INTEGRA Lightweight Concrete Flooring System - Integra Flooring RenderSpec

General

Building Code Compliance

If the project has a building consent then the following clauses apply.

B1 - Structure

This specification complies with the requirements as set out in B1 - Structure which requires buildings, building elements and sitework to withstand the combination of loads and physical conditions they are likely to experience during construction, alteration and throughout their lives. Loads and physical conditions include self-weight, temperature, water, earthquakes, snow, wind, fire.

B2 - Durability

This specification complies with the requirements as set out in B2 - Durability which must always be considered when demonstrating compliance with each of the clauses of the Building Code. It ensures that a building throughout its life will continue to satisfy the performance of the Building Code. It confirms the use of materials that will remain functional throughout the specified intended life of the building, but not less than 50, 15 or 5 years

This flooring system meets the expected durability of the NZBC of at least 50 years

F2 - Hazardous building materials

This specification complies with the requirements as set out in F2 - Hazardous building materials which safeguards people from illness and injury from quantities of gas, liquid, radiation and solid particles caused by exposure to building materials

Building Consent Authority Requirements

All the appropriate inspections are to be carried out by a BCA representative and that it complies with the NZBC requirements.

Documents

Abbreviations

The following abbreviations are used throughout this work section:

- BCA - Building Consent Authority
- LBP - Licensed Building Practitioner
- MSDS - Material Safety Data Sheet
- NZBC - New Zealand Building Code

Manufacturers Documents

Copies of the above relevant company documents referred to in this specification are available at;

Resene Construction Systems
Web: reseneconstruction.co.nz
Telephone: 0800 50 70 40

No Substitutions

Substitutions are not permitted to any specified Resene Construction Systems system. Materials and execution to Resene Construction Systems specification except where varied by this specification and supported by architectural detailing.

Documentation

Health and Safety

Refer to the requirements of the Health and Safety in Employment Act 2015 and Worksafe NZ: Guidelines for the provision of facilities and general safety in the construction industry. If the elimination or isolation of potential hazards and risks is not possible then minimise hazards and risks in this work on site by using the proper equipment and techniques as required in the MPNZA Painters hazard handbook. Supply protective clothing and equipment. Inform employees and others on site of the hazards and put into place procedures for dealing with emergencies. Obtain from Resene Construction Systems the Material Safety Data Sheets for each product. Keep sheets on site and comply with the required safety procedures. Confirmation at the start of the project as to whether a Site Specific Safety Plan is to be produced by the Registered Plasterer prior to works starting.

Warranty

Warrant this system under normal environmental and use conditions against failure. Resene Construction Systems system warranty. Materials: by Resene Construction Systems - 15 Years Materials only

Components Used

Integra Panel 75mm Panels

- Dry Density: 520kg/m3
- Compressive strength : 4mPa
- Modulus of Elasticity, E: 1800MPa
- Thermal Conductivity: 0.12 W/(mk)
- Thermal Resistivity, R: 0.44m2K/W
- Substrate Thickness: 75mm Integra panel
- Weight: 49 kg/m2 coatings and substrate, considered a Medium weight cladding in terms of NZS3604
- Panel size = 1800mm x 600mm

Wurth Zinc Spray Light Perfect

- Outstanding long-term protection and optimum metal surface appearance
- High layer thickness in first spray pass
- High degree of safety thanks to optimum weathering protection
- Minimum amount of time spent, as only one operation is required
- Good coverage
- Versatile use with adjustable spray head
- Large area and minor repairs can be carried out quickly and reliably with the variable spray head.
- High degree of resistance to running
- High degree of wear resistance
- Tested corrosion protection in accordance with DIN
- Can be used for repairs in accordance with DIN EN ISO 1461
- Supplied in 400ml spray cans

AAC Adhesive

- Polymer-modified, cement based dry plaster mix. Supplied in 20kg bags.

Screws 100mm x 14g - Galvanised

- 14 Gauge
- 500 per box
- AS3566 Class 4 - Hot-dip galvanised

Installation/Application

Integra Flooring Panel 75mm

Introduction

This specification is limited to New Zealand conditions in particular the wind and earthquake loads as set out by NZS 3604:2011 (Timber Framed Buildings) and AS/NZS1170: 2004 (Structural Design Actions). The Integra Flooring System uses the Integra panels as a flooring material, laid on top of timber floor joists. Integra panels are autoclaved aerated concrete (AAC) panels that are produced in a range of sizes and lengths.

