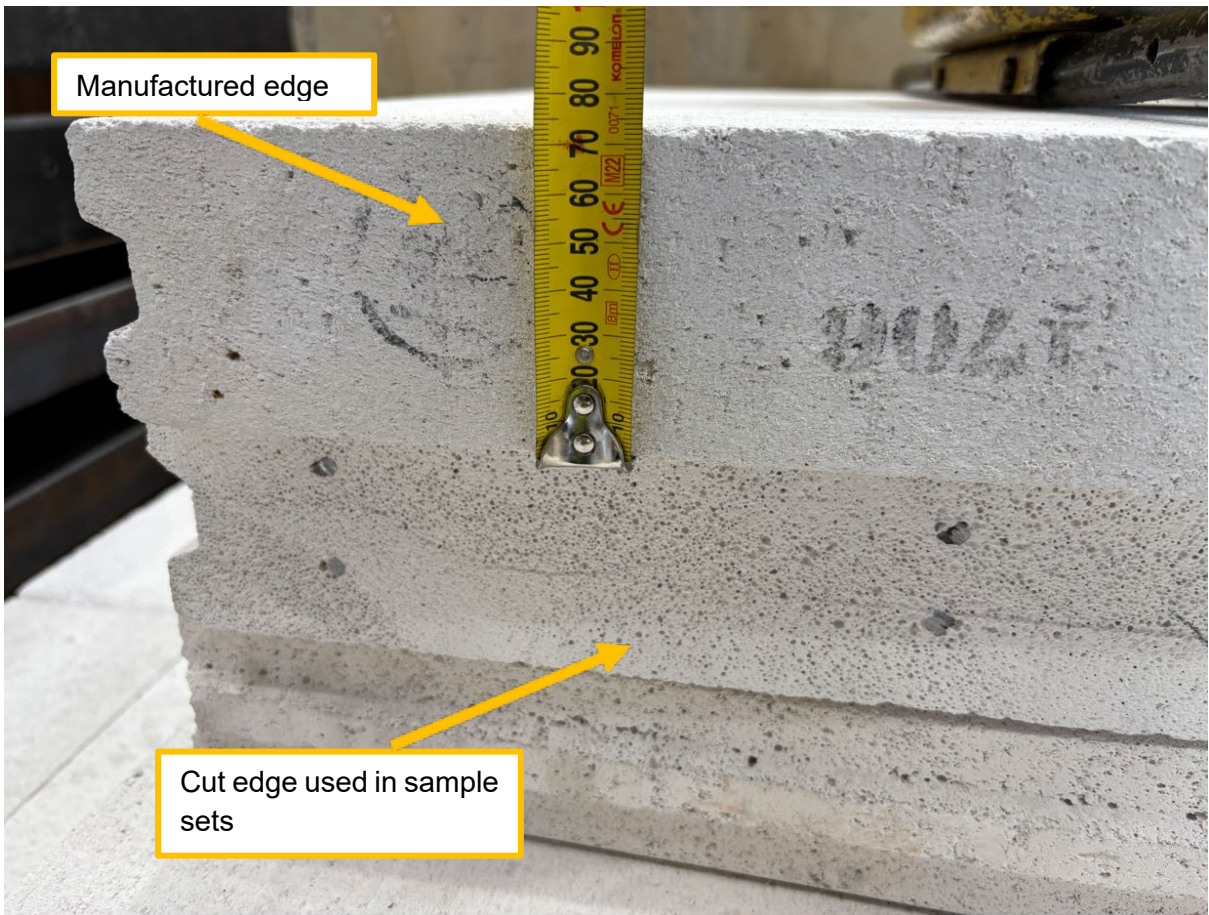


Figure 4 Integra light weight concrete floor panel edges.

3.2 Specimen construction

Samples were constructed at the BRANZ site in accordance with the INTEGRA flooring system technical manual [1] using the following elements:

- 140 x 45 SG8 edge bearer 600 mm long
- 2 x 140 x 45 SG8 joists at 300 mm centres.
- 2 x 14g 100 mm screws with 50 mm edge distance to floor panel. Installed skewed and countersunk 2-3 mm.
- Integra floor panel 75 mm thick 600 mm x 600 mm wide.
- 45 x 90 mm SG8 bottom plate 600 mm long.
- **150 x 14g Integra screw, installed with 30mm edge distance.**

Resene construction systems supplied the flooring panels and screws. Flooring panels were cut on site to sample sizes as required.

Figure 5 and Figure 6 indicate the sample build up as constructed for the in plane and out of plane testing. Tension testing samples were constructed as per the figures excluding the bottom plate to allow for the testing machine to grip the screw. The 30 mm edge distance and joist penetration were achieved for all samples. A cut edge was used for the outer edge of the sample.

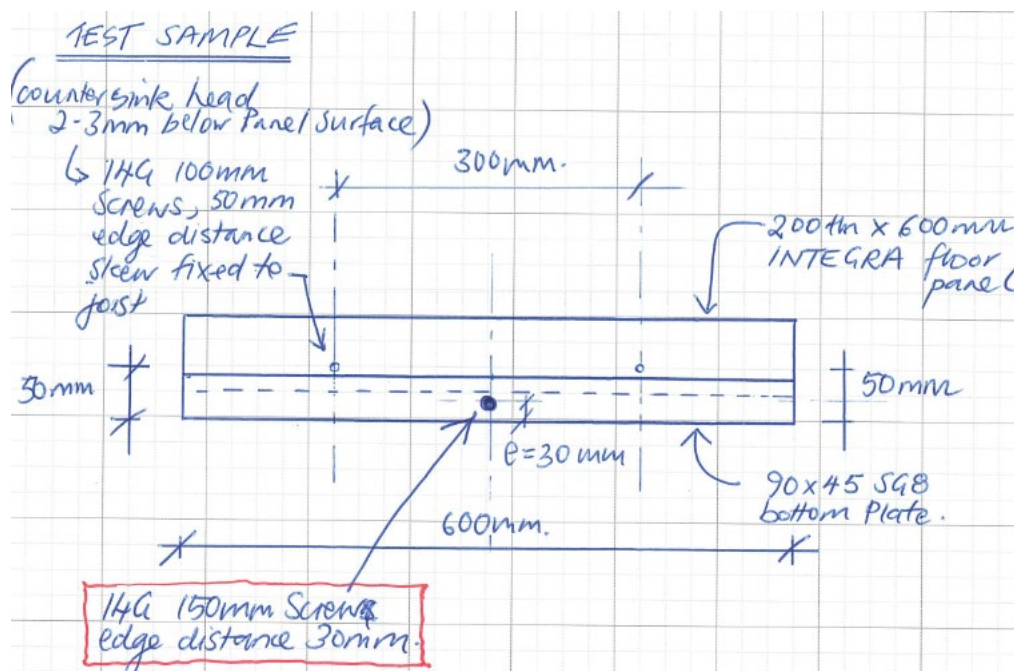


Figure 5 Plan view of test sample for in plane and out of plane shear testing.

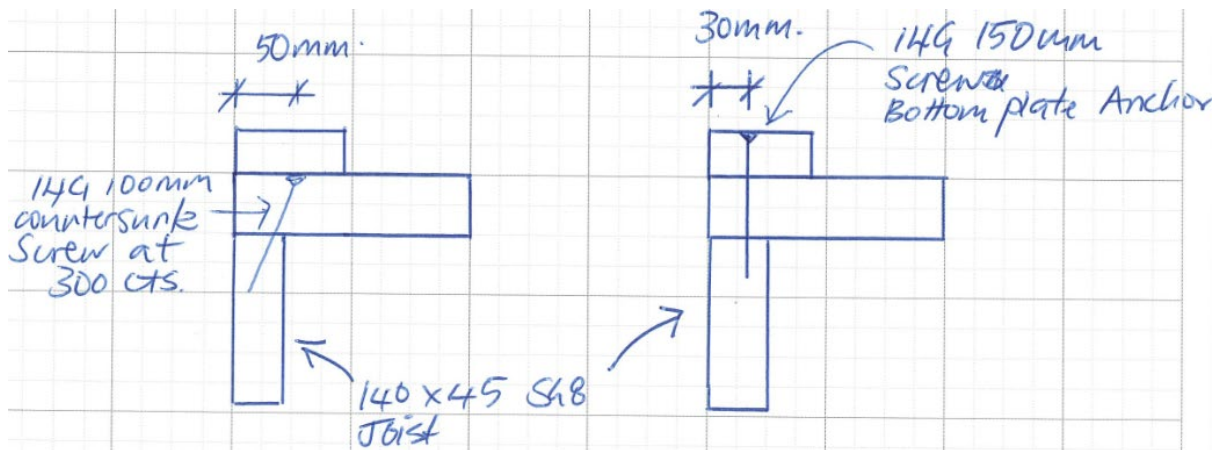


Figure 6 Section of panel fixing to joist (a) and bottom plate anchor fixing (b).



Figure 7 Tension test sample indicating 45mm of screw above floor plate.

4. DESCRIPTION OF TEST

4.1 Date and location of test

Tests were carried out in March and April 2025 in the Structures Test Laboratory at BRANZ, Judgeford, New Zealand.

4.2 Test set-up

The vertical load tension test was set up in the universal Dartec machine as seen in Figure 7.

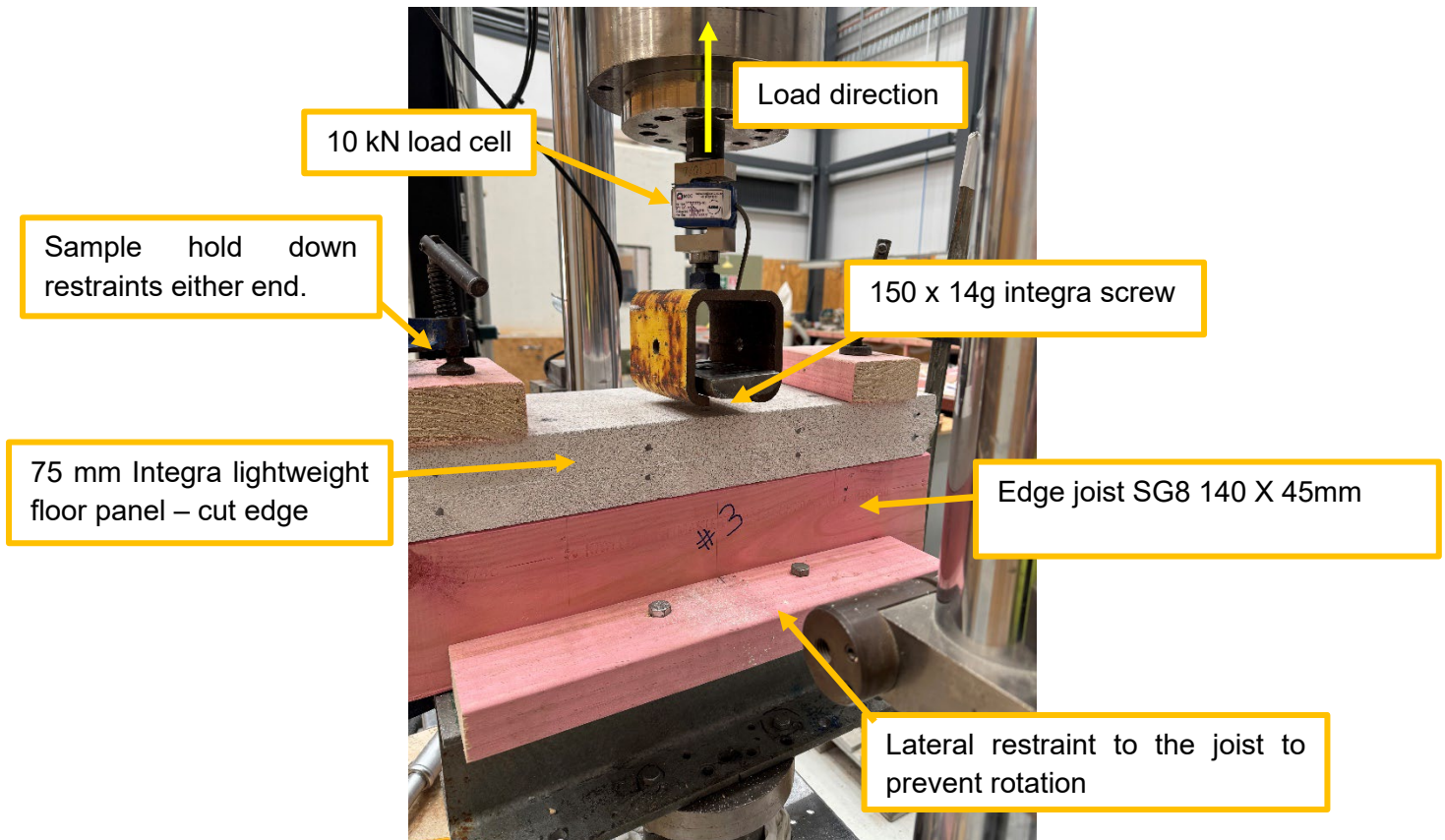


Figure 8 Tension test sample set-up.

In-plane and out of plane wall testing was carried out on the strong floor of the structural laboratory. The sample was supported on a timber frame and laterally restrained at one end with a steel reaction frame. An actuator applied the load from the adjacent strong wall via a steel beam directly fixed to the top plate.

