SPECIFICATION
of work to be done and materials to be used in carrying out the works shown on the accompanying drawings

Cairnfield House

Project Specification

52-60 Jack Street, Otangarei, Whangarei, New Zealand
Project Ref: CAIRNFEILD

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1013 DOCUMENT CONTROL

1 DOCUMENT CONTROL

Document Control

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2112 PARTIAL DEMOLITION

1 GENERAL

This section relates to the partial demolition of existing buildings and structures, to the extent necessary to carry out the contract works.

1.1 RELATED WORK

Refer to drawings.

Documents

1.2 DOCUMENTS REFERRED TO

Refer to the general section 1233 REFERENCED DOCUMENTS. The following documents are specifically referred to in this section:

NZBC F5/AS1	Construction and demolition hazards
NZDAA	Best practice guidelines for demolition in New Zealand
Health and Safety at Work Act 2015	

Documents listed above and cited in the clauses that follow are part of this specification. However, this specification takes precedence in the event of it being at variance with the cited document.

Requirements

1.3 QUALIFICATIONS

Carry out demolition

- only under the supervision of a suitably experienced person, using only operators and drivers trained for this work
- using only experienced certified construction blasters for explosives demolition
- calling upon engineering expertise in those areas of demolition required by the NZDAA Best practice guidelines for demolition in New Zealand.

1.4 HEALTH AND SAFETY

Comply with the Health and Safety at Work Act 2015 in general, NZBC F5/AS1 and NZDAA Best practice guidelines for demolition in New Zealand, Section 5 Demolition safety

1.5 DEMOLITION WORKING TIMES

Times during which demolition may be carried out is not restricted. Comply with territorial authority consent conditions and noise and nuisance controls.

1.6 DEMOLITION TIME RESTRICTIONS

Times during which demolition work may be carried out is restricted. Refer to 4. SELECTIONS for times.

1.7 DEMOLITION WASTE REMOVAL RESTRICTIONS

The removal of demolition waste material is restricted. Refer to 4. SELECTIONS for details.

2 PRODUCTS

Materials

2.1 ELEMENTS FOR SALVAGE

Carefully dismantle, remove and store on site where directed. Protect from damage and weather.

2.2 ELEMENTS FOR RE-USE

Carefully dismantle, remove and store on site where directed. Protect from damage and weather until required.

2.3 REMAINING ELEMENTS

Store all elements not scheduled for salvage or re-use on site until convenient for removal.

2.4 MATERIAL AND ELEMENTS FOR DISPOSAL

Remove demolished material and elements continually from the site through the period of the demolition.

3 EXECUTION

Conditions

3.1 EXISTING SERVICES

Disconnect and seal off services before work commences. Protect services adjacent to the area being demolished.
Maintain services to occupied areas of the building, particularly fire services.

3.2 SITE INSPECTION

Visit and check the site, the building or structural work being demolished and any contents for likely hazards.

3.3 ADJOINING BUILDINGS

Check the relationship and condition, including the contents of adjacent areas and adjoining buildings to ensure they will not be adversely affected by the demolition work.

3.4 PLANS AND DESCRIPTIONS

Carefully examine all available plans of the building, including those of the territorial authority and the network utility operators, all descriptions and past uses, and become totally familiar with the past and present condition and use of the building and its services.

3.5 EXAMINE STRUCTURE

Examine roofs, walls, cantilevered structures and basements as required by the NZDAA Best practice guidelines for demolition in New Zealand and follow their requirements.

3.6 EXPOSED WALLS, ADJOINING BUILDINGS

Protect and make weathertight temporarily with 0.125mm black polythene film. Lap and tape joints to the manufacturer's requirements and nail or masonry nail to the wall face with 50mm x 25mm timber battens at 600mm centres.

3.7 PROTECTION

Erect approved temporary screens and shelter to protect from weather and damage, and to prevent dust and dirt penetrating those parts of the existing building, other buildings and the remainder of the site being retained in their present condition.

3.8 SAFETY DURING DEMOLITION

Refer to NZBC F5/AS1 and NZDAA Best practice guidelines for demolition in New Zealand. Carry out the requirements laid down in Section 5 Demolition safety in respect of:

- instability
- supervision
- plant, tools and equipment
- personal protective equipment
- protection of the public
- unauthorised access to site.

3.9 DEMOLITION PROCEDURES

Refer to the NZDAA Best practice guidelines for demolition in New Zealand Carry out the requirements laid down in section 6 Methods of demolition including:

- scaffolding
- health
- disposal of debris and waste material
- fire protection.

Application

3.10 CARRY OUT DEMOLITION

Carry out all demolition to the requirements of NZDAA Best practice guidelines for demolition in New Zealand.

Completion

3.11 MAKE GOOD

Make good damage to adjoining buildings or property caused by demolition work.

3.12 REINSTATE

Reinstate where any damage is caused by this demolition to those parts of the existing building, other buildings and the remainder of the site being retained.

3.13 LEAVE

Leave work to the standard required by following procedures.

3.14 TAKE AWAY

Take away from the site all plant, tools and equipment, temporary access works, and demolished materials and elements, to leave the site completely clean and tidy.

