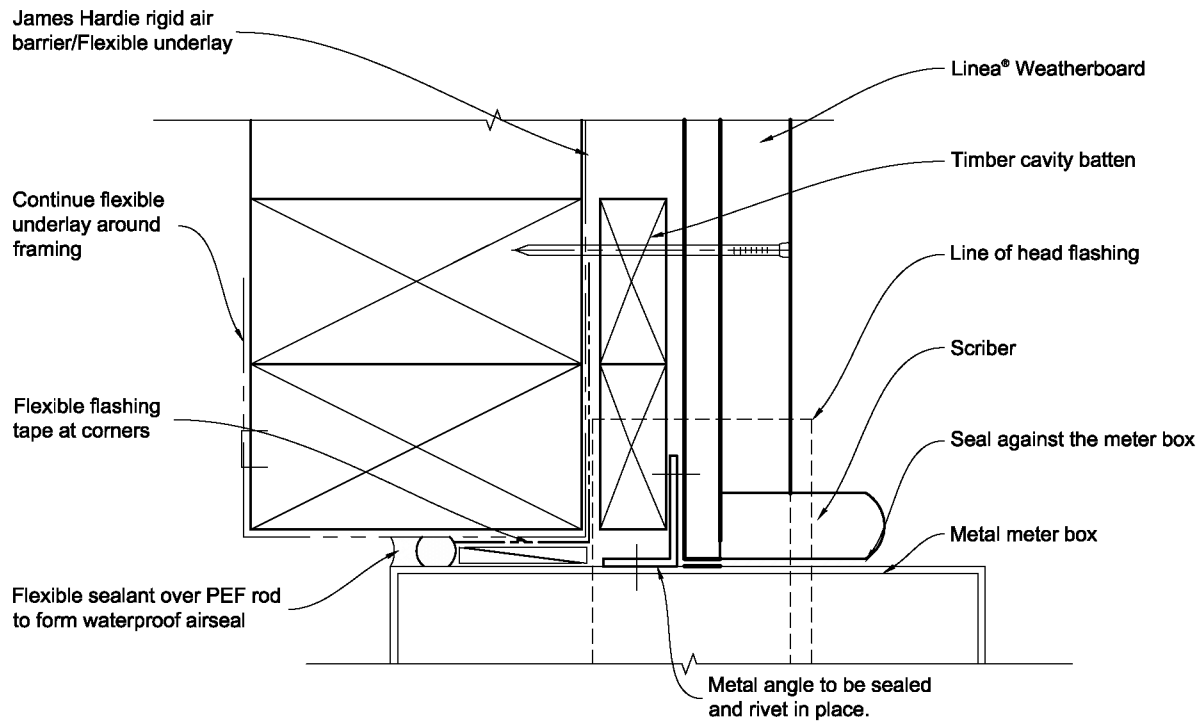


Figure 51: Timber cavity meter box head flashing at jamb



Note:
When James Hardie rigid air barrier is used flashing tape to be applied to the entire opening.

Figure 52: Timber cavity fix meter box

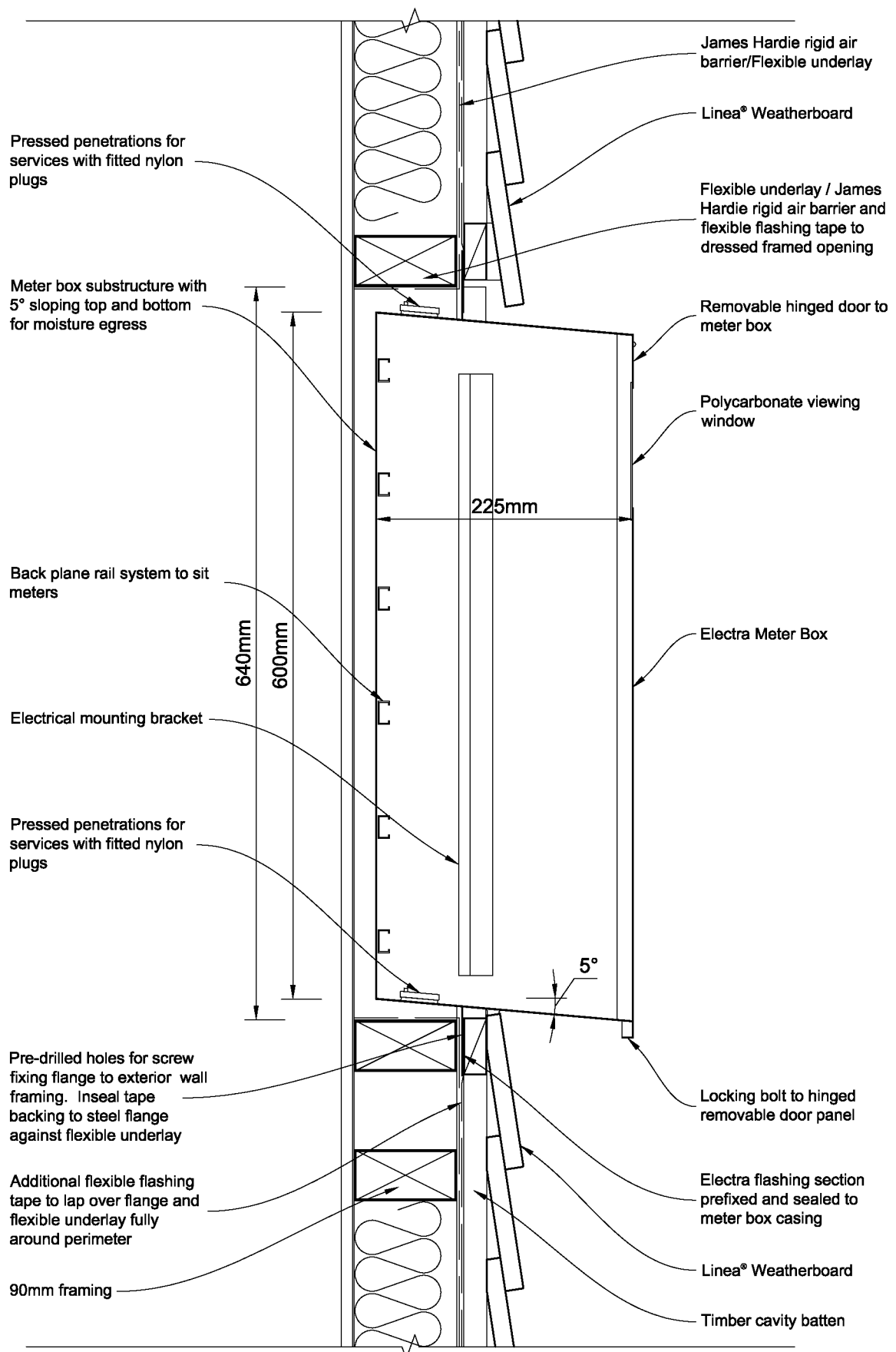
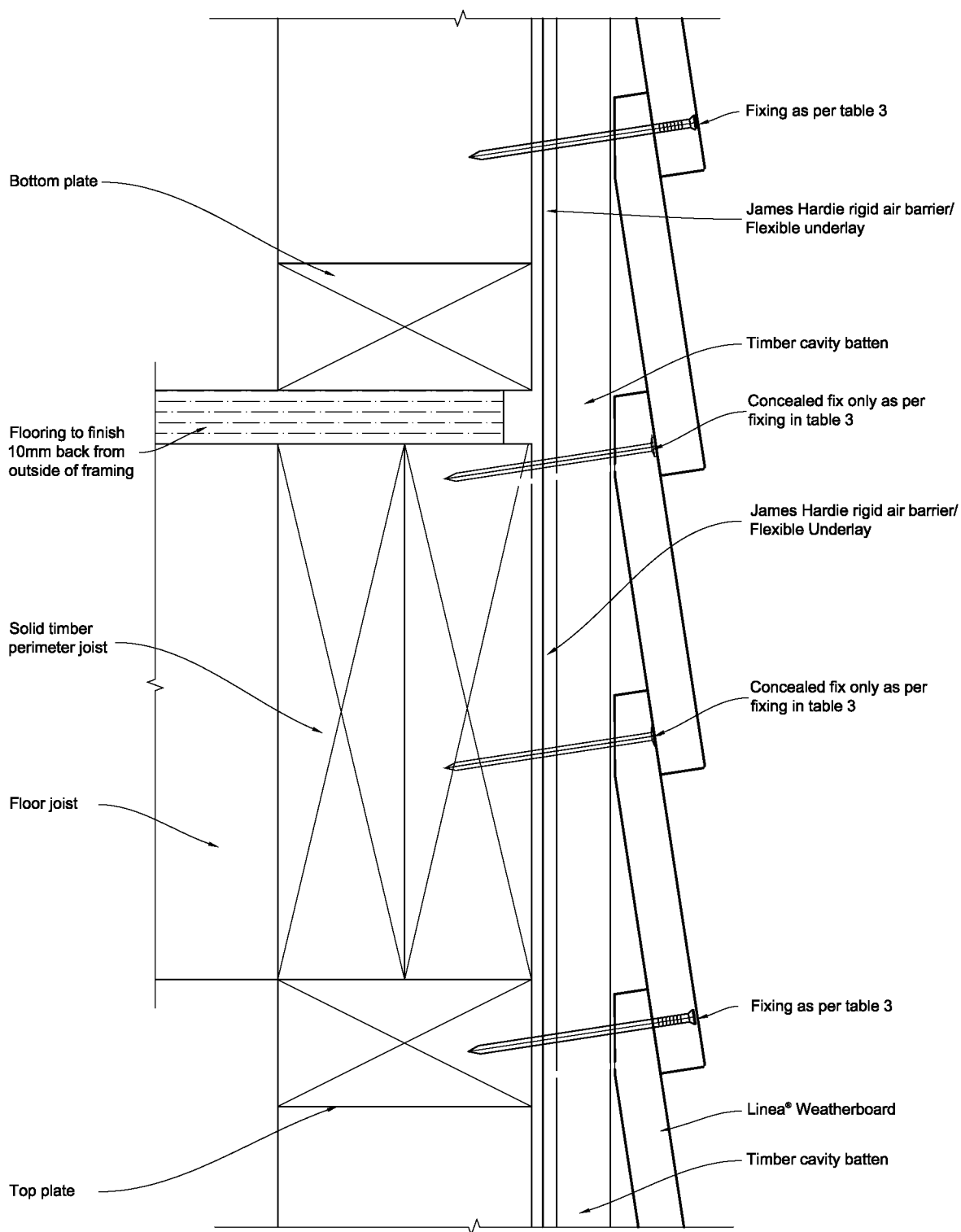


Figure 53: Floating lap over floor joist



Vertical Section

Figure 54: Timber cavity drainage joint

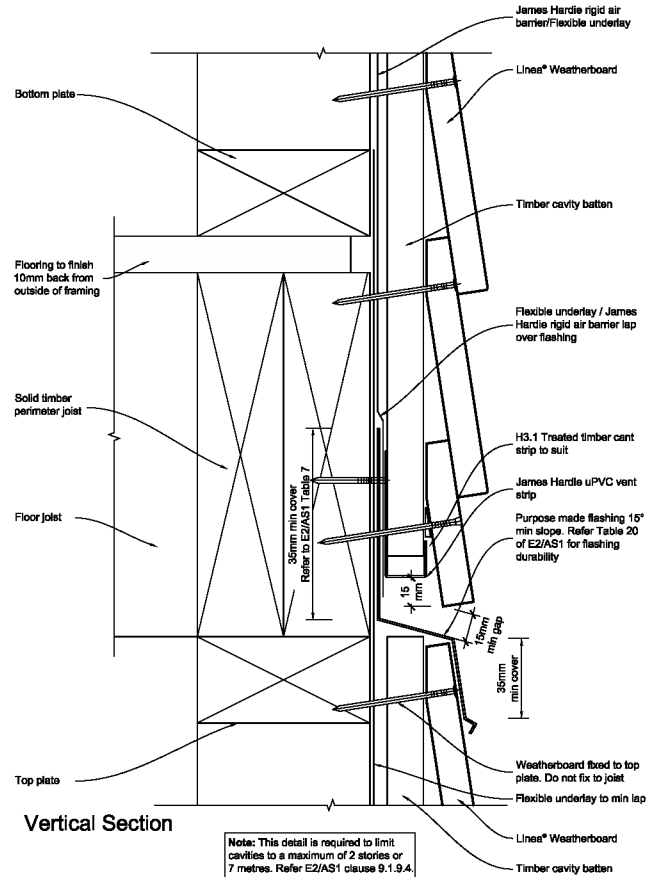


Figure 55: Timber cavity enclosed balustrade to wall

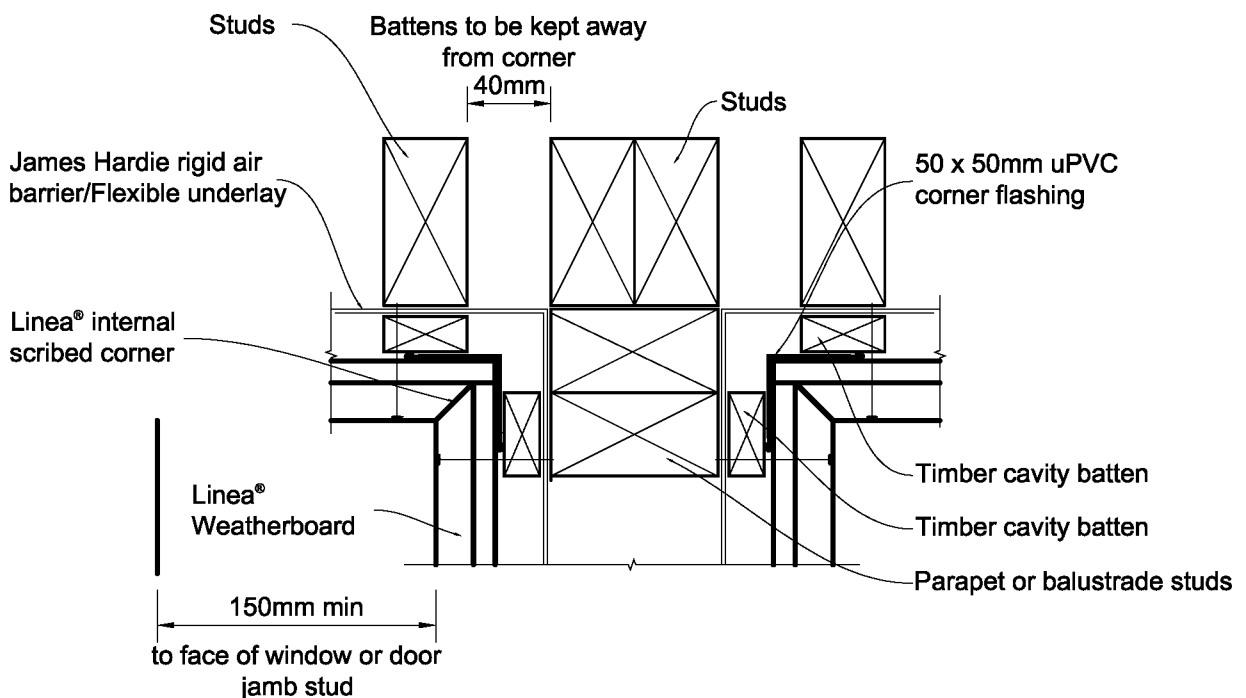


Figure 56: Timber cavity enclosed balustrade to wall

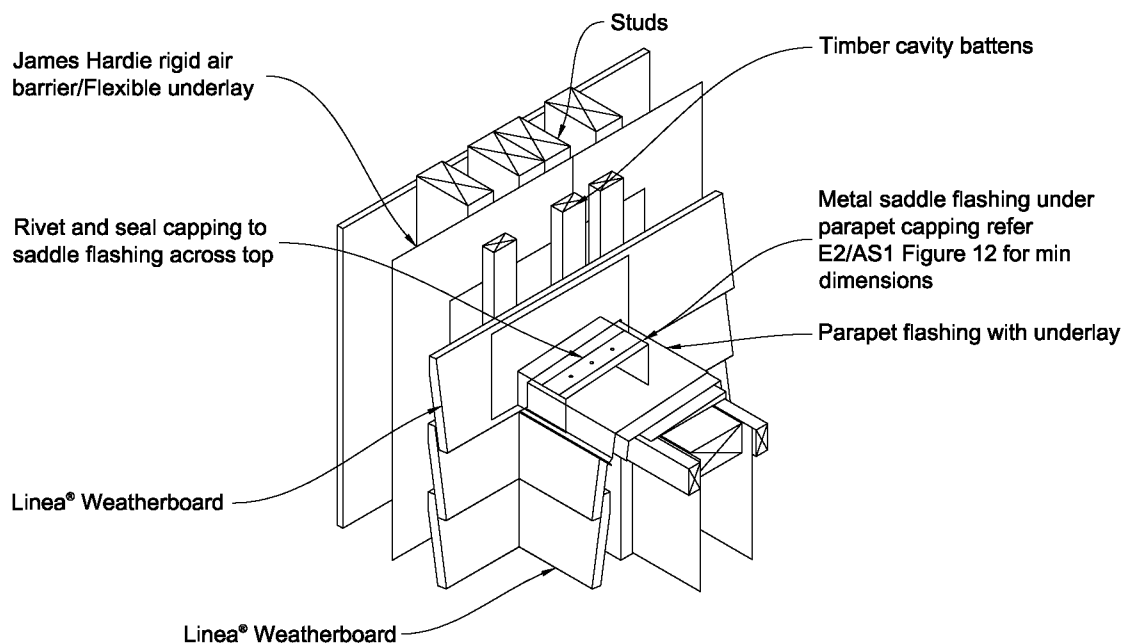
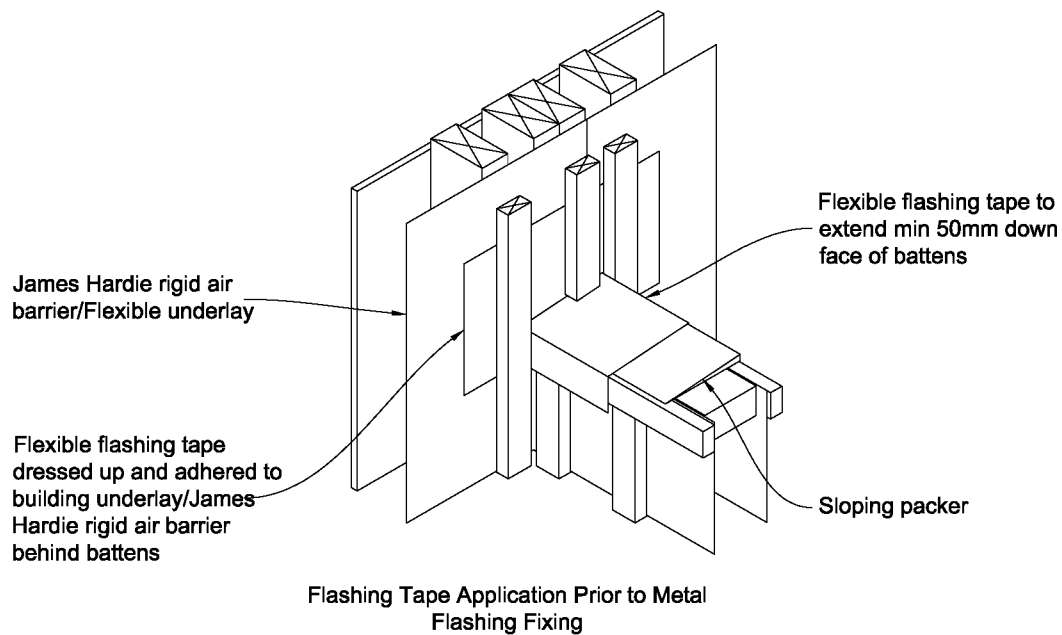
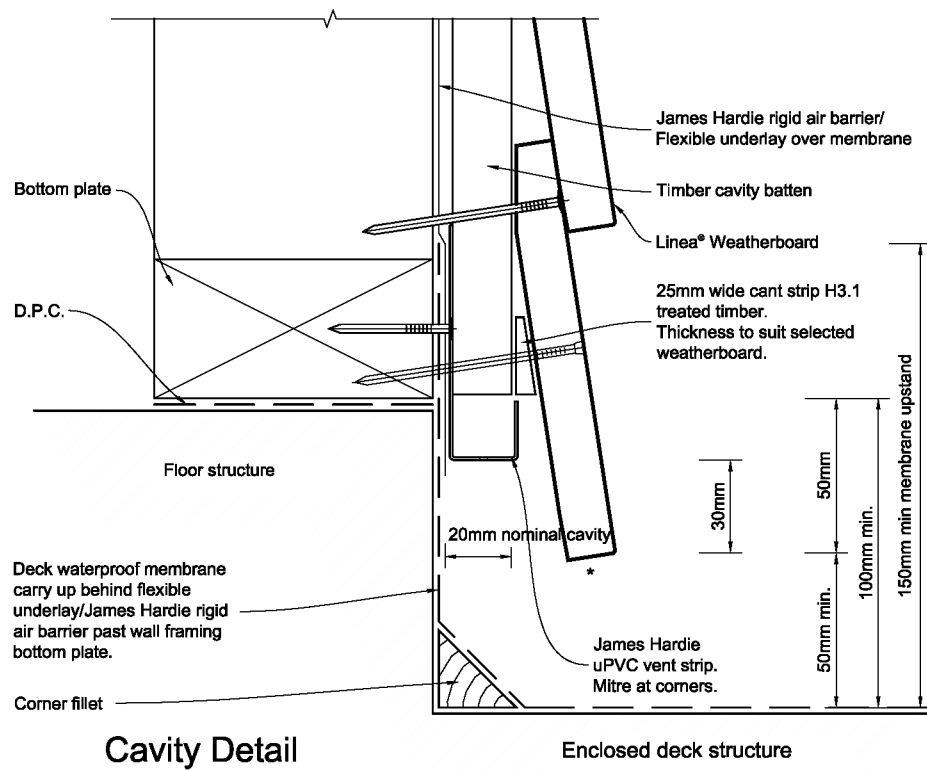


Figure 57: Timber cavity at enclosed deck



* Drain holes in James Hardie uPVC vent strip are sufficient to achieve ventilation openings of 1000mm² per lineal metre

Figure 58: Timber cavity parapet flashing

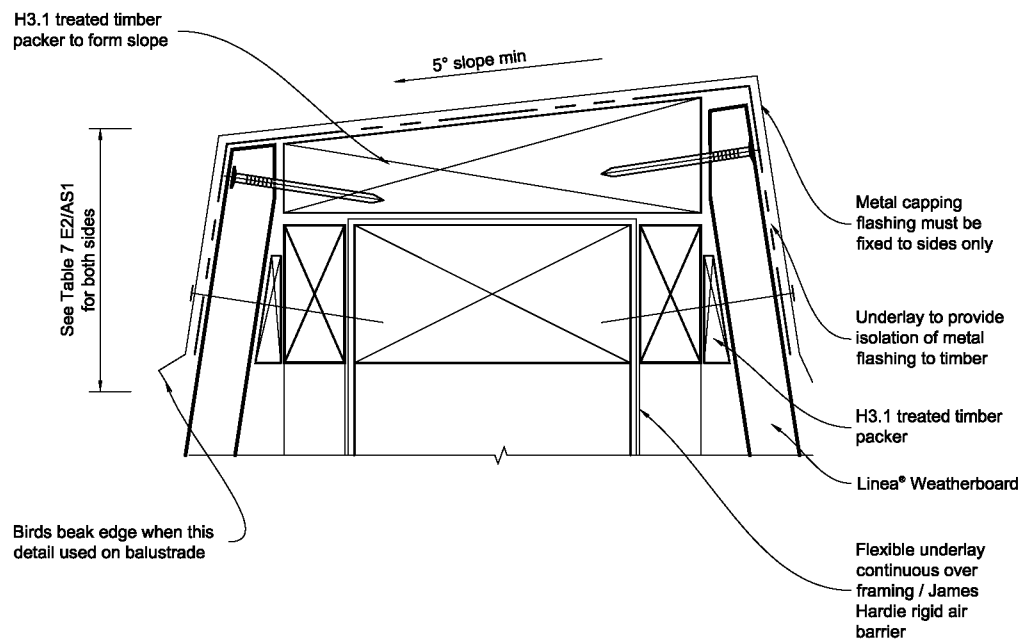
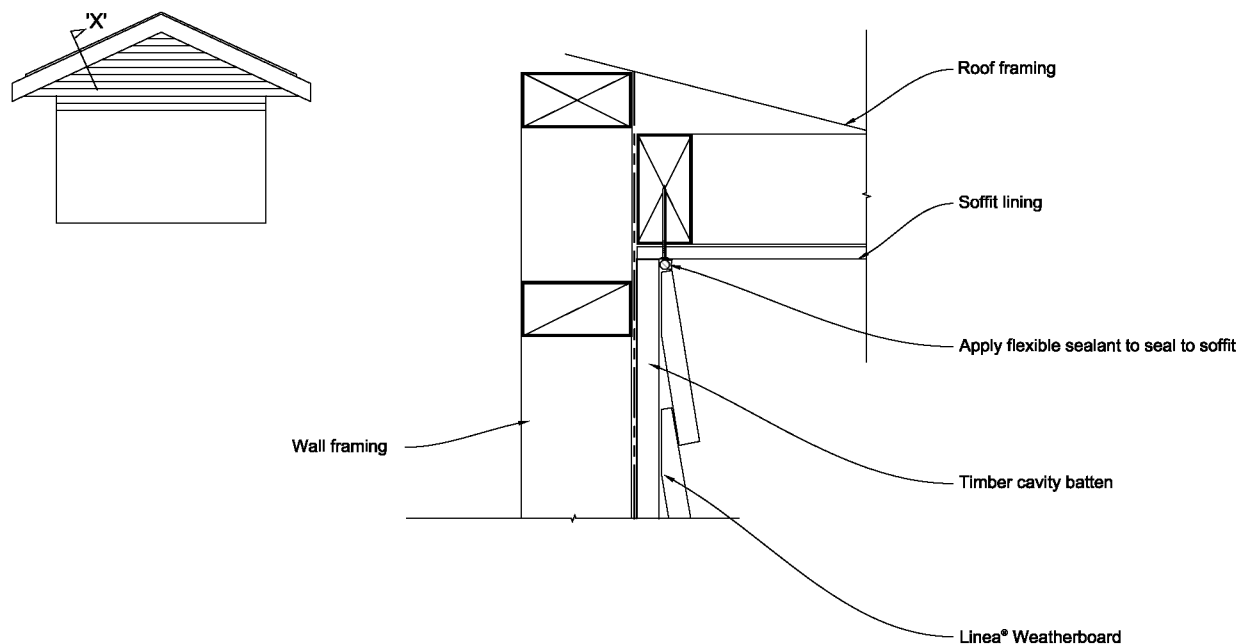


Figure 59: Linea® Weatherboard junction (section 'X') cavity to cable



The Linea® Weatherboard must be neat cut and silicone sealed to angle of soffit
Alternatively a scotia can be scribed and sealed to Linea® Weatherboard and the soffit lining

Figure 60: Linea® Weatherboard sloping soffit and wall junction

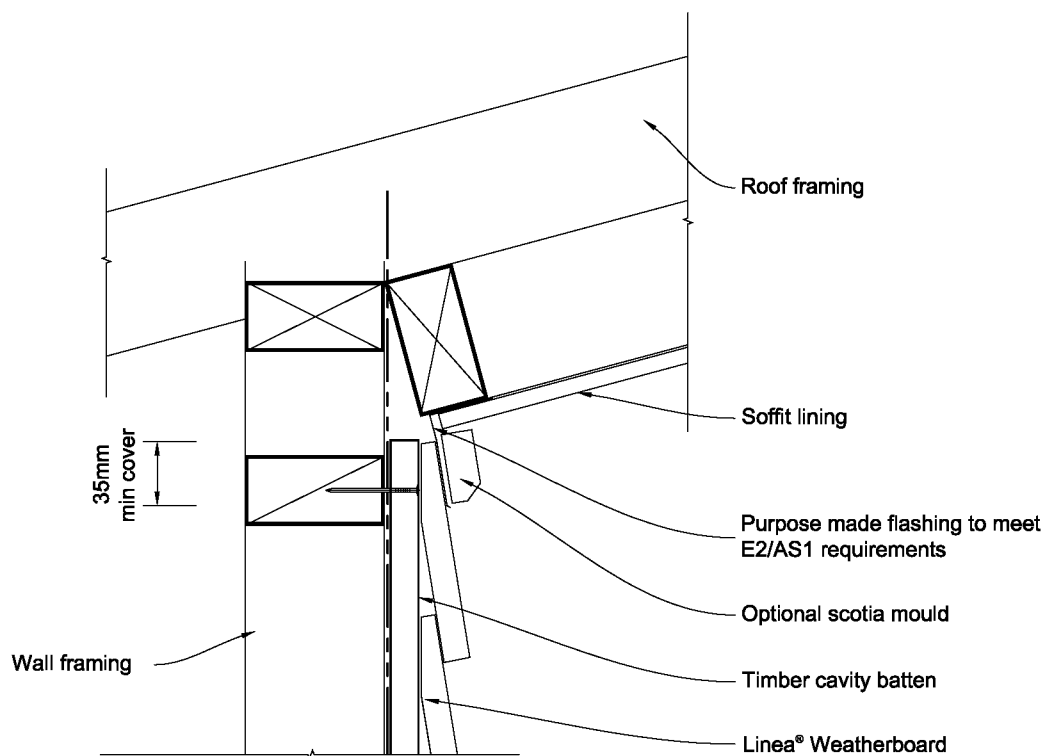


Figure 61: Timber cavity cantilevered timber deck junction

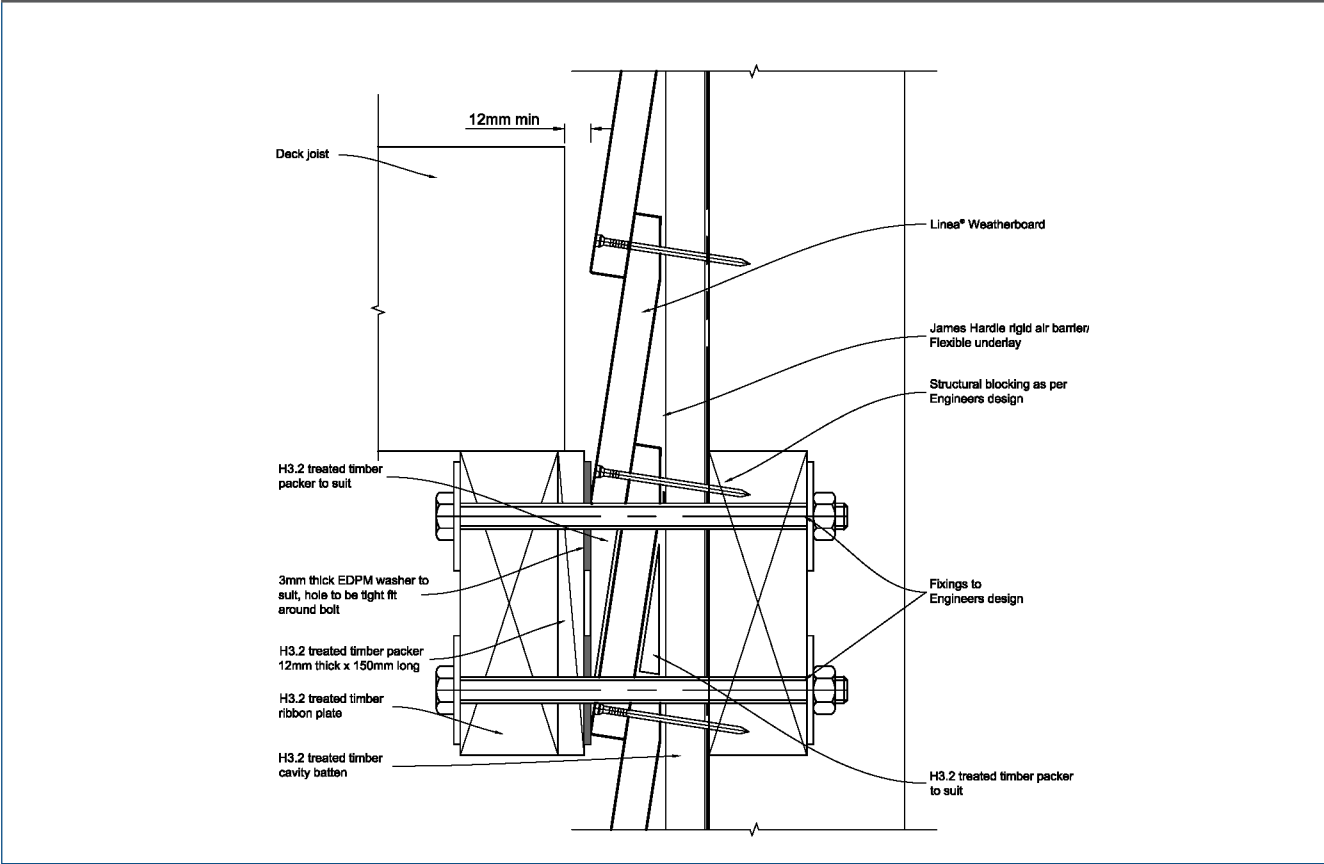


Figure 62: Linea® Weatherboard timber cavity cantilevered timber deck junction

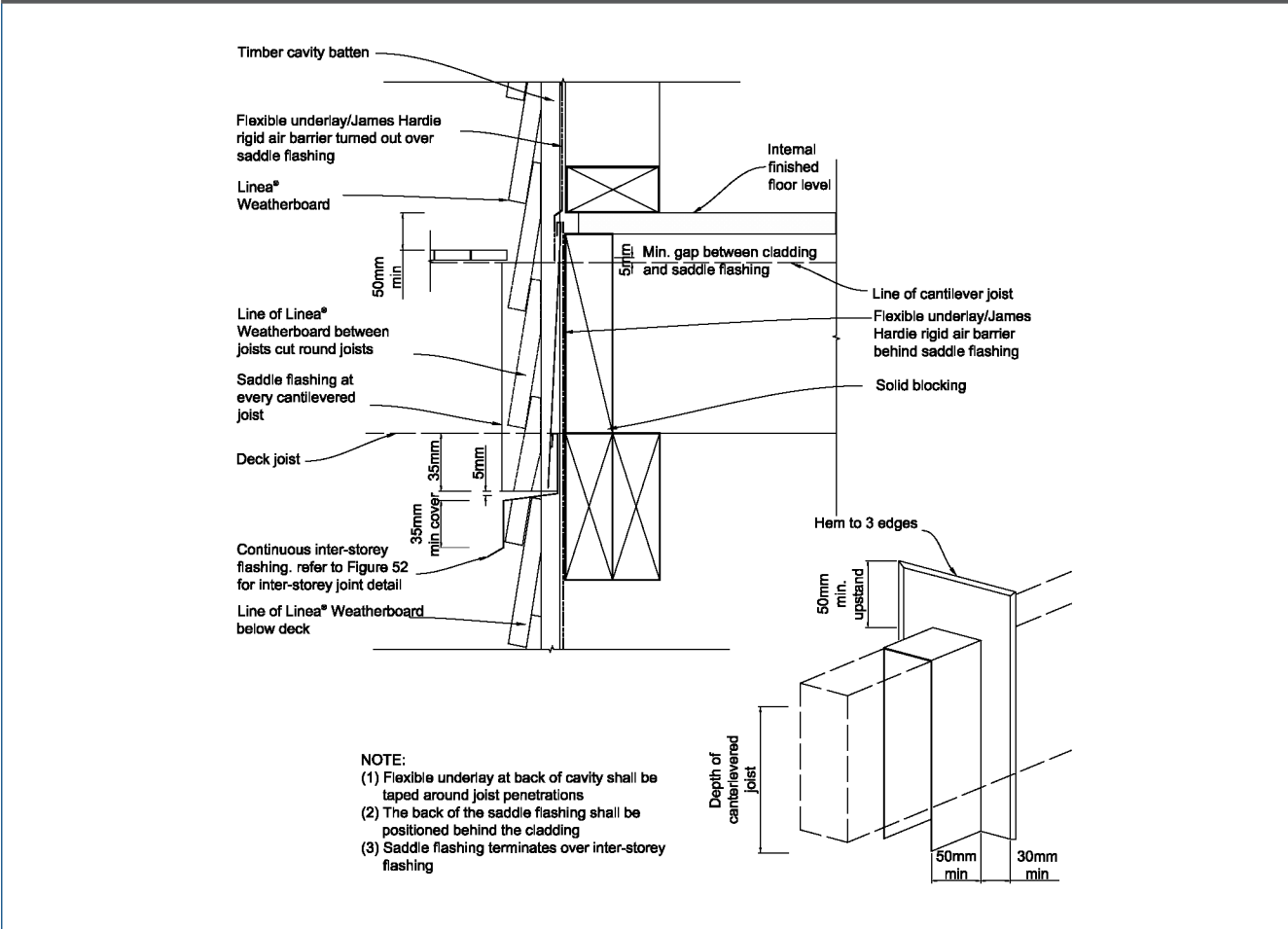
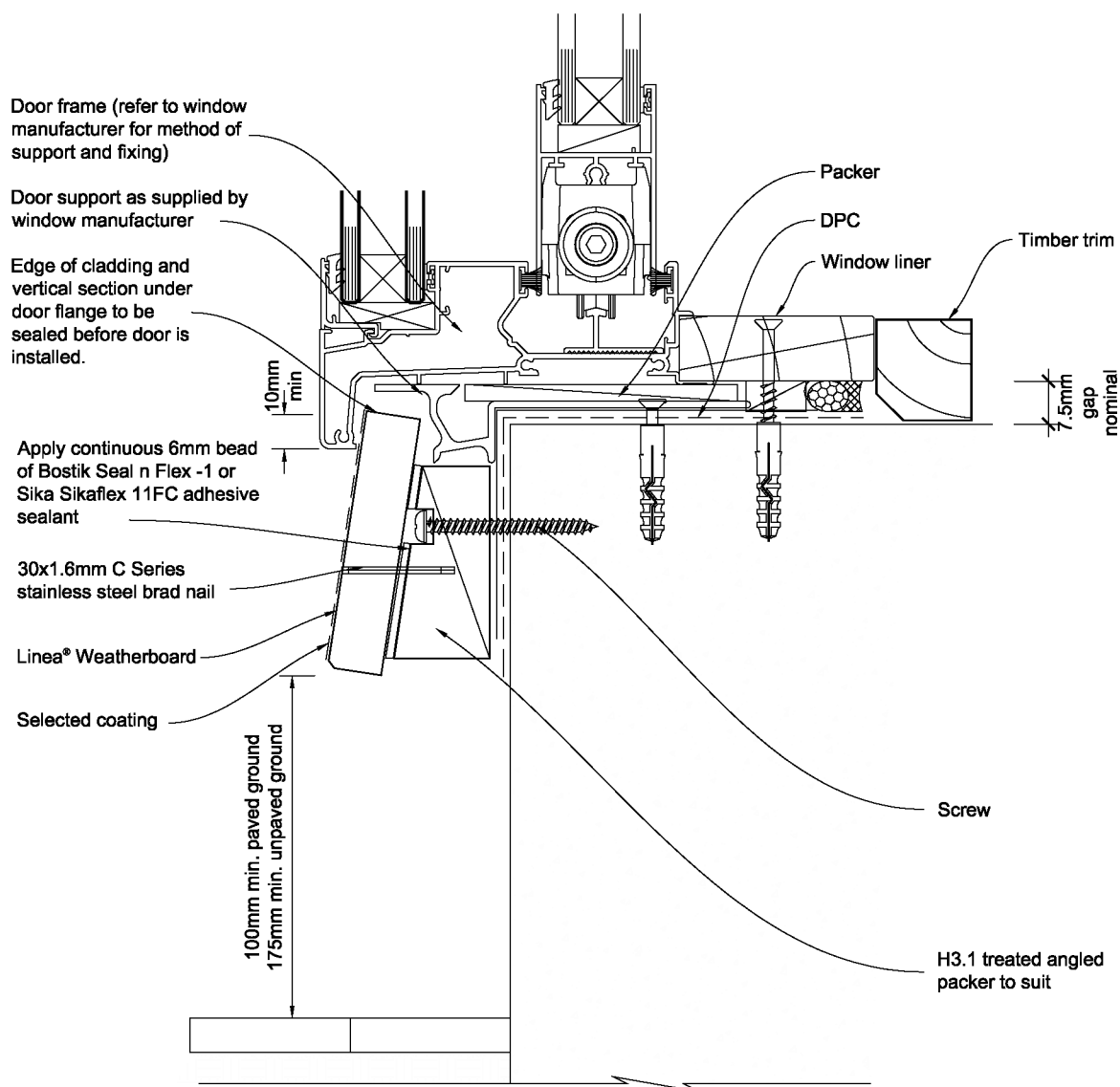


Figure 63: Door sill support detail



Refer to the manufacturer or supplier for technical information for these materials.

General notes for materials selection

1. Flashing materials must be selected based on environmental exposure, refer to NZS 3604 and Table 20 of the NZBC E2/AS1.
2. Building underlay must comply with acceptable solution E2/AS1.
3. Flashing tape must have proven compatibility with the selected flexible underlay and other materials with which it comes into contact.
4. Linea® Weatherboard to have sealed butt joint over batten at each corner of opening.