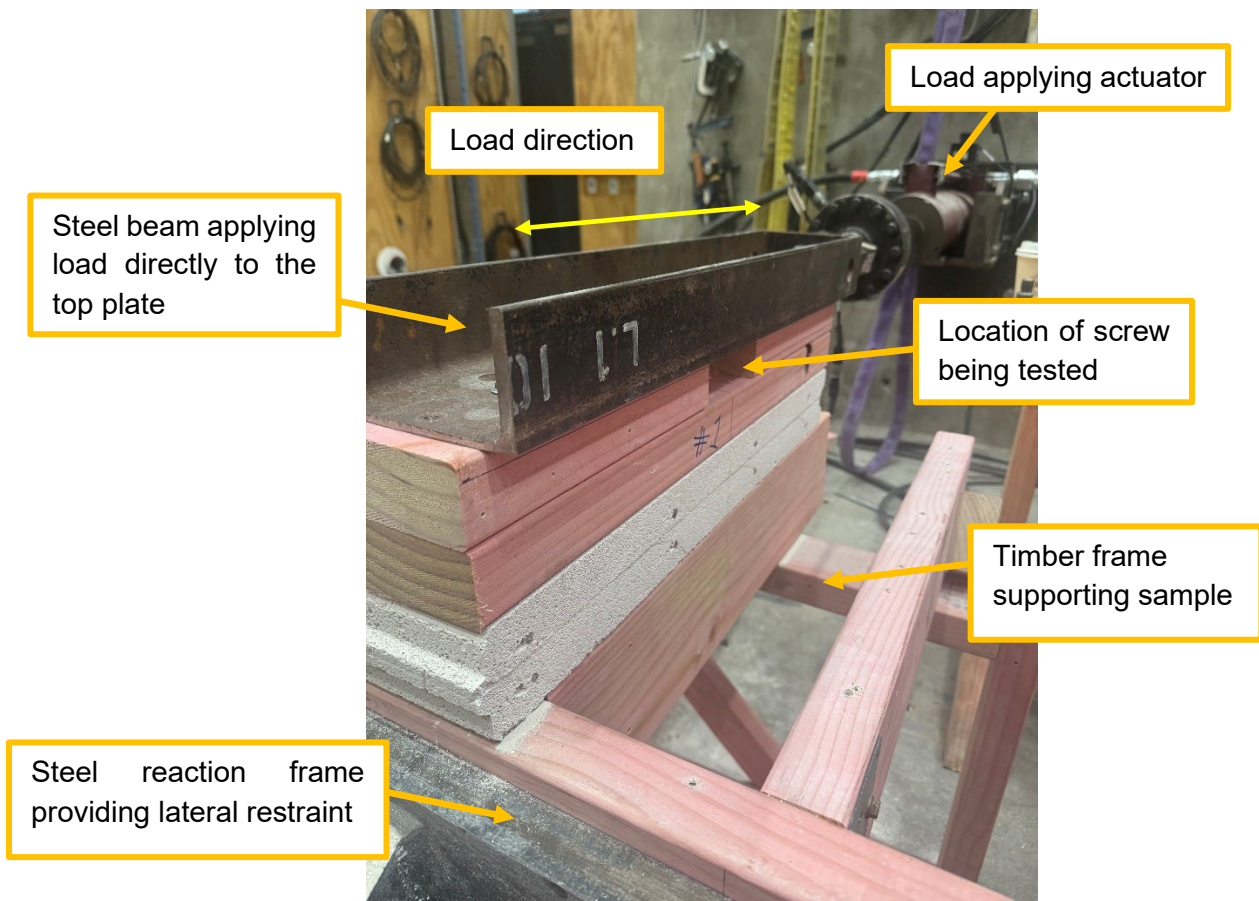


Figure 9 In-plane shear test sample set-up.

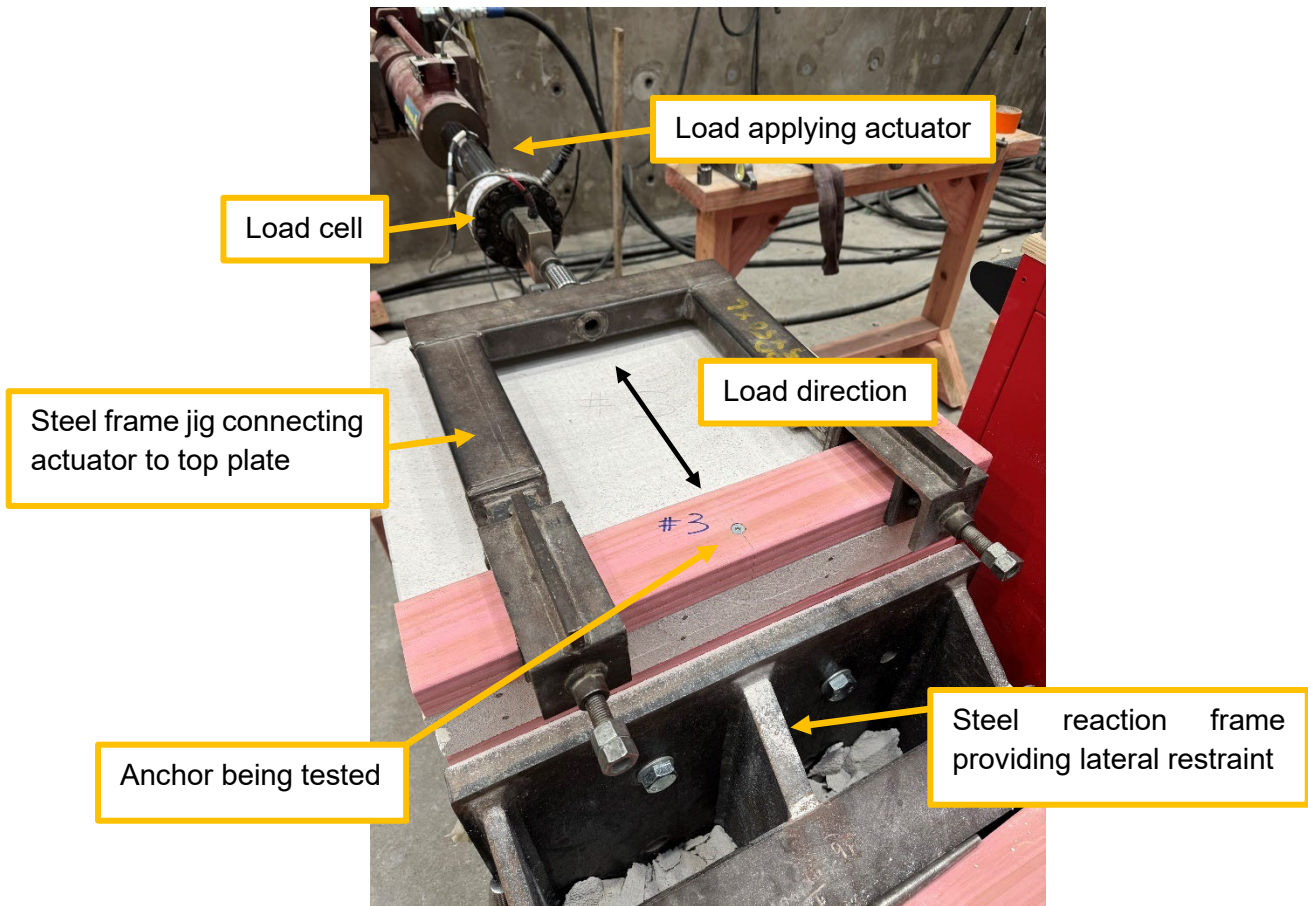


Figure 10 Out of plane shear test sample set-up.

4.3 Test procedure

For all tests, the loading regime was cyclic in accordance with BRANZ Evaluation Method No 1(1999) [3], as required by NZS 3604:2011. This method includes three cycles at each “level”, starting at a control load of 1kN +/- cycle with increment increases of 1kN. As we expected to see lower results than when testing bottom plate anchors in concrete slabs we started with a control load of 0.5kN with increment increases of 0.5 kN.

For the out-of-plane tests and in-plane tests the specimens were cycled between positive and negative directions, and for the tension tests, between zero and the upwards direction.

5. OBSERVATIONS

5.1 Tension testing

All samples failed due to screw pull out from the timber joist. A sample straight after failure is shown in Figure 11.

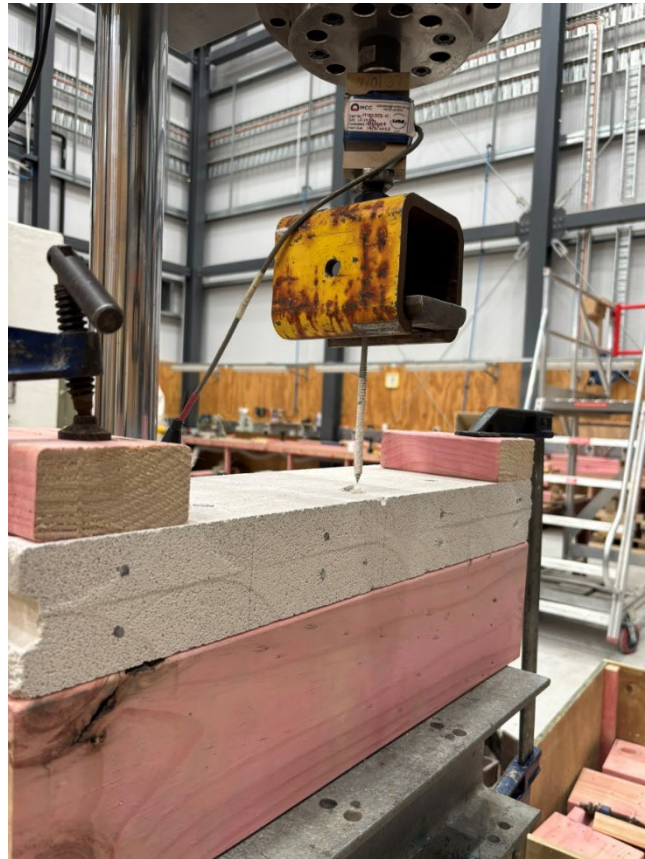


Figure 11 Tension test sample at failure of screw pull out.

5.2 In-plane shear testing

Figure 12 and Figure 13 show a typical progression of sample failure when subjected to in-plane shear. At around 2.5 kN the lightweight floor panel would begin to form vertical cracking full depth at the location of the screw. As the load and displacement continued to increase the crack in the floor panel increased in width until an edge break-out formed around the anchor which withdrew from the timber joist.



Figure 12 In plane testing: cracking of the flooring panel began on the 2.5 kN cycle



Figure 13 In plane failure of a sample (typical) where initial break out of floor panel is followed by pull out of the screw from the joist.

5.3 Out-of-plane shear testing

Initial cracking of the floor panel began in the 1 kN load cycle. The lightweight concrete began spalling off the edge of the panel typically in the 2 kN cycle as the screw displacement increased. This can be seen and is marked on Graph 6. Failure of the screw system was a result of either the screw head shearing off, as seen in Figure 15, or screw withdrawal from the timber joist.

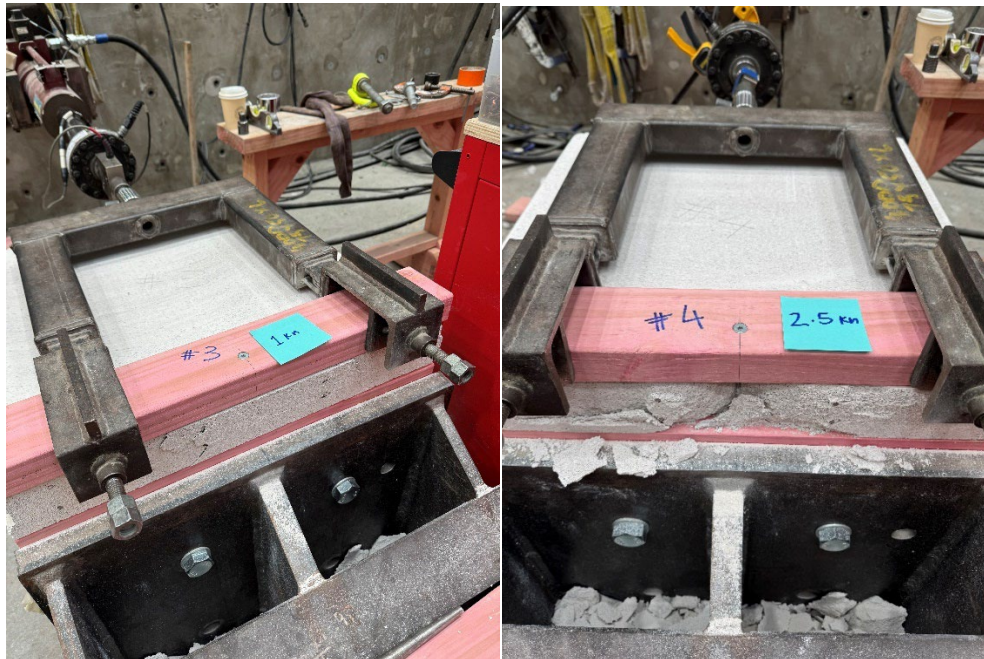


Figure 14 Out of plane testing initial cracking and spawling of concrete floor panel during early cycles of testing