4 SELECTIONS

4.1 DEMOLITION TIME RESTRICTIONS

Demolition work is restricted to:

Weekdays:	~ to ~
Saturdays:	~ to ~
Sundays:	~ to ~
Public holidays:	~ to ~

4.2 DEMOLITION WASTE REMOVAL RESTRICTIONS

The removal of demolition waste material is restricted to:
T.B.C by contractor.

4.3 PROTECTION SCREENS

Provide the following protection screens to NZBC F5/AS1 to separate off and protect unaffected parts of the building:
Contractor to provide linkmesh fencing around new works.

4.4 ELEMENTS FOR DEMOLITION AND DISPOSAL

Element/component	Location
Exterior timber framing, cladding and internal timber framing and linings. Exterior concrete paving.	Refer to small Demolition plan **02/A120**

4.5 ELEMENTS FOR RE-USE

Element/component	Location	Location for re-use
Existing door - D.Ex.01 - refer to door schedule	Existing building	Existing building, new location

2133 TEMPORARY SUPPORT TO EXISTING STRUCTURES

1 GENERAL

This section relates to the temporary support of houses and similar existing structures during lifting for the construction of a new ground floor and for re-piling
It includes requirements for the management of adjacent site conditions

1.1 RELATED WORK

Refer to drawings.

Documents

1.2 DOCUMENTS REFERRED TO

Refer to the general section 1233 REFERENCED DOCUMENTS. The following documents are specifically referred to in this section:

NZBC F5/AS1	Construction and demolition hazards
NZDAA	Best Practice Guidelines for Demolition in New Zealand

Health and Safety at Work Act 2015

Documents listed above and cited in the clauses that follow are part of this specification. However, this specification takes precedence in the event of it being at variance with the cited document.

Requirements

1.3 QUALIFICATIONS

Work to be carried out by tradespeople experienced, competent and familiar with the materials and techniques specified.

1.4 DEMOLITION PLAN

Submit detailed written and/or drawn demolition and temporary support plan.

Quality control and assurance

1.5 INSPECTIONS

Inspect the area to be supported and confirm position for beams and pigsties to enable subsequent work to be carried out.

2 PRODUCTS

Materials

2.1 PIGSTIES

Timber bearers not less the 200mm x 100mm x 900mm in sound conditions with true faces to support the required loads.

2.2 ELEMENTS FOR SALVAGE OR RE-USE

Carefully dismantle, remove and store on site where directed. Protect from damage and weather until required.

3 EXECUTION

Conditions

3.1 SAFETY

All work to comply with WorkSafe NZ requirements, NZBC F5/AS1 and Health and Safety at Work Act 2015.

3.2 CONFIRM SITE SECURITY

Check site security arrangements both at the perimeter of the site and immediately adjacent to the area in which the temporary support is being carried out

3.3 ADJOINING PROPERTY

Support and protect adjoining property. Survey adjoining properties and take all precautionary measures necessary to avoid damage or nuisance. Copy of the survey results to be sent to adjoining property owners.

3.4 SUPPORT

Support and brace the existing structure during the cutting of new openings or the replacement of structural parts. Prevent debris from overloading any part of the structure. Do not remove supports until the new work is strong enough to support the existing structure. Ensure all work remains structurally stable and sound.

3.5 CHECK MATERIAL SUPPLIES

Confirm sufficient materials are available to enable the work to be safely carried out. Check and confirm: -

- Timber for use as pigsties
- Support beams and bearers
- Adjustable props, rope and wedges
- Lifting jacks

3.6 PROHIBIT OPERATION OF HEAVY MACHINERY

Ensure that no heavy machinery is operating in the immediate vicinity of the building until the building has been safely placed on the temporary supports

Installation/application

3.7 LIFTING

Carry out lifting for either excavating under, or for relocation, to the general requirements of the NZDAA publication: Best Practice Guidelines for Demolition in New Zealand, Section 5.7 Temporary support for removal or excavation under, including the precautions required during jacking and pigsty construction.

3.8 DISCONNECT SERVICES

Disconnect all services necessary prior to lifting the building.
Re-direct roof water downpipes away from the work area.

3.9 CHECK GROUND CONDITIONS AT JACKING POINTS

Check ground conditions at each lifting point. Ensure ground is level, has suitable bearing capacity and is otherwise free of loose and unsuitable material

3.10 PLACE TEMPORARY BEAMS FOR JACKING

Place support beam and bearers in positions to adequately support the structure and to allow for required construction work below the supported structure.

3.11 CONSTRUCT TEMPORARY SUPPORTS

Construct temporary supports progressively during lifting proceed so as to minimise damage from any premature collapse. Limit height of temporary supports to not more than 3 times the minimum base width. Ensure supports remain vertical and that the loads are supported evenly on them.

3.12 JACK BUILDING

Jack building evenly to WorkSafe NZ requirements and build support structure progressively as the building is lifted

3.13 COMPLETE TEMPORARY SUPPORT

When the building is at the required height, construct temporary braces or inclined props to provide adequate support against wind and earthquake loads.