Figure 64: Junction between Linea® Weatherboard and fascia board

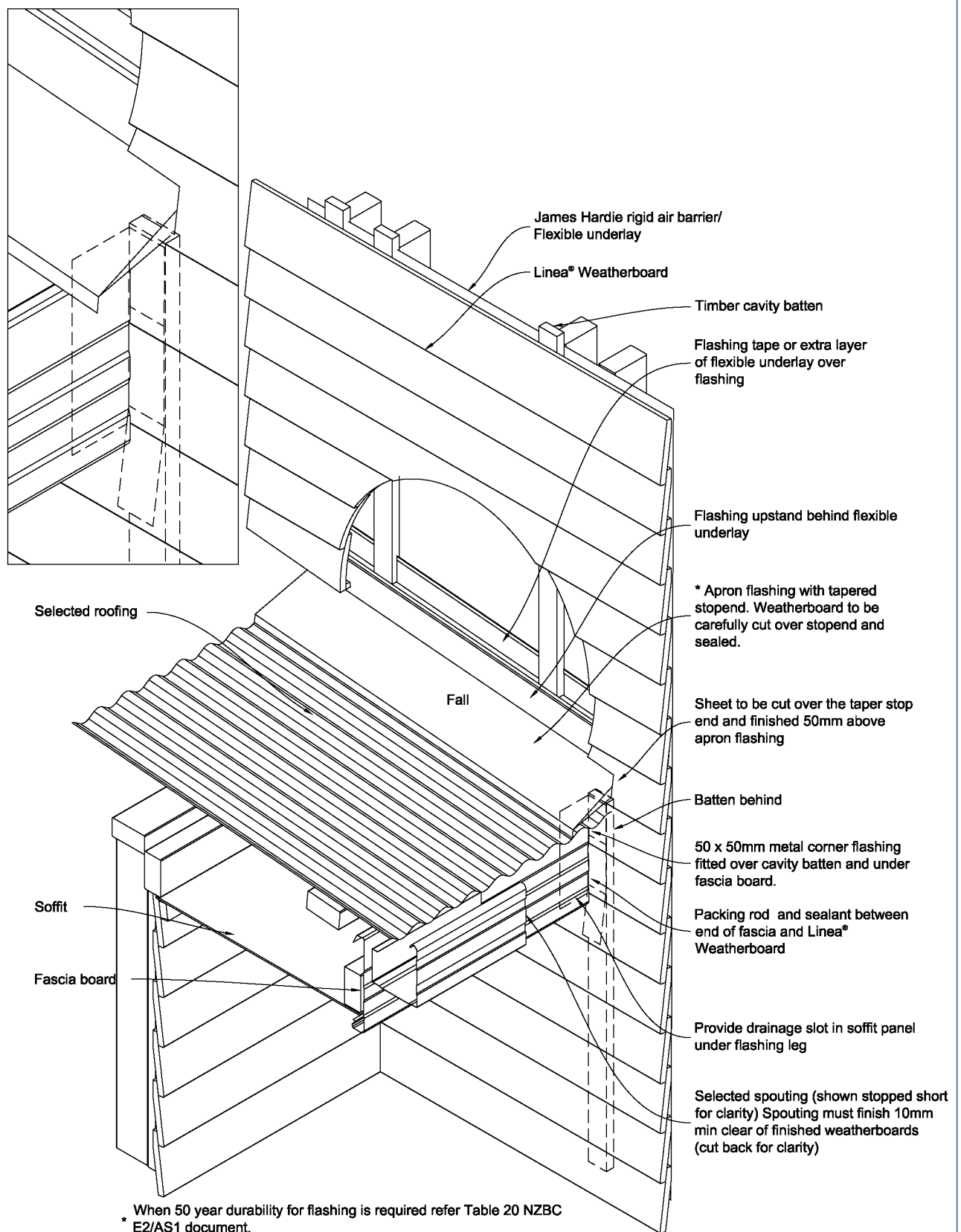
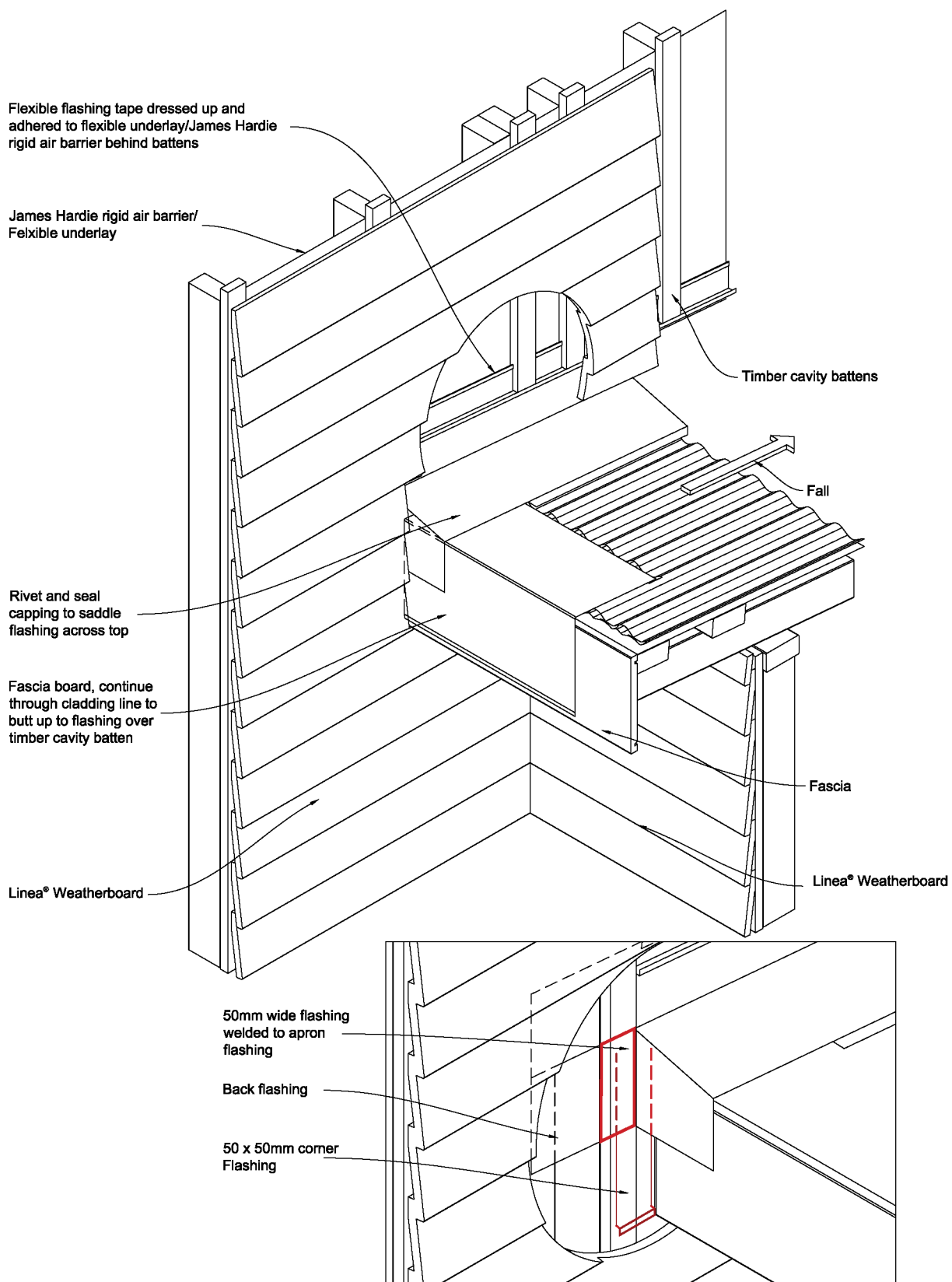


Figure 65: Enclosed roof to wall intersection



Product Warranty

Linea®
WEATHERBOARD

April 2016

Warranty: James Hardie New Zealand ("James Hardie") warrants for a period of 25 years from the date of purchase that the Linea® Weath®rboard (the "Product"), will be free from defects due to defective factory workmanship or materials and, subject to compliance with the conditions below, will be resistant to cracking, rotting, fire and damage from termite attacks to the extent set out in James Hardie's relevant published literature current at the time of installation. James Hardie warrants for a period of 15 years from the date of purchase that the Axent™ Trim and accessories supplied by James Hardie will be free from defects due to defective factory workmanship or materials.

Nothing in this document shall exclude or modify any legal rights a customer may have under the Consumer Guarantees Act or otherwise which cannot be excluded or modified at law.

CONDITIONS OF WARRANTY:

The warranty is strictly subject to the following conditions:

- a) James Hardie will not be liable for breach of warranty unless the claimant provides proof of purchase and makes a written claim either within 30 days after the defect would have become reasonably apparent or, if the defect was reasonably apparent prior to installation, then the claim must be made prior to installation.
- b) This warranty is not transferable.
- c) The Product must be installed and maintained strictly in accordance with the relevant James Hardie literature current at the time of installation and must be installed in conjunction with the components or products specified in the literature. Further, all other products, including coating and jointing systems, applied to or used in conjunction with the Product must be applied or installed and maintained strictly in accordance with the relevant manufacturer's instructions and good trade practice.
- d) The project must be designed and constructed in strict compliance with all relevant provisions of the current New Zealand Building Code ("The NZBC"), regulations and standards.
- e) The claimant's sole remedy for breach of warranty is (at James Hardie's option) that James Hardie will either supply replacement product, rectify the affected product or pay for the cost of the replacement or rectification of the affected product.
- f) James Hardie will not be liable for any losses or damages (whether direct or indirect) including property damage or personal injury, consequential loss, economic loss or loss of profits, arising in contract or negligence or howsoever arising. Without limiting the foregoing James Hardie will not be liable for any claims, damages or defects arising from or in any way attributable to poor workmanship, poor design or detailing, settlement or structural movement and/or movement of materials to which the Product is attached, incorrect design of the structure, acts of God including but not limited to earthquakes, cyclones, floods or other severe weather conditions or unusual climatic conditions, efflorescence or performance of paint/coatings applied to the Product, normal wear and tear, growth of mould, mildew, fungi, bacteria, or any organism on any Product surface or Product (whether on the exposed or unexposed surfaces).
- g) All warranties, conditions, liabilities and obligations other than those specified in this warranty are excluded to the fullest extent allowed by law.
- h) If meeting a claim under this warranty involves re-coating of Products, there may be slight colour differences between the original and replacement Products due to the effects of weathering and variations in materials over time.

Disclaimer: The recommendations in James Hardie's literature are based on good building practice, but are not an exhaustive statement of all relevant information and are subject to conditions (c), (d), (f) and (g) above. James Hardie has tested the performance of Linea® Weath®rboard when installed in accordance with the Linea® Weath®rboard technical specification, in accordance with the standards and verification methods required by the NZBC and those test results demonstrate the product complies with the performance criteria established by the NZBC. However, as the successful performance of the relevant system depends on numerous factors outside the control of James Hardie (e.g. quality of workmanship and design) James Hardie shall not be liable for the recommendations made in its literature and the performance of the relevant system, including its suitability for any purpose or ability to satisfy the relevant provisions of the NZBC, regulations and standards, as it is the responsibility of the building designer to ensure that the details and recommendations provided in the relevant James Hardie installation manual are suitable for the intended project and that specific design is conducted where appropriate.

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BRANZ Appraised
Appraisal No. 447 [2010]

**LINEA®
WEATHERBOARD
CAVITY CLADDING**



Appraisal No. 447 [2010]

Amended 01 March 2016

BRANZ Appraisals

Technical Assessments of products
for building and construction.



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a smaller way™

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Product

- 1.1 Linea® Weatherboard Cavity Cladding is a cavity-based bevelbacked fibre cement weatherboard wall cladding. It is designed to be used as part of an external cladding system for residential and light commercial type buildings where domestic construction techniques are used.
- 1.2 Linea® Weatherboard Cavity Cladding consists of Linea® Weatherboard, which is a bevelbacked fibre cement weatherboard, fixed over timber battens to form the cavity. The cladding is finished with a latex paint system.
- 1.3 The cladding incorporates a primary and secondary means of weather resistance (first and second line of defence) against water penetration by separating the cladding from the external wall framing with a nominal 20 mm cavity. The cavity allows for any occasional ingress of water that may get past the external skin to drain to the exterior of the building, and any remaining moisture to dry by evaporation.

Scope

- 2.1 Linea® Weatherboard Cavity Cladding has been appraised as an external wall cladding for buildings within the following scope:
 - the scope limitations of NZBC Acceptable Solution E2/AS1, Paragraph 1.1; and,
 - constructed with timber framing complying with the NZBC; and,
 - with a risk score of 0-20, calculated in accordance with NZBC Acceptable Solution E2/AS1, Table 2; and,
 - situated in NZS 3604 Wind Zones up to, and including Extra High.
- 2.2 Linea Weatherboard Cavity Cladding has also been appraised for weathertightness and structural wind loading when used as an external horizontally fixed wall cladding solution for buildings within the following scope:
 - the scope limitations of NZBC Acceptable Solution E2/AS1, Paragraph 1.1 with regards to building height and floor plan area; and,
 - constructed with timber framing complying with the NZBC; and,
 - situated in specific design wind pressures up to a maximum design differential ultimate limit state [ULS] of 2.5 kPa.
- 2.3 Linea® Weatherboard must only be installed horizontally on vertical surfaces.
- 2.4 Linea® Weatherboard Cavity Cladding is appraised for use with aluminium window and door joinery that is installed with vertical jambs and horizontal heads and sills. *[The Appraisal of Linea® Weatherboard Cavity Cladding relies on the joinery meeting the requirements of NZS 4211 for the relevant Wind Zone.]*

[Note: Linea® Weatherboard Cavity Cladding can be used to provide fire resistance rated construction, but these aspects have not been assessed by this Appraisal and are outside its scope.]

Building Regulations

New Zealand Building Code (NZBC)

- 3.1 In the opinion of BRANZ, Linea® Weatherboard Cavity Cladding if designed, used, installed and maintained in accordance with the statements and conditions of this Appraisal, will meet the following provisions of the NZBC:

Clause B1 STRUCTURE: Performance B1.3.1, B1.3.2 and B1.3.4. Linea® Weatherboard Cavity Cladding meets the requirements for loads arising from self-weight, earthquake, wind, impact and creep [i.e. B1.3.3 (a), (f), (h), (j) and (q)]. See Paragraphs 9.1 – 9.3.

Clause B2 DURABILITY: Performance B2.3.1 (b), 15 years and B2.3.2. Linea® Weatherboard Cavity Cladding meets these requirements. See Paragraphs 10.1 and 10.2.

Clause C3 FIRE AFFECTING AREAS BEYOND THE FIRE SOURCE: Performance C3.7. Linea® Weatherboard Cavity Cladding meets this requirement. See Paragraph 12.1.

Clause E2 EXTERNAL MOISTURE: Performance E2.3.2. Linea® Weatherboard Cavity Cladding meets this requirement. See Paragraphs 14.1 – 14.5.

Clause F2 HAZARDOUS BUILDING MATERIALS: Performance F2.3.1. Linea® Weatherboard Cavity Cladding meets this requirement and will not present a health hazard to people.

- 3.2 This is an Appraisal of an **Alternative Solution** in terms of New Zealand Building Code compliance.

Technical Specification

- 4.1 Linea® Weatherboards are bevelback weatherboards with a tongue and groove at each end for jointing. The weatherboards are pre-primed with an acrylic primer on the front face and both edges. Linea® Weatherboards are 16 mm thick and are available 135 mm, 150 mm and 180 mm wide. All boards are supplied 4200 mm long.
- 4.2 Linea® Weatherboards are manufactured from a reduced density cellulose fibre cement formulation. The boards are formed, cut to length and then cured by high-pressure autoclaving. After autoclaving, a bevel is cut on the back face of the weatherboards, the front edge at the bottom of the board is chamfered and the ends are tongue and grooved for jointing. Linea® Weatherboards are manufactured to meet the requirements of AS/NZS 2908.2.

Accessories

- 4.3 Accessories used with Linea® Weatherboard Cavity Cladding which are supplied by James Hardie New Zealand are:
- **Axent™ Trim** – a 16 mm thick fibre cement trim manufactured from a reduced density cellulose fibre cement formulation. Axent™ Trim is pre-primed with an acrylic primer on the front face and both edges, and is available in sizes of 84 mm and 100 mm wide by 2600 mm long.
 - **External and internal corner mouldings** – chromate treated aluminium external box corner, 90° internal corner 'W' mould and 135° internal corner 'W' mould. The mouldings are available in 2700 mm and 4000 mm lengths.
 - **Corner soakers** – 90° soakers are available for 135 mm, 150 mm and 180 mm Linea® Weatherboards. The soakers are available in chromate treated aluminium, copper and stainless steel.
 - **Cavity vent strip** – uPVC, available in 3000 mm lengths.
- 4.4 Accessories used with Linea® Weatherboard Cavity Cladding which are supplied by the building contractor are:
- **Flexible wall underlay** – building paper complying with NZBC Acceptable Solution E2/AS1 Table 23, or breather-type membranes covered by a valid BRANZ Appraisal for use as wall underlays.
 - **Flexible building underlay support** – polypropylene strap, 75 mm galvanised mesh, galvanised wire, or additional vertical battens for securing the flexible building underlay in place and preventing bulging of the bulk insulation into the drainage cavity. *[Note: mesh and wire galvanising must comply with AS/NZS 4534.]*

- **Rigid wall underlay** – Plywood or fibre cement sheet complying with NZBC Acceptable Solution E2/AS1, Table 23, or rigid sheathing covered by a valid BRANZ Appraisal for use as rigid air barrier systems.
- **Flexible sill, head and jamb flashing tape** – flexible flashing tapes complying with NZBC Acceptable Solution E2/AS1, Paragraph 4.3.11, or flexible flashing tapes covered by a valid BRANZ Appraisal for use around window and door joinery openings.
- **Cavity battens** – nominal 50 mm wide by 25 mm thick [minimum finished size of 45 mm wide by 18 mm thick] timber treated to Hazard Class H3.1.
- **Joinery head flashings** – folded from aluminium or galvanised steel to suit the window or door trim opening. Refer to NZS 3604, Section 4 and NZBC Acceptable Solution E2/AS1, Table 20 for durability requirements.
- **Planted sill and scribes** – timber treated to Hazard Class H3.1, pre-primed before installation.
- **Window and door trim cavity air seal** – air seals complying with NZBC Acceptable Solution E2/AS1, Paragraph 9.1.6, or self-expanding, moisture cure polyurethane foam air seals covered by a valid BRANZ Appraisal suitable for use around window, door and other wall penetration openings.
- **Flexible sealant** – sealant complying with NZBC Acceptable Solution E2/AS1, or sealant covered by a valid BRANZ Appraisal for use as a weather sealing sealant for exterior use.
- **Cavity batten fixings** – 40 x 2.8 mm flat head hot-dip galvanised nails.
- **Linea® Weatherboard fixings** – 60 x 3.15 mm flat head hot-dip galvanised HardieFlex nails or stainless steel ring shank HardieFlex nails [for concealed nailing in NZS 3604 wind zones up to and including Very High], 75 x 3.15 mm jolt head hot-dip galvanised nails or stainless steel ring shank nails [for face nailing in NZS 3604 wind zones up to and including Very High], and 90 x 4.0 mm jolt head hot-dip galvanised nails or stainless steel ring shank nails [for face nailing in the NZS 3604 Extra High Wind Zone and specific design wind pressures up to a maximum design differential ULS of 2.5 kPa].
- **Axent™ Trim fixings** – 60 x 3.15 mm or 75 x 3.15 mm hot-dip galvanised jolt head nails and stainless steel ring shank jolt head nails.

[Note: Stainless steel fixings must be Grade 316 and hot-dip galvanising must comply with AS/NZS 4680].

Paint System Specification

- 4.5 Paint systems are not supplied by James Hardie New Zealand and have not been assessed, therefore they are outside the scope of this Appraisal.
- 4.6 All exposed faces, including top edges at sills and all bottom edges of Linea® Weatherboard, Axent™ Trim and accessories must be finished with a latex exterior paint system complying with any of Parts 7, 8, 9, or 10 of AS 3730.

Handling and Storage

- 5.1 Handling and storage of all materials supplied by James Hardie New Zealand or the building contractor, whether on site or off site, is under the control of the building contractor. Linea® Weatherboards must be stacked flat, off the ground and supported on a level platform. They must be kept dry at all times either by storing under cover or providing waterproof covers to the stack. Care must be taken to avoid damage to edges, ends and surfaces. Weatherboards must always be carried on edge.
- 5.2 Accessories must be stored so they are kept clean, dry and undamaged. All accessories must be used within the maximum storage period recommended by the manufacturer.

Technical Literature

- 6.1 Refer to the Appraisals listing on the BRANZ website for details of the current Technical Literature for Linea® Weatherboard Cavity Cladding. The Technical Literature must be read in conjunction with this Appraisal. All aspects of design, use, installation and maintenance contained in the Technical Literature and within the scope of this Appraisal must be followed.

Design Information

Framing

Timber Treatment

- 7.1 Timber wall framing behind Linea® Weatherboard Cavity Cladding must be treated as required by NZBC Acceptable Solution B2/AS1.

Timber Framing

- 7.2 Timber framing must comply with NZS 3604 for buildings or parts of a building within the scope limitations of NZS 3604. Buildings or parts of a building outside the scope of NZS 3604 must be to a specific design in accordance with NZS 3603 and AS/NZS 1170. Where specific design is required, the framing must be of at least equivalent stiffness to the framing provisions of NZS 3604. Studs must be at maximum 600 mm centres in Low, Medium, High and Very High Wind Zones and maximum 400 mm centres for the NZS 3604 Extra High Wind Zone and specifically designed buildings. Nogs must be fitted flush between the studs at maximum 800 mm centres [for studs at 600 mm centres] or maximum 1200 mm centres [for studs at 400 mm centres].
- 7.3 Timber framing must have a maximum moisture content of 24% at the time of the cladding application. *[If weatherboards are fixed to framing with a moisture content of greater than 24% problems may occur at a later date due to excessive timber shrinkage.]*
- 7.4 Timber wall framing must have a maximum moisture content of 18% before the weatherboards are painted.

General

- 8.1 When the Linea™ Weatherboard Cavity Cladding is used for specifically designed buildings up to 2.5 kPa ULS wind pressure, only the weathertightness and structural aspects of the cladding are within the scope of this Appraisal. All other aspects of the building need to be specifically designed and are outside the scope of this Appraisal.
- 8.2 Punchings in the cavity vent strip provide a minimum ventilation opening area of 1000 mm² per lineal metre of wall.
- 8.3 At ground level the bottom edge of Linea® Weatherboards must be kept clear of paved surfaces, such as footpaths, by a minimum of 100 mm and unpaved surfaces by 175 mm in accordance with NZBC Acceptable Solution E2/AS1, Table 18. The ground clearances to finished floor levels as set out in NZS 3604 must be adhered to.
- 8.4 At balcony, deck or low pitch roof/wall junctions, the bottom edge of Linea® Weatherboards must be kept clear of any adjacent surface, or above the top surface of any adjacent roof flashing by a minimum of 50 mm.
- 8.5 All external walls of buildings must have barriers to airflow in the form of interior linings with all joints stopped for wind zones up to and including Very High, and rigid underlays for buildings in the Extra High wind zone and specifically designed buildings up to 2.5 kPa design differential ULS wind pressure. Unlined gables and walls must incorporate a rigid sheathing or an air barrier which meets the requirements of NZBC Acceptable Solution E2/AS1, Table 23. For attached garages, wall underlays must be selected in accordance with NZBC Acceptable Solution E2/AS1, Paragraph 9.1.3.4. Where rigid underlays are used, the cavity batten fixing lengths must be increased by a minimum of the thickness of the underlay.
- 8.6 Where cladding penetrations are wider than the cavity batten spacing, allowance must be made for airflow between adjacent cavities by leaving a minimum gap of 10 mm between the bottom of the vertical cavity batten and the flashing to the opening.
- 8.7 Where Linea® Weatherboard Cavity Cladding abuts other cladding systems, designers must detail the junction to meet their own requirements and the performance requirements of the NZBC. Details not included within the Technical Literature have not been assessed and are outside the scope of this Appraisal.

Interstorey Junctions

- 8.8 Inter-storey drained joints must be constructed in accordance with the Technical Literature. Inter-storey drained joints must be provided to limit continuous cavities to the lesser of 2-storeys or 7 metres in height, in accordance with the requirements of NZBC Acceptable Solution E2/AS1, Paragraph 9.1.9.4 [b].

Structure

Mass

- 9.1 The mass of the 135 mm wide Linea® Weatherboard when installed on the wall is 25.7 kg/m² at equilibrium moisture content (EMC). The mass of the 150 mm wide board is 24.9 kg/m² at EMC and the mass of the 180 mm wide board is 23.9 kg/m² at EMC. Linea® Weatherboard Cavity Cladding is therefore considered a light wall cladding in terms of NZS 3604.

Impact Resistance

- 9.2 Linea® Weatherboard Cavity Cladding will resist impacts likely to be encountered in normal residential use. The likelihood of impact damage to the cladding when used in light commercial situations should be considered at the design stage, and appropriate protection such as the installation of bollards and barriers provided for vulnerable areas.

Wind Zones

- 9.3 Linea® Weatherboard Cavity Cladding is suitable for use in all Wind Zones of NZS 3604 up to, and including, Extra High where buildings are designed to meet the requirements of NZBC Acceptable Solution E2/AS1, Paragraph 1.1, or up to 2.5 kPa ULS wind pressure where buildings are specifically designed.

Durability

Serviceable Life

- 10.1 Linea® Weatherboard Cavity Cladding installations are expected to have a serviceable life of at least 50 years provided the paint coating system is maintained in accordance with this Appraisal to ensure the Linea® Weatherboards and fixings remain dry in service. Linea® Weatherboards must be painted within 3 months of fixing.
- 10.2 Coastal locations can be very corrosive to fasteners, especially locations within distances of up to 500 m from the sea including harbours, or 100 metres from tidal estuaries and sheltered inlets, and otherwise as shown in NZS 3604, Figure 4.2. These coastal locations are defined in NZS 3604 as Zone D. To achieve a 50 year serviceable life in Zone D, Linea® Weatherboards must be fixed with stainless steel fasteners. Fasteners outside Zone D may be hot-dip galvanised steel.
- 10.2 Microclimatic conditions, including geothermal hot spots, industrial contamination and corrosive atmospheres, and contamination from agricultural chemicals or fertilisers can convert mildly corrosive atmosphere into aggressive environments for fasteners. The fixing of Linea® Weatherboards in areas subject to microclimatic conditions requires specific design in accordance with NZS 3604, Paragraph 4.2.4, and is outside the scope of this Appraisal.

Maintenance

- 11.1 Regular maintenance is essential for Linea® Weatherboard Cavity Cladding installations to continue to meet the NZBC durability performance provision and to maximise their serviceable life.
- 11.2 Annual inspections must be made to ensure that all aspects of the cladding system, including the paint coating system, flashings and any sealed joints remain in a weatherproof condition. Any damaged areas or areas showing signs of deterioration which would allow water ingress must be repaired immediately. Sealant and paint coatings must be repaired in accordance with the sealant or paint coating manufacturer's instructions.
- 11.3 Regular cleaning [at least annually] of the paint coating surface is recommended to remove grime, dirt and organic growth and to maximise the life and appearance of the coating. Paint systems must be recoated at approximately 7-15 yearly intervals in accordance with the paint manufacturer's instructions.

- 11.4 Minimum ground clearances as set out in this Appraisal must be maintained at all times during the life of the cladding. *[Failure to adhere to the minimum ground clearances given in this Appraisal and the Technical Literature will adversely affect the long term durability of Linea® Weatherboard Cavity Cladding.]*

Control of External Fire Spread

- 12.1 Linea® Weatherboard has a peak heat release rate of less than 100 kW/m² and a total heat released of less than 25 MJ/m² in accordance with NZBC Acceptable Solution C/AS1, Table 5.1. The system is suitable for use on buildings with a SH Risk Group classification, at any distance to the relevant boundary. Linea® Weatherboard is also suitable for use where a non combustible material is specified. When Linea® Weatherboard is finished with a paint coating of not more than 1.0 mm in thickness, the exterior surface finishes requirements of NZBC Acceptable Solutions C/AS2 – C/AS6, Paragraph 5.8.1 do not apply in accordance with NZBC Acceptable Solutions C/AS2 – C/AS6, Paragraph 5.8.2 a).

Prevention of Fire Occurring

- 13.1 When Linea® Weatherboard Cavity Cladding is finished with a paint coating of not more than 1.0 mm in thickness, clearance separations from chimneys and flues are not required. However, when used in conjunction with, or attached to heat sensitive materials, the heat sensitive material must be separated from chimneys and flues in accordance with the requirements of NZBC Acceptable Solutions C/AS1 – C/AS6, Paragraph 7.5.9 for the protection of combustible materials.

External Moisture

- 14.1 Linea® Weatherboard Cavity Cladding, when installed in accordance with this Appraisal and the Technical Literature will prevent the penetration of moisture that could cause undue dampness or damage to building elements.
- 14.2 The cavity must be sealed off from the roof and sub-floor space to meet code compliance with Clause E2.3.5.
- 14.3 Linea® Weatherboard Cavity Cladding allows excess moisture present at the completion of construction to be dissipated without permanent damage to building elements to meet code compliance with Clause E2.3.6.
- 14.4 The details given in the Technical Literature for weather sealing are based on the design principle of having a first and second line of defence against moisture entry for all joints, penetrations and junctions. The ingress of moisture must be excluded by detailing joinery and wall interfaces as shown in the Technical Literature. Weathertightness details that are developed by the designer are outside the scope of this Appraisal and are the responsibility of the designer for compliance with the NZBC.
- 14.5 The use of Linea® Weatherboard Cavity Cladding where there is a designed cavity drainage path for moisture that penetrates the cladding, does not reduce the requirement for junctions, penetrations, etc to remain weather resistant.

Internal Moisture

- 15.1 Buildings must be constructed with an adequate combination of thermal resistance and ventilation, and space temperature must be provided to all habitable spaces, bathrooms, laundries and other spaces where moisture may be generated or may accumulate.

Water Vapour

- 15.2 Linea® Weatherboard Cavity Cladding is not a barrier to the passage of water vapour, and when installed in accordance with the Technical Literature and this Appraisal will not create or increase the risk of moisture damage resulting from condensation.

Installation Information

Installation Skill Level Requirements

- 16.1 Installation of Linea® Weatherboard and accessories supplied by James Hardie New Zealand and the building contractor must be completed by tradespersons with an understanding of cavity construction and bevelback weatherboard installation, in accordance with instructions given within the Linea® Weatherboard Cavity Cladding Technical Literature and this Appraisal.

System Installation

Building Underlay and Flexible Sill and Jamb Tape Installation

- 17.1 The selected building underlay and flexible sill and jamb tape system must be installed by the building contractor in accordance with the underlay and tape manufacturer's instructions prior to the installation of the cavity battens and the rest of the Linea® Weatherboard Cavity Cladding system. Flexible building underlay must be installed horizontally and be continuous around corners. Underlay must be lapped 75mm minimum at horizontal joints and 150mm minimum over studs at vertical joints. Generic rigid sheathing materials must be installed in accordance with NZBC Acceptable Solution E2/AS1 and be overlaid with a flexible wall underlay. Proprietary systems shall be installed in accordance with the manufacturer's instructions. Particular attention must be paid to the installation of the building underlay and sill and jamb tapes around window and door openings to ensure a continuous seal is achieved and all exposed wall framing in the opening is protected.

Cavity Battens

- 17.2 Cavity battens must be installed over the building underlay to the wall framing at maximum 600 mm centres where the studs are at 600 mm centres or at 400 mm centres when studs are at 400 mm centres. The battens must be fixed in place with 40 x 2.8 mm hot-dip galvanised flat-head nails at maximum 800 mm centres.
- 17.3 Where studs are at greater than 400 mm centres, a building underlay support must be installed over the building underlay between the cavity battens at maximum 300 mm centres.

Linea® Weatherboard Installation

- 17.4 Linea® Weatherboards may be cut on site by power saw. Holes and cut-outs may be formed by drilling a number of holes around the perimeter of the opening required and tapping out the centre with a hammer, or by using a hole saw.
- 17.5 Weatherboards must be dry prior to installation. Before the weatherboards are installed, cut ends exposed to the exterior such as at aluminium box corners or internal corners must be sealed with an acrylic sealer to reduce the absorbency of the fibre cement.
- 17.6 Linea® Weatherboards must be installed starting at the bottom of the wall. A cant strip [H3.1 treated timber or fibre cement] must be fixed behind the bottom course of weatherboards to ensure the weatherboards are set at the correct angle. The cant strip must be continuous around the perimeter of the building. The bottom course of weatherboards must overhang the bottom plate by a minimum of 50 mm.
- 17.7 Before the weatherboards are installed, the corner detail must be prepared to suit the selected option, e.g. external box corner, corner soaker. The necessary flashings, including window flashings, must be installed before commencing weatherboard fixing.
- 17.8 The first course of weatherboards must be full length, i.e. 4200 mm and commence from an external corner. Jointing of Linea® Weatherboards is made off the stud using the pre-cut tongue and groove joint. Tongue and groove joints may be located centrally between the studs, but must be no closer than 100 mm to the edge of a stud. A bead of sealant must be applied to the front side of the tongue before the corresponding board is inserted. Subsequent courses of weatherboards must be installed so that the tongue and groove joints are staggered by 600 mm minimum from joints in the previous course.

- 17.9 Linea® Weatherboards must have a minimum lap of 30 mm, and should be set out so as near to a full board as possible will finish under and over windows and doors and at the top of the wall. A storey rod can be used to accurately position weatherboard courses.
- 17.10 Linea® Weatherboards must be fixed to each stud using concealed fixings behind the lap of the boards or face nailing, except that face nailing must be provided at all corners and vertical edges of openings.
- 17.11 Concealed fixing must be carried out using 60 x 2.8 mm hot-dip galvanised or stainless steel Hardieflex nails depending on the location - see Paragraph 10.2. Nails must be fixed 25 mm from the top edge of the board and must be driven flush with the board surface.
- 17.12 Face nailing must be carried out using 75 x 3.15 mm hot-dip galvanised or stainless steel jolt-head nails in NZS 3604 wind zones up to and including Very High, or 90 x 4.0 mm hot-dip galvanised or stainless steel jolt-head nails in the NZS 3604 Extra High Wind Zone and specific design wind pressures up to a maximum design differential ULS of 2.5 kPa, depending on the location - see Paragraph 10.2. Nails must be fixed 15 mm up from the bottom of the board and punched a maximum of 2 mm below the surface of the board. When stainless steel nails are used, the top board at each lap must be pre-drilled.
- 17.13 Linea® Weatherboards can be hand or gun nailed. Nails must not be closer than 25 mm to the end of the board when hand nailing, or closer than 50 mm when gun nailing. *[Note: Gun nailing must only be used for concealed nailing.]*

Aluminium Joinery Installation

- 17.14 Aluminium joinery and associated head and sill flashings must be installed by the building contractor in accordance with the Technical Literature. A 7.5 mm nominal gap must be left between the joinery reveal and the wall framing so a PEF rod and air seal can be installed after the joinery has been secured in place.
- 17.15 After installing the window and door joinery, Axent™ Trim, planted sills and scribes may be installed in accordance with the Technical Literature to provide additional weatherproofing for the joinery/weatherboard junction.

Inspections

- 17.16 The Technical Literature must be referred to during the inspection of Linea® Weatherboard Cavity Cladding installations.

Finishing

- 17.17 The paint coating manufacturer's instructions must be followed at all times for application of the paint finish. Linea® Weatherboards and trim must be clean and dry before commencing painting.

Health and Safety

- 18.1 Cutting of Linea® Weatherboard must be carried out in well ventilated areas, and a dust mask and eye protection must be worn.
- 18.2 When power tools are used for cutting, grinding or forming holes, health and safety measures as set out in the Technical Literature must be observed because of the amount of dust generated.
- 18.3 Safe use and handling procedures for Linea® Weatherboard and the components that make up the cladding system are provided in the relevant manufacturer's Technical Literature.

Basis of Appraisal

The following is a summary of the technical investigations carried out:

Tests

19.1 The following testing has been completed by BRANZ:

- BRANZ expert opinion on NZBC E2 code compliance for Linea® Weatherboard Cavity Cladding was based on testing and evaluation of all details within the scope and as stated within this Appraisal. Linea® Weatherboard Cavity Cladding was tested to E2/VM1 (as contained within NZBC Clause E2, Third Edition, Amendment 5). The testing assessed the performance of the foundation detail, window head, jamb and sill details, meterbox head, jamb and sill details, balustrade to wall junction, parapet cap and internal and external corners. In addition to the weathertightness test, the details contained within the Technical Literature have been reviewed, and an opinion has been given by BRANZ technical experts that the system will meet the performance levels of NZBC Acceptable Solution E2/AS1 for drained cavity claddings.
- Uniform wind face load tests to simulate wind pressures on 12 mm thick Linea® Weatherboards were carried out by BRANZ, and the results were used in assessing 16 mm thick Linea® Weatherboard used in Linea® Weatherboard Cavity Cladding.
- Cone Calorimeter testing to determine the peak rate of heat release and total heat release of Linea® Weatherboard was completed by BRANZ. The testing was carried out in accordance with AS/NZS 3837.

19.2 Linea® Weatherboards have been tested by a James Hardie NATA accredited laboratory in accordance with AS/NZS 2908.2. The testing covered: soak-dry, bending strength, warm water soaking, heat/rain, freeze/thaw and apparent density. The test methods and results have been reviewed by BRANZ and found to be satisfactory.

19.3 Testing has been carried out by James Hardie New Zealand to determine the modulus of rupture and inter-laminar bond strength of carbonated and non-carbonated Linea® Weatherboard. The test methods and results have been reviewed by BRANZ and found to be satisfactory.

Other Investigations

20.1 Weathertightness, structural, fire and durability opinions have been provided by BRANZ technical experts.

20.2 Site visits have been carried out by BRANZ to assess the practicability of installation, and to examine completed installations.

20.3 The manufacturer's Technical Literature has been examined by BRANZ and found to be satisfactory.

Quality

21.1 The manufacture of Linea® Weatherboard has been examined by BRANZ, and details regarding the quality and composition of the materials used were obtained by BRANZ and found to be satisfactory.

21.2 The quality of materials, components and accessories supplied by James Hardie New Zealand is the responsibility of James Hardie New Zealand. The quality control system of James Hardie New Zealand has been assessed and registered as meeting the requirements of ISO 9001: 2008.

21.3 Quality on site is the responsibility of the installer.

21.4 Designers are responsible for the building design, and building contractors are responsible for the quality of installation of the building underlay, cavity battens, Linea® Weatherboard and accessories in accordance with the instructions of James Hardie New Zealand.

21.5 Building owners are responsible for the maintenance of Linea® Weatherboard Cavity Cladding in accordance with the instructions of James Hardie New Zealand.

Sources of Information

- AS 3730 Guide to the properties of paints for buildings.
- AS/NZS 1170: 2002 Structural design actions.
- AS/NZS 2908.2: 2000 Cellulose-cement products - Flat sheet.
- AS/NZS 3837: 1998 Method of test for heat and smoke release rates for materials and products using an oxygen consumption calorimeter.
- AS/NZS 4534: 1998 Zinc and zinc/aluminium-alloy coatings on steel wire.
- AS/NZS 4680: 2006 Hot-dip galvanized [zinc] coatings on fabricated ferrous articles.
- NZS 3602: 2003 Timber and wood-based products for use in building.
- NZS 3603: 1993 Timber Structures Standard.
- NZS 3604: 1999 Timber framed buildings.
- NZS 4211: 2008 Specification for performance of windows.
- Compliance Document for New Zealand Building Code External Moisture Clause E2, Department of Building and Housing, Third Edition July 2005.
- Ministry of Business, Innovation and Employment Record of Amendments for Compliance Documents and Handbooks.
- The Building Regulations 1992.

Amendments

Amendment No. 1, dated 31 January 2012.

This Appraisal has been amended to update clause changes as required by the introduction of NZS 3604: 2011 and NZBC Acceptable Solution E2/AS1 Third Edition, Amendment 5.

Amendment No. 2, dated 30 October 2013.

This Appraisal has been amended to change the Appraisal Holder, change the Product Name and to update clause changes as required by the introduction of NZBC Fire Clauses C1 – C6 Protection from Fire and A3 Building Importance Levels.

Amendment No. 3, dated 5 March 2014.

This Appraisal has been amended to alter the scope to include NZS 3604 Wind Zone Extra High, and specific design wind pressures up to and including 2.5 kPa.

Amendment No. 4, dated 01 March 2016.

This Appraisal has been amended to remove the term Scyon®.



In the opinion of BRANZ, **Linea® Weatherboard Cavity Cladding** is fit for purpose and will comply with the Building Code to the extent specified in this Appraisal provided it is used, designed, installed and maintained as set out in this Appraisal.

The Appraisal is issued only to **James Hardie New Zealand**, and is valid until further notice, subject to the Conditions of Appraisal.

Conditions of Appraisal

1. This Appraisal:
 - a) relates only to the product as described herein;
 - b) must be read, considered and used in full together with the Technical Literature;
 - c) does not address any Legislation, Regulations, Codes or Standards, not specifically named herein;
 - d) is copyright of BRANZ.
2. **James Hardie New Zealand:**
 - a) continues to have the product reviewed by BRANZ;
 - b) shall notify BRANZ of any changes in product specification or quality assurance measures prior to the product being marketed;
 - c) abides by the BRANZ Appraisals Services Terms and Conditions.
 - d) Warrants that the product and the manufacturing process for the product are maintained at or above the standards, levels and quality assessed and found satisfactory by BRANZ pursuant to BRANZ's Appraisal of the product.
3. BRANZ makes no representation or warranty as to:
 - a) the nature of individual examples of, batches of, or individual installations of the product, including methods and workmanship;
 - b) the presence or absence of any patent or similar rights subsisting in the product or any other product;
 - c) any guarantee or warranty offered by **James Hardie New Zealand**.
4. Any reference in this Appraisal to any other publication shall be read as a reference to the version of the publication specified in this Appraisal.
5. BRANZ provides no certification, guarantee, indemnity or warranty, to **James Hardie New Zealand** or any third party.

For BRANZ



Pieter Burghout

Chief Executive

Date of Issue:

14 September 2010



CODEMARK™

Product Description

40 Below Window Tape is a self-adhesive flashing tape to seal around windows, doors, and other joinery openings as a secondary defence against water penetration.

Roll Sizes

H 75mm x L 20m H 150mm x L 10m
H 100mm x L 20m H 200mm x L 20m
H 150mm x L 20m

Certificate Holder

Masons Plastabrick Ltd
9A Parkhead Place
Albany Auckland 0632 NZ
0800 522 533
www.mpb.co.nz



Certification Body

CertMark International Pty Ltd

T/A CertMark New Zealand

ABN: 80 111 217 568

JAS-ANZ Accreditation No. Z4450210AK

PO Box 321 Tuakau 2121

+64 (09) 951 8246

www.CertMark.org

CERTIFICATE OF CONFORMITY

This is to certify that
40 Below Window Tape



Complies with the New Zealand Building Code:

1. B2.3.1 (b).
2. B2.3.2.
3. E2.3.2.
4. F2.3.1.

Product Purpose or Use

40 Below Window Tape is a self-adhered, flashing tape designed to protect windows penetrations from moisture infiltration. When integrated into the wall system and used properly, the tape will provide a secondary defence against water penetrating. 40 Below Window Tape can also be used as a Rigid Air Barrier Tape.