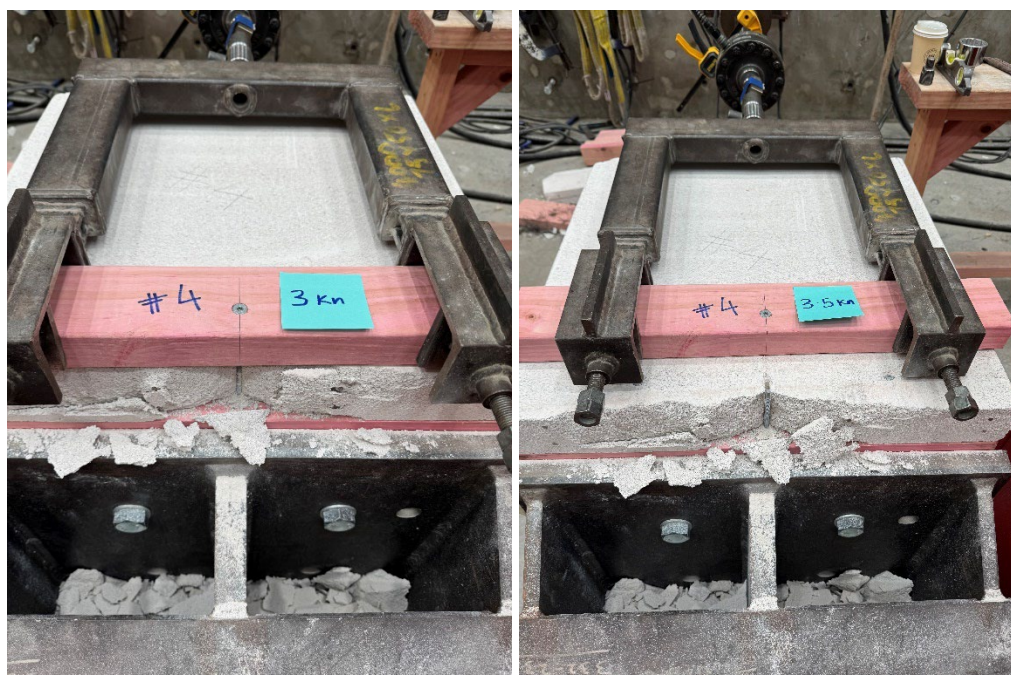
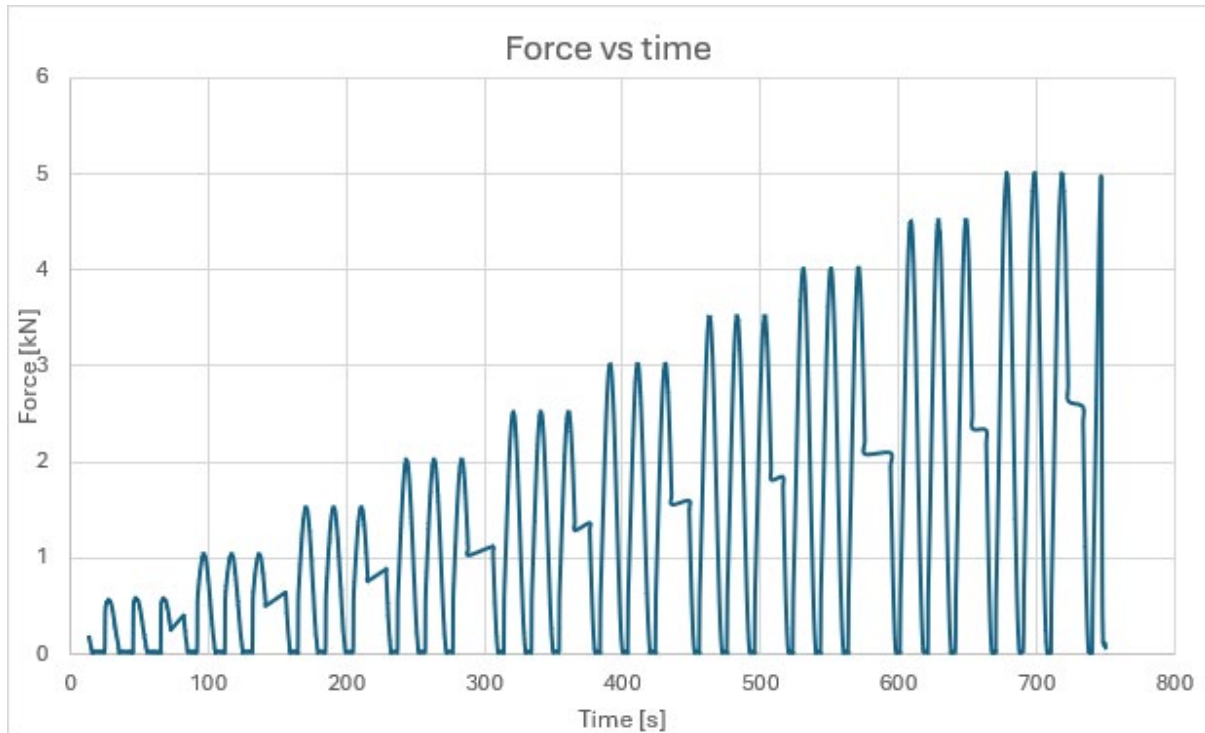


Figure 15 Out of plane testing failure of sample due to shearing of the screw head.

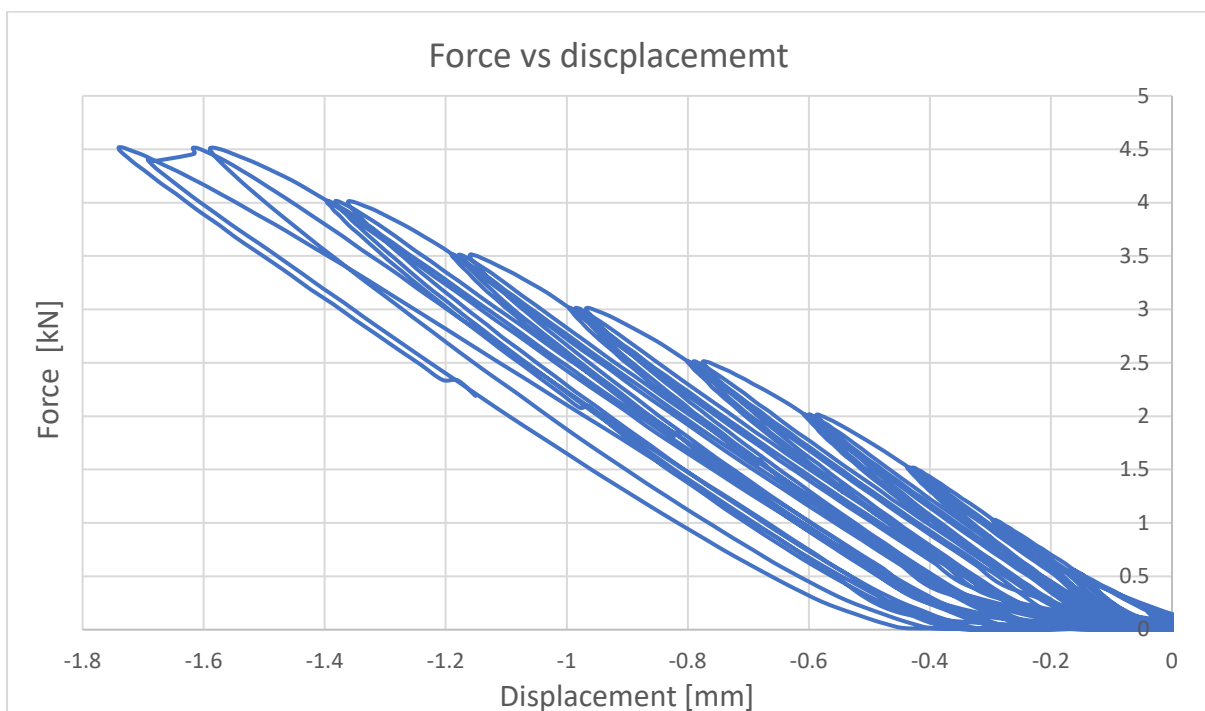
6. RESULTS

Representative plots of load against displacement are presented in Graph 1 to Graph 6. Failure in each plot is indicated by the sudden drop off in the load.

6.1 Tension testing



Graph 1 Plot of force vs time for tension sample.



Graph 2 Plot of force vs displacement for tension samples.

EM1 ANALYSIS

Capacity
[kN]
4.50
5.00
3.00
3.50
5.00
4.50

Sample

Resene bottom plate anchor testing TENSION

Instructions

inputs Inputs (data in these cells)
calcs contains calculated values.

Number of Samples

6

Coefficient of variation

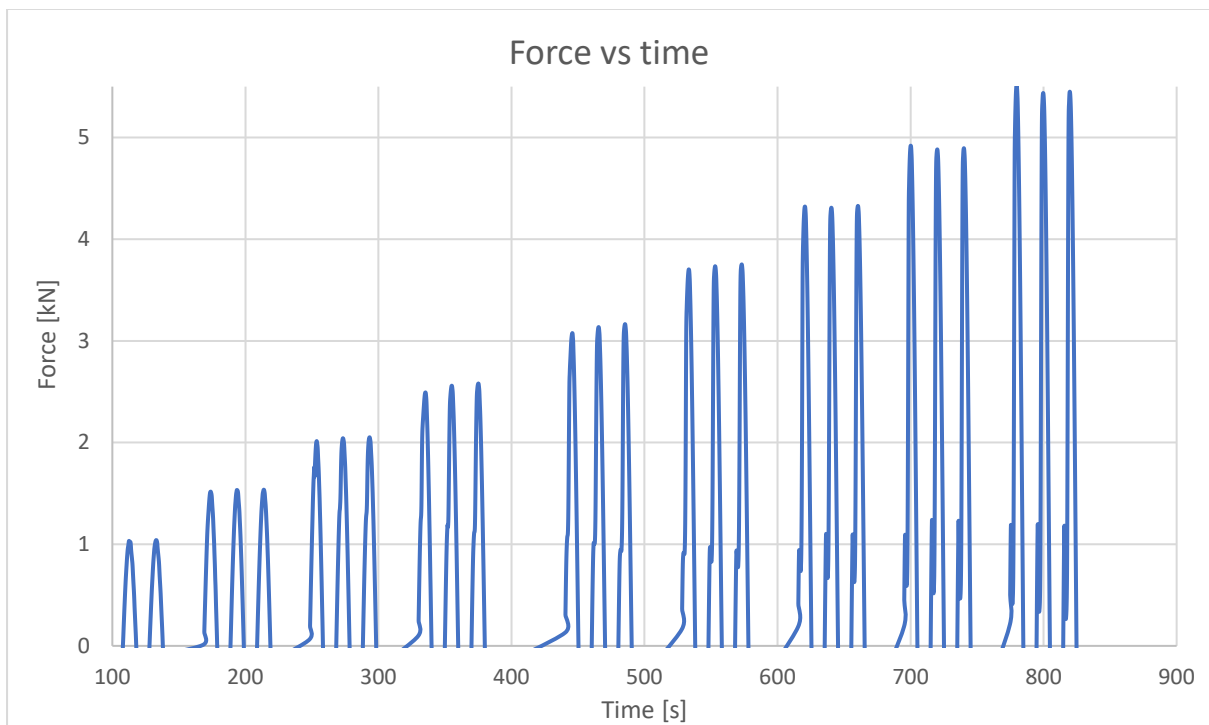
0.19

Characteristic Strength Rk

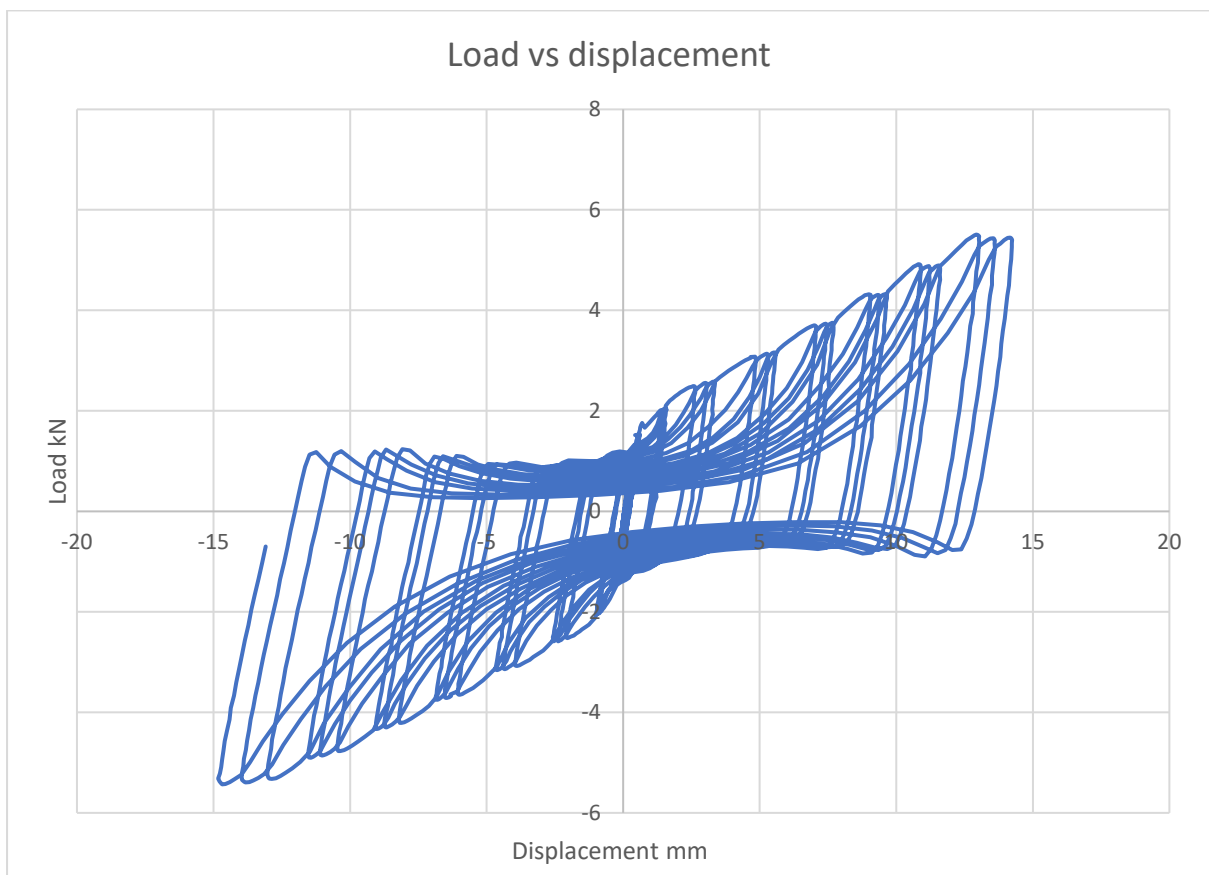
Less than 10 samples
 2.243 kN

ϕ	0.8	
$\phi Rk =$	1.8 kN	
Min Capacity tension R =	7.0 kN	@ 900 centres NZ3604 7.5.12.3 (c)
$(900\text{mm}/R) * \phi Rk =$	230 mm	Max allowable centres to satisfy NZ3604 7.5.12.3 (c)
	300 mm	Specified centres in Resene technical literature [1]

6.2 In-plane shear testing



Graph 3 Plot of force vs time for in-plane wall shear sample.



Graph 4 Plot of force vs displacement for in-plane wall shear sample.

EM1 ANALYSIS

Capacity [kN]	%
5.50	
5.50	
4.50	
3.50	
4.00	
6.00	

Sample

RESENE ANCHORS IN-PLANE OF WALL

Instructions

inputs Inputs (data in these cells)
calcs contains calculated values.