- Dry Density: 520kg/m3
- Compressive strength : 4mPa

- Modulus of Elasticity, E: 1800MPa
- Substrate Thickness: 75mm Integra panel
- Size: 600mm wide x 1800mm long
- Weight: 45.5kg. Thermal Conductivity: 0.174W/(mK)
- Thermal Resistivity: R:0.56
- Substrate Thickness: 75mm Integra panel

Health and Safety

The dust from cutting the panel is irritating to the eyes, skin and respiratory system. Inhalation may cause health problems. When cutting, grinding or drilling panels do so in the open space or in well ventilated spaces and wear approved safety glasses and dust mask. All methods of cutting, grinding and drilling must comply with the latest WorkSafe regulations. Provided appropriate safety equipment is used when cutting (eg. Safety Glasses, Hearing protection and Dust Masks are used) and appropriate precautions are made when handling and lifting then this system will meet the requirements of this section.

Framing Set-out

Resene Construction Systems Integra Flooring Panels shall be laid generally in full panels wherever possible. The panels shall be laid in half stretcher bond. The panels can be readily cut to size to suit floor layout requirements and openings.

Resene Construction Systems Integra Flooring Panels must be supported on either a light timber framed system or a light steel framed system. The light timber framed system may comprise timber joists, ply webbed joists, trussed joists, laminated timber joists, timber and steel beams or any combination of the above. 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 flooring panels. Framing sizes should be selected from the appropriate table for a live load of the Design Live Load plus 0.5kPa 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 + 0.5kPa). Similarly for normal domestic decks the deck joists should be chosen from the 3.0kPa (2.0kPa + 0.5kPa) live load tables

Floor Loading

Resene Construction Systems Integra Flooring Panels have been designed to support a concentrated live load of 2.7kN applied over a 0.3m x 0.3m 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:

Timber floor joists have been sized according to maximum spans for the following spacing: 360mm, 450mm, and 600mm. Integra Floor 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 (eg. Supporting a load bearing wall must have additional blocking or be situated over a double joist).

Bracing/Load-Bearing Walls

Where a bracing wall occurs on top of the Integra Floor System it shall have either supporting blocking or a joist directly underneath.

For bracing walls parallel with the floor joists the bracing wall shall either be over a joist or be supported by solid blocking. Blocking shall have a minimum width of 45mm.

Bracing systems need to allow for a larger fastener to go through the flooring.

All Bottom Plates to load-bearing walls should be screwed down using a 150mm fasteners at 300mm centres.

Non-Load Bearing Walls

All Bottom Plates to non load-bearing walls should be blocked out and screwed down using a 150mm fasteners at the centres at which your joists are spaced out. If your non load-bearing wall is running parallel to the joists then ensure there is blocking at the same centre as your joists so you can secure the bottom plate in place.

Penetrations

Provided they are isolated, penetrations up to 80mm in diameter may be made in Integra Floor 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.

Fixing Locations

Panels are fixed to the floor joists using 14-gauge, 100mm long screws @ maximum 150mm centres around the perimeter of the floor area, and at 300mm centres along all intermediate 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 on the short edges the panel overhangs a floor joist it must be cut back so that it is supported on this edge.

Wet Areas

Where Integra Floor 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 prior to any membranes being installed.

Floor joist sizes

Table 1 sets out the joist sizes based on spacing of 360mm, 450mm and 600mm joist spacing.

Acoustic performance

The New Zealand Building Code requires an acoustic barrier between two tenancies to have an STC rating of at least 55. In order 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 Integra, refer to the report from Marshall Day Acoustics.

Construction joints

Construction control joints should divide the Integra Floor Panels into separate floor areas.