Subject to the following Conditions & Limitations:

- a. The certificate holder must maintain compliance with the conditions set out in Section 15 of the Building (Product Certification) Regulations 2008.
- b. This product can be applied in temperature ranges of between -40c to +65c.
- c. Ensure all surfaces to which 40 Below Window Tape is applied are clean, dry and free of dust.
- d. 40 Below Window Tape is to be applied only in areas as described in the Masons 40 Below Window Tape Installation Instruction April 2014 and on the packaging. It should not be used in areas where it has the potential to be exposed to heat such as chimney flues.
- e. When applying 40 Below Window Tape to LOSP treated timber, ensure the solvent has been allowed to flash off prior to installing the product. It is suggested that a minimum of one (1) week is allowed for.
- f. 40 Below Window Tape when used, installed and maintained in accordance with the requirements outlined in 40 Below Window Tape technical brochure April 2014, contributes to the requirements of Acceptable Solution E2/AS1, Clause 9.1.5 (b) (i).

John Thorpe

John Thorpe
CertMark International Pty Ltd

19/05/2016
Date of Issue

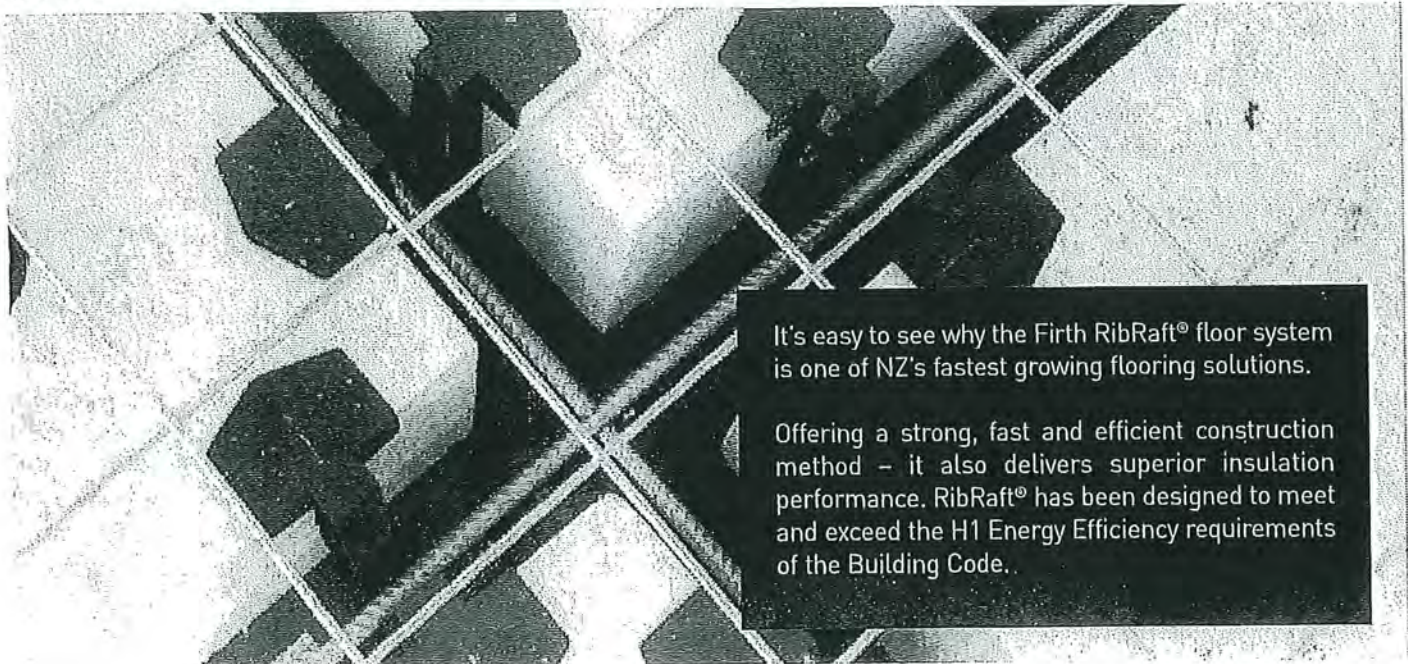
CMA-CM40098 (Rev1)
Certificate Number
Revised June 2016

- This certificate is issued by an independent certification body accredited by the product certification accreditation body appointed by the Chief Executive of the Ministry of Business, Innovation & Employment (MBIE) under the Building Act 2004. MBIE does not in any way warrant, guarantee, or represent that the building method or product the subject of this certificate conforms to the New Zealand Building Code, nor accept any liability arising out of the use of the building method or product. MBIE disclaims, to the extent permitted by law, all liability (including negligence) for claims of losses, expenses, damages, and costs arising as a result of the use of the building method(s) or product(s) referred to in this certificate.
- It is advised to check that this Certificate of Conformity is currently valid and not withdrawn, suspended or superseded by a later issue by referring to the MBIE website, www.mbie.govt.nz
- This certificate may only be reproduced in its entirety.





SUPERIOR FLOOR INSULATION DESIGN SOLUTIONS



It's easy to see why the Firth RibRaft® floor system is one of NZ's fastest growing flooring solutions.

Offering a strong, fast and efficient construction method – it also delivers superior insulation performance. RibRaft® has been designed to meet and exceed the H1 Energy Efficiency requirements of the Building Code.

NZ BUILDING CODE REQUIREMENTS

In 2007, changes were made to Clause H1 (Energy Efficiency) of the Building Code.

The Schedule Method is the simplest method to achieve compliance under the Code. Using this method, the minimum R-values required for floors are:

$$\left. \begin{array}{l} R \ 1.3 \text{ m}^2 \text{ }^{\circ}\text{C/W} \\ R \ 1.5 \text{ m}^2 \text{ }^{\circ}\text{C/W} \end{array} \right\} \text{ Depending on the glazing R-value}$$

While the Schedule Method is simple and quick, the Calculation Method offers greater flexibility as it allows low R-values in some elements of the construction to be offset against higher R-values in other building elements such as floors.

THE SUPERIOR SOLUTION

The insulation performance of a concrete floor is dependent upon a number of physical factors including:

- the floor structure
- the concrete mix used in the floor structure
- the ratio of the interior surface area to external perimeter area of the floor
- the thickness of the exterior wall placed on top of the perimeter of the floor
- the positioning and properties of specific insulation elements in the floor design

The Firth RibRaft® floor system - consisting of proprietary RibRaft® polystyrene pods, plastic spacers and RaftMix™ concrete - has been further developed to meet and exceed the insulation requirements of Clause H1 of the Code.

That's the reason why RibRaft® offers such a superior solution. Where RibRaft® floors have higher R-values than required by the Schedule Method, there is now an opportunity to have less insulation in the other building elements by using the Calculation Method.

RIBRAFT® R-VALUE DESIGN SOLUTIONS

The following wall, floor and floor area:perimeter ratio construction details describe a range of floor R-values which can only be achieved using the proprietary RibRaft® system.

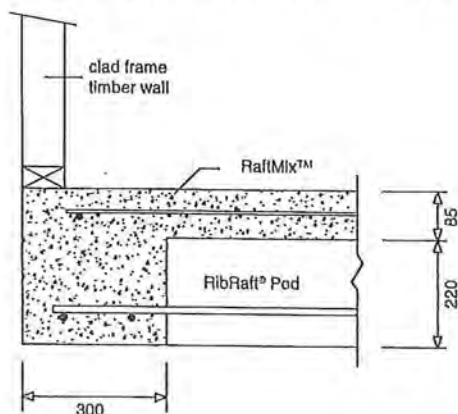
SOLUTION 1

All RibRaft® Floors

All RibRaft® floors are acceptable under the Code which assumes a minimum of $R \ 1.3 \text{ m}^2 \text{ }^{\circ}\text{C/W}$.

SOLUTION 2

RibRaft® Floors with a 90mm Frame Timber Clad External Wall



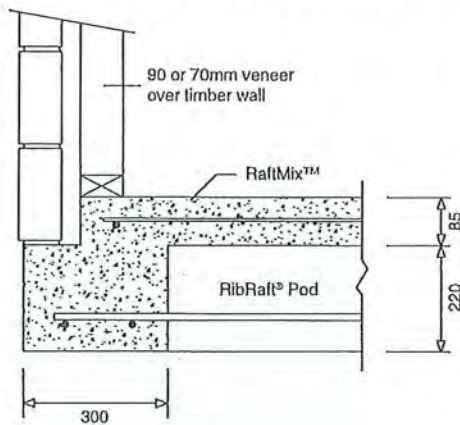
IMPORTANT NOTES:

1. The R-values in the following tables only apply to RibRaft® floors which have been constructed with RaftMix™ and RibRaft® pods and spacers.
2. The R-values below are calculated in accordance with NZS 4214:2006 "Methods of Determining the Total Thermal Resistance of Parts of Buildings".

	Floor Area To Perimeter Ratio m^2/m									
	1.25	1.50	1.75	2.00	2.25	2.50	2.75	3.00	3.50	4.00
R-value $\text{m}^2 \text{ }^{\circ}\text{C/W}$	1.48	1.52	1.64	1.75	1.86	1.97	2.07	2.17	2.38	2.57

SOLUTION 3

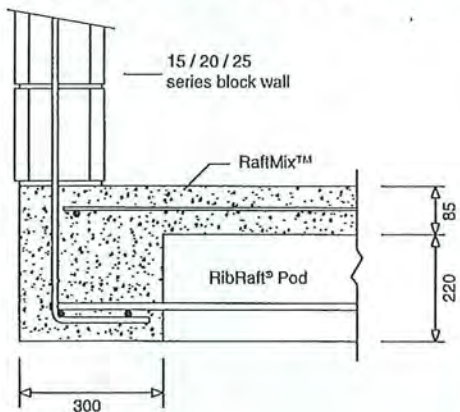
RibRaft® Floors with a 90mm Timber Frame and 70-90mm Veneer Wall with Cavity



	Floor Area To Perimeter Ratio m ² /m									
	1.25	1.50	1.75	2.00	2.25	2.50	2.75	3.00	3.50	4.00
R-value m ² °C/W	1.54	1.67	1.80	1.93	2.05	2.17	2.28	2.40	2.62	2.84

SOLUTION 4

RibRaft® Floors with a Firth Standard or HotBloc® Masonry External Wall



	Block	Floor Area To Perimeter Ratio m ² /m									
		1.25	1.50	1.75	2.00	2.25	2.50	2.75	3.00	3.50	4.00
R-value m ² °C/W	15 series	1.48	1.60	1.73	1.85	1.96	2.08	2.19	2.30	2.51	2.72
	20 series	1.54	1.67	1.80	1.93	2.05	2.17	2.28	2.40	2.62	2.84
	25 series	1.59	1.73	1.86	1.99	2.12	2.24	2.37	2.49	2.72	2.95

SOLUTION 5

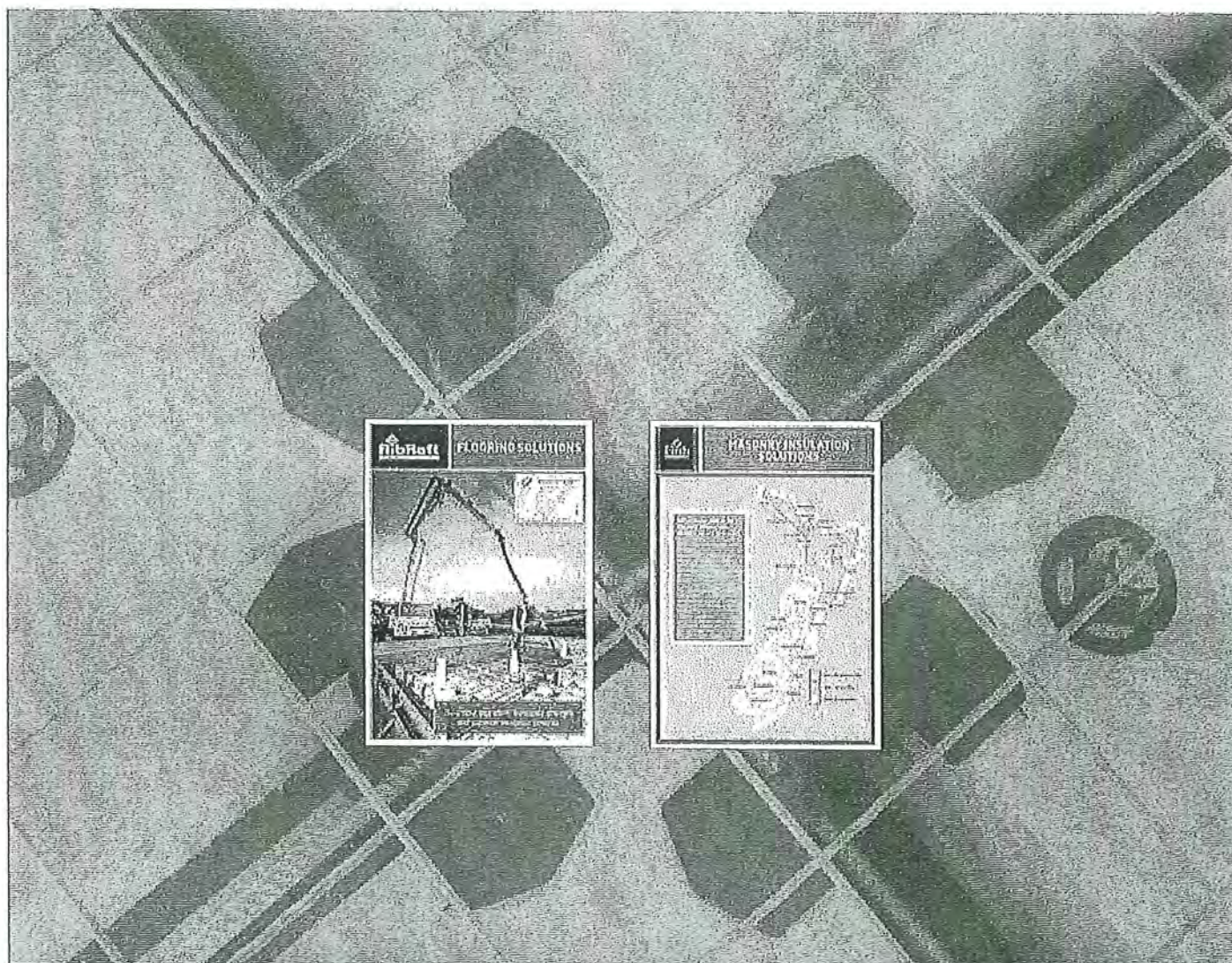
RibRaft® Heated Floors

Where in-floor heating is used, the combination of RaftMix™ and RibRaft® pods ensures that $(R_{IN})/(R_{OUT})$ is always less than 0.1. The R-value of the floor can

be established from the above tables. The Building Code requires that the floor has a R-value not less than 1.9 m² °C/W.

DESIGN AND CONSTRUCTION

RibRaft® design and construction details can be found in the 'Firth RibRaft® Flooring Solutions' brochure and the 'Firth RibRaft® Floor System Manual'. These publications are available at www.firth.co.nz or by phoning 0800 800 576.



SUSTAINABILITY: THE FIRTH CONCRETE & CONCRETE MASONRY SUSTAINABILITY LIFECYCLE

- ✓ Environmentally compliant manufacturing plants
- ✓ Surplus water and some aggregates recycled
- ✓ Low transport impacts
- ✓ Reheave concrete returned from construction sites
- ✓ Passive solar heated thermal mass makes completed buildings more energy efficient

- ✓ Most wash water returned from construction sites
- ✓ Highly durable, low maintenance buildings and no rot
- ✓ High degree of noise control
- ✓ Inherent fire resistance
- ✓ Overall longer effective building life
- ✓ Demolished concrete can be recycled as hard fill or aggregate

For more on Firth's contribution to building a sustainable tomorrow, today, visit www.firth.co.nz or call us on 0800 800 576 for our free brochure.

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DAVCO WATERPROOFING GUIDE



Quality System



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Standards Australia



Davco

EXCELLENCE IN
TILING SYSTEMS

Product Information



Type	Product	Description
Acrylics	<i>Dampflex</i>	A white, acrylic-based, non-trafficable waterproofing and sealing ready to use from the container reinforced with fibreglass mat
	<i>Dampflex Reo</i>	An internally reinforced acrylic membrane which negates the need for reinforcement at wall/floor junctions and areas to be waterproofed
	<i>Duraflex</i>	A single pack, water based, high build membrane coating for long-term protection of exterior surfaces. Duraflex can be applied to materials such as concrete, render, aluminium, steel, cement. A standard colour range of White, Grey, Pale Beige, and Moss Green
	<i>Duratread</i>	A water based, high build trafficable membrane coating for the protection of floor surfaces. Can be applied to concrete, bitumen, steel, etc.
Polyurethane	<i>K10 Plus</i>	Single pack, water based, polyurethane waterproofing membrane for internal and external wet areas, such as showers, bathrooms, etc. Ideal for roofs, including walkways and other exposed situations. Foot trafficable.
Acrylic/Cement	<i>Dampfast</i>	2-part waterproofing and sealing membrane that eliminates the need for drying. Quick drying. Ideal for waterproofing shower recesses, laundry rooms, roofs, water tanks, cement toppings, planter boxes, etc.
Cementitious	<i>Davco K11</i>	A brush or spray applied, cement based system for waterproofing masonry through the crystallisation process. Davco K11 is applied to the side or the negative side of the substrate and as such is suitable for areas involving negative hydrostatic pressure i.e. lift wells, cellars etc.
Bitumens	<i>Bitumen Paint</i>	A multi purpose bitumen paint which can be used as an adhesive or a waterproofing agent.
	<i>Brushable Waterproofer</i>	A thick cold applied solvent based bitumen, reinforced with tough inert fibres to produce a non-trafficable, black, semi-flexible waterproofing membrane.
	<i>Brushable Duraseal</i>	A thick cold applied solvent based bitumen, reinforced with tough inert fibres to produce a non-trafficable, black, semi-flexible waterproofing membrane.
	<i>Duraseal Putty (Waterproofing Putty)</i>	A thick bitumen putty reinforced with tough inert fibres to produce a non-trafficable, black, semi-flexible waterproofing membrane. Putty has a thick consistency, and dries to form a thick waterproofing membrane.
	<i>Silvershield</i>	Water resistant bitumen-based coating containing flakes of aluminium for UV protection. Ideal for use over concrete, masonry, etc.
	<i>Aqueous Bitumen</i>	A single component, water-based emulsion of bitumen and acrylic solids content, formulated for coating concrete. Aqueous Bitumen forms an elastic membrane resistant to penetration of water.
	<i>Bitkote No. 3</i>	Bitkote No. 3 is suitable for general purpose repair and protection of timber, metal, brick, concrete and cement sheeted surfaces against water penetration to concrete water storage tanks, ponds etc.
Miscellaneous	<i>Bitkote No.5</i>	Bitkote No. 5 contains reinforcing fibres for sealing cracks in concrete structures and is suitable for heavy duty applications. Ideal for waterproofing and can be used as a leveling layer prior to application of a trafficable membrane.
	<i>Masonry Waterproofer</i>	A clear saturating fluid that effectively provides a barrier to water as well as soot, dirt and mould growth. In addition, it does not alter the appearance of the substrate when used on the exterior of brickwork or render.

For help with product selection, refer to the Waterproofing Selection Guide

Type Tested

These products have been type tested, granted by Quality Assurance Services, this certifies that the products conform with Specification no: AS3855:1994 highlighting their suitability for contact with non

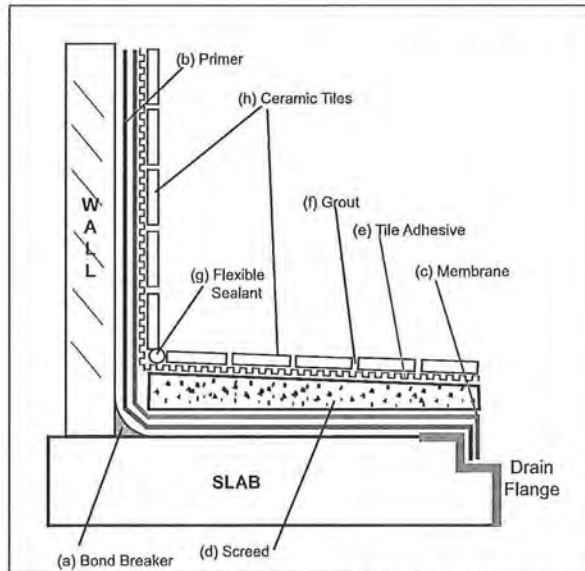


		Coverage <i>All figures quoted may vary depending on application, site conditions and the porosity of the surface.</i>	Pack Sizes
ing membrane, tting.	CSIRO Appraised	4L will cover approximately 1.5m ² when used with fibreglass matting.	4L, 10L and 20L.
use of conventional ofed.	CSIRO Appraised	15L will cover approximately • 10m ² - to provide a 1mm thick dry film • 15m ² - to provide a 0.6mm thick dry film	4L and 15L.
the sealing and died to all common building sheet, masonry, brick, wood etc. sion Brown is available.		Flat Roofs: 500 micron dry film thickness - 1.1 m ² /L Pitched Roofs: 370 micron* dry film - 1.5 m ² /L Walls (smooth): 250 micron* dry film - 2.2 m ² /L High Movement / Likely Cracking areas: 1000 micron* dry film - 0.5 m ² /L Junction/Joints: 500 - 1100 micron* dry film - 0.5 - 1.1 m ² /L (ensure reinforcement is used).	4L and 20L.
e sealing and long-term protection masonry, brick and wood etc.		1m ² per litre to achieve a dry film thickness of 500 microns*.	20L.
ane. Use to waterproof both , terraces and balconies. ons, as it is UV stable and		A 20L pail will cover approximately: • 13m ² - to provide a 1mm thick dry film • 16m ² - to provide a 0.8mm thick dry film • 20m ² - to provide a 0.6mm thick dry film	20L.
re need for a reinforcement layer. ries, terraces, balconies, concrete		10L / 20kg of Davco Dampfast will cover approx 12m ² with a 1.5mm dry film thickness.	2L / 4kg Handy kit or 10L / 20kg unit.
	Type Tested	CSIRO Appraised	
ofing concrete and terproofs the positive able for applications		Ground Moisture - Approx 2kg/m ² Hydrostatic Pressure On the negative side - Approx 4kg/m ²	Davco K11 - Grey 25kg bags Cement Mix Fortifier - 5L and 20L.
isive primer or coating.		As an adhesive - approximately 4m ² /L. As a primer - approximately 7m ² /L. As a coating - approximately 7m ² /L.	500ml, 1L, 4L and 20L.
ough inert fibres, roofing membrane.	Type Tested	1L will cover approximately 1m ² when applied at the rate of 1L / m ² .	500ml, 1L and 4L. (Also available in 20L as Brushable Duraseal.)
duce superior strength. Duraseal proof surface.		1kg will approx fill a joint 25mm x 25mm x 1.2m.	1kg, 4kg and 20kg. (It is also available in 300g cartridges - as Waterproofing Putty).
uminium for a protective silver r bitumen coatings to provide		1L will cover approx 8m ² .	1L, 4L and 20L.
rylic latex of high men provides an		20L will cover 15m ² applied with 2 coats. Each coat is applied at the rate of 0.67L / m ² .	20L.
ction. Ideal for sealing most ainst water entry. Also ideal as a		20L will cover approx 20m ² when applied at the rate of 1L / m ² (two coats each applied at the rate of 0.5L / m ²).	4L and 20L.
water tanks and other concrete r rejuvenating old bituminous n of sheet and acrylic membranes.		20L will cover approx 20m ² when applied at the rate of 1L / m ² (two coats each applied at the rate of 0.5L / m ²).	20L.
ater penetration as ter the colour of the		Approximately 9-12 m ² /L per coat	4L and 20L.

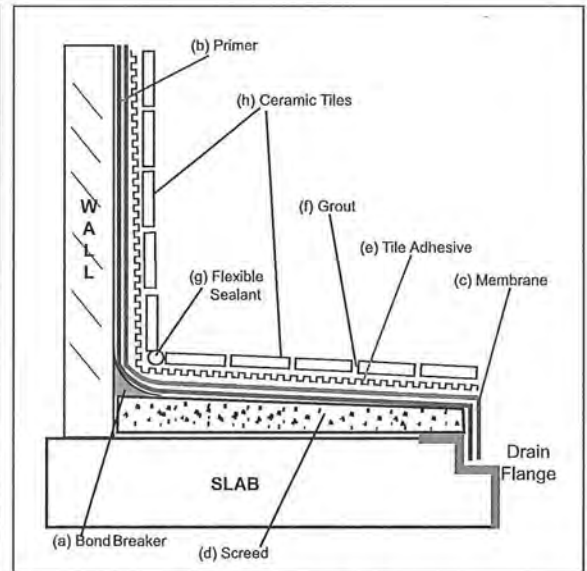
uide on the back of this brochure or call our Technical Advisory Line on 1800 653 347

1. Waterproofing Wet Areas

1.1 Shower Recesses (Category 1 Area)

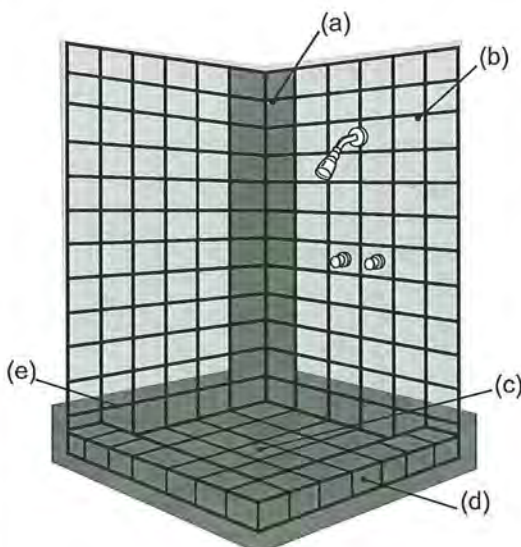


AS 3740 - Waterproofing of Wet Areas within residential buildings



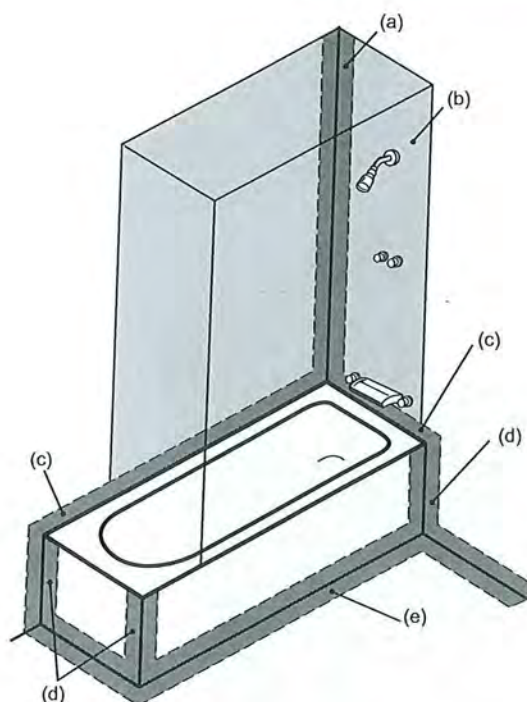
Preferred Method

- a) Use a bond breaker to create a "coved" corner detail - either Abelrod, 50mm bond breaker tape or Dawsil silicone sealant.
- b) Application of primer.
- c) The Australian Standard (AS 3740 Waterproofing of Wet Areas within Residential Buildings) calls for the membrane to be applied under the screed to receive tiles, but it is recommended that the membrane be applied over the screed laid to falls.
- d) Sand Cement Screed to ensure that a minimum of 1:80 fall to the waste is created. This equates to a 12.5mm fall over 1m. Note: A slurry coat of Davelastic mixed 1:1 with neat cement should be used to improve the adhesion of the screed if being applied over the membrane.
- e) Application of Tile Adhesive.
- f) Application of Grout.
- g) Use a flexible sealant either Dawsil or Colorcaulk in all wall/floor and wall/wall joins.
- h) Ceramic Tiles
- i) Drain Flange - ensure application of membrane is turned down into the drain flange.



1.2 Shower Recess Detailing

- a) AS 3740 calls for the membrane to be applied up the wall to 1800mm or to the height of the shower rose, out to a width of 150mm.
- b) However, it is recommended that the entire wall is coated with the membrane, up to the height of the shower rose.
- c) Apply the membrane over the entire floor area.
- d) If enclosed by a shower screen, apply the membrane up over the hob, and at least 150mm beyond the outside edge of the hob. If unenclosed, apply the membrane up over the hob, and out to a 1500mm radius from the shower rose.
- e) Apply the membrane to the base of the wall, at least 150mm above the height of the hob.



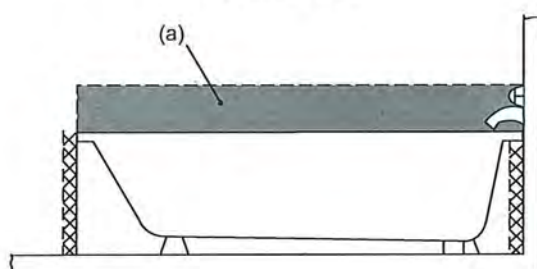
1.3 Shower-over-bath Enclosure (Category 1 Area)

- AS 3740 calls for the membrane to be applied up the wall/wall junction 1800mm from the floor or to the height of the shower rose, out to a width of 150mm.
- However, it is recommended that the entire wall is coated with the membrane, up to the height of the shower rose.
- Apply the membrane 150mm wide at the base of the bath wall sheet.
- Apply the membrane 150mm wide over the vertical corners of the bath.
- Apply the membrane 150mm wide along the bath/floor joint. If the bath is enclosed with a shower screen, this will be sufficient. If the bath is unenclosed, continue applying the membrane over the floor, out to a 1500mm radius from the shower rose.

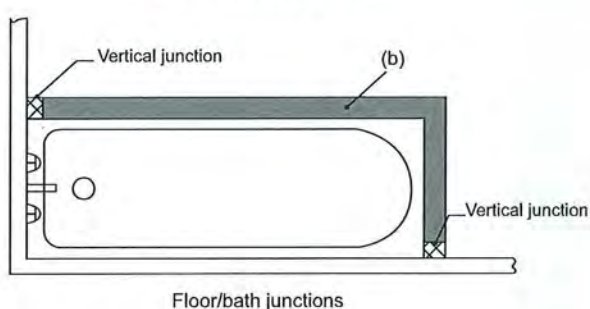
1.4 Other Wet Areas (Category 2)

1.4.1 Baths

Pedestal Bath

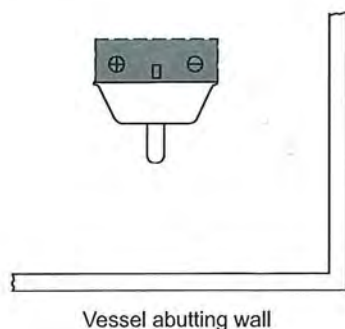


Hob Mounted Bath



- Apply the membrane 150mm wide at the base of the bath wall sheet.
- Apply the membrane 150mm wide along the bath/floor joint.

1.4.2 Laundries, Sinks

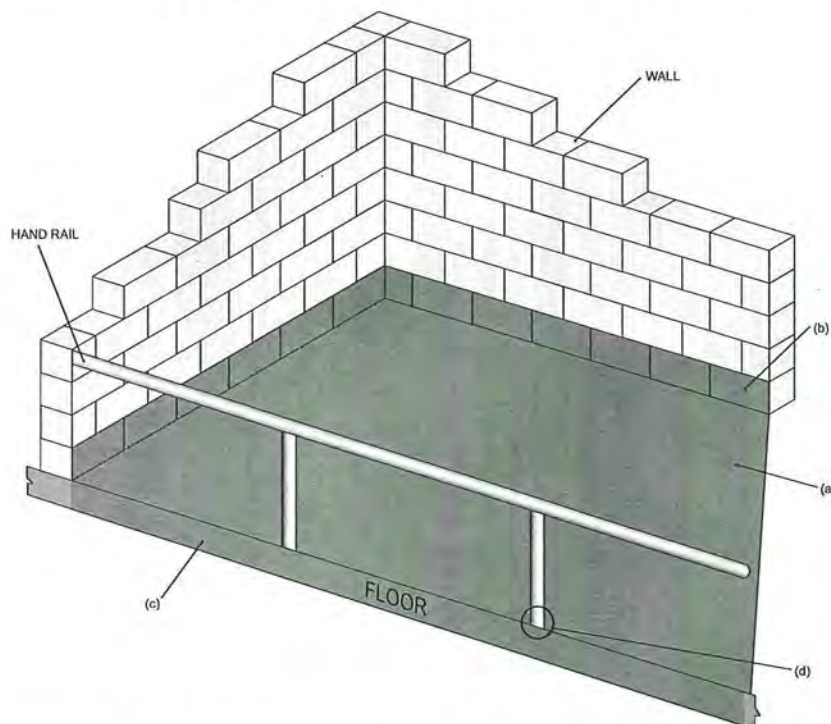


Apply membrane to the wall area 150mm above a fixed vessel, and for the width or length of the vessel.

Suitable Membranes:

- Dampflex
- Dampflex Reo
- Dampfast
- K10 Plus

2. Waterproofing, Roofs Decks and Balconies



- a) Ensure the deck is constructed with falls to the edge or to the drains which are a minimum 1:100 (ie 10mm over 1m)*. If this has not been built into the floor, it will require a cement/sand screed be used to achieve this fall. Apply the membrane over the entire balcony floor, or over the screed if one has been applied.
- b) Apply the membrane up the wall at least 100mm, or to the first course of bricks.
- c) Apply the membrane over the front edge of the balcony and the underside of that front edge (if structurally possible).
- d) Ensure all gaps around handrail penetrations are carefully sealed, prior to covering with the membrane (Refer to Section 2.2.1).

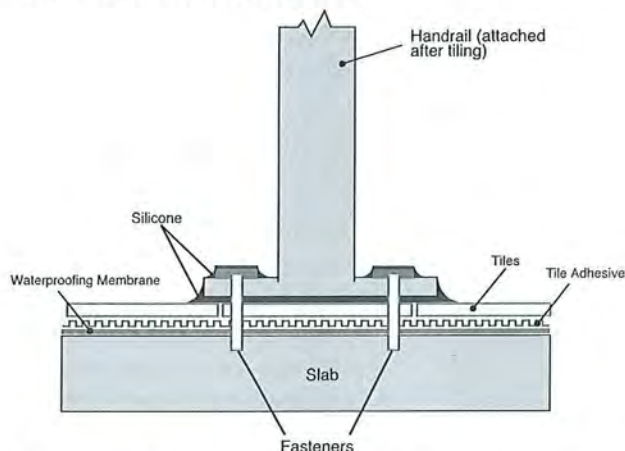
* As necessary, treat any cracks or joints per instructions in Section 5.

2.1 Metal Roofs

- a) Ensure the metal surface is thoroughly cleaned and dry.
- b) Any rust needs to be removed with a wire brush or grinder. Treat with rust treatment as required.
- c) Fill any holes with Duraseal Putty (Refer to Section 4.2 for detailed hole repair).
- d) Allow to cure for 24 hours.
- e) Coat with two coats of Brushable Duraseal allowing it to cure for at least 7 days at 20°C before overcoating with Silvershield.
- f) Coat with Silvershield - allowing to dry for 24 hours at 20°C.

2.2 Rail/Pipe Penetration Details

2.2.1 Hand Rail Penetration

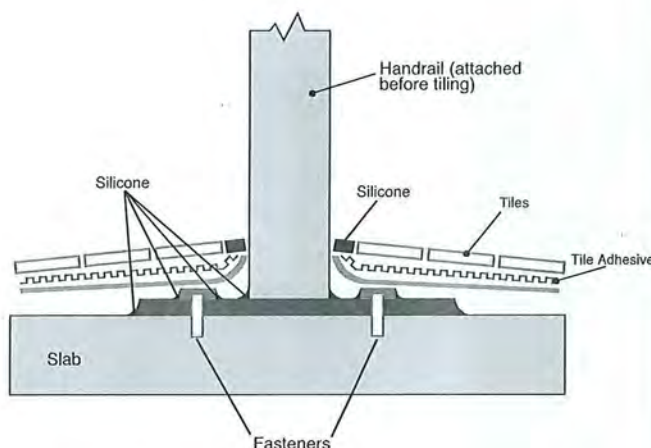


For a situation where the handrail is attached after tiling:

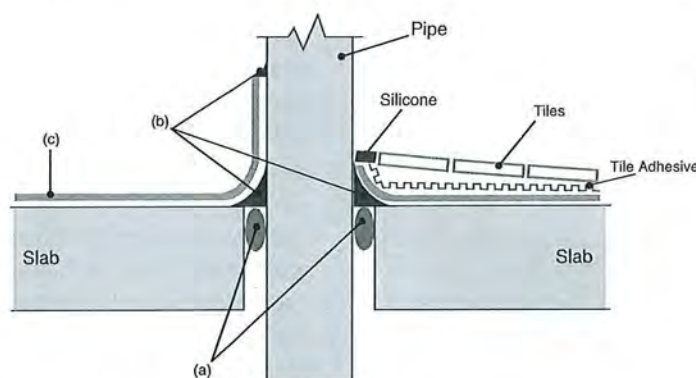
- Ensure the handrail and the fastening bolts are applied over one full tile.
- Apply Davsil silicone sealant around the perimeter of the base plate, the sides of the base plate and over the head of the fastening bolts, to ensure it is fully sealed.

For a situation where the handrail is attached prior to tiling:

- The membrane is turned up the penetration to the point where the tiling will finish.
- The tiles & grout would be applied.
- Davsil silicone sealant used to seal the gap between the tiles and the penetration.



2.2.2 Pipe Penetration



- If required, use Abelrod backer rod to fill gap between slab and pipe.
- Apply Davsil (silicone sealant) over joint to form a corner cove, and to top of the membrane to finally seal it.
- Apply membrane after use of appropriate primer over concrete slab, (and suitable primer over the pipe penetration). Membrane should be turned up the pipe 100mm.

For a situation where the balcony is to be tiled:

- The membrane is turned up the penetration to the point where the tiling will finish.
- The tiles and grout would be applied.
- Davsil Silicone sealant used to seal the gap between the tiles and the penetration.

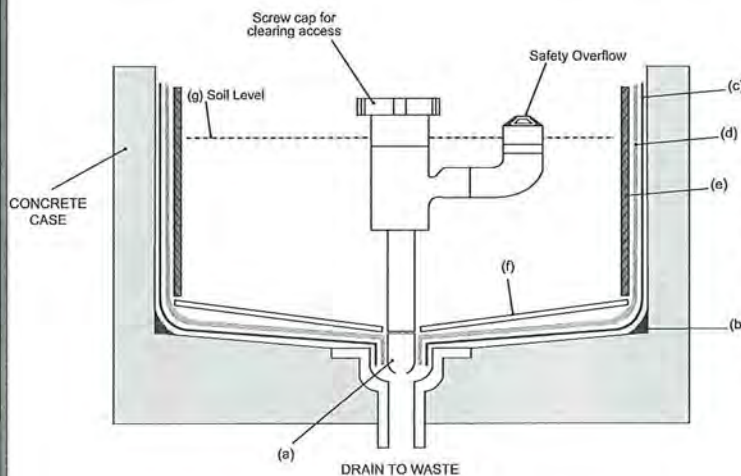
Suitable Membranes for tiling over:

- Dampfast
- Dampflex Reo
- Davco K10 Plus
- Davco K11

Suitable Exposed Membranes:

- Brushable Duraseal/Silvershield
- Duraflex
- Duratread
- Davco K10 Plus

3. Planter Boxes

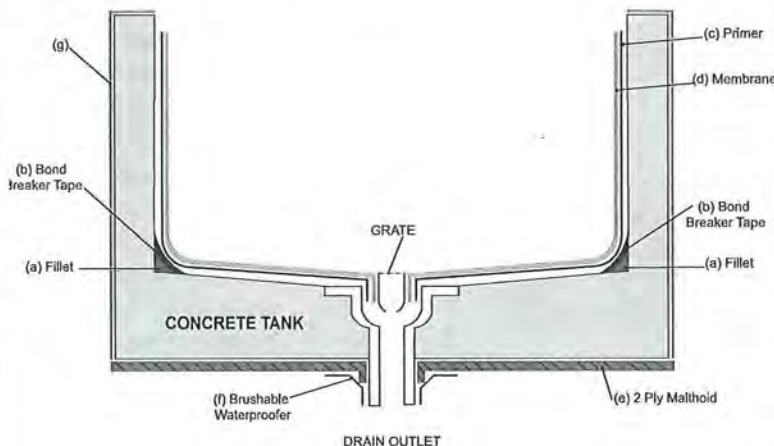


- a) Grate to stop roots going down drain waste.
- b) Davsil (silicone) or Sodaflex 603 as bond breaker in corners, allow to cure.
- * *Treat any cracks as per instructions in Section 5.*
- c) Prime with suitable primer.
- d) Apply the membrane over the entire surface.
- e) Fibre cement protection board to stop root damage to the membrane.
- f) Drainage cell - recommended that this be wrapped in geo-filter fabric, to protect the membrane from root damage, and aid in drainage of moisture to the outlet.
- g) Soil level should be 100mm below the membrane.

NOTE: The suitability of plants to be installed should be considered, as certain rooting systems are aggressive and may penetrate the membrane.

4. Water Tanks/Ponds

4.1 Concrete Tanks (Potable)

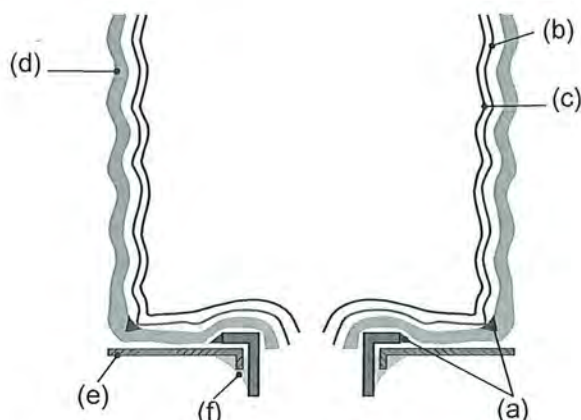


Surface Preparation

Ensure the tank is emptied and dried. If required, use a suitable biocide to remove any signs of biological growth/contamination, then allow to dry. Treat any cracks, joints as per instructions in Section 5. Ensure all sharp protrusions are removed/treated prior to application. All laitance must be removed by mechanical means. The tank needs to be thoroughly dried before starting work.