Number of Samples

6

Coefficient of variation

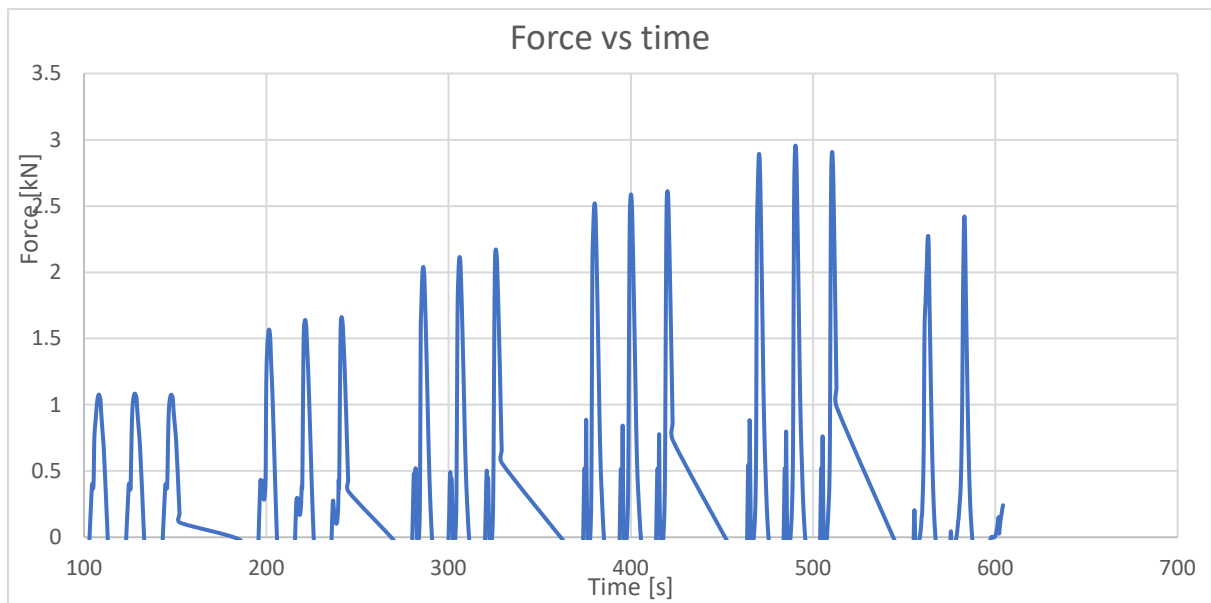
0.2034

Characteristic Strength Rk

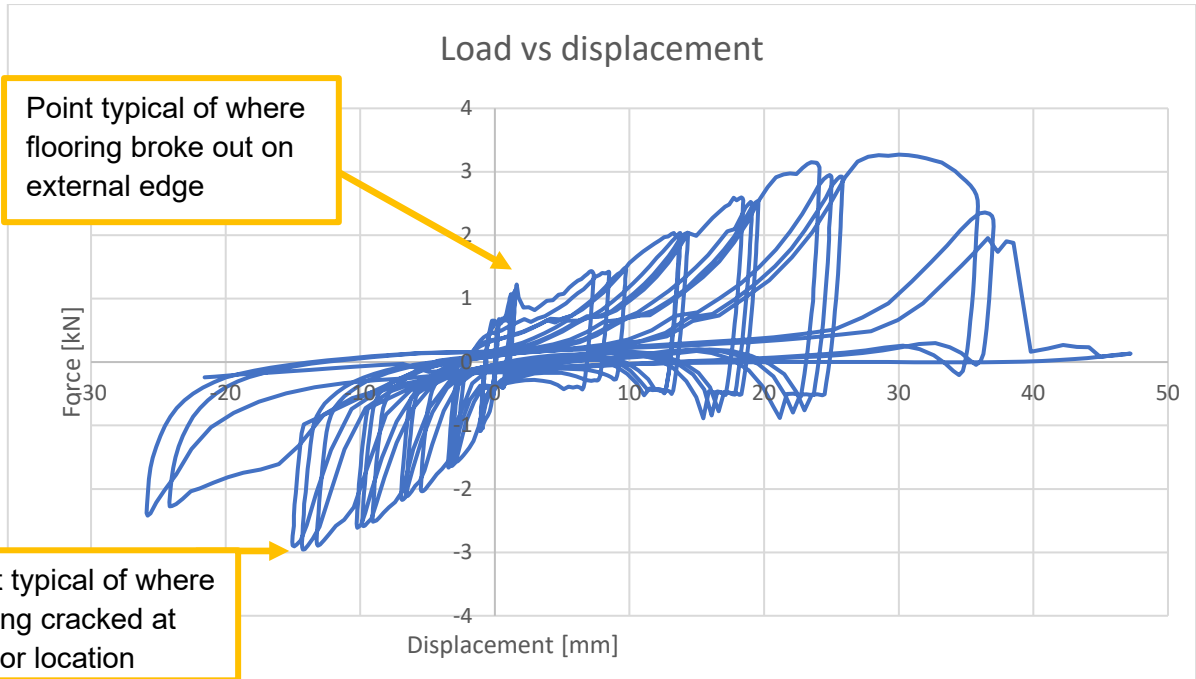
Less than 10 samples
 2.58 kN

ϕ	0.8	
$\phi Rk =$	2.06 kN	
Min Capacity in-plane Shear R =	2 kN	@ 900 centres NZ3604 7.5.12.3 (a)
$(900\text{mm}/R) * \phi Rk =$	928 mm	Max allowable centres to satisfy NZ3604 7.5.12.3 (a)
	300 mm	Specified centres in Resene technical literature [1]

6.3 Out-of-plane shear testing



Graph 5 Plot of force vs time for out-of-plane wall shear sample.



Graph 6 Plot of force vs displacement for out-of-plane wall shear sample

EM1 ANALYSIS

Capacity [kN]
3.50
3.00
3.00
3.00
3.00
2.50

Sample
RESENE ANCHORS OUT-OF-PLANE OF WALL

Instructions
 inputs Inputs (data in these cells)
 calcs contains calculated values.

Number of Samples
6

Coefficient of variation
0.11

Characteristic Strength Rk
 Less than 10 samples based on the minimum measured value
 2.1 kN

	ϕ	0.8	
	$\phi R_k =$	1.71 kN	
Min Capacity out-of-plane R =		3 kN	@ 900 centres NZ3604 7.5.12.3 (b)
(900mm/R) * $\phi R_k =$		512 mm	Max allowable centres to satisfy NZ3604 7.5.12.3 (b)
		300 mm	Specified centres in Resene technical literature [1]

7. CONCLUSION

150 mm x 14g INTEGRA screw fasteners used as a bottom plate anchor at 300mm centres with the INTEGRA lightweight concrete floor panel as profiled within this report complies with clause 7.5.12.3 (a) and (b). Additional fixings are required to satisfy clause 7.5.12.3 (c).

The conclusions above are dependant on the anchors being accurately located and installed with respect to the edge distance and installed as per the manufacture's guidelines.

8. REFERENCES

- [1] Resene Construction systems INTEGRA flooring system technical manual version 3 – February 2025.
- [2] Standards New Zealand (SNZ). 2011. NZS 3604:2011. Timber Framed Buildings. SNZ, Wellington, New Zealand.
- [3] NZS 3603:1993. "Timber structures standard". Standards New Zealand, Wellington, New Zealand.

APPENDIX

Resene Construction systems INTEGRA flooring system technical manual version 3 – February 2025.



INTEGRA[®]

LIGHTWEIGHT CONCRETE FLOORING SYSTEM

Version 3 - February 2025

0800 50 70 40

reseneconstruction.co.nz

TECHNICAL MANUAL

General System Description

The INTEGRA Lightweight Concrete Flooring System is a proprietary high-performance flooring system that can provide both structural performance and vertical fire separation and prevent undue noise transmission in a building.

The panel includes two discrete layers of steel mesh for reinforcement, and the panels are screw fixed into the joists to ensure the performance of the System.

The INTEGRA Lightweight Concrete Flooring System is suitable for use in low, medium and high-density housing.

This system provides a quality floor solution with the feel of a concrete floor at a significantly reduced cost.

Terminology

Find below explanations of some of the acronyms that are used throughout this document. For further information, refer to the Building Code Handbook for additional definitions. This can be found at the following link.

<https://www.building.govt.nz/building-codecompliance/building-code-and-handbooks/building-code-handbook/>

AS – Acceptable Solution or Australia Standard

FRR – Fire Resistance Rating

FSTC – Field Sound Transmission Class

NZBC – New Zealand Building Code

NZS – New Zealand Standard

STC – Sound Transmission Class represents a single number system for quantifying the transmission loss through a building element. STC is based upon typical speech and domestic noises and thus is most applicable to these areas. STC of a building element is measured in approved testing laboratories under ideal conditions.

FSTC – The ‘field’ or in situ measurement of Sound Transmission Class. Building tolerances and flanking noise have an effect on the performance of a partition when it is actually installed, which results in FSTC values lower than the laboratory-derived STC values, typically 5 dB less.

Rw – Sound Reduction Index is a number used to rate the effectiveness of a soundproofing system or material

IIC – Impact Insulation Class measures a floor assembly’s ability to absorb impact sound

FIIC – The ‘field’ or in situ measurement of Impact Insulation Class. Building tolerances and flanking noise have an effect on the performance of a partition when it is actually installed, which results in FIIC values lower than the laboratory-derived IIC values, typically 5 dB less.

PPE – Personal Protective Equipment

SG – Stress Grade

VM – Verification Method

AS1530.4-2005 – Methods for fire tests on building materials, components and structures, Part 4: Fire-resistance tests of elements of construction

Sound Insulation – When sound hits a surface, some of the sound energy travels through the material. ‘Sound insulation’ refers to the ability of a material to stop sound travelling through it.

Impact Sound – Sound produced by an object directly impacting a building structure, such as footfall noise or chairs scrapping on a floor.

Flanking Paths/Transmission – The transmission of sound energy through paths adjacent to the building element is being considered. For example, sound may be transmitted around a wall by travelling up into the ceiling space and then down into the adjacent room.

Structure-Borne Transmission – The transmission of sound from one space to another through the structure of a building.

Specification Reference Labelling

The specification label reference allows a quick reference to a system. For example

INTA120a

IN = 75mm INTEGRA Panel

TJ = Timber Support Structure

CJ = Composite Support Structure

SJ = Steel Support Structure

FC = Floor Ceiling

FSC = Floor Suspended Ceiling

A = Acoustic

120 = Fire Resistance Rating

a/b/c/d/e = System Options

Product Substitution

The INTEGRA Lightweight Concrete Flooring System is a proprietary system that has been carefully designed for New Zealand conditions and independently tested and assessed to ensure that it meets the performance criteria outlined in the NZBC. Using only Resene Construction Systems' proprietary products where specified is imperative. This will ensure that fire safety and structural and sound performance are achieved on-site.

Components not supplied

GIB® Systems

A GIB® System is only required when using the INTEGRA Lightweight Concrete Flooring System as part of a fire separation system.

The INTEGRA Lightweight Concrete Flooring System described in this document is partly based on test data from Winstone Wallboards Ltd. Resene Construction Systems has received authorisation and approval to utilise this data to achieve enhanced solutions for the INTEGRA Lightweight Concrete Flooring System. This means that the system must always incorporate the Winstone Wallboards Ltd products that are specified in the Technical Manual. Resene Construction Systems accepts no liability if system components are not used per the instructions in this publication.

What is the scope of use for the INTEGRA Lightweight Concrete Flooring System?

INTEGRA Lightweight Concrete Flooring System can be used:

- As a replacement for conventional particleboard or plywood sheet flooring on a suspended timber or steel support structure with floor joists at 600 centres, maximum
- Where a Fire Resistance Rating up to 120/120/120 is required
- Where up to a 3 kPa uniformly distributed live load is required
- Where a concentrated live load up to 3.7 kN is required (20 mm diameter foot – see Table 3.1 in AS/NZS 1170.1)
- Where a concentrated live load up to 7.5 kN is required (100 mm x100 mm square foot – see Table 3.1 in AS/NZS 1170.1)
- For buildings that have been designed and constructed in accordance with NZS 3604 Section 7
- When seeking compliance with the NZBC

The designer should consider the various systems depending on the required acoustic and fire performance. The designer should factor in the following:

- Size of the floor
- Control Joint set out
- Potential building movement, earthquake zones
- Any lateral loads
- Floor loads
- The timber framing needs to be designed for the individual project
- Fire Ratings, if needed
- Acoustic Ratings, if needed

Compliance with the NZBC

B1 – Structure

The design and specification for timber framing must be in accordance with the performance requirements of NZBC B1. Acceptable Solution B1/AS1 nominates NZS 3604:2011, so timber floor framing designed in accordance with NZS3604:2011 complies with NZBC B1 and is the best choice to use when using the INTEGRA Lightweight Concrete Flooring System. Where the timber framing falls outside the scope and the requirements of NZS3604:2011, we recommend that a structural engineer is engaged to ensure that NZBC B1 compliance is achieved.

The INTEGRA Lightweight Concrete floor panels can carry permanent and imposed actions (dead and live loads) but otherwise perform NO STRUCTURAL FUNCTION and cannot form part of a diaphragm floor.

In relation to the design of the timber floor framing, the framing must be designed in accordance with either B1/AS1 3.0 Timber (NZS 3604) or B1/VM1 6.0 Timber (NZS 3603).

The INTEGRA Lightweight Concrete Flooring System can be used with either a loadbearing or non-loadbearing wall.

During construction, provisions should be made for areas with increased foot traffic to prevent wear and tear if the INTEGRA panels are wet.

Provision should also be made if the INTEGRA Panel is being stored on the floor joists during the construction phase to ensure that the floor can take the load of the panels.

B2 – Durability

NZBC clause B2.3.1 requires that a floor continue to satisfy the performance requirements of the NZBC for a period not less than 50 years. Under normal conditions of internal use, the INTEGRA Lightweight Concrete Flooring System will achieve a service life in excess of 50 years and thus satisfy the requirements of NZBC B2.

C1-C6 – Protection from Fire

The INTEGRA Lightweight Concrete Flooring System can provide passive fire protection per NZBC C1-C6 – Protection from Fire requirements. The INTEGRA Lightweight Concrete Flooring System has been peer reviewed and meets the provisions of NZBC C1-C6 when kept within the scope as outlined in Section 6 – Scope of use for the INTEGRA Lightweight Concrete Flooring System.

The INTEGRA Lightweight Concrete Flooring System has been designed to be used in conjunction with GIB® Fire Rated Floor/Ceiling Systems, where the INTEGRA system replaced the particle board or plywood sheet flooring material that is used in the GIB® system.

The fire-resistance rating of the INTEGRA system has been established through a Technical Opinion from BRANZ. The non-combustibility of the INTEGRA system (i.e., the lightweight concrete panels) has been established through a report from CSIRO. These fire reports are available on request.

Fire Cells and Fire Resistance Ratings

1. The fire engineer for the project will determine where the fire cells are in the building and what fire resistance ratings (FRRs) are required.
2. In most cases, the INTEGRA Lightweight Concrete Flooring System will be part of the common floor of a fire cell between adjacent tenancies and will require an FRR.
3. The INTEGRA Lightweight Concrete Flooring System has been assessed in accordance with AS 1530.4: 2005 and achieves up to a 120/120/120-minute FRR, depending on which GIB® Fire Rated Floor/Ceiling system is utilised.
4. The elements of the FRR required will depend on the specific scenario in the building in question. For example, the INTEGRA LWC Flooring System will not require an insulation rating if fire sprinklers are present.
5. Specific requirements are contained within the Acceptable Solutions C/AS1 (Risk Group SH) and C/AS2 (all other Risk Groups)

Control of Internal Fire and Smoke Spread

1. Where the INTEGRA LWC flooring system is required to have an FRR, any service penetration through the floor is required to be fire-stopped. Specialist advice will be required from the fire engineer in this case.