Construction joint locations should be as follows:

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

Components

- Integra Floor Panels
- 14g x 100mm Galvanised Integra Screw (for fixing the Integra Floor Panels)
- 14g x 150mm Galvanised Integra Screw (for fastening bottom plates)
- Resene Construction Systems AAC Adhesive (for joining Integra Floor Panels)
- Resene Galvo-Prime - Brush applied waterborne galvanised iron primer or Zinc rich spray pak primer / solvent bourn- exterior solvent borne Spray application (for priming exposed steel)
- Broad-knife
- Power saw with metal or diamond blade
- Impact Drill or Standard Drill with hex drive drill bit
- Safety Equipment (Gloves, Earmuffs, Eye-ware, Respiratory Protection)

Installation

Check that sub-floor/joists are straight and true

Measure 600mm in from boundary joists (where the intersecting joists run into) at both ends of the floor. Mark this with a chalk line and continue this process across the floor

Starting from the corner of one of the boundary joists you measured from, lay the first Integra Floor Panel so that it is parallel with that boundary joist. You should make sure that both of the narrower ends of the Integra Floor Panel are supported on joists/blocking. Make sure that the edge with the groove in it, is on the boundary joist edge.

Around all boundary joists the fixing centres must be at a maximum 150mm. Along all intermediate joists and blocking fixing, centres must be at a maximum of 300mm. Where 2 Integra Floor Panels meet on a floor joist/blocking, screws can be fixed by screwing in on an angle from both sides. All full sheets of Integra Floor Panels must be supported by at least 2 intermediate joists

Where cutting of panels lengthwise is required, the minimum width of cut panel allowable is 200 mm to ensure sufficient reinforcing is located in each panel. If a narrower piece is required against a floor edge, the last two panels should be reduced in width so that both exceed 200 mm in width. All reinforcing exposed on cut panels should be coated with anti-corrosion agent.

Continue along the boundary joist installing Integra Floor Panel as above, ensuring they remain parallel with the boundary joist.

Before installing any of the second row of panels you will have to apply Resene Construction Systems AAC Adhesive. The easiest way to do this is to apply Resene Construction Systems AAC Adhesive into the groove of the panel you are about to install using a Broad-knife. Take care not to over-pack the groove then carefully install the Integra Floor Panel into the tongue of the first row of Integra Floor Panels in stretcher bond. The second row of Integra Floor Panels must be installed in a stretcher bond pattern (refer to Sheet 1 “Flooring layout”). The Integra Floor Panels will have to be cut to allow this to happen. Make sure that all narrow panel ends are supported on joists.

Screw fix the panel 150mm from either side of the panel following along the joist. Two screws are required in each panel at each joist. 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 if you are skewing screws at a sharp angle. The screws must be wound into the panel until the head is 2mm – 3mm below the panel surface. 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.

Panel around the boundary joists must be fastened at 150mm centres, this can be achieved by screwing your panel off at 300mm centres and fastening your perimeter plate between theses fixings to achieve the 150mm centre requirement. All Bottom Plates to load-bearing walls should be screwed down using a 150mm fasteners at 300mm centres.

Continue across the entire floor making sure to keep a stretcher bond pattern. Try and keep all panel joins tidy by scraping off any Resene Construction Systems AAC Adhesive so that the joins are flush.

Make sure that all narrow ends of the Integra Floor Panels also have Resene Construction Systems AAC Adhesive applied to it before butting in the adjoining panel.

Once you have completed the flooring go around all the exposed edges of Integra Floor Panels and prime all the exposed steel using an appropriate primer.

Floor Protection

Once the floor has been laid we recommend that the floor panels are protected prior to finished floor coverings and preparation being completed. Thin plywood, or RAM board can be laid on top of the flooring where high traffic is expected during construction (ie. hallways and entrances). This will protect and minimise surface damage to the INTEGRA Floor panels.

Floor Finishings

Where the floor covering specification calls for 'thin section' flooring such as Vinyl and Carpet tiles, also other floor coverings with low surface defect tolerances then the floor will require the application of a Floor Levelling/surface preparation compound prior to installation of these. Carpet with underlay can generally be installed as per a standard concrete floor preparation guidelines.

Carpets

Installation of carpet smooth edge prior to laying carpet requires the use of specifically selected nails (Annular Grooved) as well as an adhesive. Use appropriate primer with all adhesives.

Tiles

As per manufacturer's guidelines. Apply tiles to screed or adhesive as per normal floor. Screed Floors to maintain fall and/or levelling. Refer to Tile Adhesive manufacturer for Primer suitable for AAC (porous materials) to alleviate suction.

Timber Floors

All timber floors require a vapour barrier to be installed prior to the flooring being installed. We also recommend the use of a Floor Levelling Compound to ensure the floor is flat.