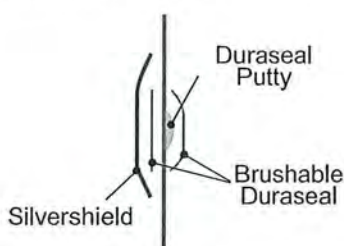
- (a) Apply a fillet into the corners using a 4:1 sand:cement screed, gauged with diluted Davelastic (mixed 1 part Davelastic to 3 parts water). Allow 24 hours to set.
- (b) Apply a bond breaker tape (eg, Duct tape), over the fillet, extending 20mm either side of fillet.
- (c) Apply primer coat over the entire tank surface. Allow to dry.
- (d) Apply 2 coats of membrane, allowing suitable drying/airing in between coats. Allow the final coat to dry for a minimum of 10 days, and then wash the membrane and allow it to dry thoroughly, at least twice, before filling.
- (e) To prevent water ingress from beneath the tank, it is recommended to sit the tank on a bed of Malthoid.
- (f) Apply a coat of Brushable Waterproofer to seal Malthoid to drain outlet and make base watertight.
- (g) It is also suggested the exterior of the tank be coated with Duraflex, a suitable exterior coating membrane system, to prevent water ingress.

4.2 Metal Tanks (Potable)



Surface Preparation

Detailed Hole Repair



- Abrade surface with wire brush to remove any signs of rust.
- Treat with rust treatment as required.
- Fill hole with Duraseal Putty. Allow to cure 24 hours.
- Coat inside and out with Brushable Duraseal - coating 100mm radius from hole.
- Coat any Brushable Duraseal on the exterior of the tank which will be exposed to UV light with Silvershield.

General Surface Repair

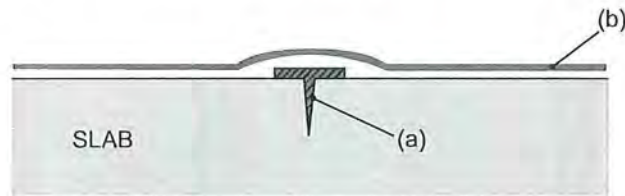
- Ensure the tank is emptied, thoroughly cleaned and dry.
 - Use a suitable biocide to remove any sign of biological growth/contamination, then allow to dry.
 - Use a wire brush or grinder to remove any signs of rust and treat holes as mentioned above. Use a suitable rust treatment method as required to treat rust spots.
 - Coat the treated area - coating 100mm radius from the edge of the treated area with Brushable Duraseal.
- Apply Duraseal Putty as bond breaker onto corner, and against inside flange of drain outlet.
 - Prime entire inside using Bitumen Paint. Allow to dry 24 hours.
 - Coat tank with 2 coats Brushable Duraseal, allowing 24 hours drying between coatings. Allow the final coat to dry for a minimum of 10 days, and then wash the membrane and allow it to dry thoroughly, at least twice, before filling.
 - Apply a coating of Silvershield over the entire outside of the tank, should it require overcoating, or wherever any of the bitumen products are exposed to UV light.
 - To protect the base of the tank from moisture, it is recommended to sit the tank on a bed of Malthoid.
 - Apply a coat of Brushable Duraseal to seal the Malthoid to the drain outlet and make the base watertight.

Suitable Membranes:

- Brushable Duraseal / Silvershield
- Dampfast
- Davco K11

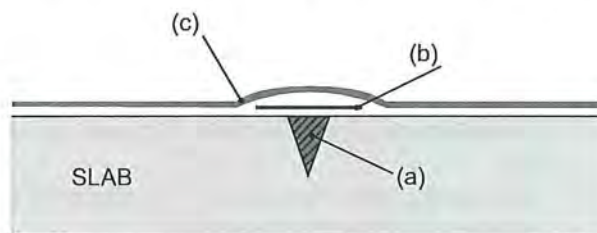
5. Treatment of Expansion Joints and Cracks

5.1 Non Structural Cracks (NOT Subject to Movement) < 0.5mm



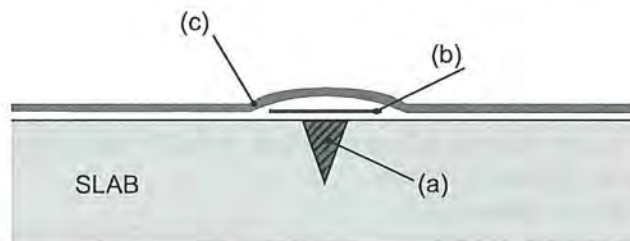
- a) Fill the crack with the membrane and apply a 50mm wide band of membrane over the length of the crack and allow to dry.
- b) Apply membrane to remainder of area, after use of suitable primer.

5.2 Non Structural Cracks (NOT Subject to Movement) > 0.5mm



- a) Route out the joint to form a 'V' shaped groove with a hand or power chisel, to a depth and width of approximately 25mm. Dampen the chiselled out crack with clean water and whilst still damp, fill the joint with Lanko 731 repair mortar or Duragrout. Finish flush with the concrete surface and allow 24 hours to cure.
- b) Apply a 100mm band of membrane over the filled crack and allow to dry.
- c) Apply the membrane to the remainder of the area after use of suitable primer.

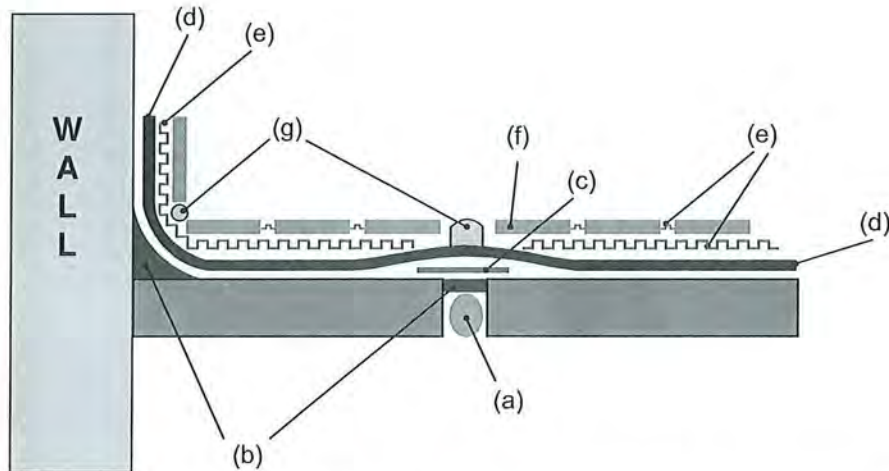
5.3 Structural Cracks (Subject to Movement)



NOTE: All structural cracks should be subject to investigation by a structural engineer prior to any remedial action. We offer the following as a guide only - each case needs to be assessed on its individual merits.

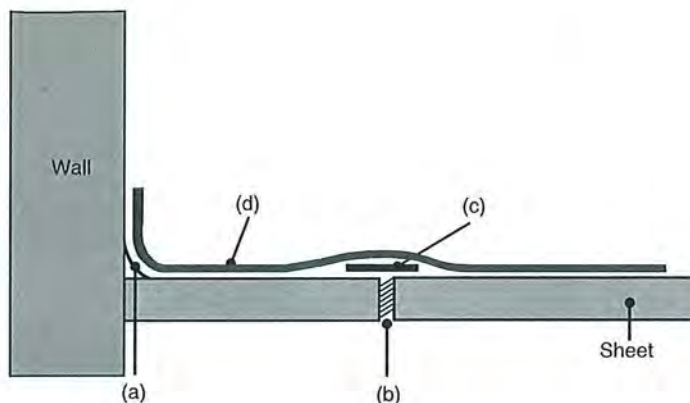
- a) Fill the crack with a flexible sealant - Dawsil (Silicone) or Sodaflex 603 (Polyurethane). Allow 24 hours to cure. In the case of large cracks, Abelrod can be used to pack the body of the crack, before filling with Dawsil or Sodaflex 603.
- b) Apply a 100mm wide strip of Polyethylene/Polypropylene tape over the total length of the crack - extending either side of where the crack finishes. * Ensure the surface is clean prior to application of the tape, to achieve good adhesion.
- c) Apply the membrane to the remainder of the area after use of suitable primer.

5.4 Expansion Joints



- a) For wide joints (>10mm), the use of Abelrod (Polyethylene foam backer rod) is recommended.
- b) Use Davsil (silicone) or Sodaflex 603 (Polyurethane) to fill the remainder of the joint, and to provide a bond breaker at the wall/floor junction. (Narrow joints of <10mm can be filled with Davsil or Sodaflex 603 only).
- c) Apply a 50mm wide strip of polyethylene/polypropylene tape over the total length of the expansion joint.
* Ensure the surface is clean prior to application of the tape, to achieve good adhesion.
- d) Apply the membrane to the remainder of the area, after use of a suitable primer.
- e) & f) Application of adhesive, tiles and grout ensuring the expansion joint is NOT tiled over.
- g) Use Davsil (silicone) or Sodaflex 603 (Polyurethane) to fill the expansion joint and the wall/floor joint in the tiled surface.

5.5 Sheet Joint Detail



NOTE: Ensure the floor sheeting material used is suitable for the intended application - consult the manufacturer for suitability. All floor sheeting material must be fixed in accordance with the manufacturers instructions. All joint detailing must also be carried out in accordance with the manufacturers instructions. In the absence of suitable instructions for joint detailing we offer the following suggestion, however this does not override manufacturers instructions:

- a) Davsil (Silicone) or Sodaflex 603 (Polyurethane) bond breaker.
- b) Davsil or Sodaflex 603 in sheet joint, if the joint is greater than 1mm. For butt jointed sheets, or joints of less than 1mm, the use of a flexible sealant is not necessary.
- c) Polyethylene/Polypropylene tape - 50mm wide, to be placed over all joints, prior to application of membrane (including joints of less than 1mm). * Ensure the surface is clean prior to application of the tape, to achieve good adhesion.
- d) Apply membrane, after use of a suitable primer.

Davco Waterproofing Selection Guide

SUBSTRATE	MEMBRANE OVERCOATED OR COVERED WITH.....					EXPOSED MEMBRANE	
	Paint or other membrane	Tiles	Pavers	Vinyl	Timber floorboards (floating)	Light Foot Traffic (Building Maintenance)	Foot Traffic (Entertaining Areas)
Roofs & Decks							
concrete Slab ement Screed	Dampflex Dampflex Reo K10 Plus	K10 Plus Dampflex Dampflex Reo Dampfast	K10 Plus Dampflex Dampflex Reo Dampfast	K10 Plus Dampflex Dampflex Reo Dampfast	K10 Plus Dampflex Dampflex Reo Dampfast	Duraflex K10 Plus Dampfast	Duratread
metal (primed)	Duraflex K10 Plus	Duraflex Dampflex Reo K10 Plus	Duraflex Dampflex Reo K10 Plus	Duraflex Dampflex Reo K10 Plus	Duraflex Dampflex Reo K10 Plus	Duraflex K10 Plus Brushable Duraseal/Silvershield	Duratread
compressed FC Sheet mber arine Grade Plywood	Dampflex Dampflex Reo K10 Plus	Dampflex Dampflex Reo K10 Plus	n/a	Dampflex Dampflex Reo K10 Plus	Dampflex Dampflex Reo K10 Plus	Duraflex K10 Plus Dampfast	
Wet Areas - Showers, Bathrooms & Laundries							
concrete Slab ement Render ement Screed	n/a	K10 Plus Dampflex Dampflex Reo Dampfast	n/a	K10 Plus Dampflex Dampflex Reo Dampfast	n/a	n/a	
compressed FC Sheet (Floors) ypsum Plasterboard (Walls) C Sheet (Walls)	n/a	Dampflex Dampflex Reo K10 Plus	n/a	Dampflex Dampflex Reo K10 Plus	n/a	n/a	
Immersed Areas - Swimming Pools							
concrete ement Screed	Dampfast Davco K11	Dampfast Davco K11	n/a	n/a	n/a		
Retaining Walls, Landscaping						Planter Boxes	
concrete ement Render ement Screed	Davco K11 Bitkote No. 5 Brushable Waterproofer	Dampfast Davco K11	Dampfast Davco K11 Bitkote No. 5 Brushable Waterproofer	n/a	n/a	Dampfast Davco K11 Brushable Duraseal/Waterproofer	

Water Tanks / Ponds

concrete	Brushable Duraseal Bitkote No. 5 Dampfast Davco K11	These products are suitable for waterproofing the inside of concrete tanks. Should Brushable Duraseal be in a situation where it is exposed to UV, it will need to be overcoated with Silvershield. If Bitkote No.5 is in a position where it is exposed to UV, it should be overcoated with Duraflex. For potable applications, Brushable Duraseal or Dampfast are the only suitable membranes for use.	
metal (primed)	Brushable Duraseal	Brushable Duraseal is recommended for waterproofing the inside of metal tanks, and is suitable for use in potable situations. Should it be in a situation where it is exposed to UV, it will need to be overcoated with Silvershield	

This is a guide for use in the selection of waterproofing membranes only. It is not intended as a guide for building design. For detailed information or assistance on applications not covered by this guide, refer to the datasheets or contact our Technical Advisory Line 1800 653 347

Davco

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BRANZ Appraised
Appraisal No. 452 [2013]

SIKA BOOM® AIR SEAL

Appraisal No. 452 [2013]

This Appraisal replaces BRANZ Appraisal No. 452 [2007] dated 29 May 2007.

BRANZ Appraisals

Technical Assessments of products for building and construction.



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Product

- 1.1 Sika Boom® is a self-expanding polyurethane foam air seal used around window and door penetrations and other cladding fenestration trim cavities to assist with weathertightness and energy efficiency.

Scope

- 2.1 Sika Boom® has been appraised for use as an air seal around window and door penetrations and other cladding fenestration trim cavities in buildings within the following scope:
- the scope limitations of NZBC Acceptable Solution E2/AS1, Paragraph 1.1 with regard to building height and floor plan area; and,
 - situated in NZS 3604 Wind Zones up to, and including Extra High.
- 2.2 Sika Boom® has also been appraised as an air seal with window and door joinery that is designed and manufactured in accordance with NZS 4211, situated in NZS 3604 Wind Zones up to, and including Extra High, and where the cladding is an Alternative Solution and/or the building is outside the scope limitations of NZBC Acceptable Solution E2/AS1, Paragraph 1.1. The weathertightness design of the window and door joinery penetrations and other cladding fenestration trim cavities in these situations has not been assessed and is outside the scope of this Appraisal.

Building Regulations

New Zealand Building Code (NZBC)

- 3.1 In the opinion of BRANZ, Sika Boom® Air Seal, if designed, used, installed and maintained in accordance with the statements and conditions of this Appraisal, will meet or contribute to meeting the following provisions of the NZBC:

Clause B2 DURABILITY: Performance B2.3.1 (b), 15 years. Sika Boom® Air Seal meets this requirement. See Paragraphs 8.1 and 8.2.

Clause E2 EXTERNAL MOISTURE: Performance E2.3.2. When used as part of a cladding system, Sika Boom® Air Seal will contribute to meeting this requirement. See Paragraphs 10.1 – 10.4.

Clause F2 HAZARDOUS BUILDING MATERIALS: Performance F2.3.1. Sika Boom® Air Seal meets this requirement and will not present a health hazard to people.

- 3.2 This is an Appraisal of an **Acceptable Solution** in terms of New Zealand Building Code compliance as follows:
- self-expanding foam air seal in accordance with NZBC Acceptable Solution E2/AS1 Paragraph 9.1.6.

3.3 This is an Appraisal of an **Alternative Solution** in terms of New Zealand Building Code compliance as follows:

- assisting the weathertightness performance of the building envelope in accordance with Paragraph 2.2 of this Appraisal.

Technical Specification

4.1 Products and accessories supplied by Sika (NZ) Ltd are as follows:

Air Seal

- Sika Boom® – a single component self expanding moisture cure polyurethane foam. Available as Sika Boom® – G a 750 ml can fitted with an adaptor system for use with a one component dispensing gun and Sika Boom in 250 ml, 500 ml, 750 ml Multi positional cans. *[Note these can be used in any position, the can does not have to be inverted to allow the foam to be propelled].*

Accessories

- Sika Boom® Cleaner – a solvent based cleaner for the dispensing gun.

4.2 Accessories supplied by the building contractor are as follows:

- One-component dispensing gun.
- PEF backing rod – a closed cell polyethylene foam (PEF) backing rod complying with ASTM C1330.

Handling and Storage

5.1 The handling and storage of Sika Boom® on site is the responsibility of the installer. Sika Boom® has a shelf life of 12 months if stored in unopened packaging under dry, cool conditions at temperatures between 5°C and 35°C. The product must be stored out of direct sunlight.

Technical Literature

- 6.1 Refer to the Appraisals listing on the BRANZ website for details of the current Technical Literature for Sika Boom®. The Technical Literature must be read in conjunction with this Appraisal. All aspects of design, use, installation and maintenance contained in the Technical Literature and within the scope of this Appraisal must be followed.
- 6.2 Some installation instructions are also printed on the can. The can label also contains uses outside the scope of this Appraisal.

Design Information

General

- 7.1 The use of air seals is critical to assist the weathertightness performance of window and door joinery installations at the trim cavities, and other wall penetrations. Air seals also assist energy efficiency by reducing heat loss through these cavities.
- 7.2 Sika Boom® is designed to be used as a gap-filling air seal around window and door trim cavities and wall penetrations, e.g. plumbing pipes. It is designed for use in interior locations, and along with its good gap-filling capacities it has excellent adhesion to most materials. Two exceptions are polyethylene or polypropylene. However, testing completed on window installations incorporating polyethylene building wraps and polyethylene backed flashing tapes has shown that any potential lack of adhesion between Sika Boom® and the polyethylene will not affect its performance as an air seal.
- 7.3 Sika Boom® is designed to prevent air leakage at the interior face of the window and door trim cavities and wall penetrations. This prevention of air leakage assists in achieving the overall airtightness requirements of the trim cavity.
- 7.4 A PEF backing rod complying with ATSM C1330 must be used in all trim cavities and around wall penetrations to support the Sika Boom®. At the same time the backing rod prevents the trim cavity from being completely filled by restricting the depth of the air seal to a maximum of 45 mm.

- 7.5 Sika Boom® is not designed to overcome poor detailing and workmanship of window or door joinery installation. It is designed to be used in conjunction with flashing systems, not as a substitute.

Durability

- 8.1 Assessment of durability to meet the NZBC is based on difficulty of access and replacement of the air seal, and the ability to detect failure of the air seal both during normal use and maintenance of the building.

Serviceable Life

- 8.2 When air seals are installed using Sika Boom® in accordance with this Appraisal (i.e. in dry, interior environments where the product is inaccessible, and completely sheltered from exposure to sunlight, chemicals, solvents and temperature extremes), they will remain serviceable for at least 15 years.

Prevention of Fire Occurring

- 9.1 Separation or protection of the Sika Boom® from heat sources such as fire places, heating appliances, flues and chimneys must be provided. Part 7 of NZBC Acceptable Solutions C/AS1 – C/AS6 and NZBC Verification Method C/VM1 provide methods for separation and protection of combustible materials from heat sources.

External Moisture

- 10.1 Sika Boom® is a self-expanding polyurethane foam complying with the requirements of NZBC Acceptable Solution E2/AS1 Paragraph 9.1.6.
- 10.2 When installed over a PEF backing rod complying with ASTM C1330, window, door and other penetration openings in exterior walls incorporating Sika Boom® can minimise the risk of airflows carrying water into the building wall.
- 10.3 Sika Boom®, when installed in accordance with this Appraisal, will assist the total cladding system in complying with NZBC Acceptable Solution E2/AS1.
- 10.4 Buildings outside the scope of NZBC Acceptable Solution E2/AS1, Paragraph 1.1 are the subject of specific weathertightness design. The designer must incorporate air seal details to meet their own requirements and the performance requirements of the NZBC. These details are outside the scope of this Appraisal.

Installation Information

Installation Skill Level Requirements

- 11.1 Installation of Sika Boom® must be completed by competent tradespersons with an understanding of air seal installation, in accordance with the instructions given in the Technical Literature and this Appraisal.

General

- 12.1 Before the installation of Sika Boom®, the installer must refer to the contract documentation, E2/AS1 and the cladding system manufacturer's Technical Literature for guidance on the installation requirements of air seals in their system.
- 12.2 Substrate surfaces must be clean and free from any surface contaminants such as dust or grease that may cause loss of adhesion. Window and door joinery or wall penetrations must have been installed and firmly secured in place.
- 12.3 Substrate surfaces should be moistened with a mist of water before the installation of Sika Boom®. The moisture assists by accelerating the curing of the air seal and creating a more homogeneous cell structure.
- 12.4 After installation of the PEF backing rod, Sika Boom® must be extruded into the gap between the window or door reveal liner or wall penetration and the timber frame or building wrap at the internal face of the cavity using the dispensing gun. Once extruded, it will expand to fill the gap and form a continuous air seal.

- 12.5 Sika Boom® that has spilled but not cured can be removed with Sika Boom® Cleaner.
- 12.6 Sika Boom® that has cured can be trimmed with a sharp knife.

Health and Safety

- 13.1 Safe use and handling procedures for Sika Boom® are provided on the can. Extra care must be taken when using the product in areas where there is insufficient ventilation, and suitable respiratory equipment must therefore be worn. Additional information on the product is available in the Material Safety Data Sheet available from Sika (NZ) Ltd.

Basis of Appraisal

The following is a summary of the technical investigations carried out:

Tests

- 14.1 A BRANZ ad-hoc test was completed to confirm the suitability of Sika Boom® for use as an air seal. The test results were reviewed by BRANZ experts and found to be satisfactory.
- 14.2 Cyclic and static pressure water leakage tests in accordance with AS/NZS 4284 were carried out by BRANZ on typical window installations to assess the practicability of expanding foam air seals.

Other Investigations

- 15.1 The practicability of installation was assessed by BRANZ and found to be satisfactory.
- 15.2 A Material Safety Data Sheet for Sika Boom® has been reviewed by BRANZ and found to be satisfactory.
- 15.3 A durability opinion has been given by BRANZ technical experts for Sika Boom® when used as an air seal.

Quality

- 16.1 The manufacture of the product has not been examined by BRANZ, but details of the quality and composition of the materials used were obtained and found to be satisfactory. The manufacturer is an ISO 9001:2008 Certified manufacturer.
- 16.2 The quality of supply of the product to the market is the responsibility of Sika (NZ) Ltd.
- 16.3 The quality of installation of the product on site is the responsibility of the installer.
- 16.4 Building designers are responsible for the design of the building, and for the incorporation of the air seal into their design in accordance with the instructions of Sika (NZ) Ltd.

Sources of Information

- AS/NZS 4284: 2008 Testing of building facades.
- NZS 3604: 2011 Timber-framed buildings.
- NZS 4211:2008 Specification for performance of windows
- ASTM C1330-02 Standard Specification for Cylindrical Sealant Backing for Use with Cold Liquid-Applied Sealants.
- Compliance Document for New Zealand Building Code External Moisture Clause E2, Department of Building and Housing, Third Edition July 2005 [Amendment 5, 1 August 2011].
- Ministry of Business, Innovation and Employment Record of Amendments for Compliance Documents and Handbooks.
- The Building Regulations 1992.



In the opinion of BRANZ, Sika Boom® Air Seal is fit for purpose and will comply with the Building Code to the extent specified in this Appraisal provided it is used, designed, installed and maintained as set out in this Appraisal.

The Appraisal is issued only to Sika [NZ] Ltd, and is valid until further notice, subject to the Conditions of Appraisal.

Conditions of Appraisal

1. This Appraisal:
 - a) relates only to the product as described herein;
 - b) must be read, considered and used in full together with the Technical Literature;
 - c) does not address any Legislation, Regulations, Codes or Standards, not specifically named herein;
 - d) is copyright of BRANZ.
2. Sika [NZ] Ltd:
 - a) continues to have the product reviewed by BRANZ;
 - b) shall notify BRANZ of any changes in product specification or quality assurance measures prior to the product being marketed;
 - c) abides by the BRANZ Appraisals Services Terms and Conditions.
 - d) Warrants that the product and the manufacturing process for the product are maintained at or above the standards, levels and quality assessed and found satisfactory by BRANZ pursuant to BRANZ's Appraisal of the product.
3. BRANZ makes no representation or warranty as to:
 - a) the nature of individual examples of, batches of, or individual installations of the product, including methods and workmanship;
 - b) the presence or absence of any patent or similar rights subsisting in the product or any other product;
 - c) any guarantee or warranty offered by Sika [NZ] Ltd.
4. Any reference in this Appraisal to any other publication shall be read as a reference to the version of the publication specified in this Appraisal.
5. BRANZ provides no certification, guarantee, indemnity or warranty, to Sika [NZ] Ltd or any third party.

For BRANZ



Chris Preston
Chief Executive
Date of Issue:
16 August 2013



BRANZ Appraised

Appraisal No. 548 [2013]

TEKTON® BUILDING WRAP

Appraisal No. 548 [2013]

This Appraisal replaces BRANZ Appraisal No. 548 [2007], issued 27 July 2007.

Amended 17 December 2013.



BRANZ Appraisals

Technical Assessments of products for building and construction.



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Product

- 1.1 Tekton® Building Wrap is a synthetic breather-type flexible wall underlay and air barrier for use under direct and non-direct fixed wall cladding on timber and steel framed buildings. The product is manufactured of a coated spun-bonded polypropylene.

Scope

- 2.1 Tekton® Building Wrap has been appraised for use as a flexible wall underlay on timber framed buildings within the following scope:
- the scope limitations of NZBC Acceptable Solution E2/AS1, Paragraph 1.1 with regards to building height and floor plan area; and,
 - with absorbent wall claddings directly fixed to framing; and,
 - with absorbent and non-absorbent wall claddings installed over an 18 mm minimum drained cavity; and,
 - with masonry veneer in accordance with NZBC Acceptable Solution E2/AS1; and,
 - situated in NZS 3604 Wind Zones up to, and including Very High.
- 2.2 Tekton® Building Wrap has been appraised for use as a flexible wall underlay on steel framed buildings within the following scope:
- the scope limitations of NZBC Acceptable Solution E2/AS1, Paragraph 1.1 with regards to building height and floor plan area; and,
 - with absorbent and non-absorbent wall claddings installed over an 18 mm minimum drained cavity; and,
 - with masonry veneer subject to specific design; and,
 - situated in NZS 3604 Wind Zones up to, and including Very High.
- 2.3 Tekton® Building Wrap has been appraised for use as a flexible wall underlay over rigid wall underlays on timber and steel framed buildings within the following scope:
- the scope limitations of NZBC Acceptable Solution E2/AS1, Paragraph 1.1 with regards to building height and floor plan area; and,
 - with absorbent and non-absorbent wall claddings installed over an 18 mm minimum drained cavity; and,
 - with masonry veneer in accordance with NZBC Acceptable Solution E2/AS1 for timber framed buildings or specific design for steel framed buildings; and,
 - situated in NZS 3604 Wind Zones up to and including Extra High.
- 2.4 Tekton® Building Wrap has also been appraised for use on buildings subject to specific weathertightness design. Building designers are responsible for the building design and for the incorporation of Tekton® Building Wrap into their design in accordance with the declared properties and the instructions of Marshall Innovations Limited.

Building Regulations

New Zealand Building Code (NZBC)

- 3.1 In the opinion of BRANZ, Tekton® Building Wrap, if used, designed, installed and maintained in accordance with the statements and conditions of this Appraisal, will meet, or contribute to meeting the following provisions of the NZBC:

Clause B2 DURABILITY: Performance B2.3.1 [a], not less than 50 years, B2.3.1 [b], 15 years and B2.3.2. Tekton® Building Wrap meets these requirements. See Paragraphs 9.1 and 9.2.

Clause E2 EXTERNAL MOISTURE: Performance E2.3.2. When used as part of the cladding system, Tekton® Building Wrap will contribute to meeting this requirement. See Paragraphs 12.1 – 12.3.

Clause F2 HAZARDOUS BUILDING MATERIALS: Performance F2.3.1. Tekton® Building Wrap meets this requirement and will not present a health hazard to people.

- 3.2 This is an Appraisal of an **Alternative Solution** in terms of the New Zealand Building Code compliance.

Technical Specification

- 4.1 Tekton® Building Wrap is a 100 g/m² light grey sheet polypropylene membrane material approximately 0.6 mm thick.
- 4.2 The product is supplied in rolls 1.370 m x 74 m and 2.743 m x 37 m. The product is printed with the Tekton® logo repeated along the length of the roll. The rolls are wrapped with an instruction sticker.

Accessories

- 4.3 Accessories used with Tekton® Building Wrap which are supplied by the installer are:
- Fixings – staples, clouts, screws or proprietary wrap fixings, or other temporary fixings to attach the wall wrap to the framing.
 - Wall underlay support – polypropylene strap, 75 mm galvanised mesh or galvanised wire, or vertical cavity battens where required to support the wall wrap in accordance with NZBC Acceptable Solution E2/AS1, Paragraph 9.1.8.5.

Handling and Storage

- 5.1 Handling and storage of the product, whether on or off site, is under the control of the installer. The rolls must be protected from damage and weather. They must be stored on end, under cover, in clean, dry conditions and must not be crushed.

Technical Literature

- 6.1 Refer to the Appraisals listing on the BRANZ website for details of the current Technical Literature for Tekton® Building Wrap. The Technical Literature must be read in conjunction with this Appraisal. All aspects of design, use, installation and maintenance contained in the Technical Literature and within the scope of this Appraisal must be followed.

Design Information

Timber and Steel Framing

- 7.1 Studs must be provided at maximum 600 mm centres. Dwalgs must be fitted flush between the studs at maximum 1200 mm centres.

General

- 7.2 Tekton® Building Wrap is intended for use as an alternative to conventional building papers which are fixed over timber and steel framed walls in order to limit the entry of wind into building cavities, and to act as a secondary barrier to wind-driven rain.

- 7.3 The material also provides a degree of temporary weather protection during early construction. However, the product will not make the building weathertight and some wetting of the underlying structure is always possible before the building is closed in. Hence, the building must be closed-in and made weatherproof before moisture sensitive materials such as wall or ceiling linings and insulation materials are installed.
- 7.4 Tekton® Building Wrap must not be exposed to the weather or ultra violet light for a total of more than 60 days before being covered by the wall cladding.
- 7.5 Tekton® Building Wrap is suitable for use under wall claddings as a wall underlay as called up in NZBC Acceptable Solution E2/AS1, Table 23, except that it must not be used with non-absorbent wall claddings such as vinyl or metal based sidings or weatherboards in direct fixed installations. Tekton® is suitable for use under cavity based wall claddings as a non-absorbent synthetic wall underlay as called up in NZS 2295, Table 2.4 on steel framed buildings. Refer to Table 1.
- 7.6 Tekton® Building Wrap is also suitable for use as an air barrier to walls that are not lined, such as attic spaces at gable ends, as called up in NZBC Acceptable Solution E2/AS1, Paragraph 9.1.4 [c]. Refer to Table 1.

Table 1: NZBC E2/AS1 Table 23 Requirements

NZBC E2/AS1 Table 23 Wall Wrap Properties	Property Performance Requirement	Actual Property Performance
Absorbency	$\geq 100 \text{ g/m}^2$	Classified as non-absorbent (see paragraph 7.4)
Vapour Resistance	$\leq 7 \text{ MN s/g}$	Pass
Water Resistance	$\geq 20 \text{ mm}$	Pass
pH of Extract	≥ 5.5 and ≤ 8	9.78 [Note 1]
Shrinkage	$\leq 0.5\%$	Pass
Mechanical	Edge tear and tensile strength	Edge tear: Machine direction = 228 N Cross direction = 186 N Tensile strength: Machine direction = 4.4 kN/m Cross direction = 3.9 kN/m
Air Barrier	Air resistance: $\geq 0.1 \text{ MN s/m}^3$	Pass

Note 1: Further testing of Tekton® Building Wrap was completed to determine the effect of the high pH level on the wall underlay and materials it is likely to come into contact with during its serviceable life. The testing confirmed that the high pH had no adverse effects on the wall underlay performance, or the performance of other materials.

- 7.7 In cavity installations where the cavity battens are installed at greater than 450 mm centres, the wall underlay must be supported between the battens to prevent the wall underlay bulging into the cavity space when bulk insulation is installed in the wall frame cavity in accordance with the requirements of NZBC Acceptable Solution E2/AS1, Paragraph 9.1.8.5.

Stucco Plaster

- 7.8 Tekton® Building Wrap is suitable for use as a non-rigid backing material for stucco plaster in accordance with the requirements of NZBC Acceptable Solution E2/AS1, Paragraph 9.3.5.1. The wall underlay must be supported with 75 mm galvanised mesh or plastic tape or wire at 150 mm centres run across the cavity battens to limit deflection to a maximum of 5 mm in accordance with the requirements of NZBC Acceptable Solution E2/AS1, Paragraph 9.3.5.2.
- 7.9 Tekton® Building Wrap may also be used as a slip layer over rigid backings for stucco plaster in accordance with the requirements of NZBC Acceptable Solution E2/AS1, Paragraph 9.3.3 [b].

Structure

- 8.1 Tekton® Building Wrap is suitable for use in all Wind Zones of NZS 3604 up to, and including, Very High when used as a flexible building underlay, and all Wind Zones of NZS 3604 up to, and including, Extra High when used as an overlay for rigid building underlays.

Durability

- 9.1 Tekton® Building Wrap meets code compliance with NZBC Clause B2.3.1 [a], not less than 50 years for building wraps used where the cladding durability requirement or expected serviceable life is not less than 50 years, and code compliance with NZBC Clause B2.3.1 [b], 15 years for building wraps used where the cladding durability requirement is 15 years.

Serviceable Life

- 9.2 Provided it is not exposed to the weather or ultra-violet light for a total of more than 60 days, and provided the exterior cladding is maintained in accordance with the cladding manufacturer's instructions and the cladding remains weather resistant, Tekton® Building Wrap is expected to have a serviceable life equal to that of the cladding.

Control of Internal Fire and Smoke Spread

- 10.1 Tekton® Building Wrap has an AS 1530 Part 2 flammability index of not greater than 5 and therefore meets the requirements of NZBC Acceptable Solutions C/AS2 to C/AS6, Paragraph 4.17.8 b], for the surface finish requirements of suspended flexible fabric used as an underlay to exterior cladding that is exposed to view in occupied spaces. It may therefore be used with no restrictions in all buildings.

Prevention of Fire Occurring

- 11.1 Separation or protection must be provided to Tekton® Building Wrap from heat sources such as fire places, heating appliances, flues and chimneys. Part 7 of NZBC Acceptable Solutions C/AS1 – C/AS6 and NZBC Verification Method C/VM1 provide methods for separation and protection of combustible materials from heat sources.

External Moisture

- 12.1 Tekton® Building Wrap must be used behind claddings that meet the requirements of the NZBC, e.g. such as those covered by NZBC Acceptable Solution E2/AS1, or claddings covered by a valid BRANZ Appraisal.
- 12.2 Tekton® Building Wrap, when installed in accordance with the Technical Literature and this Appraisal, will assist in the total cladding systems compliance with NZBC Clause E2.
- 12.3 When used as an air barrier, particular care must be taken to ensure an air tight barrier is achieved, and weather sealing at all openings and penetrations through the cladding meets the requirements of the NZBC.

Installation Information

Installation Skill Level Requirements

- 13.1 Installation must always be carried out in accordance with the Technical Literature and this Appraisal, by competent tradespersons with an understanding of wall wrap installation.

Wrap Installation

- 14.1 Tekton® Building Wrap must be fixed to all framing members at maximum 300 mm centres with hot-dip galvanised, large-head clouts 20 mm long, zinc plated 6-8 mm staples, self-drilling screws, or proprietary wrap fixings. The membrane must be pulled taut over the framing before fixing.
- 14.2 Tekton® Building Wrap must be run horizontally and must extend from the upper-side of the top plate to the under-side of the bearers or wall plates supporting ground floor joists, or below bottom plates on concrete slabs. Horizontal laps must be no less than 75 mm wide, with the direction of the lap ensuring that water is shed to the outer face of the membrane. End laps must be made over framing and be no less than 150 mm wide.
- 14.3 The wall underlay should be run over openings and these left covered until windows and doors are ready to be installed. Openings are formed in the membrane by cutting on a 45 degree diagonal from each corner of the penetration. The flaps of the cut membrane must be folded inside the opening and stapled to the penetration framing. Excess wall underlay may be cut off flush with the internal face of the wall frame.
- 14.4 Tekton® Building Wrap can be added as a second layer over head flashings in accordance with the requirements of NZBC Acceptable Solution E2/AS1, Paragraph 9.1.10.3.
- 14.5 When fixing the product in windy conditions, care must be taken due to the large sail area created by wide roll widths.
- 14.6 Any damaged areas of Tekton® Building Wrap, such as tears, holes or gaps around service penetrations, must be repaired. Damaged areas can be repaired by covering with new material lapping the damaged area by at least 150 mm and taping, or by taping small tears.

Inspections

- 14.7 The Technical Literature must be referred to during the inspection of Tekton® Building Wrap installations.

Basis of Appraisal

The following is a summary of the technical investigations carried out:

Tests

- 15.1 The following tests have been carried out on Tekton® Building Wrap by Scion: Folding strength of paper in accordance with AS/NZS 1301.423; edge tear resistance and tensile strength in accordance with AS/NZS 4200.1 and air resistance in accordance with BS 6538-3.
- 15.2 The following tests have been carried out on Tekton® Building Wrap by BRANZ: Absorbency in accordance with AS/NZS 4201.6, Vapour transmission in accordance with ASTM E 96B, Shrinkage in accordance with AS/NZS 4201.3, Water barrier in accordance with AS/NZS 4201.4 and pH of extract in accordance with AS/NZS 1301.421. A range of these tests were completed before and after Tekton® Building Wrap was exposed to ultra-violet light.
- 15.3 The Flammability Index of Tekton® Building Wrap has been evaluated in accordance with AS 1530.2.

Other Investigations

- 16.1 A durability opinion was given by BRANZ technical experts.
- 16.2 Site inspections were carried out by BRANZ to assess methods used for the installation of Tekton® Building Wrap, and to examine completed installations.
- 16.3 The marketer's Technical Literature, including installation instructions, have been examined by BRANZ and found to be satisfactory.

Quality

- 17.1 The manufacture of Tekton® Building Wrap has not been examined by BRANZ, but details regarding the quality and composition of the materials used were obtained by BRANZ and found to be satisfactory. BRANZ has taken note of product certification by ICC-ES and CCMC covering quality aspects associated with the product.
- 17.2 The quality of supply to the market is the responsibility of Marshall Innovations Limited.
- 17.3 Building designers are responsible for the design of the building, and for the incorporation of the wall wrap into their design in accordance with the instructions of Marshall Innovations Limited.
- 17.4 Quality of installation is the responsibility of the installer in accordance with the instructions of Marshall Innovations Limited.

Sources of Information

- AS 1530.2 – 1993 Test for flammability of materials.
- AS/NZS 1301.421s: 1998 Determination of the pH value of aqueous extracts of paper, board and pulp – cold extraction method.
- AS/NZS 4200.1: 1994 Pliable building membranes and underlays – materials.
- AS/NZS 4201.1: 1994 Pliable building membranes and underlays – Methods of test – Resistance to dry delamination.
- AS/NZS 4201.2: 1994 Pliable building membranes and underlays – Methods of test – Resistance to wet delamination.
- AS/NZS 4201.3: 1994 Pliable building membranes and underlays – Methods of test – Shrinkage.
- AS/NZS 4201.4: 1994 Pliable building membranes and underlays – Methods of test – Resistance to water penetration.
- AS/NZS 4201.6: 1994 Pliable building membranes and underlays – Methods of test – Surface water absorbency.
- BS 6538.3: 1987 Method for determination of air permeance using the Garley apparatus.
- NZS 2295: 2006 Pliable, Permeable Building Underlays.
- NZS 3604: 2011 Timber-framed buildings.
- Compliance Document for New Zealand Building Code External Moisture Clause E2, Department of Building and Housing, Third Edition July 2005 [Amendment 5, 1 August 2011].
- Ministry of Business, Innovation and Employment Record of Amendments for Compliance Documents and Handbooks.
- The Building Regulations 1992.

Amendment

Amendment No. 1, dated 17 December 2013.

This Appraisal has been amended to fix an editorial error.



BRANZ Appraised
Appraisal No. 548 [2013]

BRANZ Appraisal
Appraisal No. 548 [2013]
16 December 2013

TEKTON® BUILDING WRAP



In the opinion of BRANZ, Tekton® Building Wrap is fit for purpose and will comply with the Building Code to the extent specified in this Appraisal provided it is used, designed, installed and maintained as set out in this Appraisal.

The Appraisal is issued only to Marshall Innovations Limited, and is valid until further notice, subject to the Conditions of Appraisal.

Conditions of Appraisal

1. This Appraisal:
 - a) relates only to the product as described herein;
 - b) must be read, considered and used in full together with the technical literature;
 - c) does not address any Legislation, Regulations, Codes or Standards, not specifically named herein;
 - d) is copyright of BRANZ.
2. Marshall Innovations Limited:
 - a) continues to have the product reviewed by BRANZ;
 - b) shall notify BRANZ of any changes in product specification or quality assurance measures prior to the product being marketed;
 - c) abides by the BRANZ Appraisals Services Terms and Conditions.
 - d) Warrants that the product and the manufacturing process for the product are maintained at or above the standards, levels and quality assessed and found satisfactory by BRANZ pursuant to BRANZ's Appraisal of the product.
3. BRANZ makes no representation or warranty as to:
 - a) the nature of individual examples of, batches of, or individual installations of the product, including methods and workmanship;
 - b) the presence or absence of any patent or similar rights subsisting in the product or any other product;
 - c) any guarantee or warranty offered by Marshall Innovations Limited.
4. Any reference in this Appraisal to any other publication shall be read as a reference to the version of the publication specified in this Appraisal.
5. BRANZ provides no certification, guarantee, indemnity or warranty, to Marshall Innovations Limited or any third party.

For BRANZ

Cheydra Percy

Chief Executive

Date of Issue:

16 December 2013

25 JUN 2018

UH

30033

G.J. Gardner. HOMES

BUILDING SPECIFICATION

for

Lot 29, 2 Lamont Place, FERNDALE

Between

G. K. Pate Family Trust
(the Purchaser)

and

Sudfelt Construction Ltd
(the Builder)

Job Number: 970111

Building Specification

PURCHASER : G. K. Pate Family Trust
SITE ADDRESS : Lot 29, 2 Lamont Place, FERNDALE
TERRITORIAL AUTHORITY: Kapiti Coast District Council

PLEASE READ CAREFULLY BEFORE COMPLETING THE SPECIFICATION

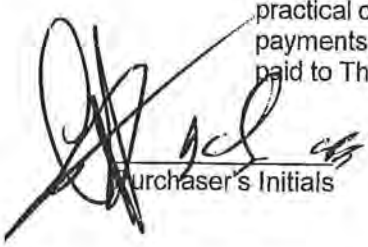
INTERPRETATION AND USE OF SPECIFICATION

- 1 This specification forms part of the contract for the proposed work when executed and initialled by both parties.
- 2 Where multiple choices are available, only one choice is permitted. If choice/s is/are not clarified by the Purchaser at the time of signing the choice/s is/are to be at the Builder's sole discretion.
- 3 All items are to be selected within the range as determined by the Builder as allowable for this style of building.
- 4 The Purchaser acknowledges that the Builder [Sudfelt Construction Ltd] is the independent owner and operator of a GJ Gardner Homes franchise and agrees this building contract is exclusively between the Purchaser and the Builder [Sudfelt Construction Ltd].