2. In situations (Risk Group other than SH) where floor coverings are used, the floor covering shall be either non-combustible or, when tested, have a critical radiant flux of not less than that specified in Table 4.5 of C/AS2 or comply with Appendix of C/VM2.

NZBC F2 – Hazardous Building Materials

Under normal conditions of internal use, the INTEGRA Lightweight Concrete Flooring System does not constitute a health hazard and meets the provisions of the NZBC Clause F2.

NZBC G6 – Airborne and Impact Sound

The INTEGRA Lightweight Concrete Flooring System provides airborne noise control ratings that exceed the minimum requirements of NZBC Clause G6 – Airborne and Impact Sound. The INTEGRA Lightweight Concrete Flooring System has been peer reviewed and meets the provisions of NZBC G6 when kept within the scope as outlined in Section 6 – Scope of use for the INTEGRA Lightweight Concrete Flooring System.

The STC ratings have been established through full-scale sound testing at the University of Auckland and an opinion by Acoustic Engineering Solutions. These reports/opinions are available on our website.

Exposure to weather during construction

The INTEGRA Lightweight Concrete Flooring System can be exposed to the elements for up to 3 months before the building is closed in. Should the floor be exposed to the weather for a longer period, then we recommend applying Resene Aquapel over the entire surface of the INTEGRA Lightweight Concrete Panels to protect it further.

Materials

Fasteners

INTEGRA Lightweight Concrete Flooring System Screws must be used; these are available in the following sizes

Timber Floor Joists

- 14gx100mm Galvanised Screws – Used to secure the INTEGRA Panel to the Floor Joists
- 14gx125mm Galvanised Screws – Used to secure the INTEGRA Panel to the Floor Joists
- 14gx150mm Galvanised Screws – Used to secure the INTEGRA Panel to the Floor Joists and the bottom plate to the joists on non-bracing walls

Steel Floor Joists

- 14gx100mm Galvanised Self-Tapping Screws – Used to secure the INTEGRA Panel to the Floor Joists

INTEGRA Floor Panel

- Compressive strength: 4 MPa
- Modulus of Elasticity, E: 1800 MPa

- Thermal Conductivity: 0.1496 W/mK (Average 23°) (m2K/W)
- Thermal Resistivity, R: 0.501 m2K/W
- Substrate Thickness: 75 mm
- Density: 550 kg/m3
- Weight: 44.55 kg/m2
- 1800 mm long, 600 mm wide
- Non-Combustible (AS1530.1-1994)

PSL AAC Adhesive

- Supplied in 20kg bags
- Used for bonding AAC together and patching panel

Anti-Corrosion Coating

- Use to prime any exposed steel that may be exposed when the INTEGRA panel is cut to length or width
- Zinc-rich protective Coating such as Wurth Zinc Spray Light Perfect

System Variations

Where fire or acoustic performance is not required, the following variations are permitted

- The use of Steel frames in accordance with the (NASH Handbook Best Practice for Design and Construction of Residential and Low Rise Steel Framing).
- Utilising LVL members
- Utilising proprietary joists systems.

Framing set out

The INTEGRA Lightweight Concrete Flooring System must be supported on either a light timber framed structure or a light steel framed structure. The light timber-framed structure may comprise timber joists, ply webbed joists, trussed joists, laminated timber joists, timber and steel beams or any combination of the above.

It is recommended that the floor framing system have a joist set out of either 360, 450 or 600mm (whole-number multiples of the 1800 mm INTEGRA panel length) to ensure minimal wastage onsite. The joists, bearers and any other support framing should be sized according to the project engineer/architect.

The floor framing system should be designed for the appropriate live load plus the in-service mass of the panels. For framing designed to NZS3604 "Timber Framed Buildings" compensation needs to be made for the extra weight of the INTEGRA LWC flooring panels. Framing sizes should be selected from the appropriate table for a live load of the Design Live Load plus 0.5 kPa for the Floor Panel. For example, for normal domestic loading, the floor joists should be chosen from the 2.0kPa live load tables (1.5kPa + 0.5 kPa). Alternatively, a tabular summary of joist spacing, spans and sizes is provided in Table 1, which accounts explicitly for the increased self-weight of INTEGRA LWC floor panels compared to conventional sheet flooring products.

Floor Loading

The INTEGRA Lightweight Concrete Flooring System has been designed to support a concentrated live load of 2.7kN applied over a 0.1m x 0.1m area.

Concentrated loads from load-bearing walls or point loads shall be supported by additional framing, such as joists or blocking. The bearing stress in the panels shall be limited to 1.0MPa.

Panel Layout

Floor joists have been sized according to maximum spans for the following spacing: 360mm, 450mm, and 600mm. INTEGRA Lightweight Concrete Flooring Panels should be laid as full panels wherever possible. The panels shall be laid in a stretcher bond pattern. INTEGRA Floor Panels can be readily cut to size to suit floor layout requirements and openings. Concentrated loads (e.g. Supporting a load-bearing wall must have additional blocking or be situated over a double joist).

We recommend not using panel lengths less than 225mm wide where the panels need to be cut down.

Bracing Walls

Where a bracing wall occurs on top of the INTEGRA Lightweight Concrete Flooring System, it shall have either supporting blocking or a joist directly underneath. A GIB® HandiBrac™ can be fastened through the bottom plate into the supporting floor joist/blocking. For bracing walls parallel with the floor joists, the bracing wall shall either be over a joist or supported by solid blocking. Blocking shall have a minimum width of 45mm.

The INTEGRA Lightweight Concrete Flooring System is not considered to provide a horizontal diaphragm bracing system.

Coach screw for fixing bracket to be sized to achieve minimum embedment into joist/blocking as required by GIB® specification.

Penetrations

Penetrations on a floor are generally required for foul water pipework, air conditioning, and electrical services.

Provided the penetrations are isolated, penetrations up to 80mm in diameter may be made in INTEGRA Lightweight Concrete Flooring Panels without reducing the structural performance of the floor system. Larger penetrations or groups of penetrations should be supported by additional blocking.

Penetrations should be finished using a collar or appropriate sealant. Where the penetration is part of a fire-rated system, an appropriate fire collar and sealant should be installed according to the fire engineer's specifications.

Lateral Load Transfer

INTEGRA Lightweight Concrete Flooring Panels are fixed to the floor joists using 14-gauge, 100mm long screws at a maximum of 300mm centres along all joists. A minimum edge distance of 50mm is recommended from the short edge to the first screw, although screwing in on an angle is permitted. If the panel overhangs a floor joist on the short edges, it must be cut back so that it is flush and supported on this edge.

The INTEGRA Lightweight Concrete Flooring System is not considered to provide a horizontal diagram bracing system.

Wet Areas

Where INTEGRA Lightweight Concrete Flooring Panels are being used in a Wet Area, an appropriate waterproof membrane must be installed in accordance with the manufacturer's specifications. Please check that adhesion to the panels will not be compromised by having a dusty surface. A masonry sealer may be required before any membranes are installed.

Acoustic Performance

The New Zealand Building Code requires an acoustic barrier between two tenancies to have an STC rating of at least 55. For a material to have an STC rating of 55, each frequency band between 125Hz and 4000Hz must have a 'deficiency' of no more than 8, and the sum of all deficiencies must be no more than 32. For more information regarding the acoustic values of the INTEGRA Flooring System, refer to the report from Acoustic Engineering Services.

The placement of insulation in the floor/ceiling cavity will enhance the acoustic performance of the INTEGRA Lightweight Concrete Flooring System.

A carpet with underlay generally provides the best absorption of sound.

It should be noted that the INTEGRA Lightweight Concrete Flooring System is generally **NOT** suitable for an intertenancy floor. This is due to the difficulty in achieving a suitable STC/IIC rating when hard flooring finishes such as tiles are used.

Further increases in acoustic performance can be obtained using resilient mounts, channels or cradle systems. For further information on acoustic systems, please contact GIB® Acoustic Systems or an Acoustic Engineer.

Construction Joints

Construction control joints should divide the INTEGRA Lightweight Concrete Flooring System.

Construction joint locations should be as follows:

- At changes in panel and joist direction
- Over support walls or beams
- At 6.0 m maximum spacing

Floor Protection

Once the INTEGRA Lightweight Concrete Flooring System has been laid, we recommend that the INTEGRA Lightweight Concrete Flooring Panels be protected before the finished floor coverings and preparation are completed. Thin plywood, or RAM board, can be laid on top of the flooring where high traffic is expected during construction (i.e., hallways and entrances). This will protect and minimise surface damage to the INTEGRA Lightweight Concrete Flooring Panels.

Floor Coverings

Where the floor covering specification calls for 'thin section' flooring such as vinyl and carpet tiles or other floor coverings with low surface defect tolerances, the floor will require the application of a floor levelling/surface preparation compound before installation. Carpet with underlay can generally be installed as per a standard concrete floor preparation guideline.

Carpets

Installation of a smooth carpet edge before laying the carpet requires using specifically selected nails (Annular Grooved) and an adhesive. Use an appropriate primer with all adhesives.

Tiles

As per manufacturer's guidelines. Apply tiles to screed or adhesive as per a concrete floor. Screed floors to maintain fall and/or levelling. Refer to Tile Adhesive manufacturer for Primer suitable for AAC (porous materials) to promote adhesion.

Timber Floors

All timber floors require a vapour barrier to be installed after the flooring has been installed. We also recommend using a Floor Levelling Compound to ensure the floor is flat. Anchor battens at the required centres using anchors suitable for AAC Floating Timber Floor - Underlay/backing is installed as usual for a concrete slab.

Vinyl (Linoleum)

Floor levelling is generally required: Installed as per manufacturer's requirements. Always consult your floor covering specialist for advice.

Recommend Floor Levelling Screeds and Vapour Barriers

The recommended floor levelling compound is Bostik UI-200. The recommended vapour barrier is the Bostik Moisture Seal Epoxy Water Vapour Barrier. For a full specification, please contact your local Bostik Representative.

Installation Guidelines for over joists

General

Check that the sub-floor/joists are straight and true

STEP 1

Setting out

Measure 600mm from the perimeter/boundary joist at both ends of the floor. Mark this with a chalk line and continue this process across the floor. Trim the edge of several panels. These panels will be used to start the flooring system installation.

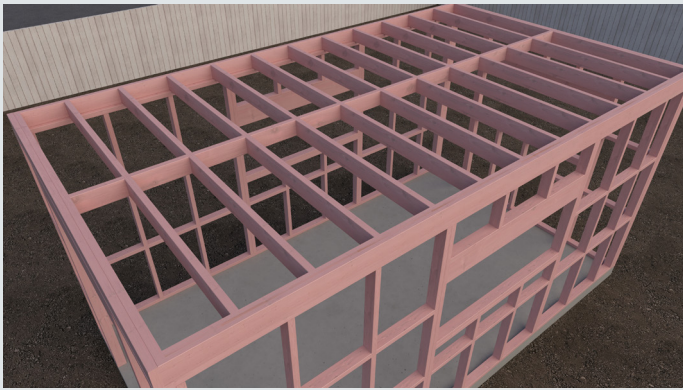


Image 1 - Typical framing layout



Image 2 - The tongue should be removed before installing the panels to the boundary joists

STEP 2

Installing the first panel

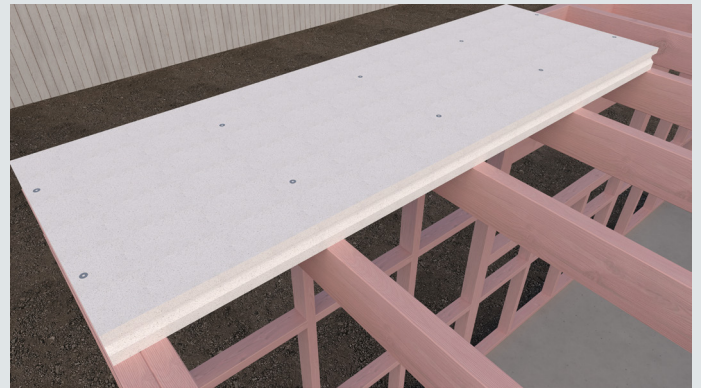


Image 3 - Start installing from the corner

Starting from one corner of the floor structure, lay the first INTEGRA Floor Panel parallel to that boundary joist. Make sure that both of the narrower ends of the INTEGRA Floor Panel are supported on joists/blocking. Ensure that the flat edge of the INTEGRA Panel is on the boundary joist edge. Once the panels are positioned in the correct location, screw-fix them so they are secure.

INTEGRA Lightweight Concrete Flooring Panels are fixed to the floor joists using 14-gauge, 100mm long screws at a maximum of 300mm centres along all joists.

STEP 3

Joining panels

Ensure all narrow ends of the INTEGRA Floor Panels also have Resene Construction Systems AAC Adhesive applied to them before butting in the adjoining panel.



Image 4 - AAC Adhesive should be used on the long and short edges of the INTEGRA panel

STEP 4

Finishing the first row

Around all boundary joists, the fixing centres must be at a maximum of 300mm. Where two INTEGRA Floor Panels meet on a floor joist/blocking, screws can be fixed by screwing in on an angle from both sides. At least two intermediate joists must support all full sheets of INTEGRA Floor Panels.



Image 5 – The ends of adjacent panels should finish over solid timber

STEP 5

Installing the second row of the panel

Before installing any of the second row of panels, apply Resene Construction Systems AAC Adhesive. The easiest way to do this is to apply Resene Construction Systems AAC Adhesive into the panel groove using a Broad-knife before installing the panel. Take care not to overpack the groove, and then carefully install the INTEGRA Floor Panel into the tongue of the first row of INTEGRA Floor Panels in stretcher bond. Gently tape the panels with a hammer and block of wood to ensure the tongue of the panels fits neatly into the groove.

The second row of INTEGRA Floor Panels must be installed in a stretcher bond pattern. The INTEGRA Floor Panels must be cut to allow this to happen. Make sure that all narrow panel ends are supported on joists.