Batten fix – Anchor battens at the required centres using anchors suitable for AAC

Floating Timber Floor - Underlay / backing installed as per normal for a concrete slab.

Vinyl (Linoleum)

Floor levelling is generally required: Installed as per manufacturers requirements

Always consult your floor covering specialist for advice.

Recommend Floor Levelling Screeds and Vapour Barriers

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

Table 1 – Joist Sizes (NZS3604:2011)

Live Load (kPa)	Span (m)	360mm Joist Spacing	450mm Joist Spacing	600mm joist Spacing
1.5	1.2	90 x 35	90 x 35	90 x 35
	1.5	90 x 35	90 x 35	140 x 35
	1.8	140 x 35	140 x 35	140 x 35
	2.1	140 x 35	140 x 35	140 x 35
	2.4	140 x 35	190 x 45	190 x 45
	2.7	190 x 45	190 x 45	190 x 45
	3	190 x 45	190 x 45	190 x 45
	3.3	190 x 45	190 x 45	240 x 45
	3.6	190 x 45	240 x 45	240 x 45
	3.9	240 x 45	240 x 45	240 x 45
	4.2	240 x 45	240 x 45	290 x 45
	4.5	240 x 45	290 x 45	290 x 45
	4.8	290 x 45	290 x 45	
2.0	1.2	90 x 35	90 x 35	90 x 35
	1.5	90 x 35	140 x 35	140 x 35
	1.8	140 x 35	140 x 35	140 x 35
	2.1	140 x 35	140 x 35	190 x 45
	2.4	140 x 35	190 x 45	190 x 45
	2.7	190 x 45	190 x 45	190 x 45
	3	190 x 45	190 x 45	240 x 45
	3.3	190 x 45	240 x 45	240 x 45
	3.6	190 x 45	240 x 45	240 x 45
	3.9	240 x 45	240 x 45	290 x 45
	4.2	240 x 45	290 x 45	290 x 45
	4.5	240 x 45	290 x 45	
	4.8	290 x 45		
3.0	1.2	90 x 35	90 x 35	140 x 35
	1.5	140 x 35	140 x 35	140 x 35
	1.8	140 x 35	140 x 35	190 x 45
	2.1	190 x 45	190 x 45	190 x 45
	2.4	190 x 45	190 x 45	190 x 45
	2.7	190 x 45	190 x 45	240 x 45

3	190 x 45	240 x 45	240 x 45
3.3	240 x 45	240 x 45	240 x 45
3.6	240 x 45	240 x 45	290 x 45
3.9	290 x 45	290 x 45	290 x 45
4.2	290 x 45	290 x 45	
4.5	290 x 45		
4.8			

Screws 100mm x 14g Galvanised

Fix panels with fasteners as given in Table 1 – Fastener Sizes

Fix fasteners into studs according to the number of fasteners per panel as shown in Table 1.

Fixings must be finished flush or slightly below the surface with the panel, pulling the panel hard back against the cavity batten.

Fixings must be no closer than 50mm, but no further than 150mm from the horizontal panel edge and no closer than 50mm to the vertical edge.

Where studs are at 600 centres a single screw into the dwang/nog/bottom plate is required or 3 screws per stud are installed to the bottom row of panels.

Table 1 – Fastener Sizes

Framing Type	Batten Size/Type	Panel Size	Screws per stud	Screw Size
Timber/Steel	20mm Graphex/EPS	50mm	2	100mm x 14g
Timber/Steel	40mm Graphex/EPS	50mm	3	125mm x 14g
Timber/Steel	20mm Graphex/EPS	75mm	3	125mm x 14g
Timber/Steel	40mm Timber	75mm	3	125mm x 14g
Timber/Steel	40mm Graphex/EPS *	75mm	3	150mm x 14g

* Must be on a rebated slab (any areas above roofs/windows must use a timber batten)

Wherever a Graphex/EPS batten is used then this can be substituted for a Timber Batten

Important:

This specification must be read in conjunction with the Resene Construction Systems technical drawings.
No alteration to the Resene Construction Systems RenderSpec® is permitted.
All Technical Data Sheets are available at https://reseneconstruction.co.nz/technical-library/technical-data-sheets/
All Safety Data Sheets are available at https://reseneconstruction.co.nz/technical-library/safety-data-sheets/