ITEM	DESCRIPTION	INITIAL ALTERATIONS
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1. GENERAL

- a) Unless otherwise specified, the works shall be constructed in accordance with the Building Act 2004 (as amended) in conjunction with the New Zealand Building Code.
- b) Unless otherwise specified, the Purchaser is responsible to provide a house site clear of any obstructions to building including removal of long grass, shrubs and trees where necessary.
- c) It is acknowledged by the Purchaser that it is the Purchaser's responsibility to engage a licensed surveyor to peg the boundary corners of the allotment prior to commencement of site works if the survey pegs are not in place.
- d) The Purchaser acknowledges that it is their responsibility to provide all weather access suitable to allow vehicles and machinery, as normally used in the building industry, to drive in and out of the property.
- e) Unless otherwise specified, the contract price allows that town water supply will be available from an existing main of the Local Authority prior to commencement of construction. Where no such water supply exists, the Purchaser is to arrange at their expense, a temporary fresh water supply for building purposes by means satisfactory to The Builder, and to be available prior to commencement of construction.
- f) This contract allows for 240 Volt single phase power being available prior to and during the construction of the dwelling. Where no such power is available the Purchaser is to arrange temporary power to the satisfaction of The Builder at the Purchaser's expense.
- g) (i) Complying with statutory obligations and any notices and obtaining relevant approvals is the responsibility of The Builder.
(ii) The Builder and the Purchaser acknowledge that notwithstanding proper requests by the Builder the Local Authority does not on all occasions carry out final inspections in relation to the works. The Purchaser further acknowledges and irrevocable agrees that they will not make any objection to the lack of provision of a final inspection report subsequent to practical completion and further will not withhold or cause to be withheld any progress payments due to The Builder, either directly or through their financier that are due to be paid to The Builder on practical completion of the works.


Purchaser's Initials


Builder's Initials

Sudfelt Construction Ltd

Building Specification

ITEM	DESCRIPTION	INITIAL ALTERATIONS
	(iii) The Purchaser acknowledges and agrees that should their financier refuse to advance all or any funds until the provision of a final inspection report from the Local Authority which may not be available, The Builder will at the Purchaser's cost obtain a final inspection report suitable to the financier from a qualified engineer/registered Builder.	
	h) Unless otherwise specified, all council building fees are paid for by The Builder. Any Bonds called for or development application fees requested by any Local or Other Authority or statutory body are to be arranged and paid for by the Purchaser.	
	(i) It is the responsibility of the Purchaser to obtain any necessary building consents from relevant developer or land corporation where a covenant applies.	
	i) An Engineer's soil report, footing and slab designs are to be provided by The Builder. The cost of which is taken from the initial deposit.	
	j) Should this Contract not proceed for any reason whatsoever all moneys expended by The Builder on Local Authority fees, obtaining soil reports and footing and slab designs, engineers fees and an administration fee of \$1,000.00 for the costs of preparation of contracts and plans shall be deducted forthwith from any deposit paid by the Purchaser. If the deposit paid by the Purchaser is insufficient to cover such costs then the Purchaser shall pay such extra costs to The Builder within fourteen days after receiving notification that the same are due and payable.	
	k) Colour selection must be completed before council approval has been received to enable the Purchaser's home to be built within the construction period stated in this contract. The colour selection forms part of this contract and any item at a cost above standard allowance will be charged as an extra.	
	l) (i) Any valuations required by the lending body (other than Council final inspection) are to be the responsibility of the Purchaser to organise.	
	(ii) The Builder takes no responsibility for any colour variation in the roof tile, brick, ceramic wall and floor tile, between those shown in displays or brochures to those delivered by the manufacturer. These products may vary slightly in colour from time to time and any discrepancy is the responsibility of the manufacturer.	
	(iii) Electrical plan is to be completed and returned to this office within seven days from the date the Purchaser signs the contract, failing which the standard electrical plan will apply.	
	(iv) The Purchaser and The Builder hereby agree that any extension of time claimed for practical completion due to wet or inclement weather shall be based on notification pursuant to the relevant clause of the Contract and shall be claimed as per the logged days by the nearest post office or weather bureau.	
	(v) The Purchaser acknowledges that it is their responsibility to pay a deposit to the electrical authority to connect power. Any delay by the electrical authority in connecting power shall not on its own delay practical completion or final payment to The Builder.	
	(vii) Where due to soil conditions, Local or Other Authority requirements, pump out tanks, submersible pumps and irrigation systems are needed over and above the normal septic system, the Purchaser agrees to bear the costs thereof and proceed by way of variation pursuant to the relevant clause of the Contract.	
	m) The Builder reserves the right to charge a \$200.00 fee for each variation requested by the Purchaser subsequent to execution of the contract. Variations are deemed to be changes, additions, deletions and alterations to contract, colour selection, allowances or prior variations. Each variation may add one week to the contract time.	
	n) The Builder accepts no responsibility to contact the owners of adjoining properties in relation to fencing. It is the Purchaser's responsibility to contact the adjoining neighbours to arrange rebates. Should the Purchaser not arrange rebates, The Builder will install the fence(s) as per the contract at the Builder's discretion.	

Purchaser's Initials

Builder's Initials

ITEM	DESCRIPTION	INITIAL ALTERATIONS
	o) The Purchaser acknowledges that they have not relied upon any representations made by The Builder, its agents, employees or workmen in entering into this contract other than those representations as are included in and form part of this contract.	
	q) Provisional cost or prime sum items (to the value of items) in this contract will be adjusted with a margin for recovery of profit and administration as indicated in the building contract. Adjustments will be made on receipt of final invoice and credited off the final progress claim. These allowances are non-transferable and will be subject to a 5% retention if deleted.	

2. INSURANCE / GUARANTEES

- a) Certified Builders Association of New Zealand, 10 Year Builders Guarantee.
- b) Public Liability and Contract Works Insurance.

3. EXCAVATION

The Owner acknowledges that after breaking the surface of the ground, if variations are required by the Engineer, or Territorial or Other Authorities, or due to the nature of the site access or due to extra excavations or footings required if rock or other obstacles are encountered, then the Builder will notify the Owner as provided for in Clause 4 of the contract and the cost of such variation together with a reasonable allowance for overheads and profits shall be adjusted against the contract sum.

- a) All earthworks and retaining will be completed by the Owner (to satisfaction of builder).

4. CONCRETOR

- a) Footings and slab are designed to comply with NZS 3604, 2011 for Soil with 300kpa minimum bearing capacity and specifically designed by an engineer.
- b) FIRTH Ribraft Foundation system with polystyrene pods and steel mesh are the general basis for foundation design unless engineer specifies otherwise.
- c) Slab and footing concrete to be as per engineered design.
- d) Concrete pumping is included.
- e) Extra piers, beams, steel etc., if required by Engineer or Territorial Authority before or after Territorial Authority approval are at the Owner's expense.
- f) Driveway and entry path will be 114m² of exposed aggregate concrete (unsealed) this includes a kerb crossing and drainage strip and / or sump where required.
- g) Patio will be 26m² of exposed aggregate concrete (unsealed) this includes a kerb crossing and drainage strip and / or sump where required.
- h) Reinforcing mesh for the driveway, patio and paths has been included.

5. DRAINLAYER

- a) Sewerage installation to be in accordance with the Territorial Authority Approved Plan. All sewerage drainage is included, as required on site.
- b) Stormwater installation to be in accordance with the Territorial Authority Approved Plan. All stormwater drainage is included, as required on site.
- c) Supply and installation of a 25,000L buried concrete water tank (plumbed to the Kapiti Coast District Council requirements) is included.
- d) Pressure pump is included within the water tank Provisional Sum.
- e) A soak pit has been included within a Provisional Sum of \$2,500 + GST.
- f) A grey water system has been included within a Provisional Sum of \$6,000 + GST.

Purchaser's Initials

Builder's Initials

ITEM	DESCRIPTION	INITIAL ALTERATIONS
	g) The Builder will supply & install a conduit with draw wire for Telecommunication from house demarcation point to assumed street pillar location (to 15m). The Builder takes no responsibility should this assumed pillar location (as per plan) be incorrect.	
	h) Power is to be charged directly to the Client via a power account established by the Builder in the Owner's name with Genesis Energy. All daily power charges and power usage is covered by the Owner for the duration of the build.	
	i) Mains power cable is included, as required on site.	
	j) Mains water supply is included, as required on site.	
	k) Any water meter maintenance/connection costs will be covered by the Owner	
	l) Natural gas supply is to be charged directly to the Client via a gas account established in their name by the Builder with Genesis Energy. All gas line and usage costs are to be covered by the Owner.	

6. CARPENTER/JOINER

- a) External and Internal Timber framing to be MSG8, kiln dried, to the Manufacturer's design or NZS 3604 2011 for up to a high wind zone, H1.2 treatment for all framing.
- b) Roof Trusses are to manufacturer's design, as indicated on the plan and to detail, well fixed in accordance with NZS 3604 2011 for up to a high wind zone. Based on a 25 degree hip and gable pitched roof.
- c) The Builder will provide an access hatch to the ceiling 635mm x 535mm in the garage.
- d) Breather type building paper is to be Tekton (BRANZ Appraisal No. 548, 2013).
- e) Window flashing system is to be 40 Below Window Tape - CertMark Certificate number CMA-CM40098
- f) Air seal is to be Sika Boom air seal (BRANZ Appraisal No. 452, 2013).
- g) Ceiling height is to be 2.4m throughout.

7. BRICKLAYER

- a) Supply and installation of Firth Devonstone 290 x 160 x 70 in stack bond has been included.
- b) Joints are to be raked.
- c) Mortar colour is natural grey.
- d) Window sills are to be bricks laid on their edge.

8. EXTERNAL WALL CLADDING

- a) Exterior cladding will be James Hardie Linea weatherboards (16mm thick x 180mm wide) as detailed on the plan and painted.
- b) Soffits will be 4.5mm Fibre Cement sheeting with PVC jointer, painted.

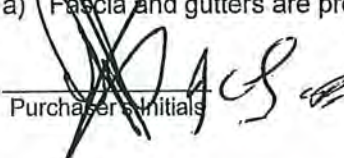
9. ROOF COVERING

- a) The roof covering will be Trimdek Coloursteel 'Endura' Longrun roofing.
- b) Roofing underlay will be Pauloid Synthetic.

10. PLUMBING, FASCIA, GUTTER AND DOWNPIPES

Fascia and guttering shall be as shown on the drawings together with down pipes, all in accordance with manufacturer's specifications and recommendations.

- a) Fascia and gutters are pre-coated steel.



Purchaser's Initials



Builder's Initials

ITEM	DESCRIPTION	INITIAL ALTERATIONS
b)	Downpipes are Downpipes are 80mm square pre-coated Steel.	
c)	Hot Water temperature will comply with NZS 4617 to limit hot water temperature to 55 degrees Celsius. The hot water supply from the hot water heater to the kitchen sink will be insulated in accordance with the minimum requirements of H1/AS1.	
d)	Supply and run 25mm OD MDPE pipe supply line from street mains. Cold water reticulation within the dwelling to be run in Dux Secura polybutylene pipes installed in strict accordance with the manufacturers instructions for working and using the material. Hot water reticulation within the dwelling to be run in Dux Secura polybutylene pipes. All pipes to be concealed in the walls or under the floor.	
e)	All plumbing and drainage will comply with ASNZS.5.2000.	

11. ALUMINIUM WINDOWS AND DOORS

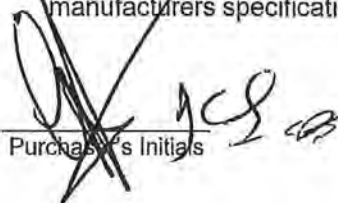
- a) All units are from the Nalco Weathertight Series suite.
- b) The front entrance door will be a painted Fibrewood Tongue and Groove (vertical) door in an aluminium powder coated frame.
- c) Front door side light has been included in clear glass.
- d) The external and internal entrance door handle will be the Legge 1244 300mm pull handle with Optimum 2-point Apex turn set.
- e) All aluminium hardware will be from the Aria range.
- f) The frame finish will be powder coated aluminium (from standard range).
- g) Reveals are pre-primed finger-jointed pine.
- h) Flashings for Linea cladding are aluminium.
- i) All units will be double glazed.
- j) All obscure glass as indicated on the plan will be Stippolite.
- k) Tinting of the windows is not included.
- l) All windows (except on sliders) will be double tongue.

12. DOORS (INCLUDING TYPE, FINISH, FURNITURE)

- a) The garage door will be pre-finished Windsor Ribline sectional door. Two Remote Controls are included.
- b) All internal doors will be 1.98m high, V Groove hollow core doors with a paint finish.
- c) All internal swing door handles will be Schlage Allegion Range in brushed chrome.
- d) All internal cavity slider door handles will be Schlage 46 100 (46 101 where privacy) in satin chrome.
- e) All door stops will be Miles Nelson 701 SC in satin chrome.

13. INTERNAL LININGS

- a) Walls are sheeted with 10mm Winstone GIB Board fixed to manufacturers specifications.
- b) Wet area walls such as bathroom, ensuite, laundry and WC are sheeted with 10mm Winstone Aqualine GIB Board fixed to manufacturers specifications.
- c) Ceilings are sheeted with 13mm Winstone GIB Board on Rondo battens fixed to manufacturers specifications.


 Purchaser's Initials


 Builder's Initials

ITEM	DESCRIPTION	INITIAL ALTERATIONS
d)	Wet area ceilings such as bathroom, ensuite, laundry and WC are sheeted with 13mm Winstone Aqualine GIB Board fixed to manufacturers specifications.	
e)	Cornice will be standard 55mm Gib Cove Classic pattern and fixed to manufacturers specifications.	
f)	Winstone Gib Board and Aqualine shall be stopped and sanded to a level 4 paint finish.	
g)	Insulation to external walls and to separate the house from the garage will be Pink Batts R4.0. No Batts will be placed in the garage external walls.	
h)	Insulation to ceilings (except garage) will be Pink Batts R5.0.	
i)	Construction expansion joints will be installed as and where required.	

14. INTERNAL FINISHING TIMBERS

- a) Architraves will be nominal 40 x 12mm Rad FJ in wet areas and otherwise MDF.
- b) Skirting will be nominal 60 x 12mm Rad FJ in wet areas (where not tiled) and otherwise MDF.
- c) Jambs will be 125mm x 40mm FJ Pine.
- d) The Profile will be bevelled.

15. PLUMBING FIXTURES AND FITTINGS

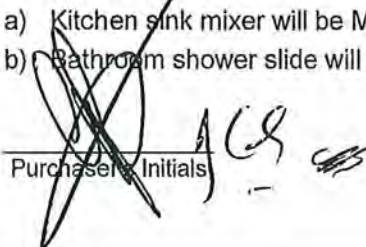
- a) Bath will be a Caroma Maxton (1675mm x 735mm) in white with end waste.
- b) Laundry tub will be Robinhood Supertub ST3701 (mixer included).
- c) Bathroom shower is a 1000mm x 1000mm (square) Clearlite Millennium with acrylic base, tiled walls and satin joinery. Moulded walls are not included.
- d) Ensuite shower is a 1000mm x 1500mm fully tiled wet area shower with frameless glass screen and 20mm step down. Moulded walls are not included.
- e) Bathroom vanity will be a 900mm Clearlite vanity from Builder's range.
- f) Ensuite vanity will be a 1500mm Clearlite double bowl vanity from Builder's range.
- g) W.C. Hand basin will be a 400mm wall hung Clearlite Mimas.
- h) W.C.'s are to be Caroma Venecia close coupled vitreous china suite.
- i) Two hose taps have been included.
- j) W.C. Roll holders are Heirloom Veloso in chrome.
- k) W.C. Hand towel ring will be Heirloom Veloso in chrome.

16. GAS SERVICE

- a) Gas service will be Natural gas supply is to be charged directly to the Client via a gas account established in their name by the Builder with Genesis Energy. All gas line and usage costs are to be covered by the Owner.
- b) The gas cooktop will be Fisher & Paykel CG604CNG2X in stainless steel.
- c) The gas hot water system will be a Rheem Gas Continuous Flow 27L/min (871624 NFZ/LFZ), no controller has been included.
- d) A Brivas gas central heating system has been included within a Provisional Sum of \$10,000 + GST.

17. TAPWARE

- a) Kitchen sink mixer will be Methven Echo Minimalist EM8105.
- b) Bathroom shower slide will be Methven Echo Minimalist EM8510.


 Purchaser's Initials


 Builder's Initials

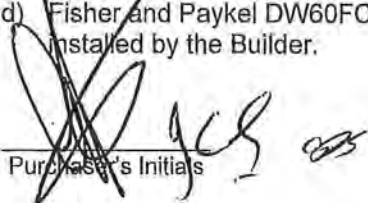
ITEM	DESCRIPTION	INITIAL ALTERATIONS
c)	Bathroom shower mixer will be Methven Echo Minimalist EM8107.	
d)	Bathroom vanity mixer will be Methven Echo Minimalist EM8101.	
e)	Bathroom bath spout will be Methven Echo E9704 (150mm projection).	
f)	Bathroom bath mixer will be Methven Echo Minimalist EM8107.	
g)	Ensuite shower slide will be Methven Echo Minimalist EM8510.	
h)	Ensuite shower mixer will be Methven Echo Minimalist EM8107.	
i)	Ensuite vanity mixer will be Methven Echo Minimalist EM8101.	
j)	W.C. Hand basin mixer will be Methven Echo Minimalist EM8101.	
k)	A water feed for fridge is included.	

18. ELECTRICIAN

- a) The builder will supply and install all electrical wiring and fittings.
- b) Single phase connection to be provided by the Builder.
- c) Recessed Martec LED downlights (model: TLAD3010WD, 13watt, 850 lumens in warm white) with white faceplates have been included as per the plan.
- d) Installation of owners supplied lights has been included as per the plan.
- e) External lights are allowed for as per the plan.
- f) Two-way switches have been included as per the plan.
- g) Double power points are allowed for as per the plan.
- h) Power points for appliances have been included as per the plan.
- i) Telephone point(s) are included as per the plan.
- j) Fibre optic hub and four data outlets have been included.
- k) T.V. point(s) are included as per the plan.
- l) Manrose 3 in 1: heating, fan, light to bathroom and ensuite is included. Fan is to be vented to outside.
- m) Smoke detectors are included and hardwired with the security system.
- n) Supply and install meter box and switchboard with underground supply to local authority supply. The switchboard shall be fitted with appropriate circuit breakers and have all circuits neatly labelled.
- o) Switch plates are to be PDL Series 600 in white.
- p) A hardwired garage door opener is included.
- q) The bathroom and ensuite heated towel rail will be a Newtech 5 bar (round) SL115 in stainless steel.
- r) A security system with 1 keypad, 3 sensors, internal and external sirens and battery backup has been included.

19. WHITE GOODS

- a) Fisher & Paykel OB60SC5CEX1 wall oven (stainless steel) will be supplied and installed by Builder.
- b) Fisher & Paykel CG604CNG2X gas hob (stainless steel) will be supplied and installed by the Builder.
- c) Fisher & Paykel HC90PLX4 rangehood (stainless steel) will be supplied and installed by the Builder.
- d) Fisher and Paykel DW60FC2X1 dishwasher (stainless steel) will be supplied and installed by the Builder.


 Purchaser's Initials


 Builder's Initials

ITEM	DESCRIPTION	INITIAL ALTERATIONS
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- e) Fisher & Paykel GD75IA1 waste disposal will be supplied and installed by the Builder.

20. CABINETMAKER

- a) The kitchen & pantry will be designed and custom made to the client's requirements with full installation by the kitchen joiners.
The Provisional Sum allowed for this kitchen & pantry is \$17,000 +GST
- b) Kitchen sink will be supplied and fitted with the kitchen joinery and included in the Kitchen Provisional Sum noted above.
- c) Three pine slat shelves to each linen cupboard as shown on the plan.
- d) One painted shelf with hanging rail to each bedroom wardrobe as shown on the plan.

21. CERAMIC TILING

All tiled areas are based on a standard grid lay pattern, other patterns are available at an additional cost.

- a) Bathroom wall tiles are from the Tilemax Builder's selection and will be applied to up to height of shower frame in shower enclosure, up to 300mm above the bath and to the bath surround. Waterproofing will be Davco K10 Plus Wet Area Membrane
- b) Bathroom floor tiles will be applied to the floor and skirting of the room from the Tilemax Builder's selection.
- c) Ensuite wall tiles are from the Tilemax Builder's selection and will be applied up to height of shower frame in shower enclosure. Waterproofing will be Davco K10 Plus Wet Area Membrane.
- d) Ensuite floor tiles will be applied to the floor and skirting of the room from the Tilemax Builder's selection.
- e) Laundry floor tiles will be applied to the floor and skirting of the room from the Tilemax Builder's selection.
- f) W.C. Floor tiles will be applied to the floor and skirting of the room from the Tilemax Builder's selection.
- g) Kitchen floor tiles are to be applied to the kitchen floor area as defined in the plan from the Tilemax Builder's selection (except for under floor standing fixtures).
- h) Entry floor tiles are to be applied to the defined entry floor area as per the plan from the Tilemax Builder's selection.
- i) Kitchen wall tiles will be applied to the area directly underneath the rangehood (750mm x 900mm) from the Tilemax Builder's selection.

22. FLOOR COVERINGS

- a) The bedroom, stairs, hallway, lounge, dining and family room floors will be laid in carpet from the Builder's range with 10mm, 90kg foam underlay.
- b) Garage floor will be left as unpainted concrete.

23. PAINTER

- a) The Painter shall ensure that all necessary priming is carried out at the required stage of construction.
The brand of paint used is Resene unless the client stipulates clearly that a specific brand must be used.
Four colours from a white base are allowed for without additional cost-

Purchaser's Initials

Builder's Initials

ITEM	DESCRIPTION	INITIAL ALTERATIONS
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1. Ceilings
2. Skirtings & Architraves
3. Walls
4. Doors

The Building Contractor and the Painter will be provided with a full schedule of finishes and colours from the colour consultant.

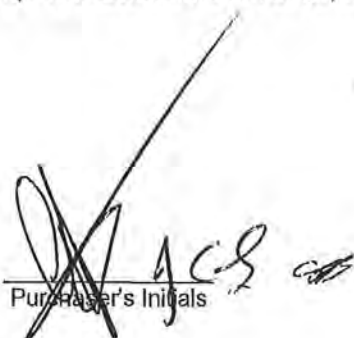
- b) External painting by the Builder:
 1. Any external AC sheeting shall have one coat of acrylic primer undercoat and two coats of semi gloss water based acrylic paint.
 2. Any other external surfaces will be painted according to the Manufacturer's Specifications.
- c) External brick walls will be unpainted.
- d) Internal Painting by the Builder.
 1. Ceilings are to be painted with one coat of approved sealer and two coats of Matt finish flat acrylic ceiling paint to the Manufacturer's Specification (from white base).
 2. Walls are to be painted with one coat of approved sealer and two coats of low sheen water base acrylic paint to the Manufacturer's Specification (from white base).
 3. Cupboard interiors will be painted with the wall colour.
 4. Wet Area walls and ceilings are to be painted with one coat of approved sealer and two coats of water based satin gloss acrylic paint to the Manufacturer's Specification (from white base).
 5. Wall-paper is not included.
- e) Timber work - doors, door jambs, architraves, reveals and skirtings will be painted with one coat of primer/undercoat, then two coats semi gloss water based acrylic paint in one colour.

24. MISCELLANEOUS

- a) Mirrors in bathroom and W.C. are 1000mm high by (maximum) length of vanity, unframed.
- b) Mirrors in ensuite are 2 x 1000mm high by 600mm

25. ALLOWANCES & EXCEPTIONS

- a) Professional house clean and rubbish removal has been included.
- b) Fencing is not included.
- c) Piling is not included.
- d) Clothes line is not included.
- e) Curtains are not included.
- f) Air Conditioning is not included.
- g) Letterbox is not included.
- h) A Provisional Sum of \$2,000 + GST has been allowed for Resource Consent.


Purchaser's Initials


Builder's Initials

Sudfelt Construction Ltd

Building Specification

ITEM DESCRIPTION

INITIAL ALTERATIONS

Dated this 31 day of May 2018

SIGNED by the Purchaser

SIGNED by the Builder

In the presence of

in the presence of

Suzanne Wilman
Receptionist
Paraparaumu

Purchaser's Initials

Builder's Initials

25 JUN 2018
UA

Memorandum from licensed building practitioner: Certificate of design work

Section 45 and section 30c, Building Act 2004

THE BUILDING
Street Address: Lot 29, 2 Lamont Place,
Suburb: FERNDALE

THE OWNER(S)
Name(s): G. K. Pate Family Trust
Mailing Address: c/- Geoff Pate , P O Box 84, PARAPARAUMU
Phone Number: 027 443 1292 or
Email Address: gpate@placemakers.co.nz

IDENTIFICATION OF DESIGN WORK THAT IS RESTRICTED BUILDING WORK			
I <u>Bill Francis</u> carried out/supervised the following design work that is restricted building work:			
PRIMARY STRUCTURE			
Design work that is restricted building work	Description of restricted building work	Carried out or supervised	Reference to plans and specifications
Tick ☒	If appropriate, provide details of the restricted building work	Tick ☒ whether you carried out this design work or supervised someone else carrying out this design work	If appropriate, specify references
Foundations and subfloor framing	☐ Rib-Raft by engineer	☐ Carried out ☐ Supervised	
Walls	☒ Framing and lintels by pre-nail manufacturer	☐ Carried out ☒ Supervised	Pg 3
Roof	☒ Truss Manufacturer has been supplied with relevant information to produce suitable trusses for this job	☐ Carried out ☒ Supervised	Pg 5
Columns and beams	☒ Entry posts and beam and rear patio post	☒ Carried out ☐ Supervised	
Bracing	☒ Sheet bracing	☒ Carried out ☐ Supervised	Pg 8
Other	☐	☐ Carried out ☐ Supervised	

EXTERNAL MOISTURE MANAGEMENT SYSTEMS			
Design work that is restricted building work	Description of restricted building work	Carried out or supervised	Reference to plans and specifications
Tick ☒	If appropriate, provide details of the restricted building work	Tick ☒ whether you carried out this design work or supervised someone else carrying out this design work	If appropriate, specify references
Damp proofing	✓ To slab ONLY	✓ Carried out ☐ Supervised	Pg 4
Roof Cladding or roof cladding system	✓ Pressed metal roof tiles	✓ Carried out ☐ Supervised	Pg 5
Ventilation system (for example, subfloor or cavity)	✓ Brick Veneer & Linea Cavity system	✓ Carried out ☐ Supervised	Pg 6
Wall cladding or wall cladding system	✓ Brick Veneer & Linea Cavity system	✓ Carried out ☐ Supervised	Pg 6
Waterproofing	✓ Wet area shower	✓ Carried out ☐ Supervised	
Other	☐ NIL	☐ Carried out ☐ Supervised	

FIRE SAFETY SYSTEMS			
Design work that is restricted building work	Description of restricted building work	Carried out or supervised	Reference to plans and specifications
Tick if appropriate ☒	If appropriate, provide details of the restricted building work	Tick ☒ whether you carried out this design work or supervised someone else carrying out this design work	If appropriate, specify references
Emergency warning systems	✓ Smoke Alarms ONLY	✓ Carried out ☐ Supervised	Pg 3, 9
Evacuation and fire-service operation systems			
Suppression or control systems			
Other			
Note: The design of fire safety systems is only restricted building work when it involves small-to-medium apartment buildings as defined by the Building (Definition of Restricted Building Work) Order 2011.			

WAIVERS AND MODIFICATIONS

Waivers or modifications of the Building Code are required. ☐ Yes ☒ No

If Yes, Provide details of the waivers or modifications below:

Clause	Waiver/modification required
List relevant clause numbers of building code	Specify nature of waiver or modification of building code required

ISSUED BY

Name and contact details of the licensed building practitioner who is licensed to carry out or supervise design work that is restricted building work:

Name: Bill Francis

LBP or Registration number: 111338

The practitioner is a: ☒ Design LBP ☐ Registered architect ☐ Chartered professional engineer

Mailing Address (if different from below): PO Box 65, Paraparaumu

Street Address/Registered Office: 11 Kodex Place, Paraparaumu

Town/City: Paraparaumu

Postcode: 5032

Phone number:

Mobile: 0272499519

After hours:

Fax: 04 298 7910

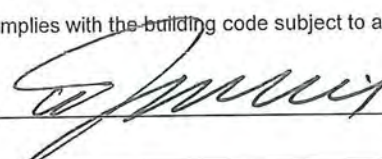
Email address: billfrancis@paradise.net.nz

Website:

DECLARATION

I Bill Francis certify that the design work that is restricted building work identified on this form:

- Complies with the building code, or
- Complies with the building code subject to any waiver or modification of the building code recorded on this form

Signature: 

Date:

19, 6, 2018

J0035

25 JUN 2018

UA



**COMPUTER FREEHOLD REGISTER
UNDER LAND TRANSFER ACT 1952**



Search Copy

R. W. Muir
Registrar-General
of Land

Identifier 434083
Land Registration District Wellington
Date Issued 06 July 2009

Prior References
WN48B/879

Estate Fee Simple
Area 1177 square metres more or less
Legal Description Lot 29 Deposited Plan 409302

Proprietors
Finman Trustees Limited and Geoffrey Kenneth Pate

Interests

8217543.1 Consent Notice pursuant to Section 221 Resource Management Act 1991 - 6.7.2009 at 1:32 pm
Land Covenant in Easement Instrument 8217543.4 - 6.7.2009 at 1:32 pm



NOTE:

Lots 100, 101, 102 & 103 are to vest as Recreation Reserve in the Kapiti Coast District Council.

Lot 200 is to vest as road in the Kapiti Coast District Council.



T 1/3

Land District Wellington

Lots 1-62, Lots 100-103 and Lot 200 Being a Subdivision of Part Lot 6 DP 20118

Surveyor: Craig William Hurford
Firm: Aurecon (Wellington)

Digital Title Plan
DP 409302

Deposited on: 6/07/2009

Digitally Generated Plan
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NOTE:
Areas marked H,I,J,K,L,M,N,O,P,Q,R,S,T,U,V,W,X,Y,Z, AA,AE & AF
to be subject to Land Covenants



Non Primary

T 2/8

Land District: Wellington

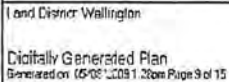
Lots 1-62, Lots 100-103 and Lot 200 Being a Subdivision of Part Lot 6 DP 20118

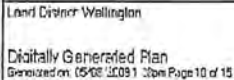
Surveyor: Craig William Hurford
Firm: Aurecon (Wellington)

Digital Title Plan
DP 409302

Digitally Generated Plan
Generated on: 15/06/2008 12:00 PM Page 1 of 15

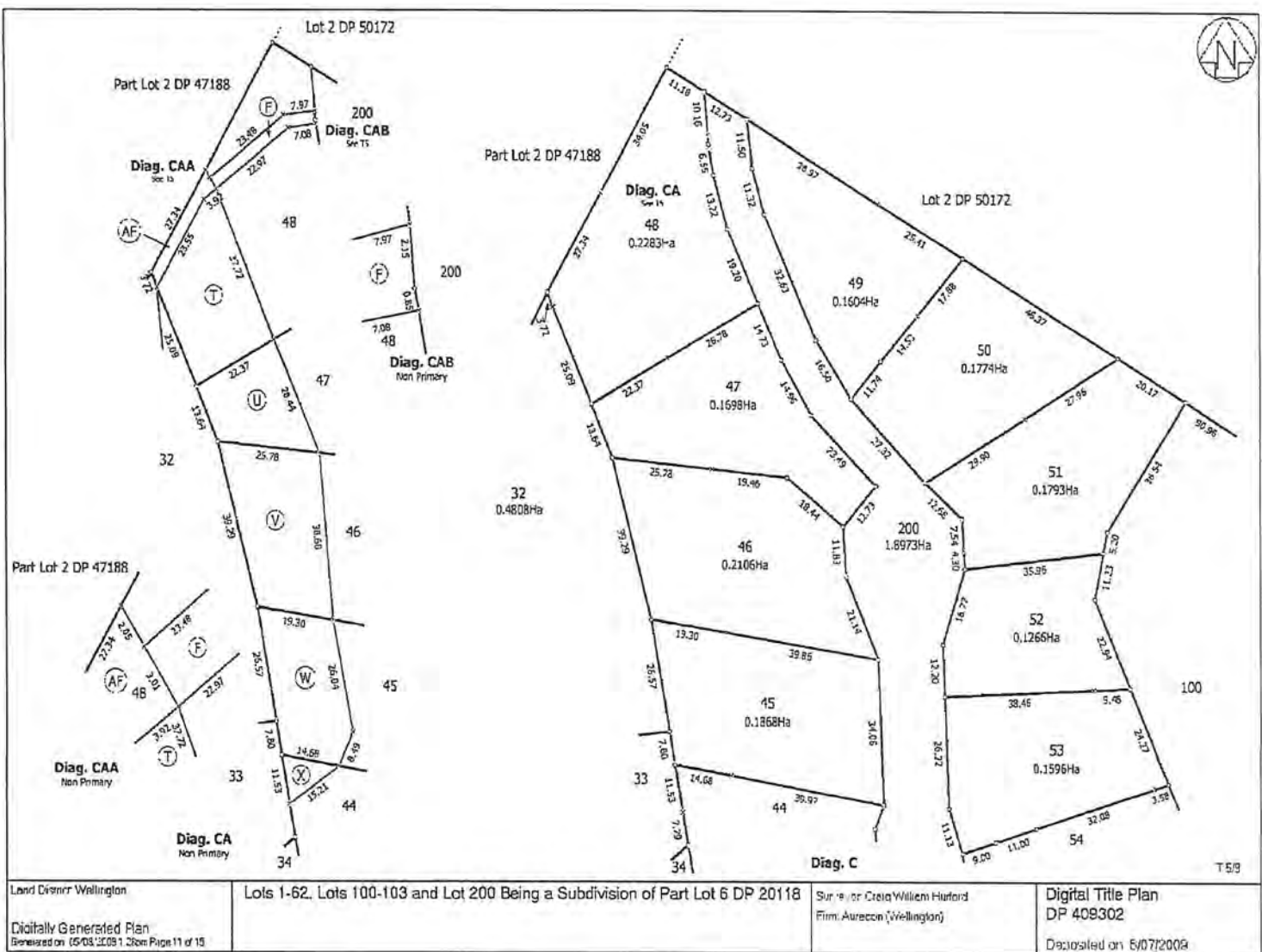
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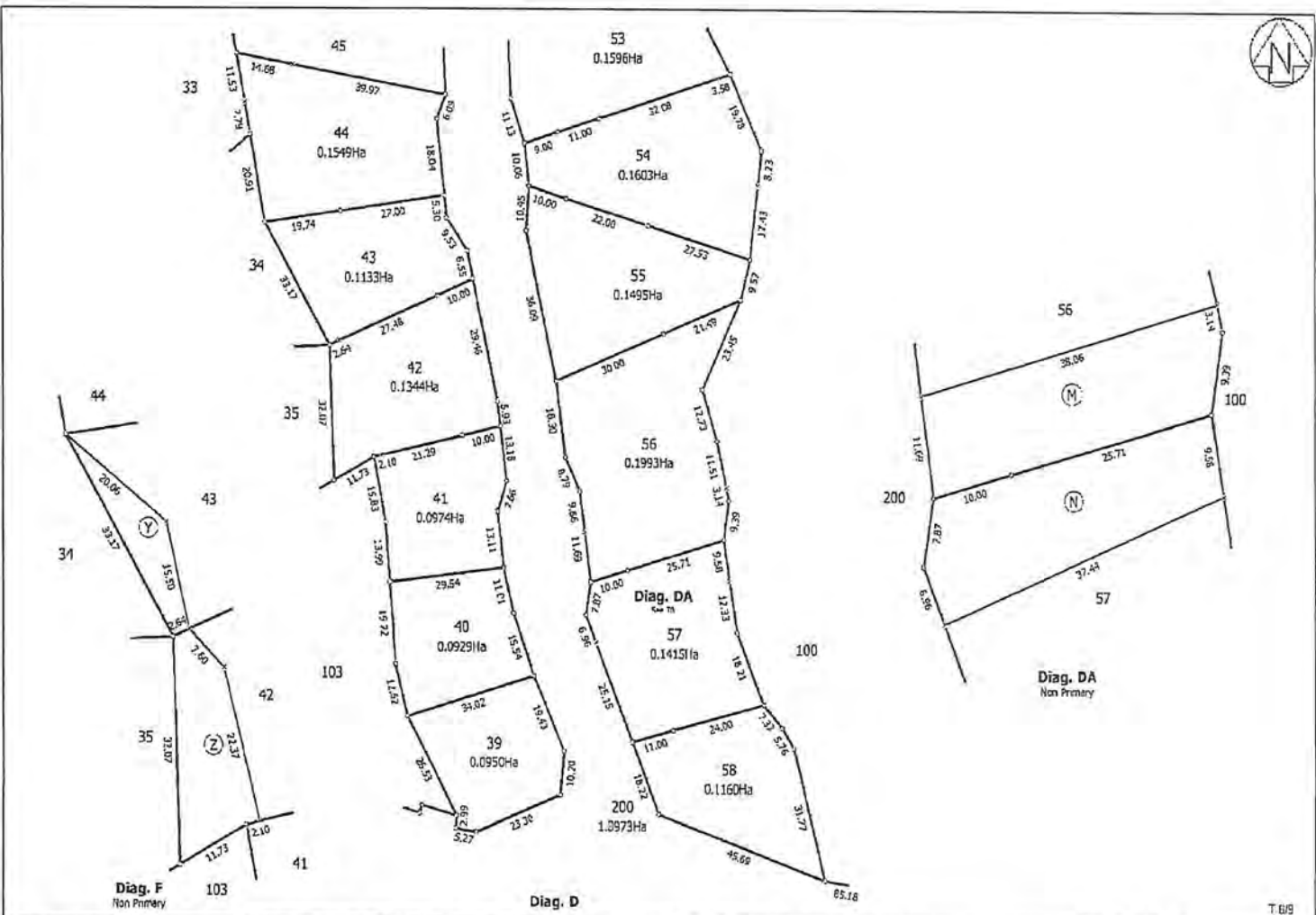




Surveyor: Craig William Harford
Firm: Aurecon (Wilmington)