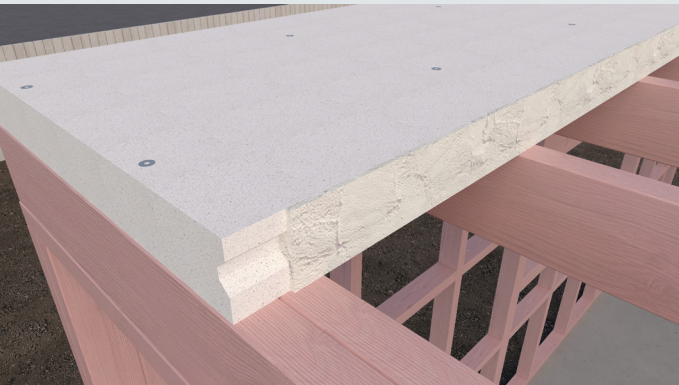


Image 6 – The rebate in the panel can be filled with AAC adhesive before the next panel is fitted into place

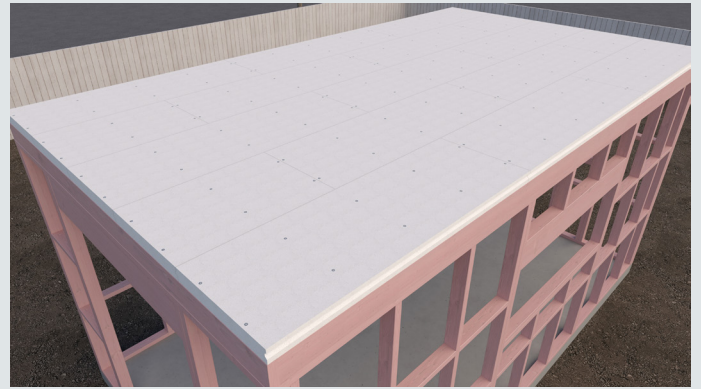


Image 7 – Remainder of the floor fastened in place

STEP 6

Screw Fixing the panel

Screw fix the panel a minimum of 150mm from either side of the panel following along the joist. Two screws are required in each panel at each joist.



Image 8 – Skew fix the panel where the screws are located near the edge of the panels

Screws in the end edge of the panel may be skewed to achieve the 50mm end distance requirement. Larger screws (125mm) may be required in this area where skewing screws at a sharp angle. The screws must be wound into the panel until the head is 2mm – 3mm below the panel surface.



Image 9 – Fix each panel 150mm from the long edges along the joists

Panels must be supported on a minimum of two joists. Screws into joists are driven without drilling of panels, and excessive adhesive should be removed immediately. Screw holes are filled with Resene Construction Systems AAC Adhesive, and any chips on panel edges should be filled with Resene Construction Systems AAC Adhesive.

STEP 7

Completing the floor

Continue across the entire floor, making sure to maintain a stretcher bond pattern. Try and keep all panel joints tidy by scraping off any Resene Construction Systems AAC Adhesive so that the joints are flush. Once the INTEGRA panels have been installed, go around all the exposed edges of INTEGRA Floor Panels and prime all the exposed steel using an anti-corrosion coating.

STEP 8

Securing the bottom plate

The panel around the boundary joists must be fastened at 300mm centres.

All Bottom Plates should be screwed down using 150mm x14G INTEGRA fasteners at 300mm centres.

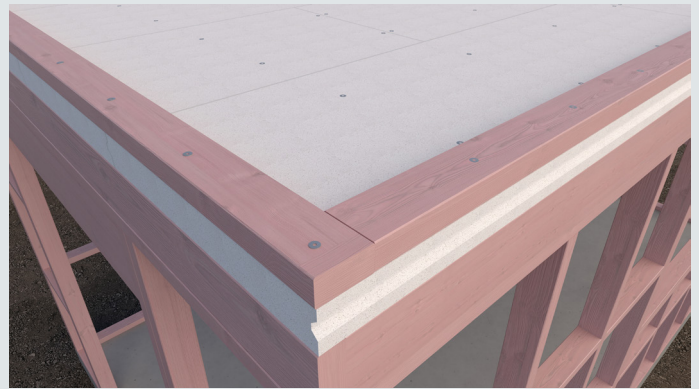


Image 10 – Fasten the bottom plate around the perimeter using a 150mm INTEGRA Screw at 300mm centres

STEP 9

Cleaning Up

Ensure that any AAC Adhesive droppings on lower levels are cleaned up on the same day. If it is left to dry, it can be difficult to remove.

Any joints in the panels may need to be flushed out with additional AAC Adhesive. Ensure that the floor is left tidy for subsequent trades.

Timber Joist Sizes (corresponding to Tables 7.1 and 14.8 in NZS3604:2011)

Table 1 below provides a summary of timber floor joist sizes and spans for three recommended joist spacings of 360 mm, 450 mm and 600 mm. Each of these recommended joist spacings is a whole number multiple for the INTEGRA panel length of 1800 mm to minimise on-site cutting time

and material wastage. The spans and spacings have explicitly been calculated to account for the self-weight of the INTEGRA LWC floor panel and correspond to the 1.0 kPa, 2.0 kPa (Table 7.1) and 3.0 kPa (Table 14.8) tables in NZS 3604:2011.

Live Load (kPa)	Span (m)	360mm Joist Spacing	450mm Joist Spacing	600mm Joist Spacing
1.5	1.2	90 × 35	90 × 35	90 × 35
	1.5	90 × 45	140 × 35	140 × 35
	1.8	140 × 35	140 × 35	140 × 35
	2.1	140 × 35	140 × 35	140 × 45
	2.4	140 × 45	190 × 45	190 × 45
	2.7	190 × 45	190 × 45	190 × 45
	3	190 × 45	190 × 45	240 × 45
	3.3	190 × 45	240 × 45	240 × 45
	3.6	240 × 45	240 × 45	240 × 45
	3.9	240 × 45	240 × 45	290 × 45
	4.2	240 × 45	290 × 45	290 × 45
	4.5	290 × 45	290 × 45	
	4.8	290 × 45		
2.0	1.2	90 × 35	90 × 35	90 × 45
	1.5	140 × 35	140 × 35	140 × 35
	1.8	140 × 35	140 × 35	140 × 35
	2.1	140 × 35	140 × 45	190 × 45
	2.4	190 × 45	190 × 45	190 × 45
	2.7	190 × 45	190 × 45	240 × 45
	3	190 × 45	240 × 45	240 × 45
	3.3	240 × 45	240 × 45	240 × 45
	3.6	240 × 45	240 × 45	290 × 45
	3.9	240 × 45	290 × 45	290 × 45
	4.2	290 × 45	290 × 45	
	4.5	290 × 45		
	4.8	290 × 45		

3.0	1.2	90 × 35	90 × 45	140 × 35
	1.5	140 × 35	140 × 35	140 × 35
	1.8	140 × 35	140 × 35	190 × 45
	2.1	140 × 45	190 × 45	190 × 45
	2.4	190 × 45	190 × 45	190 × 45
	2.7	190 × 45	240 × 45	240 × 45
	3	240 × 45	240 × 45	240 × 45
	3.3	240 × 45	240 × 45	290 × 45
	3.6	240 × 45	290 × 45	290 × 45
	3.9	290 × 45	290 × 45	
	4.2	290 × 45		
	4.5			
	4.8			

Serviceability Limit criteria using Timber Joists

Serviceability Criteria	Timber Joist Centres			
	360mm	400mm	450mm	600mm
Span/600	0.60mm	0.67mm	0.75mm	1.00mm
Span/500	0.72mm	0.80mm	0.90mm	1.20mm
Span/400	0.90mm	1.00mm	1.13mm	1.50mm
Span/300	1.20mm	1.50mm	1.50mm	2.00mm
Span/250	1.44mm	1.60mm	1.80mm	2.40mm

System Specification

Name	FRR	Linings	Structure
INTJFC15	15/15/15	1 layer of 13mm GIB® Standard	Timber Joist
INTJFC30	30/30/30	1 layer of 13mm Fyreline®	Timber Joist
INTJFC45	45/45/45	1 layer of 13mm Fyreline®	Timber Joist
INTJFC60	60/60/60	1 layer of 16mm Fyreline®	Timber Joist
INTJFC90	90/90/90	2 layers of 16mm Fyreline®	Timber Joist
INTJFC120	120/120/120	2 layers of 19mm Fyreline®	Timber Joist
INCJFC30	30/30/30	1 layer of 13mm Fyreline®	Composite Joist
INCJFC45	45/45/45	1 layer of 13mm Fyreline®	Composite Joist
INCJFC60	60/60/60	1 layer of 16mm Fyreline®	Composite Joist
INSJFC30	30/30/30	1 layer of 13mm Fyreline®	Steel Joist
INSJFC60	60/60/60	1 layer of 16mm Fyreline®	Steel Joist
INTJFSC30	30/30/30	1 layer of 13mm Fyreline Suspended Ceiling®	Timber Joist
INTJFSC60a	60/60/60	2 layers of 13mm Fyreline Suspended Ceiling®	Timber Joist
INTJFSC60b	60/60/60	1 layer of 16mm Fyreline Suspended Ceiling®	Timber Joist
INTJFSC90	90/90/90	1 layer of 13mm Fyreline and 1 layer of 16mm Fyreline Suspended Ceiling®	Timber Joist

INTJFC15 - Timber Frame 15 minute

INTEGRA Lightweight Concrete Flooring System with 1 layer of 13mm GIB® Standard Plasterboard

Framing to comply with

- NZBC B1 – Structure
- NZBC B2 – Durability

Flooring to comply with

- NZBC Clause B1 Structure
- NZBC Clause B2 Durability
- NZBC Clause C1-C6 – Protection from Fire
- NZBC Clause F2 Hazardous Building Materials
- NZBC Clause G6 Airborne and Impact Sound

Framing for Floor

- Framing as per NZS3604, strength and serviceability and spaced at a maximum of 600 centres

Flooring

- 75mm INTEGRA Flooring
- Fastened with 100mmx14g Galvanised Screws
- Fastened at 300 centres along joist and around the perimeter

Ceiling Linings

- 1 layer of 13mm GIB® Standard Plasterboard shall be fixed at right angles to the underside of the floor joists.
- All joints must occur on joists, solid strutting or nogs.
- Sheets shall be touch-fitted
- Fastened as per plasterboard manufacturer specifications

Jointing

- Jointing and finishing of plasterboard is to be as per the manufacturer's instructions to meet requirements of AS/NZS 2589:2017

INTJFC30 - Timber Frame 30 minute

INTEGRA Lightweight Concrete Flooring System with 1 layer of 13mm Fyreline® Plasterboard

Framing to comply with

- NZBC B1 – Structure
- NZBC B2 – Durability

Flooring to comply with

- NZBC Clause B1 Structure
- NZBC Clause B2 Durability
- NZBC Clause C1-C6 – Protection from Fire
- NZBC Clause F2 Hazardous Building Materials
- NZBC Clause G6 Airborne and Impact Sound

Framing for Floor

- Framing as per NZS3604, strength and serviceability and spaced at a maximum of 600 centres

Flooring

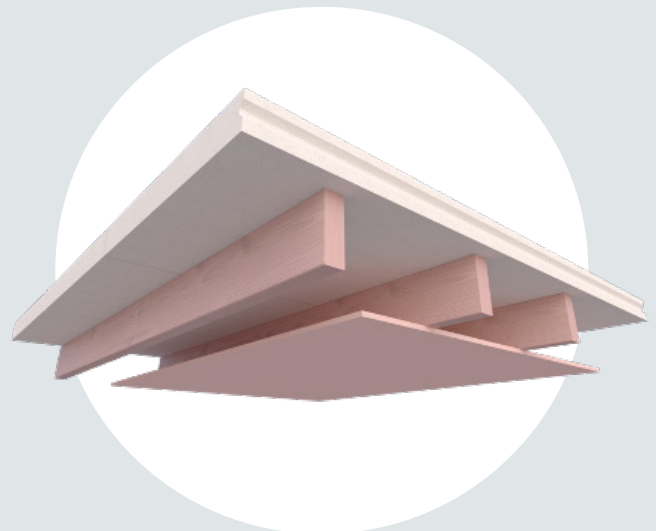
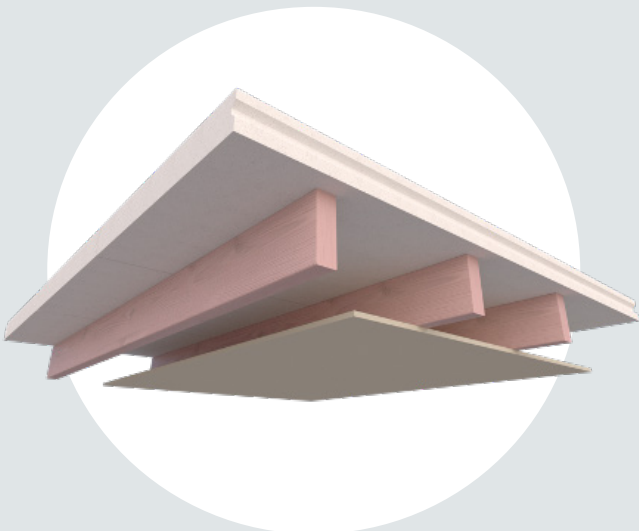
- 75mm INTEGRA Flooring
- Fastened with 100mmx14g Galvanised Screws
- Fastened at 300 centres along joist and around the perimeter

Ceiling Linings

- 1 layer of 13mm Fyreline® Plasterboard shall be fixed at right angles to the underside of the floor joists.
- All joints must occur on joists, solid strutting or nogs.
- Sheets shall be touch-fitted
- Fastened as per plasterboard manufacturer specifications

Jointing

- Jointing and finishing of plasterboard is to be as per the manufacturer's instructions to meet requirements of AS/NZS 2589:2017



INTJFC45 - Timber Frame 45 minute

INTEGRA Lightweight Concrete Flooring System with 1 layer of 13mm Fyreline® Plasterboard

Framing to comply with

- NZBC B1 – Structure
- NZBC B2 – Durability

Flooring to comply with

- NZBC Clause B1 Structure
- NZBC Clause B2 Durability
- NZBC Clause C1-C6 – Protection from Fire
- NZBC Clause F2 Hazardous Building Materials
- NZBC Clause G6 Airborne and Impact Sound

Framing for Floor

- Framing as per NZS3604, strength and serviceability and spaced at a maximum of 600 centres

Flooring

- 75mm INTEGRA Flooring
- Fastened with 100mmx14g Galvanised Screws
- Fastened at 300 centres along joist and around the perimeter

Ceiling Linings

- 1 layer of 13mm Fyreline® Plasterboard shall be fixed at right angles to the underside of the floor joists.
- All joints must occur on joists, solid strutting or nogs.
- Sheets shall be touch-fitted
- Fastened as per plasterboard manufacturer specifications