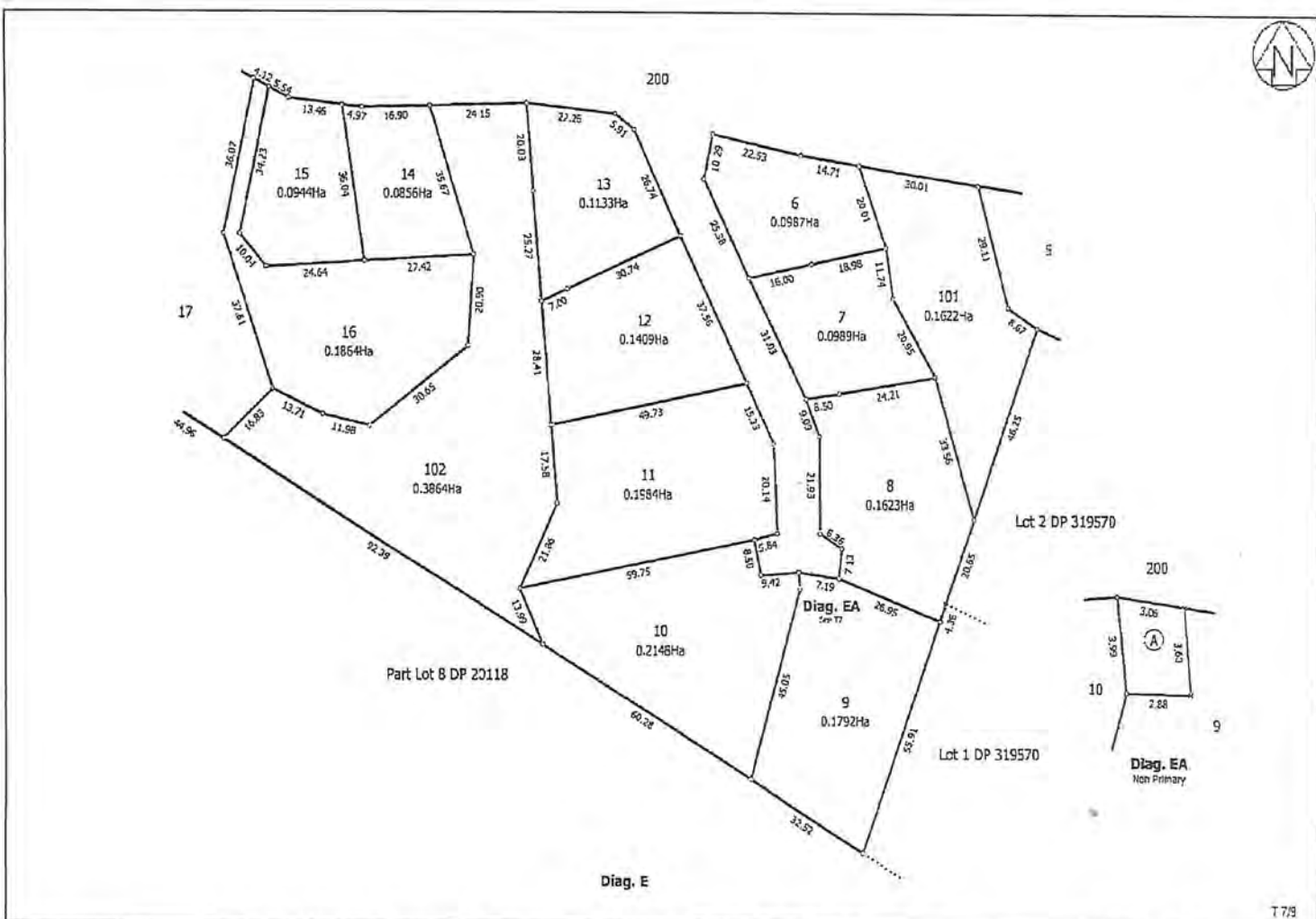
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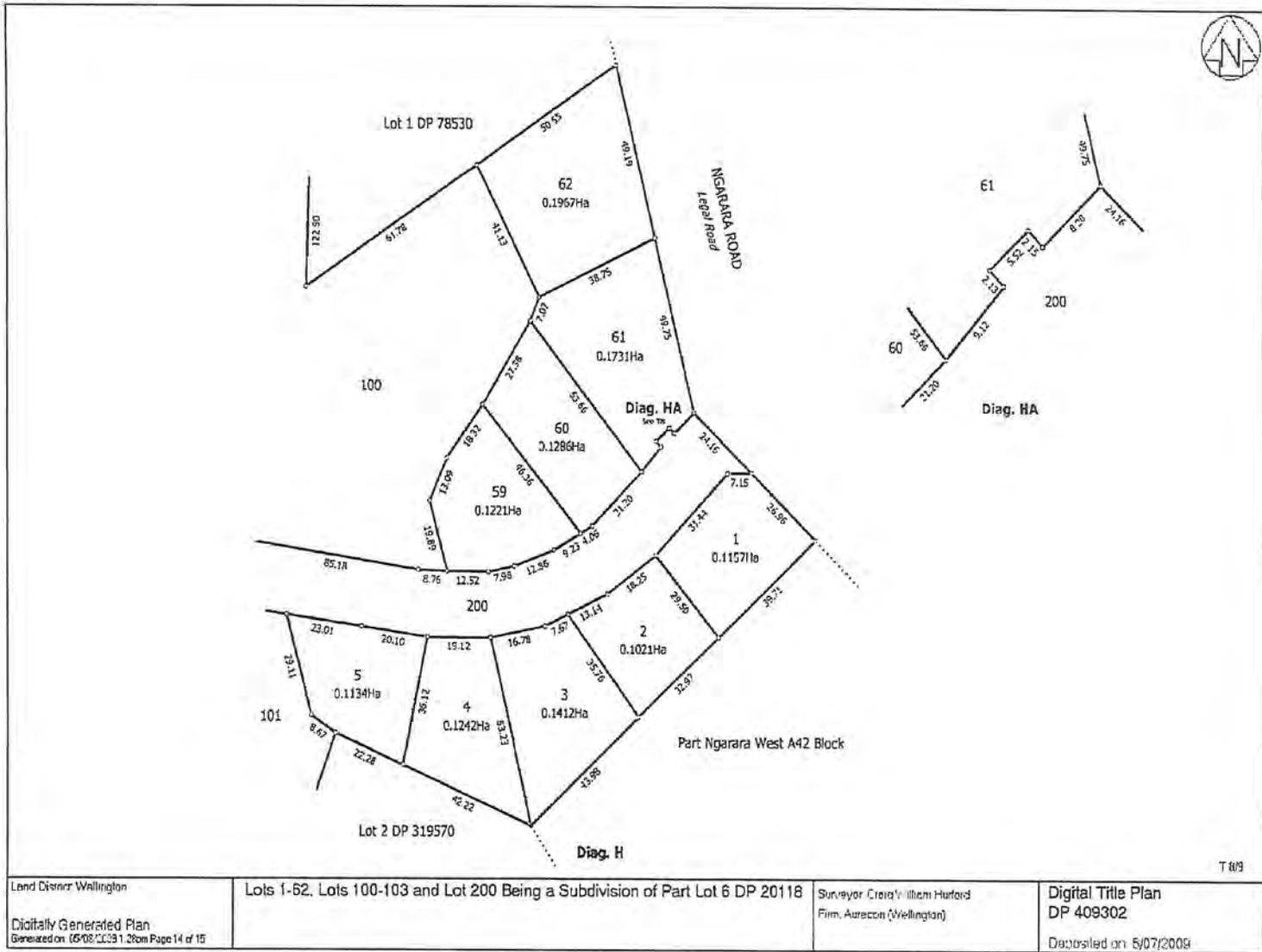
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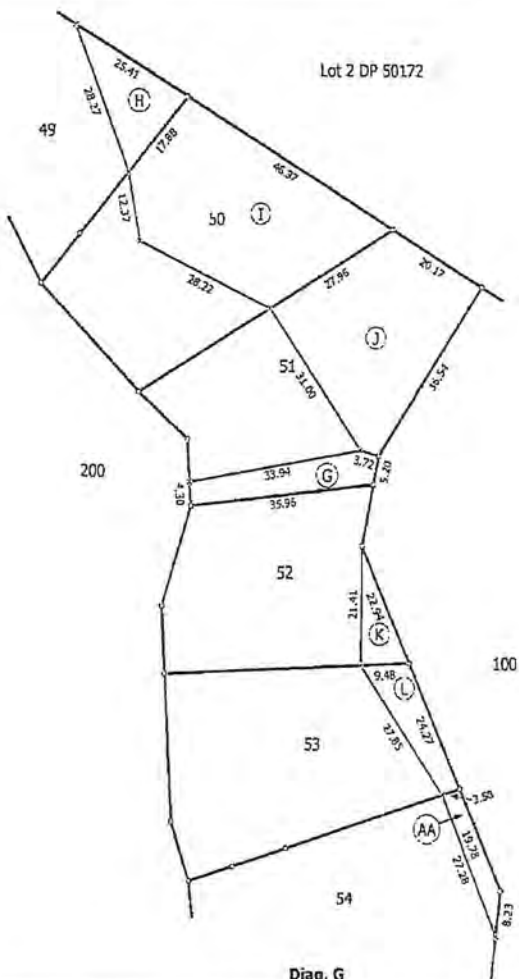
Land District Wellington	Lots 1-62, Lots 100-103 and Lot 200 Being a Subdivision of Part Lot 6 DP 20118	Surveyor Craig William Hurford Firm: Aurecon (Wellington)	Digital Title Plan DP 409302 Deposited on: 5/07/2009
Digitally Generated Plan Generated on: 05/08/2009 1:20pm Page 12 of 15			



T 7/3

Land Owner Wellington	Lots 1-62, Lots 100-103 and Lot 200 Being a Subdivision of Part Lot 6 DP 20118	Surveyor Craig William Hurford Firm: Aurecon (Wellington)	Digital Title Plan DP 409302 Deposited on 5/07/2009
Digitally Generated Plan Generation 16/03/2011 from Page 13 of 15			





T 9/9

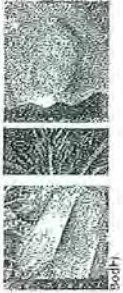
Land District: Wellington

Lots 1-62, Lots 100-103 and Lot 200 Being a Subdivision of Part Lot 6 DP 20118

Surveyor: Craig William Hurford
Firm: Aurecon (Wellington)Digital Title Plan
DP 409302

Deposited on: 6/07/2009

Digitally Generated Plan
Generated on: 16/08/2011 10:03:11 Page 15 of 15



**CONSENT NOTICE
PURSUANT TO SECTION 221 OF
THE RESOURCE MANAGEMENT ACT 1991**

**IN THE MATTER OF A PLAN LODGED FOR
DEPOSIT UNDER NUMBER 409302
AND RESOURCE CONSENT NO. RM 070273**

**(BEING THE SUBDIVISION OF PART LOT 6 DP 20118),
AT 148 – 158 NGARARA ROAD, WAIKANAE
FOR FERNDAL TRUST**

The Regional Regulatory Titles Officer at Wellington

PURSUANT to Section 221 of the Resource Management Act 1991 the Kapiti Coast District Council hereby gives notice that it has consented to the subdivision and that the following conditions are to be complied with on a continuing basis:

1. With respect to Lots 32 to 35, 37, 42 to 54, 56 and 57 inclusive: Within the attenuation and ponding areas of the respective allotments as identified in the schedule below, the following restrictions/obligations apply:
 - No Earthworks are permitted as the existing landform must be retained;
 - No buildings may be erected or established;
 - The continued efficient operation of any attenuation and/or pond facility must be ensured on a continuing basis.

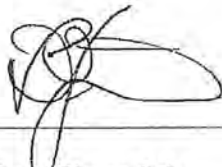
Schedule:

- Lot 32 areas marked as S and AE on DP 409302
- Lot 33 area marked as R on DP 409302
- Lot 34 area marked as Q on DP 409302
- Lot 35 area marked as P on DP 409302
- Lot 37 area marked as O on DP 409302
- Lot 42 area marked as Z on DP 409302
- Lot 43 area marked as Y on DP 409302
- Lot 44 area marked as X on DP 409302
- Lot 45 area marked as W on DP 409302
- Lot 46 area marked as V on DP 409302
- Lot 47 area marked as U on DP 409302
- Lot 48 areas marked as T and AF on DP 409302
- Lot 49 area marked as H on DP 409302
- Lot 50 area marked as H on DP 409302
- Lot 51 area marked as J on DP 409302
- Lot 52 area marked as K on DP 409302
- Lot 53 area marked as L on DP 409302
- Lot 54 area marked as AA on DP 409302
- Lot 56 area marked as M on DP 409302
- Lot 57 area marked as N on DP 409302

2. With respect to Lots 1 to 62 inclusive: Foundation design and construction for any new building or additions and alterations to a building shall take into account the findings and recommendations within the Geotechnical Earthworks Report prepared by Connell Wagner Limited (reference 153C) dated 23 December, 2008 and submitted to Council in relation to application No. RM070273. A copy of the report is available in Council's Office at any time the office is open to the public.
3. With respect to Lots 1 to 62 inclusive: Each residential lot shall have a stormwater design prepared by a suitably qualified person submitted to Council for approval prior to any application for a building consent. The approved design shall be submitted with the building consent application. The design shall incorporate, as a minimum, stormwater attenuation devices and on-site soakage systems capable of dealing with the 1 in 10 year event where there is a secondary overflow path, or the 1 in 100 year event where there is no secondary overflow path. The approved design must be implemented and maintained in full working order on a continuing basis. Stormwater shall not discharge from the residential properties onto properties adjoining the development.
4. With respect to Lots 1 to 62 inclusive: Each residential allotment shall have a greywater dispersal device approved by Council installed at the time of any dwelling construction, unless a report acceptable to Council prepared by a suitably qualified person shows that this is impracticable because of the particular site conditions.

Any greywater dispersal device shall be maintained in good operating order in accordance with the manufacturer's requirements.
5. With respect to Lots 1 to 62 inclusive: Each residential lot that cannot comply with the requirement above regarding the installation of a greywater dispersal device shall be required to have a water supply restricted to no more than 1000 litres per day (0.0116 litres per second).

Issued in respect of application No. RM 070273 on this 5th day of June, 2009.



David Wayne Gair
AUTHORISED OFFICER



Colin John Bridges
AUTHORISED OFFICER

CHECKSHEET: SINGLE RESIDENTIAL DWELLING AND ACCESSORY BUILDING

Including single stand-alone dwellings, dwelling additions and/or alterations, re-piling, garages, decks, gazebos, sheds, retaining walls etc.

Kapiti Coast District Council,
175 Rimu Road, Paraparaumu 5032
Private Bag 60601, Paraparaumu 5254
For enquiries, phone 04 296 4700

Address of Project:

2 Lamot Place, Fendale

This checklist shows you the information that has to be supplied with your building consent application. Please attach **2 copies** of the following information (unless otherwise specified) with your completed Building Consent Application Form.

Please tick relevant box in the Customer Use column as you attach the information. If the box is not relevant to your application, write NA across the box. Please check each section carefully and complete those sections that are relevant to your project.

Once you have attached all the required information, please check for completeness as an incomplete application or lack of any supporting information will mean that your application cannot be accepted for processing.

An Application Form is attached to this checklist — Please include this checklist with your application.

Customer Use	1	GENERAL Complete this section for all applications	For Office Use Only
☒	a	Building Consent Application Form (1 copy) Completed and signed by the owner or by an agent on behalf of the owner	☐
☒	b	Proof of Ownership (1 copy) One recent copy of current certificates/s of title (not older than 3 months) AND where applicable one copy of purchase agreement (if recently purchased) or one copy of relevant portions of current lease.	☐
☒	c	Locality Plan (1:500) showing: Physical location of the subject building in relation to streets or landmarks, north point, name of building and lot and DP number.	☐
☒	d	Restricted Building Work Does the application involved restricted building work? ☒ Yes ☐ No If Yes, provide certificate(s) of design work and advise Council of your Licensed Building Practitioner(s) as per the Advise of Licensed Building Practitioners Guidance sheet.	☐
☒	e	Inspections and Monitoring Details of proposed inspection regime including monitoring by council officers and other professionals e.g. architects, engineers, surveyors and certification to be supplied on completion.	☐
☒	f	Site Plan (1:100) showing: Dimensions of all boundaries, north point, finished floor levels, site area, street name and number, lot and DP number, outline of building, distance to boundaries and the position of swimming or spa pools, ground contours (extended to boundaries) and/or levels and designated wind zone of the site (e.g. specific design, very high, high, medium or low). In addition, if a site is identified as being subject to flooding, ponding, on an overflow path, river or stream corridor, or other natural hazards, indicate on plans proposed design will mitigate natural or created hazards. Additional information is available on these sites by request from Kapiti Coast District Council.	☐
☒	g	Application Fee <i>account</i> Applications will not be accepted without payment of the appropriate fees. Fees payable are set out in the published fee schedule of the council that has jurisdiction over the project site.	☐
For Office Use Only: Building Consent Officer: Application Accepted? ☐ Yes ☐ No Give reason:			
Name:		Date:	Signature:

2 CHANGE OF USE			
Complete for all existing buildings where the proposal involves forming a household unit where one did not exist before Example: the conversion of a garage or shed into a residential unit			
n/a	a	Assessment of the Building for Compliance with the Building Code Section 115(a) of the Building Act 2004 requires that the building, in its new use, complies fully with all clauses of the Building Code.	☐
n/a	b	Reasonably Practicable The above assessment must relate to all building code clauses. If the proposal is for the project to meet anything less than full compliance with any clauses, your application must clearly state your reasoning, with supporting documentation, and show how you will meet the highest level of compliance that can be considered reasonably practicable.	☐
3 FOUNDATIONS / FLOOR			
Complete for all new buildings, for existing buildings where the footprint of the building will change or where an additional storey is being added			
☒	a	Foundation Plan (1:100 / 1:50) showing: • Dimensions of all new foundations • Sub-floor, including bracing • Footing details • If a concrete slab, show basic details including reinforcing and contractions joints • Piles and footing • If the addition is an upper storey show details on upgrading existing foundations, joints, piles etc • Indicate ventilation to sub floor spaces	☐
☒ When applicable	b	Subfloor Bracing Provide subfloor bracing plan and calculations for all piled structures. Where the structure is specifically engineered, this should be included with the structural calculations. Subfloor bracing plan and calculations are required where an additional storey is to be added	☐
4 CONSTRUCTION			
Complete for all new structures or alterations to existing structures			
☒	a	Existing Floor Plan (1:100 / 1:50) showing: (For additions and alterations only) • All levels • All designated spaces • All removals • Sanitary fixtures • Smoke detectors	☐
☒	b	Proposed Floor Plans (1:100 / 1:50) showing: • Room dimensions • Location of partitions • All designated spaces • All floors (new or altered) • Location of sanitary fixtures • Stairs, barriers, handrails, floor joists and beams • Floor joist layout for each level with timber floors • Smoke detectors • Note where wall will form part of the swimming pool fence	☐
☒	c	Pre-nail Truss and Frames • Specific design wall framing requires clarification • Truss layout must be supported by design certification and design of fixing details, including consideration of load paths to ground • Lintels carrying point loads, such as from girder trusses, require specific engineering design	☐

☒	d	Wall Bracing Plan (1:100 / 1:50) showing: - Bracing details and calculations for wall bracing (also required for existing lower storeys where an additional storey is being added) - Sub-floor bracing for decks projecting more than 2m from the house - Location, type and number of bracing elements to indicate compliance with NZS 3604:2011 (include calculations) - If the bracing was specifically designed by a structural engineer, provide calculations (required for specific design wind zones and lateral distribution of upper floor loads where lower storey bracing is provided in walls beyond the upper storey footprint)	☐
☒	e	Sections and Details (1:50 / 1:20 / 1:10) showing: - Foundation details involving reinforcing and connections - Stairs, handrails, decks and decking - Insulation systems and materials to floors, walls and roof - Barriers providing safety from falling. Specific engineering design required where detail does not comply with NZBC B1/AS2 - Framing sizes, beams, lintels - Roof cladding, eaves, fascias, gutters - Flashings to openings - Fire rated systems on all walls – closer than 1 metre to boundary - Stud heights of rooms and total height from lowest ground floor level to top of ridge - Window and door installation details - Retaining wall details e.g. type, height of retained ground, relationship to boundary, waterproof membrane and proposed drainage	☐
☐	f	Fire Report For domestic dwellings of 4 storeys or more, or buildings providing more than one household unit	☐
5 EXTERNAL Complete for new buildings or existing buildings with alternations to the external shell			
☒	a	Elevations (1:100 / 1:50) showing: Accurate lines from boundary to boundary on each elevation, relevant District Plan daylight control lines, the maximum height on each elevation, location of door and window openings, fixed and opening sashes, sill heights, floor levels in relation to ground levels, exterior cladding nominated to all elevations, down pipes and spouting, ventilators to sub-floor area (suspended floors only)	☐
☒	b	Risk Assessment (Risk matrix in E2/AS1 may be used for buildings within scope) Consider exposure, design and detailing to support appropriate selection of cladding	☐
☒	c	Cladding Details (1:50 / 1:20 / 1:10) Provide details around all penetrations, joinery and other junctions at a level appropriate to the level of risk e.g. roof/wall, balcony/wall, junction of different types of cladding, back flashing details for cavity systems	☐
☒	d	Production Certification Supply copies of product certificates relied on as compliance documents	☐
☒	e	Alternative Solutions If the proposal uses products or systems that are not covered in the Acceptable Solutions of clause E2 of the Building Code provide supporting current information including test results (fully signed reports), case studies, expert opinion (including evidence of experience/qualification, basis for forming opinion and statement of independence) etc to demonstrate compliance	☐
6 SERVICES Complete for all projects with new installations or alteration of plumbing or drainage services			
☒	a	Plumbing and Drainage Plan 1:100 / 1:50) showing: Note: if you have supplied drainage details for surface water disposal on the site plan, no drainage plan is required. - Sizes of pipe work and drains - Fixtures and fittings, hot water system(s) - If the building is more than one storey with sanitary fittings on upper floors, provide an isometric layout showing wastes, pipes and falls - Drainage layout with inspection bends and junctions indicated for both sewer and stormwater - Any other drainage on site including council mains and retaining wall field drains - Ventilation of sanitary rooms - Calculations for sizing of down pipes - Gully traps including overflow relief gullies	☐

7			STRUCTURAL	
Complete for all projects incorporating specific structural design				
☒	a	Structural Calculations If any design work required the services of a structural engineer, attach 2 copies of the calculations with this. The calculations must be prefaced with information explaining the design philosophy and justification of assumptions and methodologies used in analysis		☐
☒	b	Expert Opinion (Producer Statements) If this application for consent relies on any expert opinion including Producer Statements certifying compliance with the New Zealand Building Code, a copy must be attached with this application. (Note all structural Producer Statements are required to have accompanying calculations.)		☐
8			SPECIFICATIONS	
Complete for all applications				
Note: the specification must be specific to the project and cover all aspects of the proposed work				
☒	a	Specification: General • Elements of structure (size, spacing, timber treatment) • Finish or fixings to meet durability requirements • Plumbing and drainage materials and design that installation is to comply with • Wet area surfaces • Ventilation systems • Flooring slip resistance for access routes • Glazing • Type of smoke detectors (including existing smoke detectors where they will remain)		☐
☒	b	External Claddings For each of the following claddings provide details of the product name, manufacturer, maintenance requirements and warranties offered • Building wraps • Wall claddings • Roof claddings • Membranes (roof and decks) • Tanking • Joinery		☐
9			DEMOLITION / REMOVAL	
Complete for all projects involving demolition of significant parts of buildings or the demolition or removal of whole buildings				
☒	a	Means of Barricading the Site Provide details of temporary barriers, gates which swing inwards or other means of restricting public access to the area		☐
☒	b	Proposed Tipping Location for Demolition Materials (address/landfill)		☐
☒	c	Hazardous Building Material Provide safety plan detailing the safe handling and disposal of hazardous materials		☐
☒	d	Site Management Plan Covering Management to control silt runoff, noise and dust		☐
☒	e	Proposed Destination for Relocate Building		☐
☒	f	Access To and From the Site (including use of kerb crossings)		☐
☒	g	Specify Termination of Existing Services • Water • Sewer • Stormwater		☐

	h	Details About the Building such as: Number of storeys, type of materials the building is constructed (Photographs of the building would be useful)	
---	---	--	---

	Note: You will need to contact the relevant service authorities specified below to advise them of the extent of your work: • electricity, • gas, • drainage, • water, • transport, • telecommunications, • cable television, or • any other services that may be affected. Transportation of Relocated Building You will be required to contact and provide details to Councils Transportation and Traffic Department.	
10 OTHER APPROVALS Complete for all projects involving demolition of significant parts of buildings or the demolition or removal of whole buildings		
☐	Please check Territorial Authority regarding the requirement for other approvals required and fees payable. These may include: • Consents under the Resource Management Act • Approvals under bylaws including earthworks, vehicle crossings, road openings and water connections. Show the location of swimming or spa pools on the property and describe how compliance with the Fencing of Swimming Pools Act will be achieved.	☐

The issue of a building consent does not relieve the owner of any duty or responsibility under any other Act.

PROPOSED DWELLING

FOR G.K PATE FAMILY TRUST
2 LAMONT PLACE, FERNDAL, WAIKANA

CONTENTS:

- 1 - SITE PLAN
- 2 - DRAINAGE PLAN
- 3 - FLOOR PLAN
- 4 - FOUNDATION PLAN
- 5 - ROOF PLAN
- 6 - ELEVATIONS
- 7 - SECTION
- 8 - BRACING PLAN
- 9 - ELECTRICAL PLAN
- 10 - DETAILS
- 11 - DETAILS
- 12 - DETAILS
- 13 - DETAILS
- 14 - E2 MATRIX

NOTES:

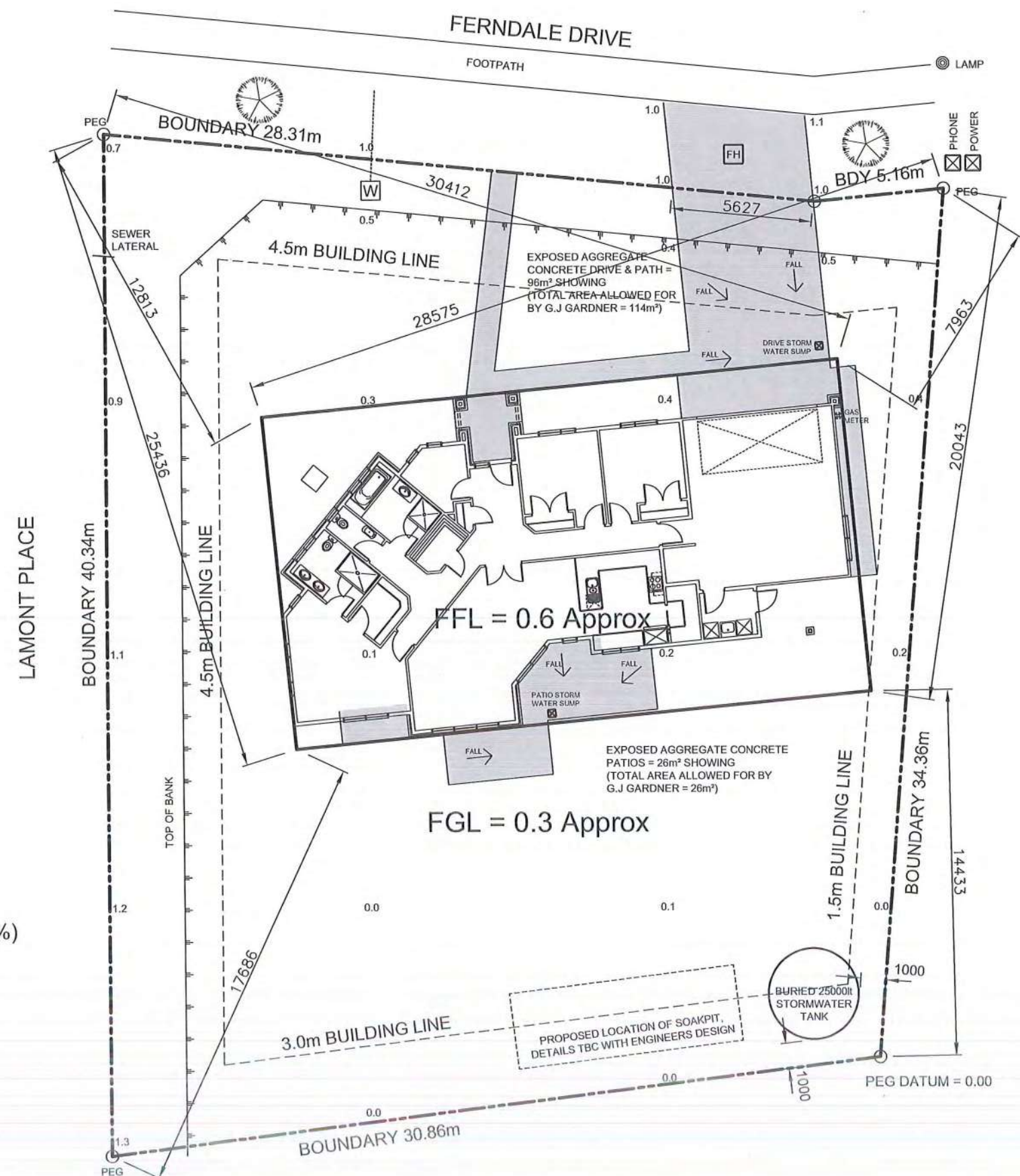
CAUTION - PLANS HAVE BEEN DIGITALLY
REPRODUCED & MAY NOT BE TO SCALE.

ALL WORK CARRIED OUT TO CONFORM TO
RELEVANT BUILDING CODE & STANDARDS FOR
LIGHT TIMBER FRAMED CONSTRUCTION.

ALL WORK CARRIED OUT UNDER JURISDICTION OF
PRODUCER STATEMENT TO MEET THE ENGINEER
REQUIREMENTS FULLY.

COASTAL
ARCHITECTURE LTD.





LOT 29
DP 409302
SITE AREA = 1177m²
DWELLING = 200m²
COVERAGE = 17% (MAX 30%)

HIGH WIND ZONE
CORROSION ZONE C

PERMEABLE AREA = 837m² = 71% (MIN 40%)

FGL = 0.3 Approx

EXPOSED AGGREGATE CONCRETE
PATIOS = 26m² SHOWING
(TOTAL AREA ALLOWED FOR BY
G.J GARDNER = 26m²)

~~FFL = 0.6 Approx~~

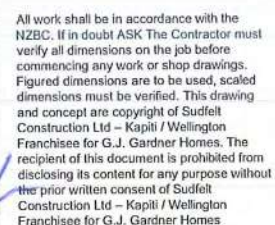
PROPOSED LOCATION OF SOAKPIT,
DETAILS TBC WITH ENGINEERS DESIGN

BURIED 250000
STORMWATER
TANK

PEG DATUM = 0.00

SCALE 1:200

NOTE: SITE CONCEPT ONLY. SUBJECT TO ENGINEERING APPROVAL



G.J. Gardner. HOMES

New Zealand's favourite home builders

Revisions:

MAY 31 / 2017
JULY 6 / 2017
JULY 13 / 2017

rev A
rev B
rev C

CONSENT PLANS

Client: GK PATE FAMILY TRUST

LOT 29 FERNDAL
WAIKANA

Client:

Drawing Title:
SITE PLAN

COASTAL
ARCHITECTURE LTD.

11 Kodex Place
Paraparaumu
New Zealand

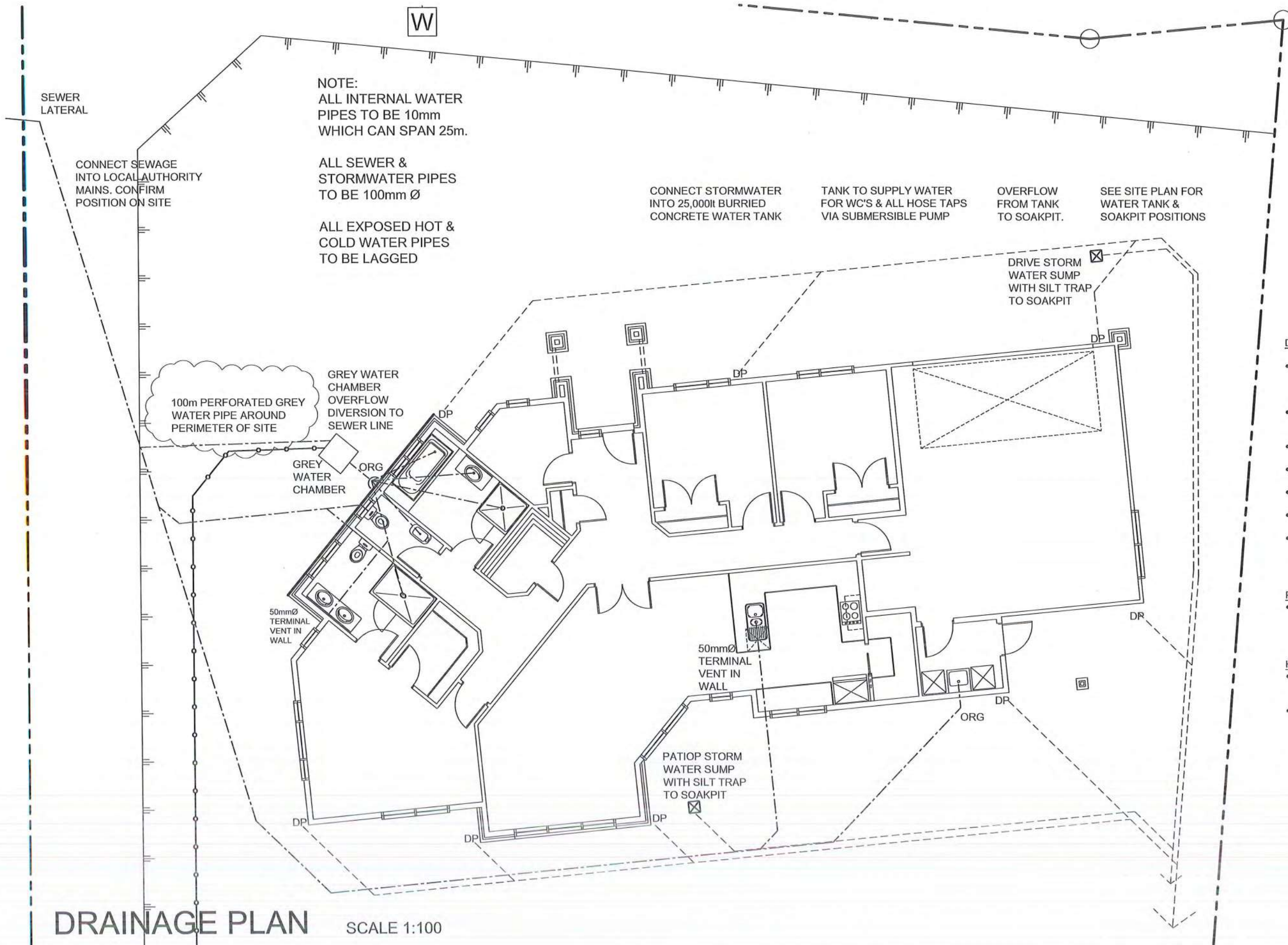
Tel: 04 296 1248
e-mail : coastarchdesign@gmail.com

Designer:

Design:
G.J Gardners

Drawn:
bf
Scale:
as shown

Job:	Page of:	Rev:
970111	1	



NOTE:
ALL INTERNAL WATER
PIPES TO BE 10mm
WHICH CAN SPAN 25m.

ALL SEWER &
STORMWATER PIPES
TO BE 100mm Ø

ALL EXPOSED HOT &
COLD WATER PIPES
TO BE LAGGED

CONNECT STORMWATER
INTO 25,000lt BURIED
CONCRETE WATER TANK

TANK TO SUPPLY WATER
FOR WC'S & ALL HOSE TAPS
VIA SUBMERSIBLE PUMP

OVERFLOW
FROM TANK
TO SOAKPIT.

SEE SITE PLAN FOR
WATER TANK &
SOAKPIT POSITIONS

DRIVE STORM
WATER SUMP
WITH SILT TRAP
TO SOAKPIT

100m PERFORATED GREY
WATER PIPE AROUND
PERIMETER OF SITE

GREY WATER
CHAMBER
OVERFLOW
DIVERSION TO
SEWER LINE

GREY
WATER
CHAMBER

50mmØ
TERMINAL
VENT IN WALL

50mmØ
TERMINAL
VENT IN WALL

PATIO STORM
WATER SUMP
WITH SILT TRAP
TO SOAKPIT

DRAINAGE PLAN

SCALE 1:100

DRAINAGE PLAN NOTES:

- All Plumbing and Drainage to be in accordance with AS/NZS 3500.2 for ground floor systems and for single stack systems
- Plumber/drainlayer to fill out producer statement and return to council with an as built drainage plan
- Check PIM information for service connections
- pipes to be inspected before covering with sand
- A tempering valve is required to be installed on the hot water service
- No pipes at any point exceed 10m in length from dn 100 vented drain
- Non-potable supply appropriately protected from cross connection hazards & is identified by appropriate signage

PIPE GRADIENTS

- Minimum grades for drains and discharge pipes
65Ø & less = 1 in 40
80Ø & 100Ø = 1 in 60

HOT & COLD WATER

- All hot & cold water pipes in house to be run in Dux Secura Polybutylene plumbing system
- 20mm for Main, to bath and to HWC
- 15mm to all other branches
- 15mm to exterior taps



All work shall be in accordance with the NZBC. If in doubt ASK The Contractor must verify all dimensions on the job before commencing any work or shop drawings. Figured dimensions are to be used, scaled dimensions must be verified. This drawing and concept are copyright of Sudfelt Construction Ltd - Kapiti / Wellington Franchisee for G.J. Gardner Homes. The recipient of this document is prohibited from disclosing its content for any purpose without the prior written consent of Sudfelt Construction Ltd - Kapiti / Wellington Franchisee for G.J. Gardner Homes

G.J. Gardner. HOMES

New Zealand's favourite home builders

Revisions:

MAY 31 / 2018	rev A
JUNE 15 / 2018	rev B
JULY 6 / 2018	rev C
JULY 13 / 2018	rev D

CONSENT PLANS

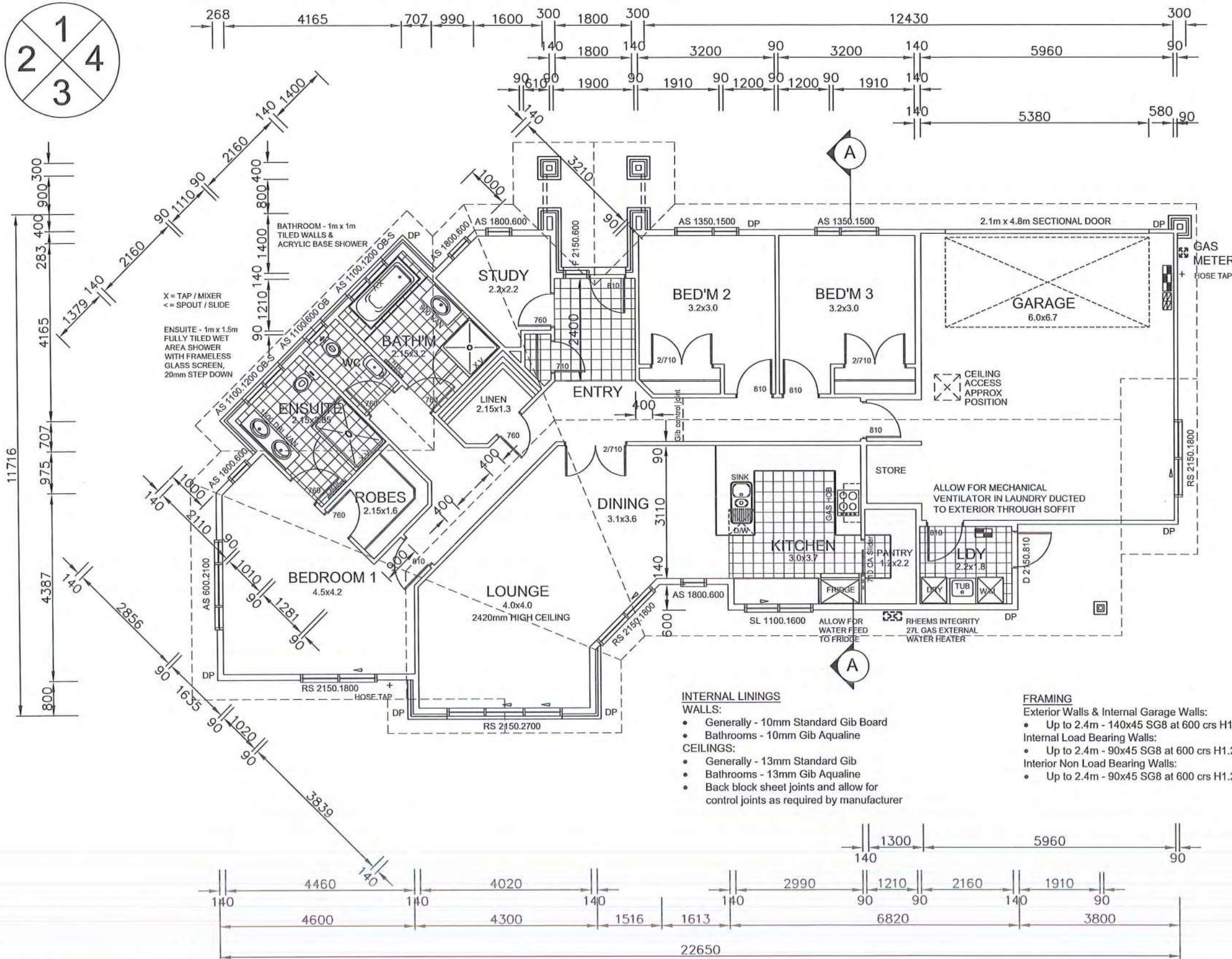
Client:
GK PATE FAMILY TRUST

LOT 29 FERNDAL
WAIKANAE

Drawing Title: DRAINAGE PLAN

Designer:
COASTAL
ARCHITECTURE LTD.
11 Kodex Place
Paraparaumu
New Zealand
Tel: 04 296 1248
e-mail : coastarchdesign@gmail.com

Design: G.J. Gardners	Drawn: bf
Job: 970111	Page of: 2
Rev: D	Scale: as shown



NOTES:

- EXTERIOR FRAMING 140x45 SG8
- R4.0 ULTRA INSULATION TO EXTERIOR WALLS (Excluding Garage)
- R5.0 INSULATION TO CEILING (Excluding Garage)
- ALLOW FOR GAS CENTRAL HEATING
- ALLOW FOR SECURITY SYSTEM
- COLOURSTEEL DOWNPIPES
- ALL INTERNAL DOORS TO BE 'V' GROOVE AVON STYLE
- PV SOLAR IS INCLUDED

GENERAL NOTES:

- All work must be carried out to conform to relevant sections of the New Zealand Building Code and New Zealand Standards - in particular NZS 3604, NZS 3602 & NZS 4218. All references to Standards shall be taken as reference to the latest revision including amendments.
- Ground bearing must be reconfirmed on site following excavation but prior to placing concrete and reinforcing.
- Confirm site boundaries with licenced surveyor. Fences may not necessarily be on the legal boundary.
- All work to be carried out to best trade practice.
- All habitable rooms have a min of 5% of their floor area as opening windows or approved alternative to achieve ventilation requirements.
- All habitable rooms have windows providing a min 10% of their floor area as natural light. At least 50% of the glazed area providing natural light is clear glazing falling within the visual awareness zone.
- Garage spaces within or attached to the building envelope shall have:
 - A - Openings provided with a 50mm min total level change between the interior & exterior paving
 - B - Provision to drain water away from the threshold of the opening.
- refer to E2 fig 65 & table 18 for overall level change requirements
- Do Not Scale off Building Consent Documentation issued from TA's as the plans may have been scanned and the scale distorted.
- Preamble framing and truss manufacturer to provide lintel sizes and provide a producer statement for framing, window lintels and trusses.
- Window openings to be 20mm larger than window sizes (10mm tolerance each side)
- All bottom plates and framing to shower areas to be H3.1. All framing in other at risk areas such as parapets and enclosed balconies to comply with NZS 3602 for particular situation.
- Allow for dwangs to fix fittings as required by owner.
- Wall junctions shall be framed up with not less than 2 studs blocked and nailed.
- Maximum diameter hole in 90mm stud to be 25mm or 35mm diameter where not more than 3 consecutive studs are drilled.
- Lintels supporting rafters or trusses shall be secured against uplift as per clause 8.6.1.8 & figure 8.12, NZS 3604:2011. 25x1mm strap with 6/30x2.5mm nails into both lintel & stud & 25x1mm strap taken under plate & up 150mm each side of stud fixed with 6/30x2.5mm nails into each side of stud
- Confirm building wrap is able to be used with timber treatment.
- Builders on site to comply with F5 of the building code (Health & Safety)

FLOOR PLAN

SCALE 1:100 AREA = 197.2m² (200m² OVER BRICK)



All work shall be in accordance with the NZBC. If in doubt ASK The Contractor must verify all dimensions on the job before commencing any work or shop drawings. Figured dimensions are to be used, scaled dimensions must be verified. This drawing and concept are copyright of Sudfelt Construction Ltd - Kapiti / Wellington Franchisee for G.J. Gardner Homes. The recipient of this document is prohibited from disclosing its content for any purpose without the prior written consent of Sudfelt Construction Ltd - Kapiti / Wellington Franchisee for G.J. Gardner Homes

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Revisions:

MAY 31 / 2018
JUNE 15 / 2018
JULY 6 / 2018
JULY 13 / 2017
JULY 23 / 2017

rev A
rev B
rev C
rev D
rev E

CONSENT PLANS

Client:
GK PATE FAMILY TRUST

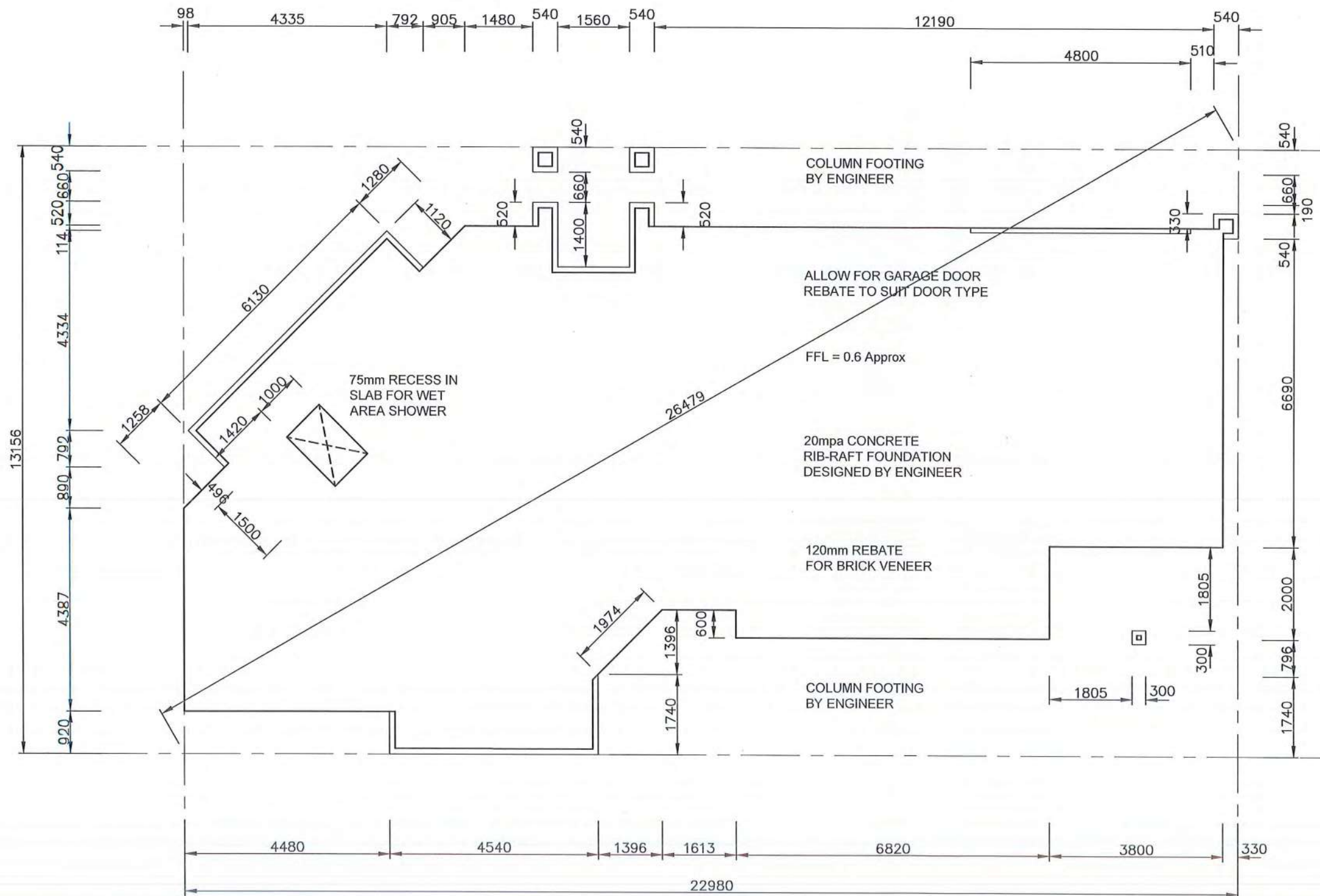
LOT 29 FERNDAL
WAIKANAE

Drawing Title:
FLOOR PLAN

Designer:
COASTAL
ARCHITECTURE LTD.
11 Kodex Place
Paraparaumu
New Zealand
Tel: 04 296 1248
e-mail: coastarchdesign@gmail.com

Design:
G.J. Gardners
Drawn:
bf
Scale:
as shown

Job: 970111
Page of: 3
Rev: E

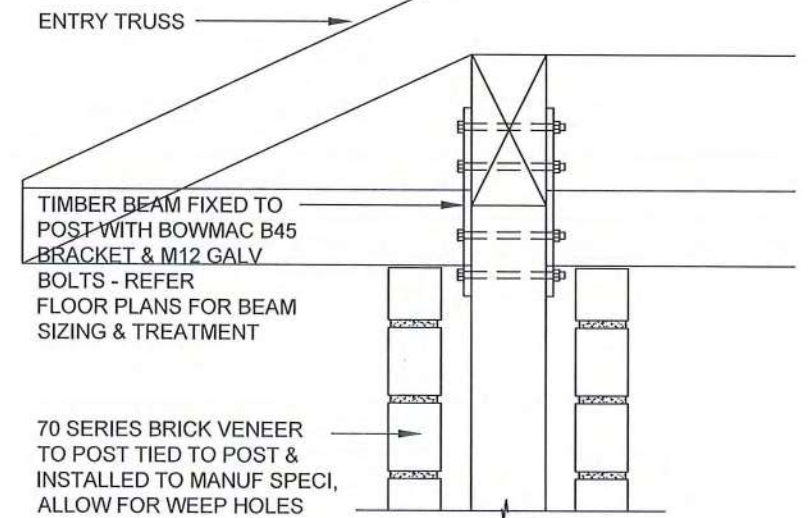


PROPRIETARY ANCHORS SHALL BE WITHIN 150mm OF EACH END & SPACED AT A MAX OF 900mm CRS OR 600mm CRS WHEN USED ON SLAB EDGES FORMED BY MASONRY HEADER BLOCKS

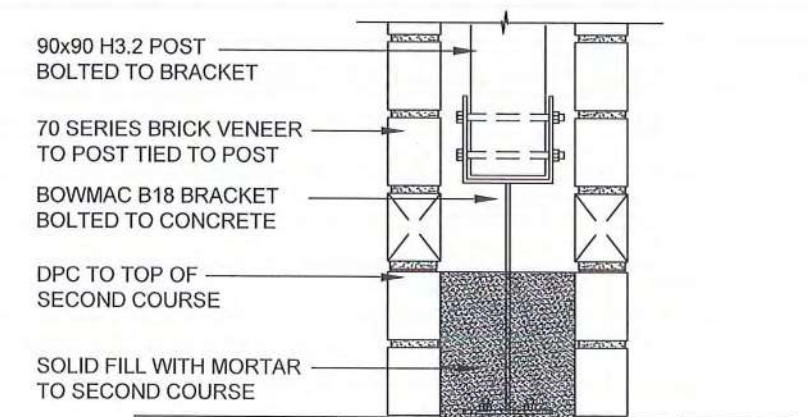
AREA OF FOUNDATION (OVER BRICK) = 217m²

MINIMUM FLOOR HEIGHT
 PROTECTED GROUND
 100MM BRICK VENEER
 150MM OTHER CLADDINGS
 UNPROTECTED GROUND
 150MM BRICK VENEER
 225MM OTHER CLADDINGS
 HEIGHTS AS PER NZS3604 1999 SECTION 7

FOUNDATION PLAN SCALE 1:100



BEAM FIXING DETAIL SCALE 1:10



POST FIXING DETAIL SCALE 1:10



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 New Zealand's favourite home builders

Revisions:
 MAY 31 / 2017 rev A

CONSENT
 PLANS

Client:
 GK PATE FAMILY TRUST
 LOT 29 FERNDAL
 WAIKANAE

Drawing Title:
 FOUNDATION
 PLAN

Designer:
COASTAL
 ARCHITECTURE LTD.
 11 Kodex Place
 Paraparaumu
 New Zealand
 Tel: 04 296 1248
 e-mail: coastarchdesign@gmail.com

Design:
 G.J. Gardners
 Drawn:
 bf
 Scale:
 as shown
 Job: 970111 Page of: 4 Rev: A

NOTES

TRUSSES

DO NOT SUPPORT BOTTOM CHORD OF TRUSS AT POINTS OTHER THAN THOSE DESIGNATED BY THE TRUSS MANUFACTURER

ALL ROOF FRAMING TO BE H1.2

SOFFITS

UNFINISHED HARDIES SOFFITS MUST BE PAINTED TO COMPLY WITH NZBC DURABILITY REQUIREMENTS

SPOUTING

FRONT EDGE OF SPOUTING TO BE 20mm BELOW TOP EDGE OF FASCIA

DOWNPINES

ALL 80mm Ø PVC

ROOF FRAMING FIXINGS

TRUSSES

FIXINGS FOR A ROOF TRUSS AT ITS SUPPORT SHALL BE AS GIVEN BY THE TRUSS MANUFACTURERS DESIGN BUT **SHALL BE NOT LESS THAN:** 2/90x3.15 SKEWED NAILS & STRAP FIXING (see figure 10.6 NZS 3604 2011)

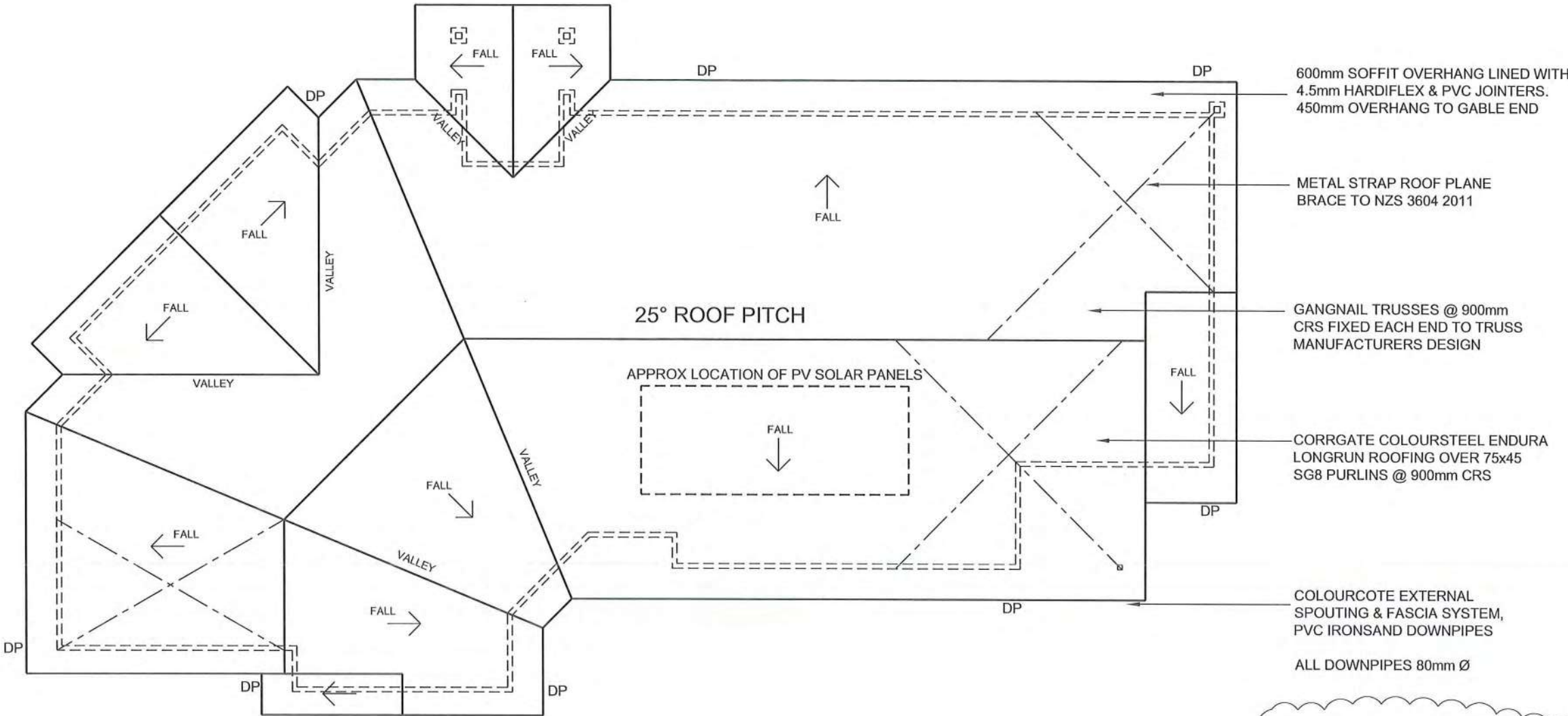
PURLINS TO TRUSSES

1/10g SELF DRILLING SCREW, 80mm LONG (2.4kN FIXING CAPACITY)

SUPPLY COPY OF RELEVANT WARRANTIES FOR ROOFING, MEMBRANE SYSTEMS & FASCIA / GUTTER SYSTEMS AS APPROPRIATE TO COUNCIL

ROOFING MATERIAL TO BE

INSTALLED TO MANUFACTURERS REQUIREMENTS IN PARTICULAR, FIXING & MINIMUM PITCH (REFERENCE ALSO SECT 8 OF E2 NZ BUILDING CODE)



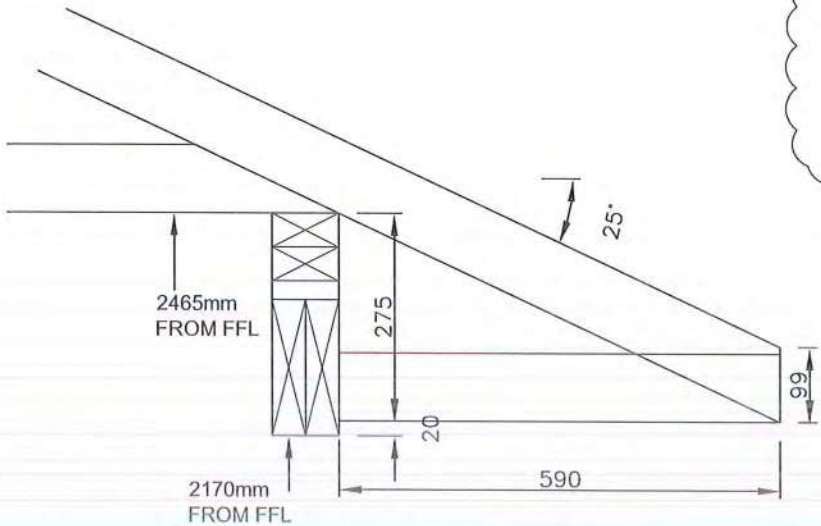
RAINWATER CALCULATION

- Roof Catchment Area = 246m² / 21° x 1.2 = 295m²
- Colorsteel gutter = Catchment capacity = 4880mm²
- Downpipe Size = 80Ø Marley
- Downpipe Catchment Area = 100m²

Roof Catchment/Downpipe Catchment = 295/100 = 3 DP's

ROOF PLAN

SCALE 1:100



DETAIL TO SUIT 2150mm HIGH JOINERY



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Revisions:

MAY 31 / 2017
JULY 6 / 2018
JULY 23 / 2018

rev A
rev B
rev C

CONSENT
PLANS

Client:
GK PATE FAMILY TRUST

LOT 29 FERNDAL
WAIKANAE

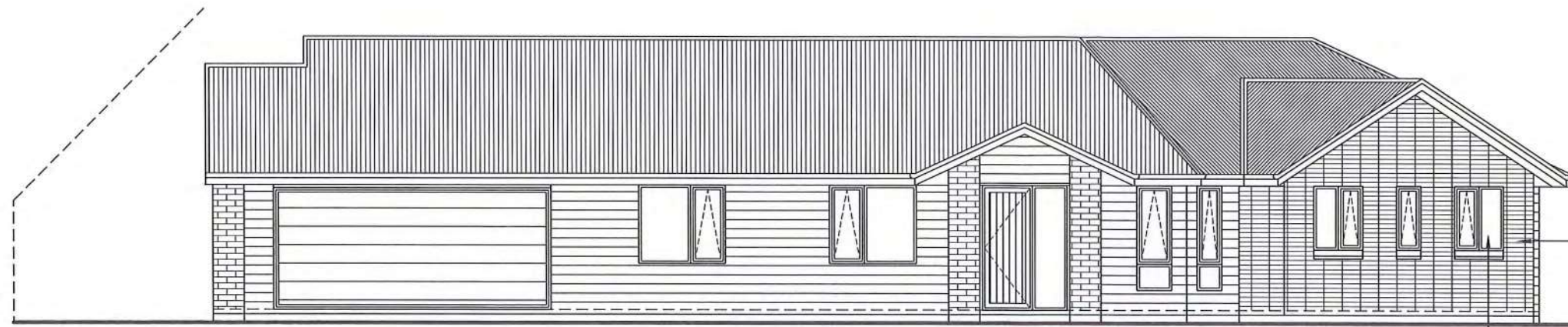
Drawing Title:
ROOF PLAN

Designer:
COASTAL
ARCHITECTURE LTD.
11 Kodex Place
Paraparaumu
New Zealand
Tel: 04 296 1248
e-mail : coastarchdesign@gmail.com

Design:
G.J. Gardners
Drawn:
bf
Scale:
as shown

Job: 970111
Page of: 5
Rev: C

SOUTH ELEVATION 1
SCALE 1:100



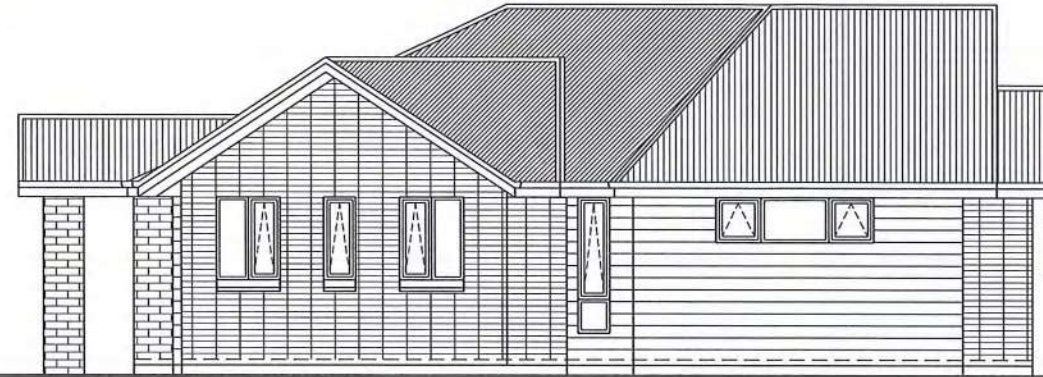
BUILDING WRAP - TEKTON
THERMAKRAFT 215 ROOFING UNDERLAY

INSULATION: (Excluding Garage)
R5.0 BATTS TO CEILINGS
R4.0 BATTS TO EXTERIOR WALLS

FIRTH DEVONSTONE BRICK
VENEER EXTERIOR
CLADDING, STACK BOND

POWDER COATED ALUMINIUM
JOINERY TO SUIT 140x45 FRAMING

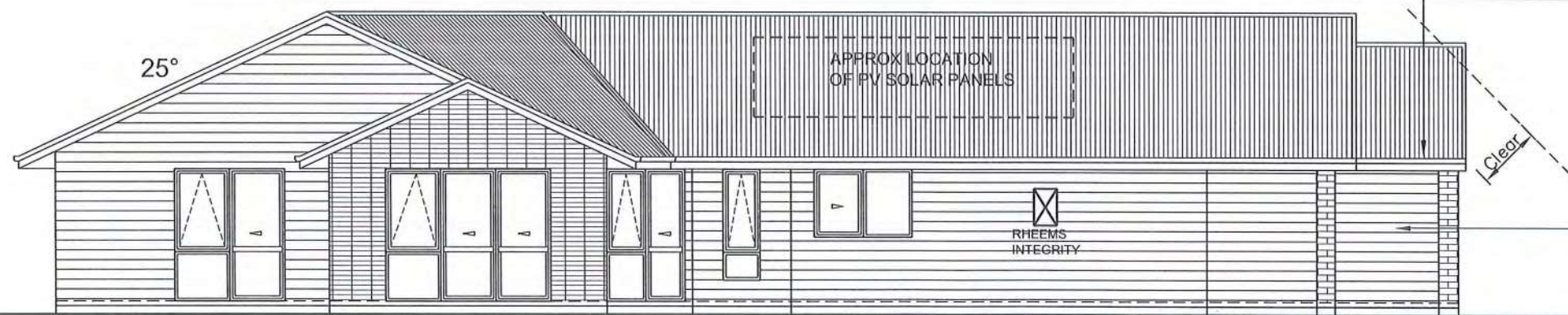
EAST ELEVATION 2
SCALE 1:100



CORRGATE COLOURSTEEL
ENDURA LONGRUN ROOFING OVER
75x45 SG8 PURLINS @ 900mm CRS

600mm SOFFIT OVERHANG LINED
WITH 4.5mm HARDIFLEX & PVC
JOINTERS.
450mm OVERHANG TO GABLE END

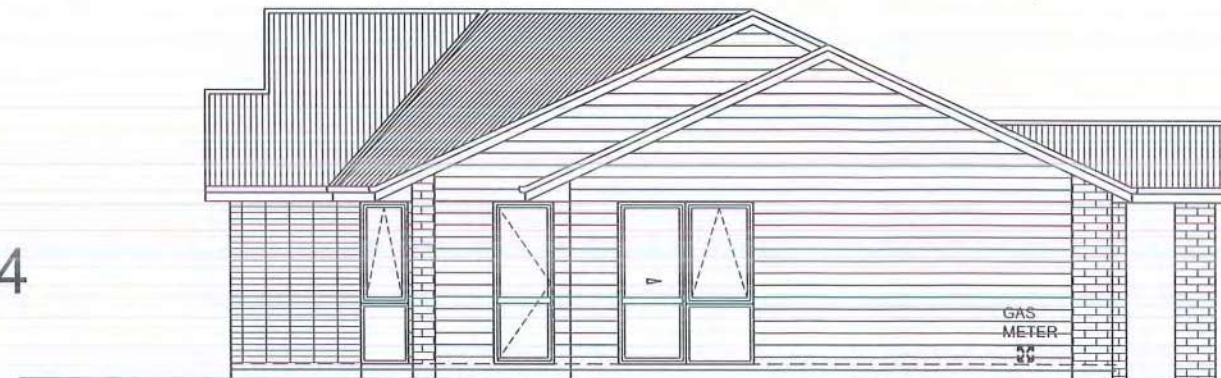
NORTH ELEVATION 3
SCALE 1:100



COLOURCOTE EXTERNAL
SPOUTING & FASCIA SYSTEM,
PVC IRONSAND DOWNPIPES

LINEA WEATHERBOARD
CLADDING ON CAVITY
SYSTEM TO FEATURE WALLS

WEST ELEVATION 4
SCALE 1:100



NOTE:
ALL CLADDINGS, ROOFING & SPOUTING SYSTEMS
TO BE MAINTAINED BY OWNER IN ACCORDANCE
TO MANUFACTURERS RECOMMENDATIONS &
WARRANTEE REQUIREMENTS

CLADDING TO BE INSTALLED TO
MANUFACTURERS REQUIREMENTS IN
PARTICULAR FIXING & GROUND
CLEARANCE.
ALSO REFER TO NZBC, CLAUSE E2/AS1,
EXTERNAL MOISTURE FOR CLARITY



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Revisions:
MAY 31 / 2018 rev A
JUNE 15 / 2018 rev B
JULY 23 / 2018 rev C

**CONSENT
PLANS**

Client:
GK PATE FAMILY TRUST

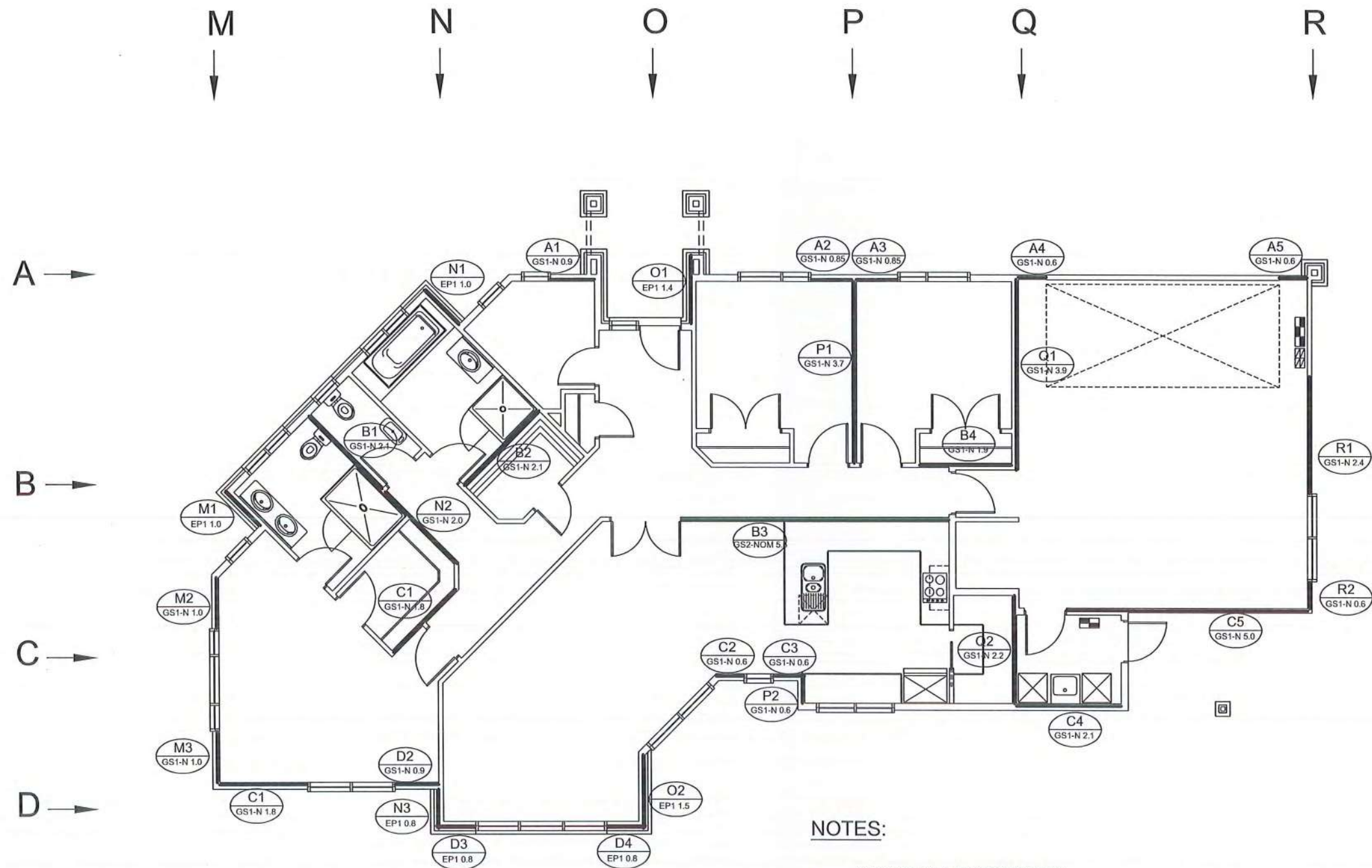
LOT 29 FERNDAL
WAIKANAE

Drawing Title:
ELEVATIONS

Designer:
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ARCHITECTURE LTD.
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e-mail : coastarchdesign@gmail.com

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G.J. Gardners
Drawn:
bf
Scale:
as shown

Job: 970111
Page of: 6
Rev: C



BRACING PLAN SCALE 1:100



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Revisions:
MAY 31 / 2017 rev A

CONSENT
PLANS

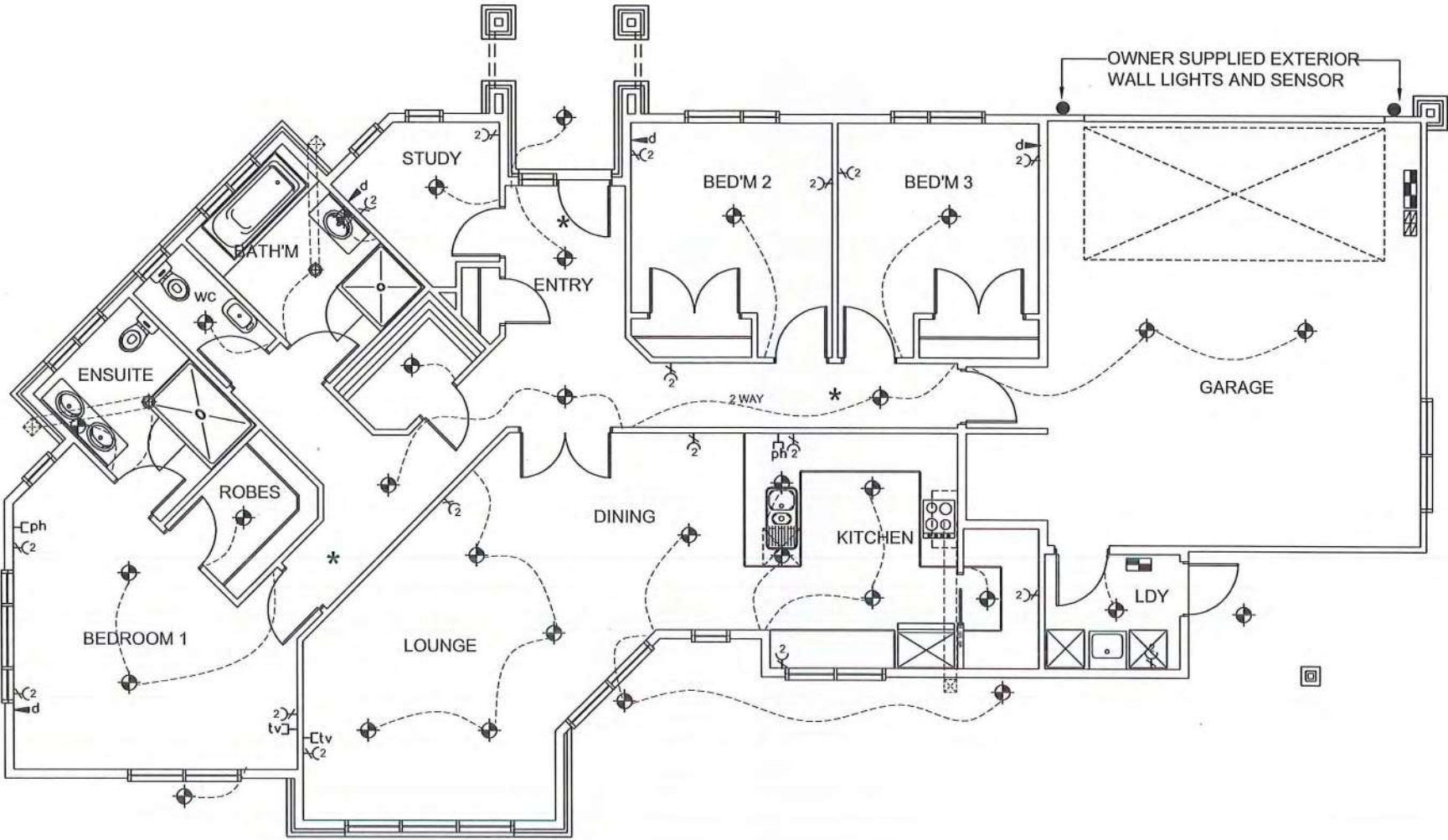
Client:
GK PATE FAMILY TRUST
LOT 29 FERNDAL
WAIKANAE

Drawing Title:
BRACING
PLAN

Designer:
COASTAL
ARCHITECTURE LTD.
11 Kodex Place
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Tel: 04 296 1248
e-mail : coastarchdesign@gmail.com

Design:
G.J. Gardners
Drawn:
bf
Scale:
as shown
Job: 970111 Page of: 8 Rev: A

NOTE: SUGGESTED LAYOUT ONLY, TBC ON SITE WITH ELECTRICIAN & OWNER



NOTE:

- Allow for security system
- 1 x Key pad
- 1 x Security controller
- 1 x Internal siren
- 1 x External siren
- 3 x Infrared PIR detectors
- 1 x Backup battery

ELECTRICAL NOTES:

RECESSED DOWNLIGHTS (IF USED) SHALL BE INSTALLED TO PREVENT TRANSFER OF MOISTURE INTO CEILING SPACE & MAINTAIN MIN CLEARANCE FROM INSULATION AS REQUIRED BY NZECP 54:2001

PROVIDE ELECTRICAL CERTIFICATE AFTER COMPLETION & PRIOR TO CODE COMPLIANCE CERTIFICATE BEING ISSUED

HARD WIRE SMOKE DETECTORS

ELECTRICAL LEGEND			
	Recessed LED		Power Point (2 denotes double)
	Manrose 3 in 1 Bathroom light		Phone Point
	Smoke detector		Television Point
	Meter Board		Data Point
	Switch Board		Starbox
	Extractor Fan		

ELECTRICAL PLAN

SCALE 1:100



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Revisions:
MAY 31 / 2017 rev A

CONSENT
PLANS

Client:
GK PATE FAMILY TRUST

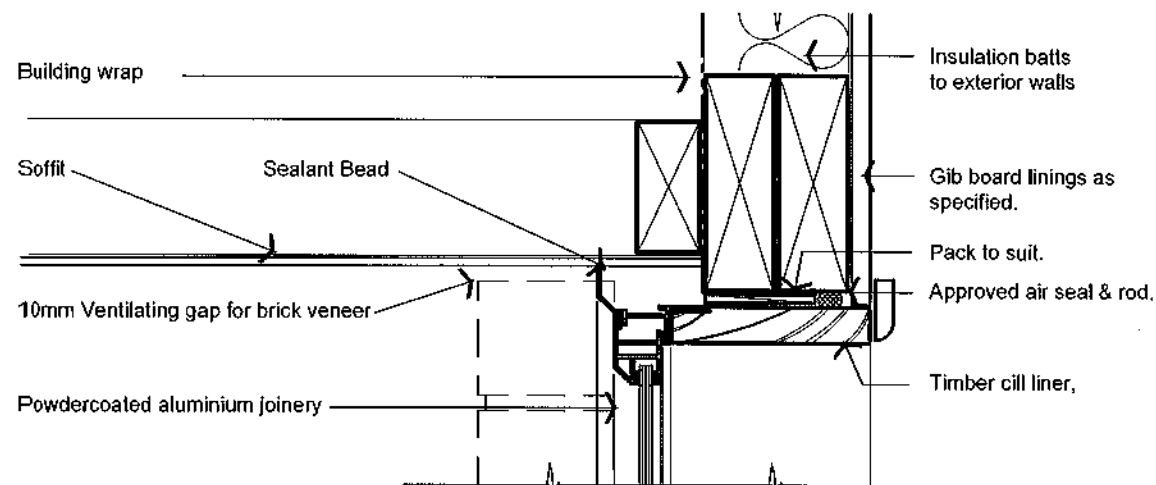
LOT 29 FERNDAL
WAIKANAE

Drawing Title:
ELECTRICAL
PLAN

Designer:
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ARCHITECTURE LTD.
11 Kodex Place
Paraparaumu
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e-mail : coastarchdesign@gmail.com

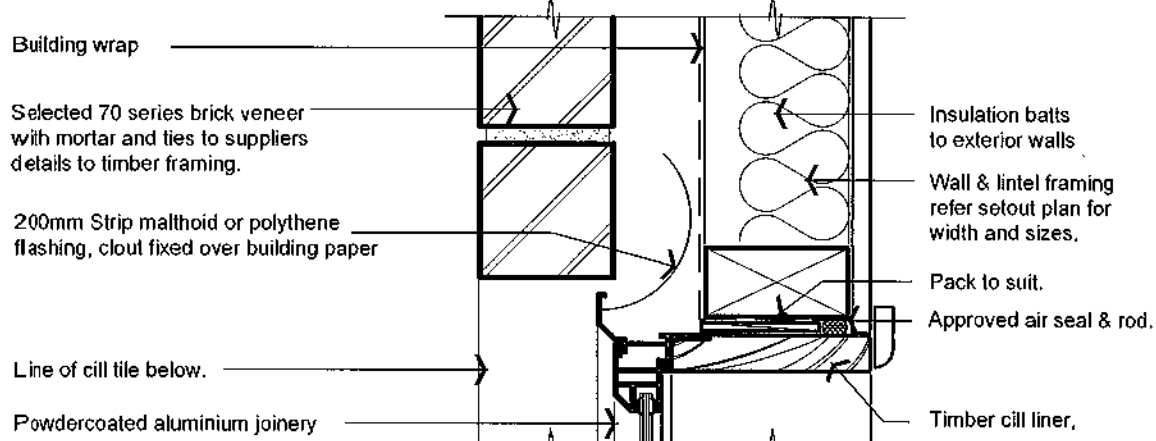
Design:
G.J. Gardners
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bf
Scale:
as shown

Job: 970111 Page of: 9 Rev: A



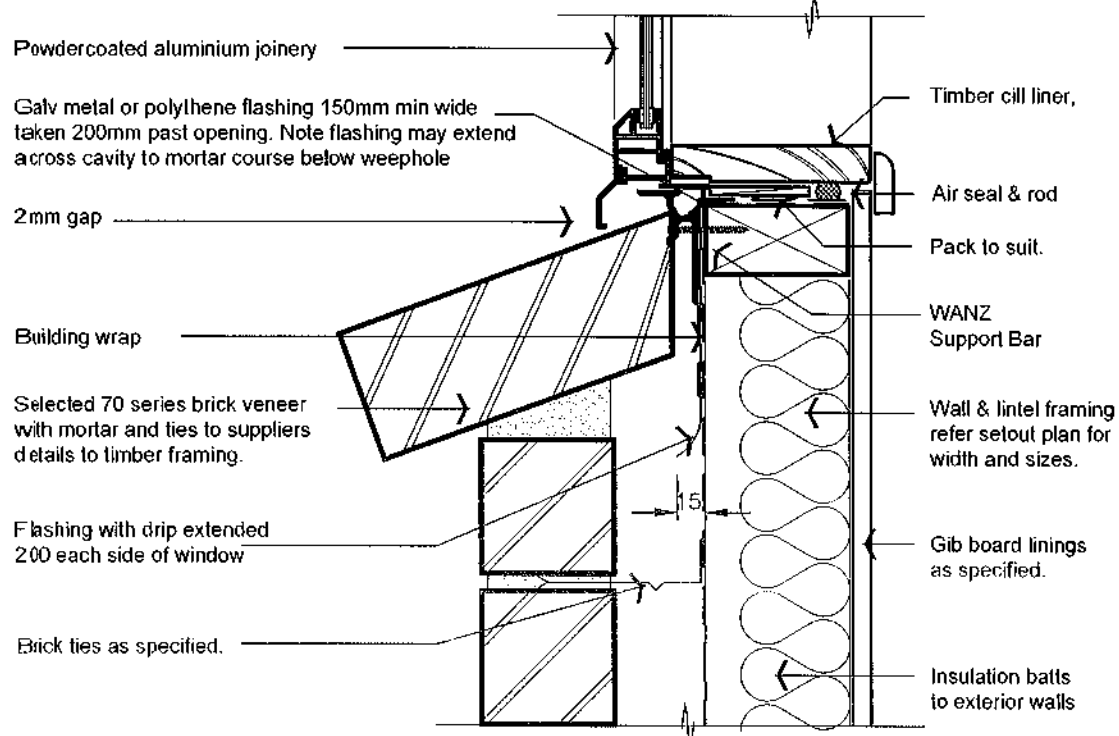
BRICK WINDOW HEAD DETAIL

SCALE 1:5



BRICK WINDOW JAMB DETAIL

SCALE 1:5



BRICK WINDOW SILL DETAIL

SCALE 1:5

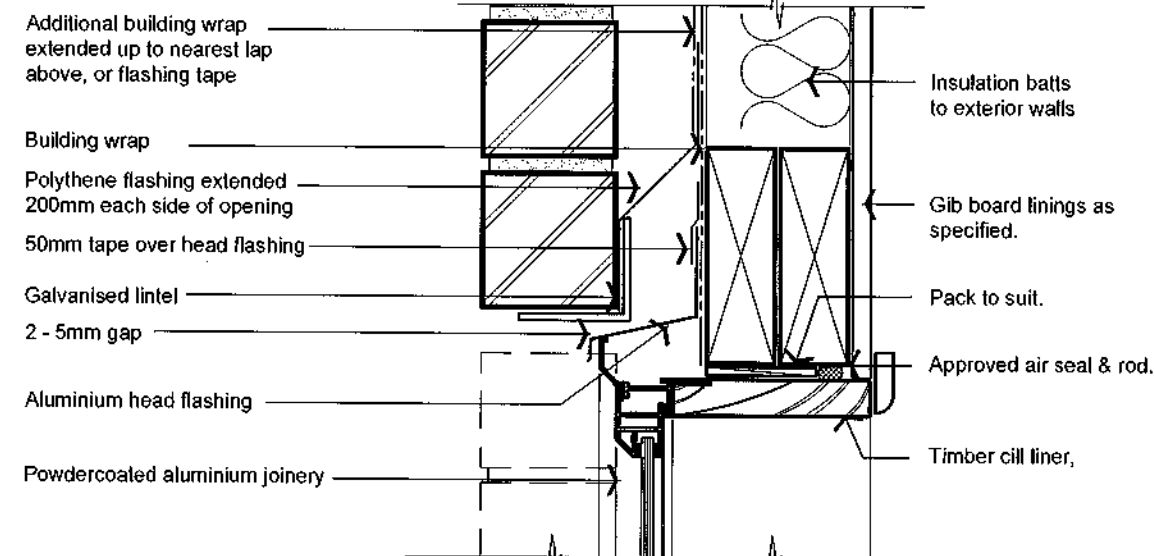
MASONRY NOTES:

THE CAVITY BETWEEN THE MASONRY VENEER & THE EXTERIOR FACE OF TIMBER STUD WALL SHALL BE NOT LESS THAN 40mm NOR MORE THAN 75mm. PIPES & SERVICES SHALL NOT BE PLACED IN THE CAVITY.