Jointing

- Jointing and finishing of plasterboard is to be as per the manufacturer's instructions to meet requirements of AS/NZS 2589:2017
-

INTJFC60 - Timber Frame 60 minute

INTEGRA Lightweight Concrete Flooring System with 1 layer of 16mm Fyreline® Plasterboard

Framing to comply with

- NZBC B1 – Structure
- NZBC B2 – Durability

Flooring to comply with

- NZBC Clause B1 Structure
- NZBC Clause B2 Durability
- NZBC Clause C1-C6 – Protection from Fire
- NZBC Clause F2 Hazardous Building Materials
- NZBC Clause G6 Airborne and Impact Sound

Framing for Floor

- Framing as per NZS3604, strength and serviceability and spaced at a maximum of 600 centres

Flooring

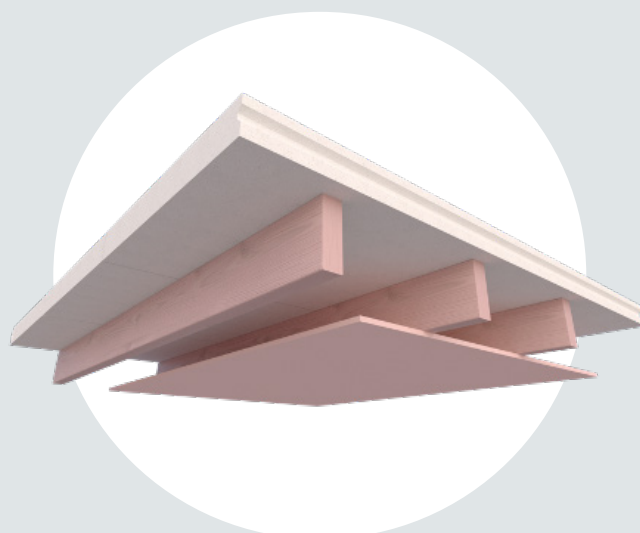
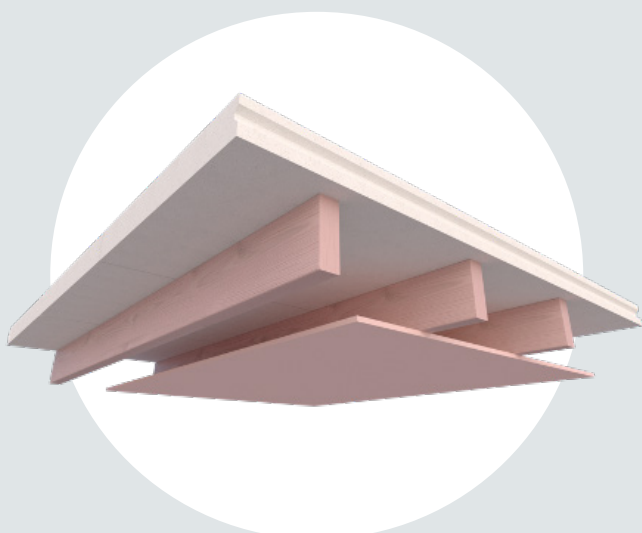
- 75mm INTEGRA Flooring
- Fastened with 100mmx14g Galvanised Screws
- Fastened at 300 centres along joist and around the perimeter

Ceiling Linings

- 1 layer of 16mm Fyreline® Plasterboard shall be fixed at right angles to the underside of the floor joists.
- All joints must occur on joists, solid strutting or nogs.
- Sheets shall be touch-fitted
- Fastened as per plasterboard manufacturer specifications

Jointing

- Jointing and finishing of plasterboard is to be as per the manufacturer's instructions to meet requirements of AS/NZS 2589:2017



INTJFC90 - Timber Frame 90 minute

INTEGRA Lightweight Concrete Flooring System with 2 layer of 16mm Fyreline® Plasterboard

Framing to comply with

- NZBC B1 – Structure
- NZBC B2 – Durability

Flooring to comply with

- NZBC Clause B1 Structure
- NZBC Clause B2 Durability
- NZBC Clause C1-C6 – Protection from Fire
- NZBC Clause F2 Hazardous Building Materials
- NZBC Clause G6 Airborne and Impact Sound

Framing for Floor

- Framing as per NZS3604, strength and serviceability and spaced at a maximum of 600 centres

Flooring

- 75mm INTEGRA Flooring
- Fastened with 100mmx14g Galvanised Screws
- Fastened at 300 centres along joist and around the perimeter

Ceiling Linings

- 2 layers of 16mm Fyreline® Plasterboard shall be fixed at right angles to the underside of the floor joists.
- All joints must occur on joists, solid strutting or noggs.
- Sheets shall be touch-fitted
- Fastened as per plasterboard manufacturer specifications

Jointing

- Jointing and finishing of plasterboard is to be as per the manufacturer's instructions to meet requirements of AS/NZS 2589:2017

INTJFC120 - Timber Frame 120 minute

INTEGRA Lightweight Concrete Flooring System with 2 layers of 19mm Fyreline® Plasterboard

Framing to comply with

- NZBC B1 – Structure
- NZBC B2 – Durability

Flooring to comply with

- NZBC Clause B1 Structure
- NZBC Clause B2 Durability
- NZBC Clause C1-C6 – Protection from Fire
- NZBC Clause F2 Hazardous Building Materials
- NZBC Clause G6 Airborne and Impact Sound

Framing for Floor

- Framing as per NZS3604, strength and serviceability and spaced at a maximum of 600 centres

Flooring

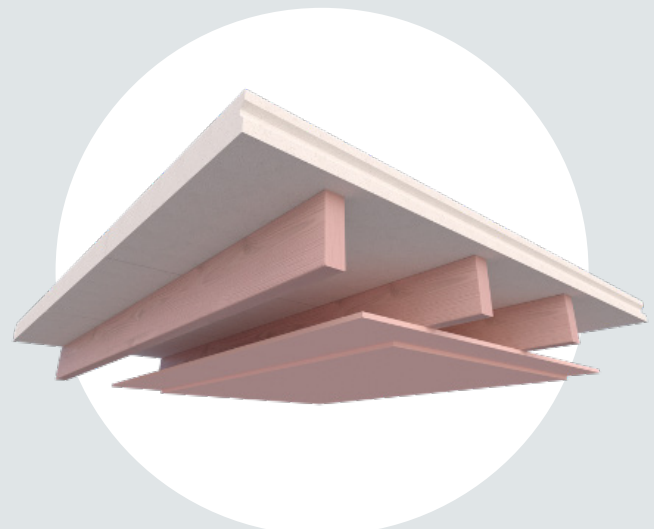
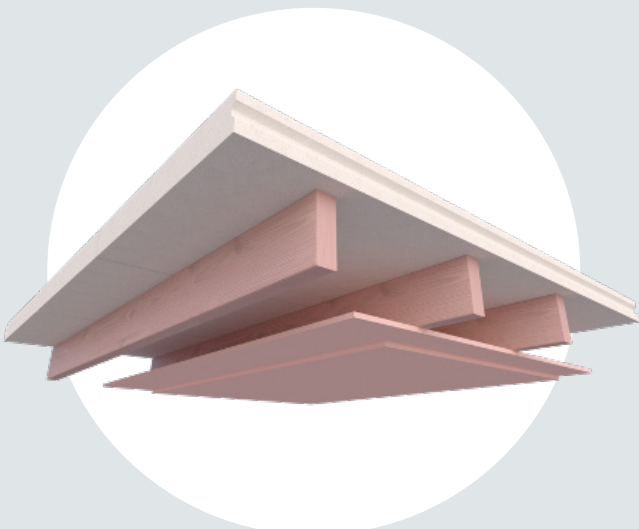
- 75mm INTEGRA Flooring
- Fastened with 100mmx14g Galvanised Screws
- Fastened at 300 centres along joist and around the perimeter

Ceiling Linings

- 2 layers of 19mm Fyreline® Plasterboard shall be fixed at right angles to the underside of the floor joists.
- All joints must occur on joists, solid strutting or noggs.
- Sheets shall be touch-fitted
- Fastened as per plasterboard manufacturer specifications

Jointing

- Jointing and finishing of plasterboard is to be as per the manufacturer's instructions to meet requirements of AS/NZS 2589:2017



INCJFC30 - Composite Frame

30 minute

INTEGRA Lightweight Concrete Flooring System with 1 layer of 13mm Fyreline® Plasterboard

Framing to comply with

- NZBC B1 – Structure
- NZBC B2 – Durability

Flooring to comply with

- NZBC Clause B1 Structure
- NZBC Clause B2 Durability
- NZBC Clause C1-C6 – Protection from Fire
- NZBC Clause F2 Hazardous Building Materials
- NZBC Clause G6 Airborne and Impact Sound

Framing for Floor

- Hyspan®/Hybeam®/Posi Strut® or other engineered joists may be used as an alternative. Joists must be covered be SED (specific engineering design) for strength and serviceability and spaced at a maximum of 600 centres
- Requirements for nogs/dwangs are the same as for NZS 3604 floor framing above.
- Consult the joist manufacturer about construction of the solid blocking contained in floor/ceiling to wall junctions.

Flooring

- 75mm INTEGRA Flooring
- Fastened with 100mmx14g Galvanised Screws
- Fastened at 300 centres along joist and around the perimeter

Ceiling Linings

- 1 layer of 13mm Fyreline® Plasterboard shall be fixed at right angles to the underside of the floor joists.
- All joints must occur on joists, solid strutting or nogs.
- Sheets shall be touch-fitted
- Fastened as per plasterboard manufacturer specifications

Jointing

- Jointing and finishing of plasterboard is to be as per the manufacturer's instructions to meet requirements of AS/NZS 2589:2017

INCJFC45 - Composite Frame

45 minute

INTEGRA Lightweight Concrete Flooring System with 1 layer of 13mm Fyreline® Plasterboard

Framing to comply with

- NZBC B1 – Structure
- NZBC B2 – Durability

Flooring to comply with

- NZBC Clause B1 Structure
- NZBC Clause B2 Durability
- NZBC Clause C1-C6 – Protection from Fire
- NZBC Clause F2 Hazardous Building Materials
- NZBC Clause G6 Airborne and Impact Sound

Framing for Floor

- Hyspan®/Hybeam®/Posi Strut® or other engineered joists may be used as an alternative. Joists must be covered be SED (specific engineering design) for strength and serviceability and spaced at a maximum of 600 centres
- Requirements for nogs/dwangs are the same as for NZS 3604 floor framing above.
- Consult the joist manufacturer about construction of the solid blocking contained in floor/ceiling to wall junctions.

Flooring

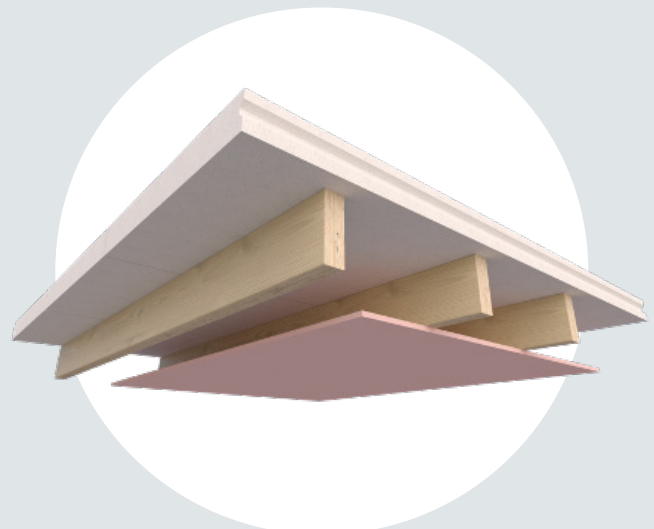
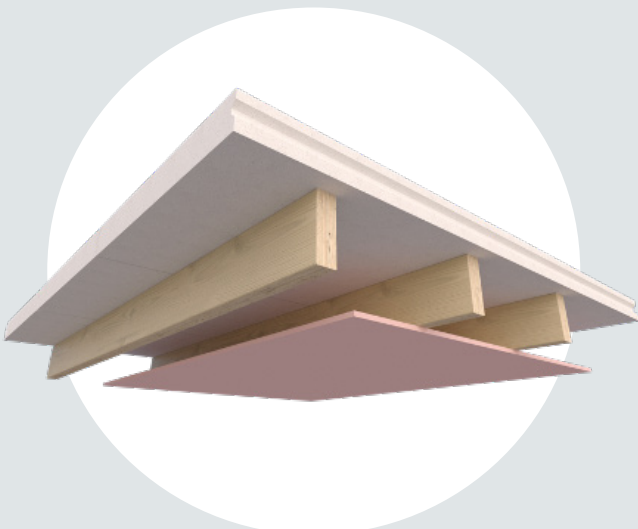
- 75mm INTEGRA Flooring
- Fastened with 100mmx14g Galvanised Screws
- Fastened at 300 centres along joist and around the perimeter

Ceiling Linings

- 1 layer of 13mm Fyreline® Plasterboard shall be fixed at right angles to the underside of the floor joists.
- All joints must occur on joists, solid strutting or nogs.
- Sheets shall be touch-fitted
- Fastened as per plasterboard manufacturer specifications

Jointing

- Jointing and finishing of plasterboard is to be as per the manufacturer's instructions to meet requirements of AS/NZS 2589:2017



INCJFC60 - Composite Frame

60 minute

INTEGRA Lightweight Concrete Flooring System with 1 layer of 16mm Fyreline® Plasterboard

Framing to comply with

- NZBC B1 – Structure
- NZBC B2 – Durability

Flooring to comply with

- NZBC Clause B1 Structure
- NZBC Clause B2 Durability
- NZBC Clause C1-C6 – Protection from Fire
- NZBC Clause F2 Hazardous Building Materials
- NZBC Clause G6 Airborne and Impact Sound

Framing for Floor

- Hyspan®/Hybeam®/Posi Strut® or other engineered joists may be used as an alternative. Joists must be covered be SED (specific engineering design) for strength and serviceability and spaced at a maximum of 600 centres
- Requirements for nogs/dwangs are the same as for NZS 3604 floor framing above.
- Consult the joist manufacturer about construction of the solid blocking contained in floor/ceiling to wall junctions.