THE BRICK VENEER CAVITY SHALL BE VENTILATED TO THE OUTSIDE AIR WITH TOP & BOTTOM OPENINGS. THE BOTTOM OPENINGS SHALL SERVE AS WEEP HOLES TO DRAIN MOISTURE TO THE OUTSIDE

85mm OR 110mm GALV BRICK TIES POSITIONED 600mm HORIZONTALLY & 400mm VERTICALLY, WITHIN 300mm AROUND OPENINGS, WITHIN THE TOP 2 MORTAR COURSES, WITHIN THE BOTTOM 400mm OF VENEER & IN THE 2 COURSES WHERE A BOND BREAKER HAS BEEN USED

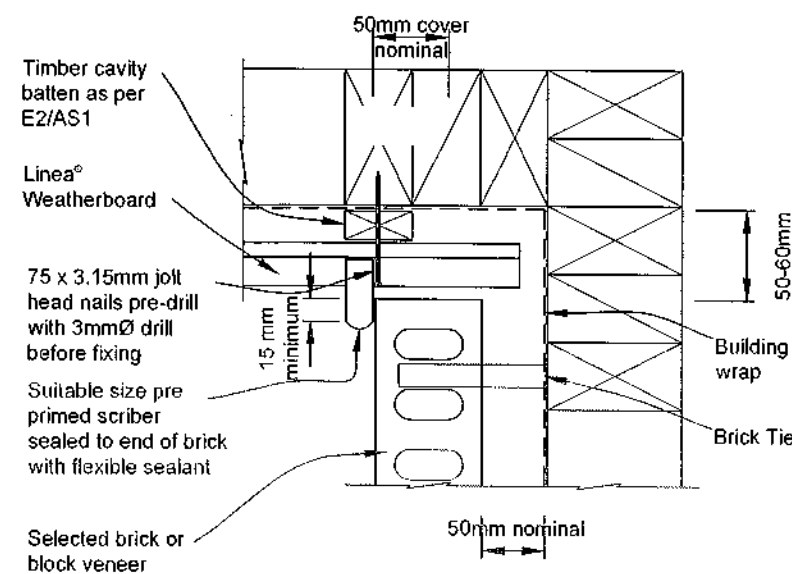
Weepholes at 800mm centres on openings over 1200mm



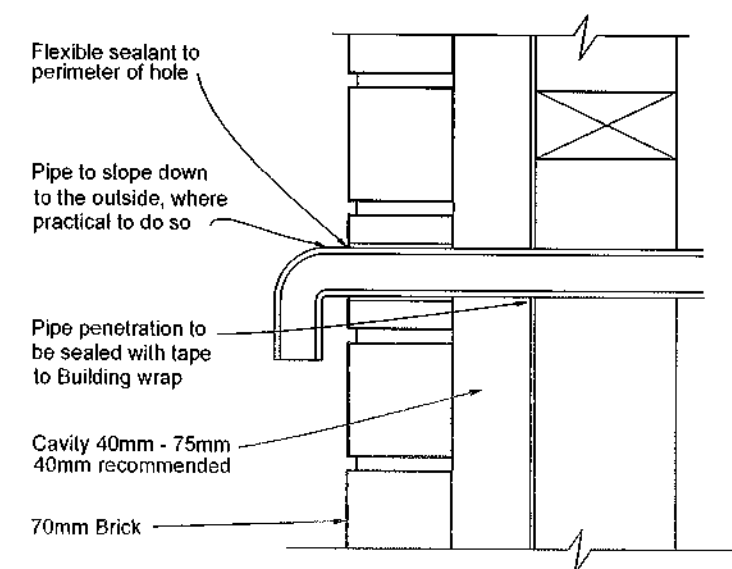
BRICK WINDOW HEAD DETAIL

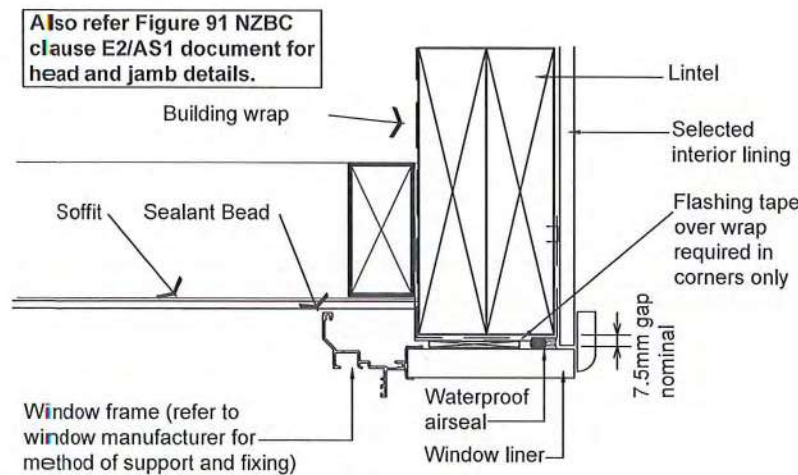
SCALE 1:5

LINEA TO BE INSTALLED & NAILED OFF COMPLETELY PRIOR TO BRICK LAYING TO ENSURE BRICK TIES ARE NOT VIBRATED LOSE

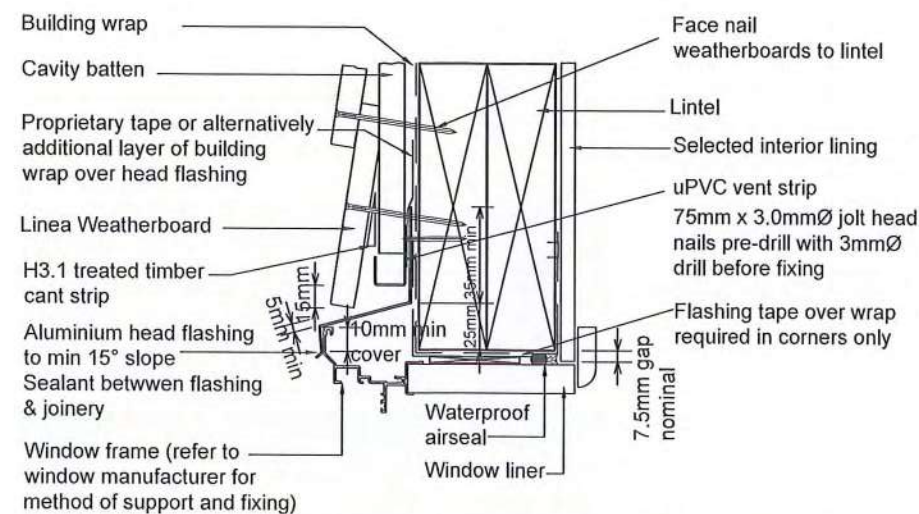


INTERNAL BRICK TO WEATHERBOARD DETAIL

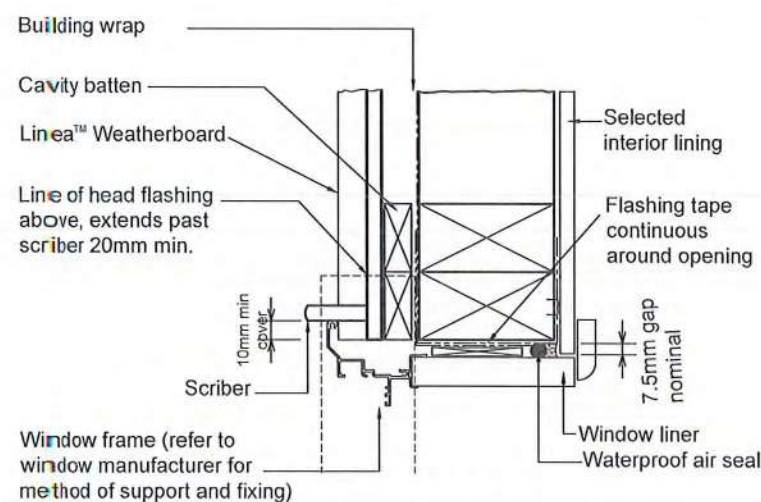




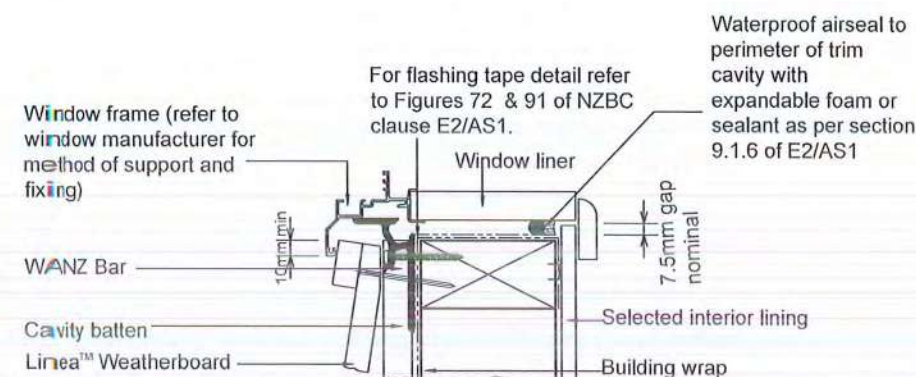
WINDOW HEAD DETAIL Scale 1:5



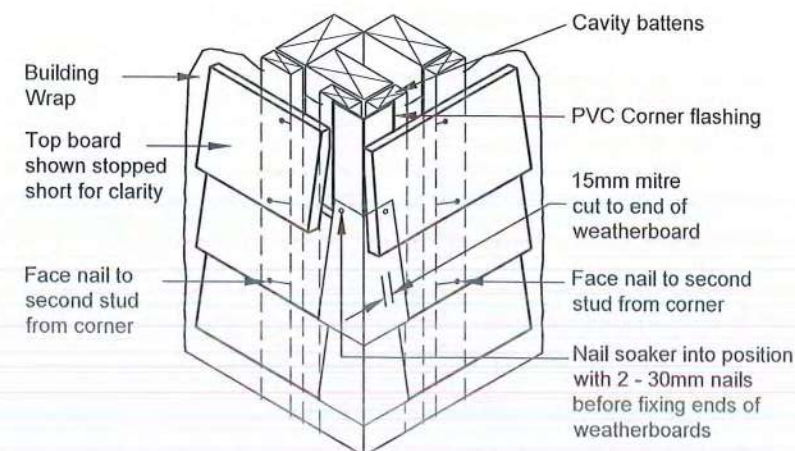
GABLE WINDOW HEAD DETAIL Scale 1:5



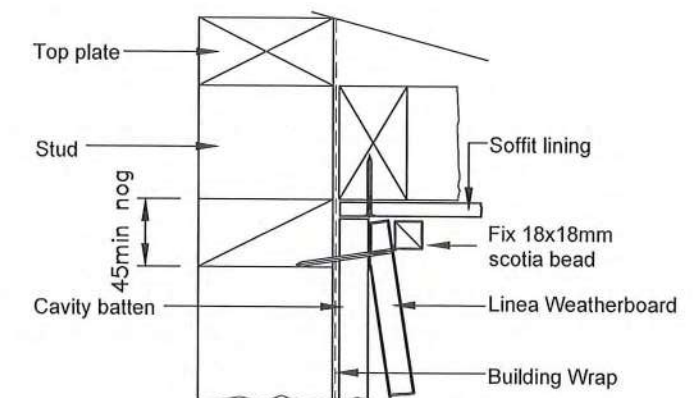
WINDOW JAMB DETAIL Scale 1:5



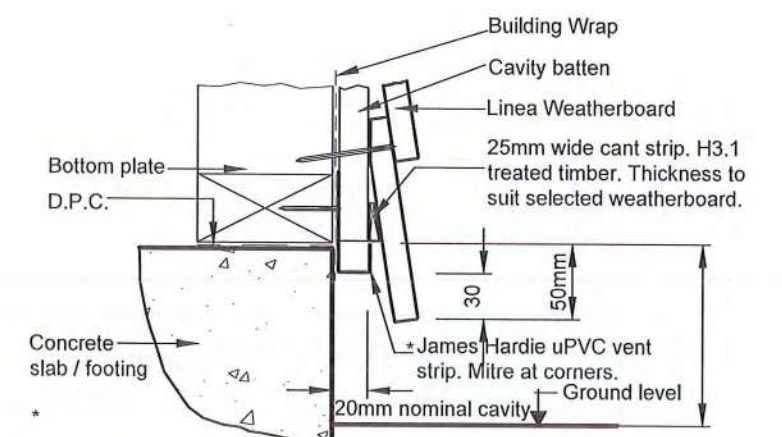
WINDOW SILL DETAIL Scale 1:5



CAVITY EXTERNAL CORNER SOAKER



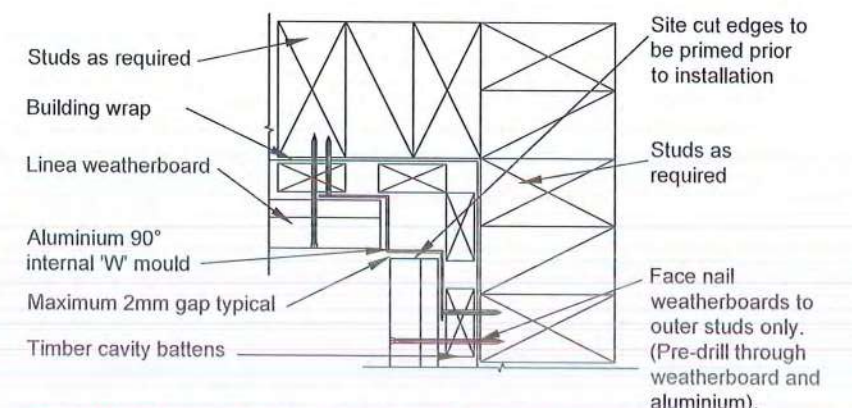
CAVITY SOFFIT DETAIL



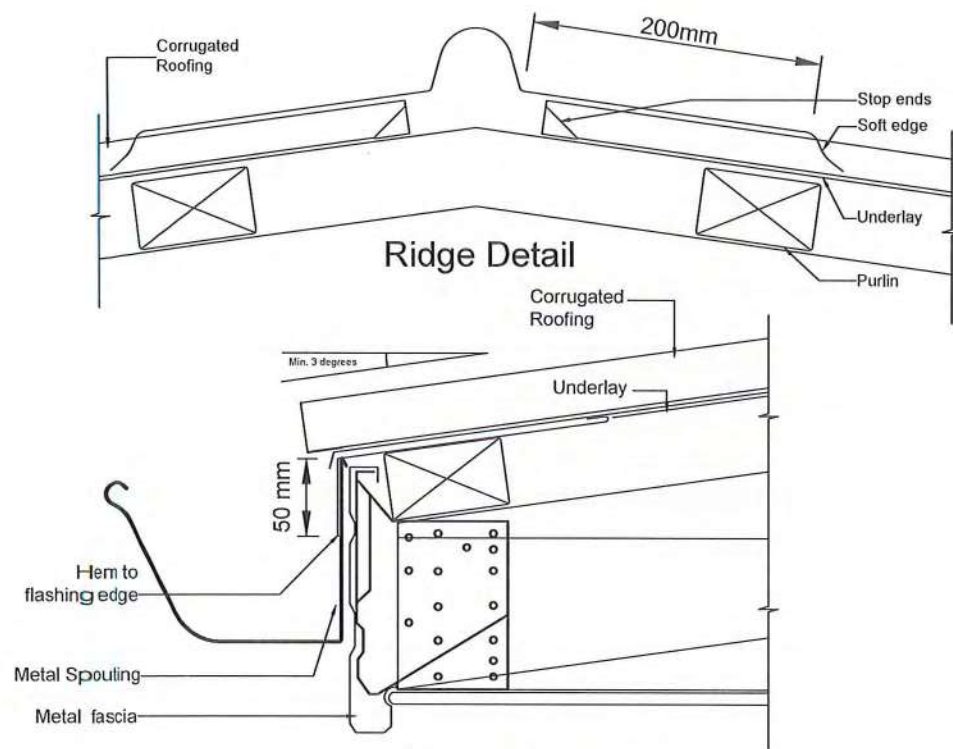
Drain holes in James Hardie uPVC vent strip are sufficient to achieve ventilation openings of 1000mm² per lineal metre

150mm min to permanent paving or 225mm min to unpaved ground to clause 9.1.3 of E2/AS1

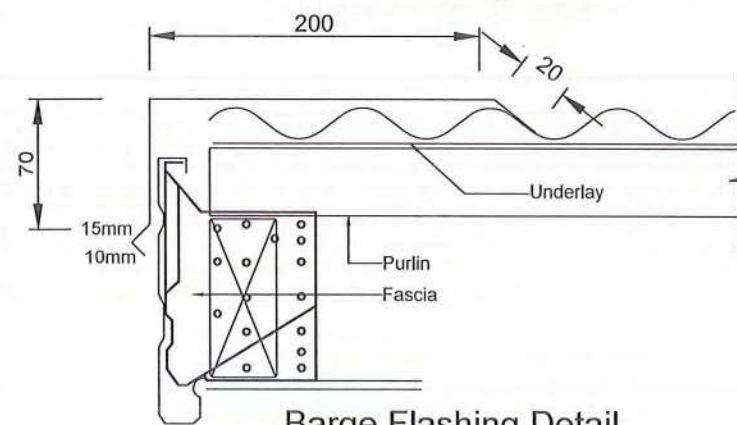
CAVITY FOUNDATION DETAIL



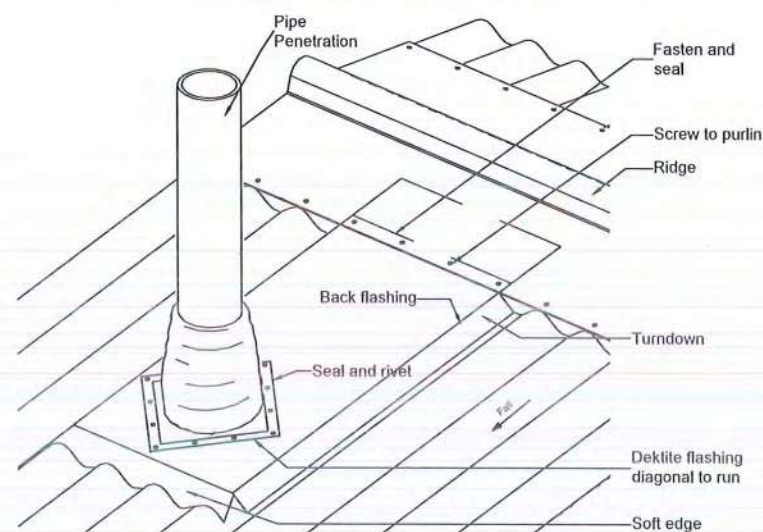
TIMBER CAVITY INTERNAL CORNER



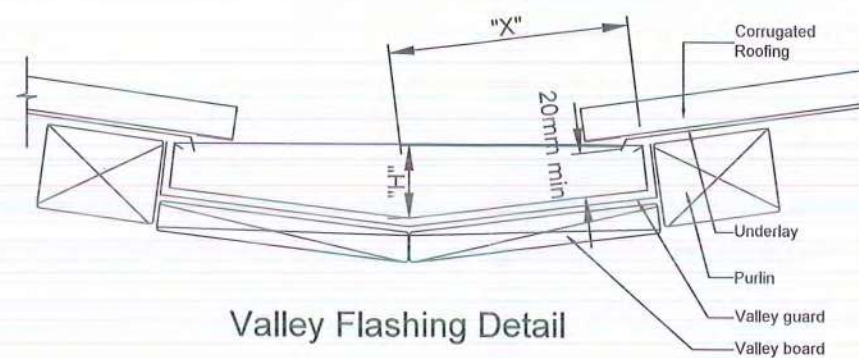
Gutter Flashing Detail



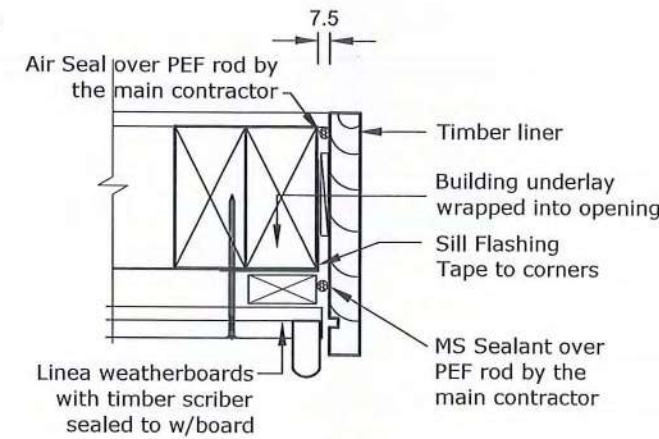
Barge Flashing Detail



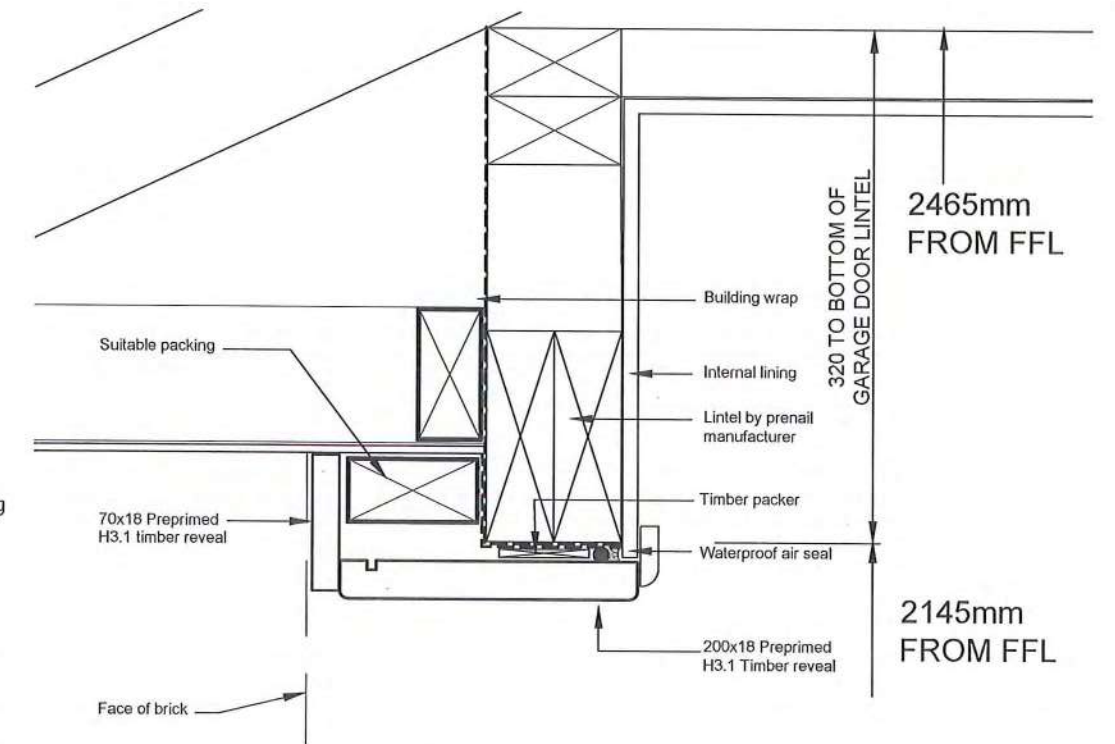
Pipe Penetration Flashing Detail



Valley Flashing Detail



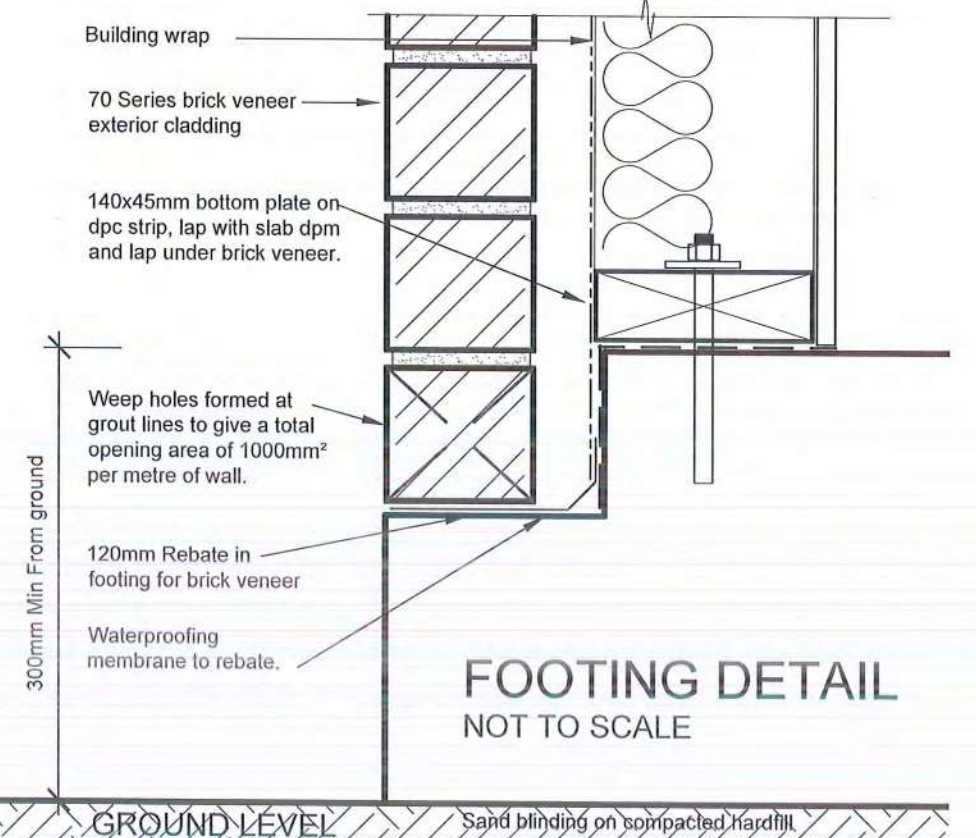
GARAGE DOOR JAMB DETAIL

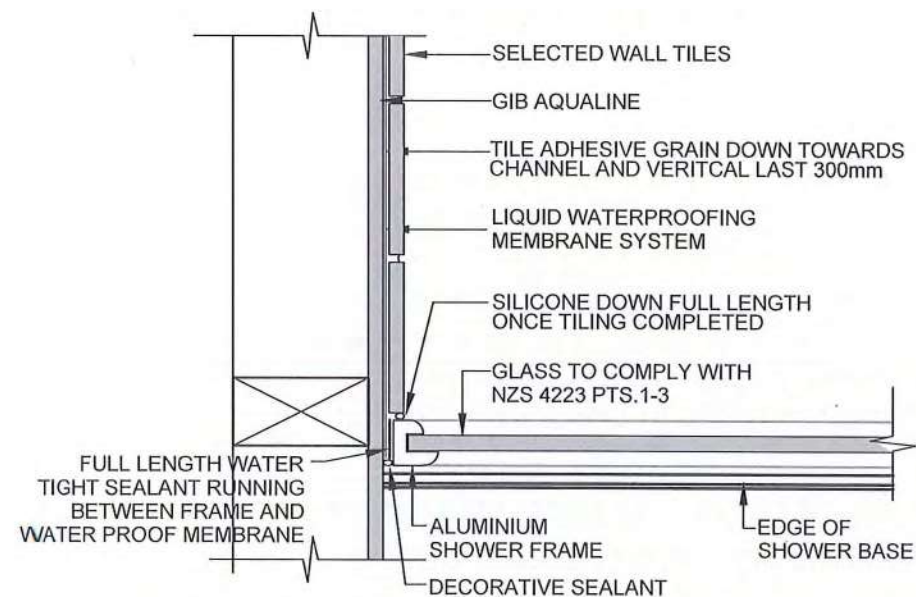


GARAGE DOOR HEAD DETAIL

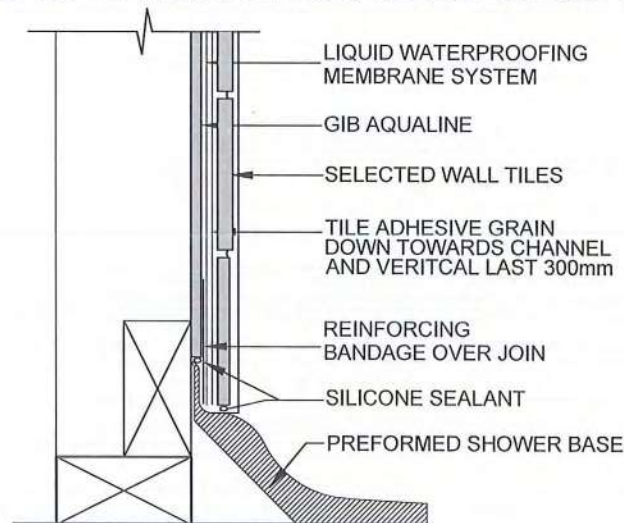
SCALE 1:5

'Powers' BTG10140 10mm x 140mm blue tip screw bolt anchors shall be within 150mm of each end & spaced at a max of 900mm crs giving 15kn fixing in accordance with NZS 3604 clause 7.5.12.3 & 7.5.12.4

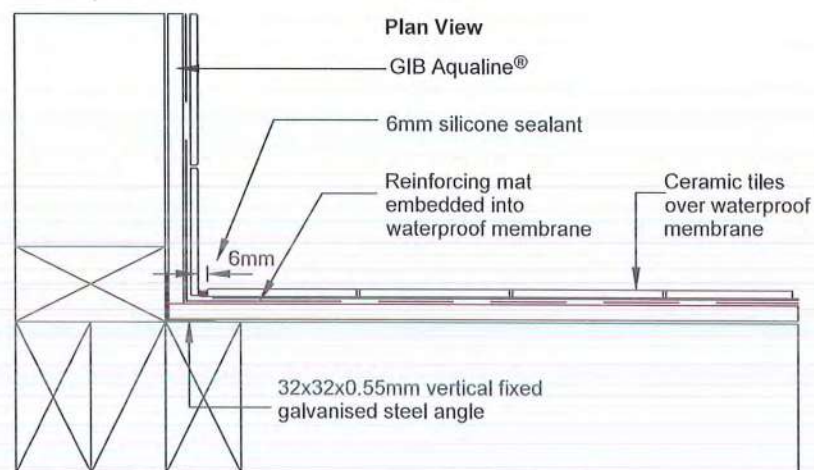




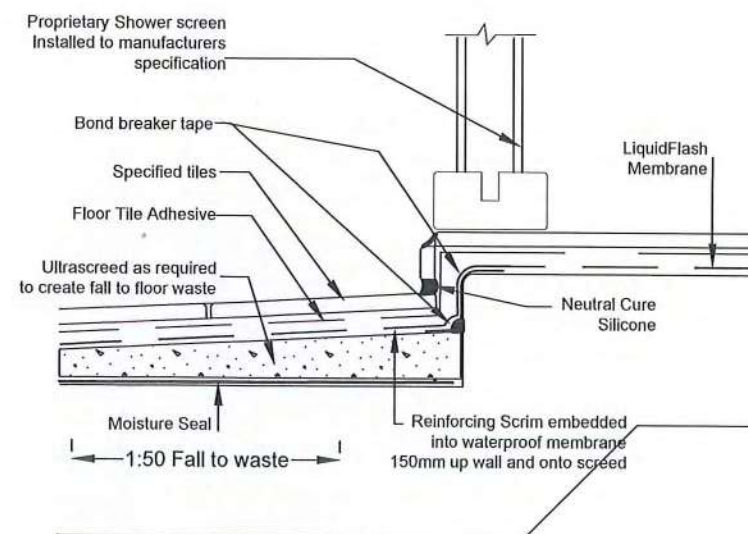
ACRYLIC SHOWER BASE/TILED WALL EDGE DETAIL



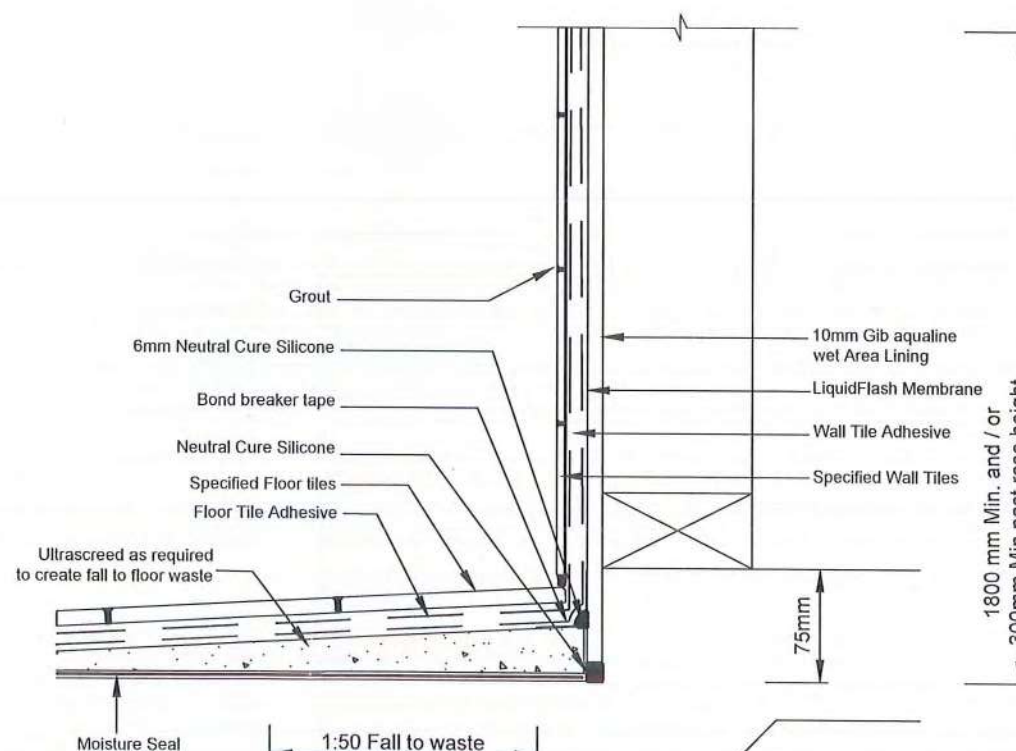
ACRYLIC SHOWER BASE/TILED WALL, CONC FLOOR DETAIL



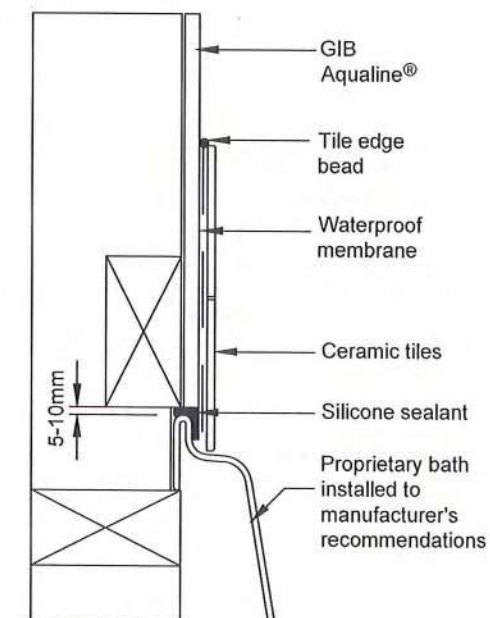
ACRYLIC SHOWER BASE/TILED WALL, INTERNAL CORNER DETAIL



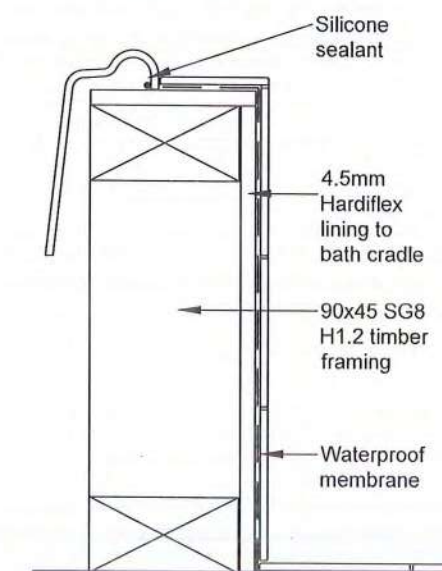
Ensuite Shower Step Down Detail



Ensuite Shower - Tiled Walls and Base Detail



Bath/Wall Detail



Bath Plinth Detail

E2/AS1 : Building Envelope Risk Matrix.

Project Details.

Name NAME GK PATE FAMILY TRUST
Street/No. STREET 2 LAMONT PLACE, FERNDAL
Lot/DP/No. LOT LOT 29
City/Town/District. CITY WAIKANA

Definition of Risk [table 1 from E2/AS1]

Factor	Risk	Detail
A Wind Zone	LOW	LOW wind zone as described by NZS 3604
	MEDIUM	MEDIUM wind zone as described by NZS 3604
	HIGH	HIGH wind zone as described by NZS 3604
	V.HIGH	VERY HIGH wind zone as described by NZS 3604
B No. of storeys	LOW	One storey
	MEDIUM	Two storey in part
	HIGH	Two storey's
	V.HIGH	More than two storey's
C Roof / Wall intersection Design.	LOW	Roof / wall intersection - Fully protected. [eg. hip / gable roof with eaves.]
	MEDIUM	Roof / wall intersection - Partly exposed. [eg. hip / gable roof with NO eaves.]
	HIGH	Roof / wall intersection - Fully exposed. [eg. Parapets or eaves greater than 90° vertical with soffit linings.]
	V.HIGH	Roof elements finished within the boundaries formed by exterior walls [eg. lower ends of aprons, chimney's etc.]
D Eaves width (1.)	LOW	Greater than 600mm at first floor level.
	MEDIUM	450 - 600mm at first floor level, or 600mm at second floor level
	HIGH	100-450mm at first floor level, or 450-600mm at second floor level
	V.HIGH	0 -100mm at first floor level, or 100-450mm at second floor level or 450 - 600mm at third floor level
E Envelope Complexity	LOW	Simple rectangular,L,T, or boomerang shape with single cladding type
	MEDIUM	Complex angular or curved shape [eg. Y or arrow head] with single cladding type.
	HIGH	More complex angular or curved shape [eg. Y or arrow head] with multiple cladding type.
	V.HIGH	As for high risk, but with junctions not covered in C or F on this Table [eg. box windows, pergola's, multi storey re - entrant shapes etc.]
F Deck design.	LOW	None or timber slat deck or porch at ground level
	MEDIUM	Fully covered in plan by roof, or timber slat deck attached at first or second floor level.
	HIGH	Enclosed deck exposed in plan or cantilevered at first floor level
	V.HIGH	Enclosed deck exposed in plan or cantilevered at second floor level or above.

NOTES

1. Eaves width measured from external face of the wall cladding to
outer edge of overhang including gutters and fascias
2. Balustrades and parapets count as 0 mm eaves.

Risk Severity by Face

North Elevation.									
RISK FACTOR	LOW	Score	MED	Score	HIGH	Score	V.HIGH	Score	Sub totals for each risk factor.
Wind Zone as NZS 3604	0		0		1	✓	2		1
No. of storey's	0	✓	1		2		4		0
Roof / Wall intersection	0	✓	1		3		5		0
Eaves width.	0		1		2	✓	5		2
Envelope Complexity	0	✓	1		3		6		0
Deck design.	0	✓	2		4		6		0
Total Risk Score for this Elevation									3

South Elevation.									
RISK FACTOR	LOW	Score	MED	Score	HIGH	Score	V.HIGH	Score	Sub totals for each risk factor.
Wind Zone as NZS 3604	0		0		1	✓	2		1
No. of storey's	0	✓	1		2		4		0
Roof / Wall intersection	0	✓	1		3		5		0
Eaves width.	0		1		2	✓	5		2
Envelope Complexity	0	✓	1		3		6		0
Deck design.	0	✓	2		4		6		0
Total Risk Score for this Elevation									3

East Elevation.									
RISK FACTOR	LOW	Score	MED	Score	HIGH	Score	V.HIGH	Score	Sub totals for each risk factor.
Wind Zone as NZS 3604	0		0		1	✓	2		1
No. of storey's	0	✓	1		2		4		0
Roof / Wall intersection	0	✓	1		3		5		0
Eaves width.	0		1		2	✓	5		2
Envelope Complexity	0	✓	1		3		6		0
Deck design.	0	✓	2		4		6		0
Total Risk Score for this Elevation									3

West Elevation.									
RISK FACTOR	LOW	Score	MED	Score	HIGH	Score	V.HIGH	Score	Sub totals for each risk factor.
Wind Zone as NZS 3604	0		0		1	✓	2		1
No. of storey's	0	✓	1		2		4		0
Roof / Wall intersection	0	✓	1		3		5		0
Eaves width.	0		1		2	✓	5		2
Envelope Complexity	0	✓	1		3		6		0
Deck design.	0	✓	2		4		6		0
Total Risk Score for this Elevation									3

Selected Cladding Resulting from Risk Assessment

	Risk score from tables above.	Cladding Selected from table 3 [from tables on page 30 E2/AS1]	TICK SELECTED OPTION	
			DIRECT FIXED	DRAINED CAVITY
North Elevation.	3	Brick Veneer / Linea Weatherboard		✓
South Elevation.	3	Brick Veneer / Linea Weatherboard		✓
East Elevation.	3	Brick Veneer / Linea Weatherboard		✓
West Elevation.	3	Brick Veneer / Linea Weatherboard		✓



All work shall be in accordance with the NZBC. If in doubt ASK The Contractor must verify all dimensions on the job before commencing any work or shop drawings. Figured dimensions are to be used, scaled dimensions must be verified. This drawing and concept are copyright of Sudfelt Construction Ltd - Kapiti / Wellington Franchisee for G.J. Gardner Homes. The recipient of this document is prohibited from disclosing its content for any purpose without the prior written consent of Sudfelt Construction Ltd - Kapiti / Wellington Franchisee for G.J. Gardner Homes

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New Zealand's favourite home builders

Revisions:
MAY 31 / 2017 rev A

CONSENT
PLANS

Client:
GK PATE FAMILY TRUST

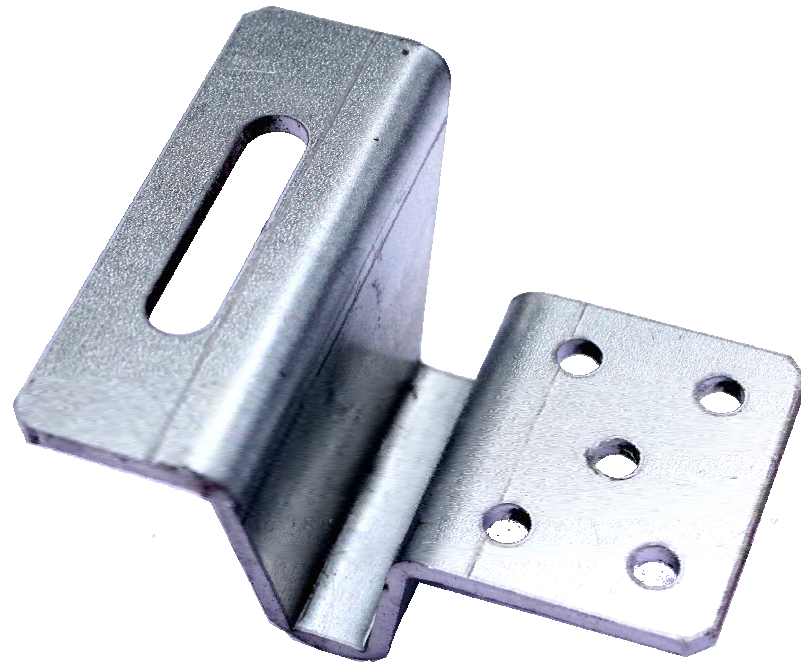
LOT 29 FERNDAL
WAIKANA

Drawing Title:
E2 MATRIX

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Design:
G.J. Gardners
Drawn:
bf
Scale:
as shown
Job: 970111 Page of: 14 Rev: A

AHI Roofing Solar Brackets



AHI Roofing Solar Brackets