Flooring

- 75mm INTEGRA Flooring
- Fastened with 100mmx14g Galvanised Screws
- Fastened at 300 centres along joist and around the perimeter

Ceiling Linings

- 1 layer of 16mm Fyreline® Plasterboard shall be fixed at right angles to the underside of the floor joists.
- All joints must occur on joists, solid strutting or nogs.
- Sheets shall be touch-fitted
- Fastened as per plasterboard manufacturer specifications

Jointing

- Jointing and finishing of plasterboard is to be as per the manufacturer's instructions to meet requirements of AS/NZS 2589:2017

INSJFC30 - Steel Frame

30 minute

INTEGRA Lightweight Concrete Flooring System with 1 layer of 13mm Fyreline® Plasterboard

Framing to comply with

- NZBC B1 – Structure
- NZBC B2 – Durability

Flooring to comply with

- NZBC Clause B1 Structure
- NZBC Clause B2 Durability
- NZBC Clause C1-C6 – Protection from Fire
- NZBC Clause F2 Hazardous Building Materials
- NZBC Clause G6 Airborne and Impact Sound

Framing for Floor

- Framing dimensions and height as determined by E2/AS4 (NASH Handbook Best Practice for Design and Construction of Residential and Low Rise Steel Framing)s

Flooring

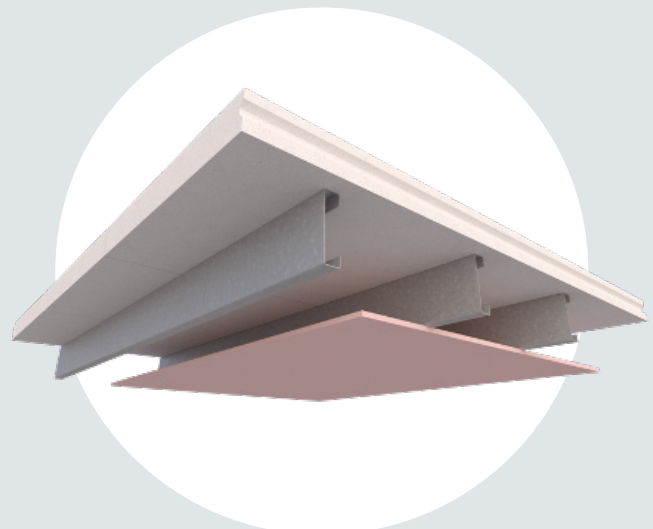
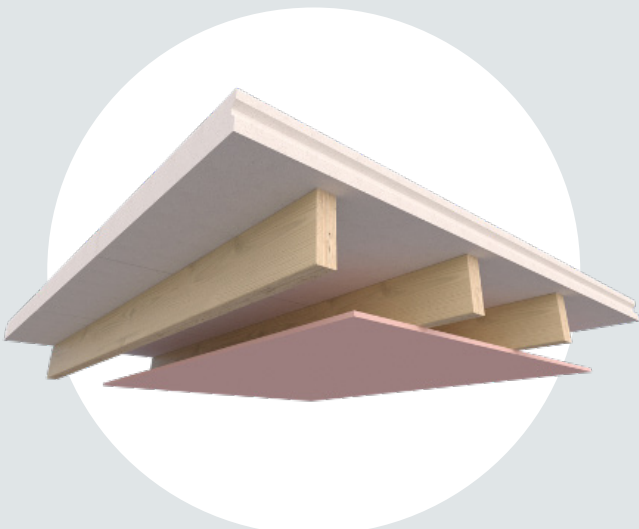
- 75mm INTEGRA Flooring
- Fastened with 100mmx14g Galvanised Screws
- Fastened at 300 centres along joist and around the perimeter

Ceiling Linings

- 1 layer of 13mm Fyreline® Plasterboard shall be fixed at right angles to the underside of the floor joists.
- All joints must occur on joists, solid strutting or nogs.
- Sheets shall be touch-fitted
- Fastened as per plasterboard manufacturer specifications

Jointing

- Jointing and finishing of plasterboard is to be as per the manufacturer's instructions to meet requirements of AS/NZS 2589:2017



INSJFC60 - Steel Frame

60 minute

INTEGRA Lightweight Concrete Flooring System with 1 layer of 16mm Fyreline® Plasterboard

Framing to comply with

- NZBC B1 – Structure
- NZBC B2 – Durability

Flooring to comply with

- NZBC Clause B1 Structure
- NZBC Clause B2 Durability
- NZBC Clause C1-C6 – Protection from Fire
- NZBC Clause F2 Hazardous Building Materials
- NZBC Clause G6 Airborne and Impact Sound

Framing for Floor

- Framing dimensions and height as determined by E2/AS4 (NASH Handbook Best Practice for Design and Construction of Residential and Low Rise Steel Framing)

Flooring

- 75mm INTEGRA Flooring
- Fastened with 100mmx14g Galvanised Screws
- Fastened at 300 centres along joist and around the perimeter

Ceiling Linings

- 1 layer of 16mm Fyreline® Plasterboard shall be fixed at right angles to the underside of the floor joists.
- All joints must occur on joists, solid strutting or noggs.
- Sheets shall be touch-fitted
- Fastened as per plasterboard manufacturer specifications

Jointing

- Jointing and finishing of plasterboard is to be as per the manufacturer's instructions to meet requirements of AS/NZS 2589:2017

INTJFSC30 - Timber Frame

30 minute

INTEGRA Lightweight Concrete Flooring System with 1 layer of 13mm Fyreline® Plasterboard

Framing to comply with

- NZBC B1 – Structure
- NZBC B2 – Durability

Flooring to comply with

- NZBC Clause B1 Structure
- NZBC Clause B2 Durability
- NZBC Clause C1-C6 – Protection from Fire
- NZBC Clause F2 Hazardous Building Materials
- NZBC Clause G6 Airborne and Impact Sound

Framing for Floor

- Framing as per NZS3604, strength and serviceability and spaced at a maximum of 600 centres

Flooring

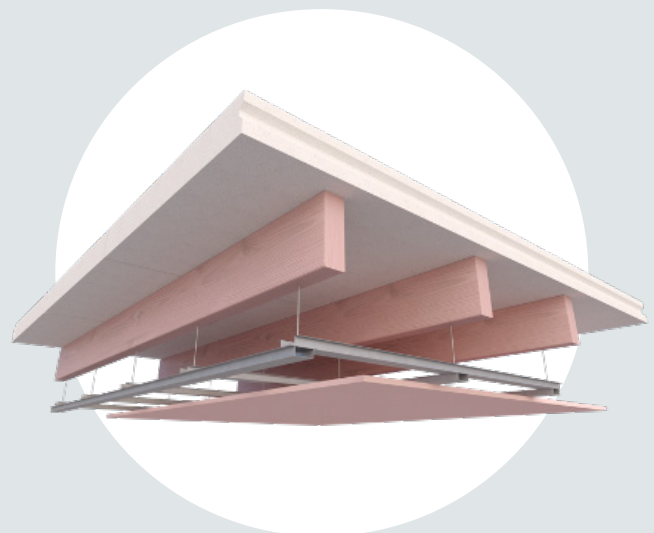
- 75mm INTEGRA Flooring
- Fastened with 100mmx14g Galvanised Screws
- Fastened at 300 centres along joist and around the perimeter

Ceiling Linings

- 1 layer of 13mm Fyreline® Plasterboard shall be fixed at right angles to the underside of the floor joists.
- All joints must occur on joists, solid strutting or noggs.
- Sheets shall be touch-fitted
- Fastened as per plasterboard manufacturer specifications

Jointing

- Jointing and finishing of plasterboard is to be as per the manufacturer's instructions to meet requirements of AS/NZS 2589:2017



INTJFSC60a - Timber Frame 60 minute

INTEGRA Lightweight Concrete Flooring System with 2 layers of 13mm Fyreline® Plasterboard

Framing to comply with

- NZBC B1 – Structure
- NZBC B2 – Durability

Flooring to comply with

- NZBC Clause B1 Structure
- NZBC Clause B2 Durability
- NZBC Clause C1-C6 – Protection from Fire
- NZBC Clause F2 Hazardous Building Materials
- NZBC Clause G6 Airborne and Impact Sound

Framing for Floor

- Framing as per NZS3604, strength and serviceability and spaced at a maximum of 600 centres

Flooring

- 75mm INTEGRA Flooring
- Fastened with 100mmx14g Galvanised Screws
- Fastened at 300 centres along joist and around the perimeter

Ceiling Linings

- 2 layers of 13mm Fyreline® Plasterboard shall be fixed at right angles to the underside of the floor joists.
- All joints must occur on joists, solid strutting or noggs.
- Sheets shall be touch-fitted
- Fastened as per plasterboard manufacturer specifications

Jointing

- Jointing and finishing of plasterboard is to be as per the manufacturer's instructions to meet requirements of AS/NZS 2589:2017

INTJFSC60b - Timber Frame 60 minute

INTEGRA Lightweight Concrete Flooring System with 1 layer of 16mm Fyreline® Plasterboard

Framing to comply with

- NZBC B1 – Structure
- NZBC B2 – Durability

Flooring to comply with

- NZBC Clause B1 Structure
- NZBC Clause B2 Durability
- NZBC Clause C1-C6 – Protection from Fire
- NZBC Clause F2 Hazardous Building Materials
- NZBC Clause G6 Airborne and Impact Sound

Framing for Floor

- Framing as per NZS3604, strength and serviceability and spaced at a maximum of 600 centres

Flooring

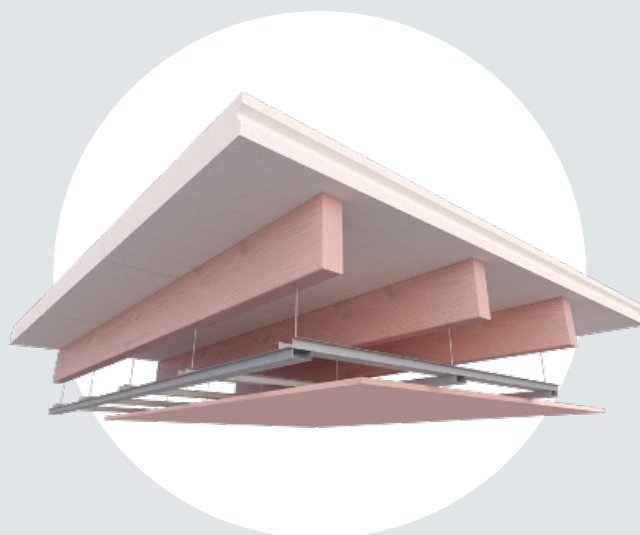
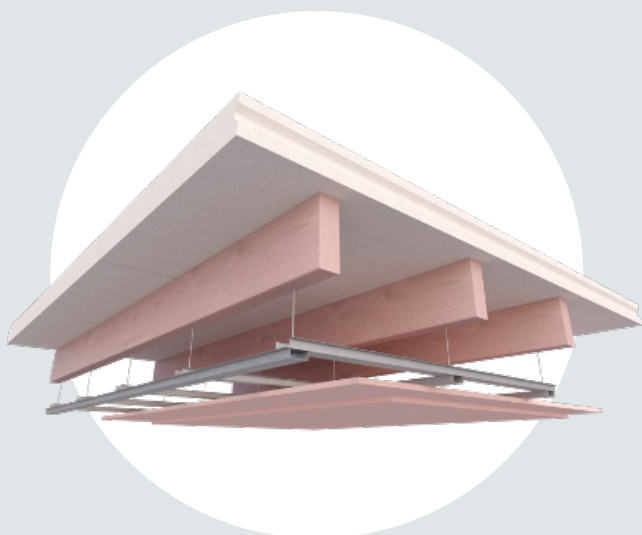
- 75mm INTEGRA Flooring
- Fastened with 100mmx14g Galvanised Screws
- Fastened at 300 centres along joist and around the perimeter

Ceiling Linings

- 1 layers of 16mm Fyreline® Plasterboard shall be fixed at right angles to the underside of the floor joists.
- All joints must occur on joists, solid strutting or noggs.
- Sheets shall be touch-fitted
- Fastened as per plasterboard manufacturer specifications

Jointing

- Jointing and finishing of plasterboard is to be as per the manufacturer's instructions to meet requirements of AS/NZS 2589:2017



INTJFSC90 - Timber Frame

90 minute

INTEGRA Lightweight Concrete Flooring System with 1 layer of 16mm Fyrelite® Plasterboard and 1 layer of 13mm Fyrelite® Plasterboard

Framing to comply with

- NZBC B1 – Structure
- NZBC B2 – Durability

Flooring to comply with

- NZBC Clause B1 Structure
- NZBC Clause B2 Durability
- NZBC Clause C1-C6 – Protection from Fire
- NZBC Clause F2 Hazardous Building Materials
- NZBC Clause G6 Airborne and Impact Sound

Framing for Floor

- Framing as per NZS3604, strength and serviceability and spaced at a maximum of 600 centres

Flooring

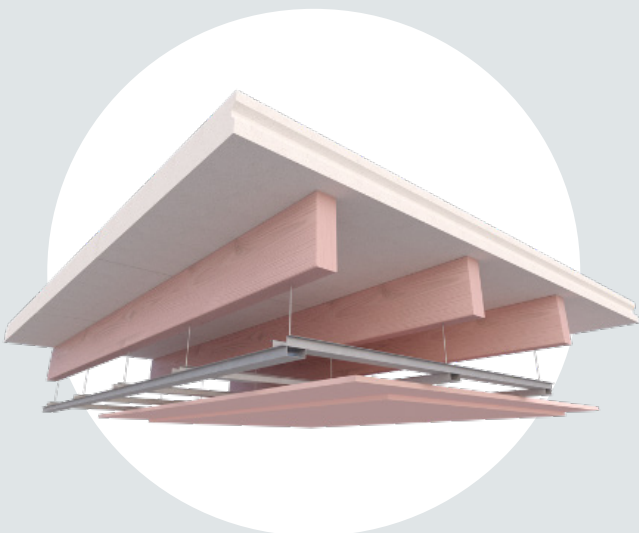
- 75mm INTEGRA Flooring
- Fastened with 100mmx14g Galvanised Screws
- Fastened at 300 centres along joist and around the perimeter

Ceiling Linings

- 1 layer of 16mm Fyrelite® Plasterboard and 1 layer of 13mm Fyrelite® Plasterboard shall be fixed at right angles to the underside of the floor joists.
- All joints must occur on joists, solid strutting or noggs.
- Sheets shall be touch-fitted
- Fastened as per plasterboard manufacturer specifications

Jointing

- Jointing and finishing of plasterboard is to be as per the manufacturer's instructions to meet requirements of AS/NZS 2589:2017



For all other information
see our website or call
one of our team to assist.