3.14 COMPLETE SITE SAFETY ARRANGEMENTS

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Completion

3.15 ROUTINE CLEANING

Clear our building debris and other material from the work area below the supported structure. Keep area clear of materials not required for subfloor work

3.16 CHECK SUPPORT STRUCTURE

Carry out daily check of the temporary support structure to ensure safe working conditions for both workers working below the supported structure and for any workers carrying out work above the supported area.

3.17 PROTECTION

Provide the following temporary protection of the finished work:
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3.18 LOWER STRUCTURE ON TO NEW PERMANENT SUPPORT

Lower evenly on jacks progressively removing temporary supports, so as to minimise damage from any premature collapse

3.19 REMOVE TEMPORARY SUPPORTS

Once structure is on the permanent supports, fully supported, stable and secure, remove temporary supports and related items.

4 SELECTIONS

4.1 ITEMS FOR SALVAGE AND REUSE

Location:	D.Ex.01
Type/Brand:	Double acting door

2323 TIMBER PILE FOUNDATIONS

1 GENERAL

This section relates to timber pile foundations and subfloor bracing supporting timber framed floor construction.

1.1 RELATED SECTIONS

Refer to drawings.

Documents

1.2 DOCUMENTS

Refer to the general section 1233 REFERENCED DOCUMENTS. The following documents are specifically referred to in this section:

NZBC B1/VM4	Structure Foundations
NZS 3109	Concrete construction
NZS 3602	Timber and wood-based products for use in building
NZS 3603	Timber structures standard
NZS 3604	Timber-framed buildings
NZS 3605	Timber piles and poles for use in buildings
NZS 3640	Chemical preservation of round and sawn timber

1.3 MANUFACTURER/SUPPLIER DOCUMENTS

Manufacturer's and supplier's documents relating to this part of the work:
~

Manufacturer/supplier contact details

Company:	~
Web:	~
Email:	~
Telephone:	~

Requirements

1.4 CO-ORDINATION

Refer to all drawings and calculations to ensure details and fixings required are provided for in the installation of the piles and bracing work structure.

1.5 DESIGN AND INSTALLATION

Design and installation of piling system to comply with NZS 3604.section 6, **Foundationsand subfloor framing**, and to NZBC B1/VM4, **Structure Foundations**, 5.3 **Timber piles**.

Performance

1.6 COMPLIANCE, VISUAL GRADING AND PROOF TESTING

The pile structure to comply with NZS 3605.

- Ordinary piles are branded with a triangle brand.
- Anchor piles for residential piles to be visually branded "A".
- Construction piles and poles that require a high performance to be branded 'H" for "high category".

1.7 PROOF OF PRESERVATIVE TREATMENT

Provide evidence that the piles and poles have been treated to NZS 3640, H5 CCA (preservative code 01 or 02)

2 PRODUCTS

Materials

2.1 TIMBER PILES, SQUARE

Radiata pine, treated H5 CCA (preservative code 01 or 02) to NZS 3602, table 1A to design data assigned in NZS 3603, section 7 and complying with NZS 3605.4 Round or square house piles, for cross-section, length, straightness, grade, growth rings, durability, strength, and branding.

2.2 TIMBER PILE BRACING

Species, grade, moisture content in service and level of treatment to NZS 3602, tables 1B and 1C and grading to NZS 3603.

Components

2.3 CONCRETE

For pile footings 17.5 MPa ordinary grade concrete to NZS 3109, and NZS 3604, section 6.4.5, **Pile footings**.

2.4 NAILS / WIRE DOGS

Stainless steel and or hot dipped galvanized steel to NZS 3604, clause 6.5.2b, **Fixings** and section 4, Durability, clause 4.4, **Steel fixings and fastenings** and table 4.3, **Steel items such as nails and screws used for framing and cladding**.

2.5 BOLTS AND SCREWS

Stainless steel and or hot dipped galvanized steel to NZS 3604, Section 4 **Durability**, clause 4.4 **Steel fixings and fastenings**.

2.6 NAIL PLATES

Hot dipped galvanized steel toothed or nailed steel plates to NZS 3604, Section 4 **Durability**, clause 4.4 **Steel fixings and fastenings**, to the manufacturer's design for the particular locations shown on the drawings.

2.7 PROPRIETARY CONNECTORS

Stainless steel, hot dipped galvanized steel or epoxy coated hot dipped galvanized steel to the manufacturer's design for the particular locations shown on the drawings.

2.8 CORROSION RISKS

For exterior timber, timber in damp areas and timber subject to occasional wetting, use only stainless steel (or equivalent) fixings and connectors, when the timber is treated with; Copper Azole (CuAz, Preservative code 58), Alkaline Copper Quaternary (ACQ, Preservative code 90), Micronise Copper Azole (code 88) or Micronised Copper Quaternary (code 89).

3 EXECUTION

Conditions

3.1 GENERALLY

Comply with NZS 3602 and NZS 3604 except as varied by this specification. Execution to include those methods, practices and processes contained in the unit standards for the National Certificate in Carpentry.

3.2 EXCAVATION

Comply with NZS 3604 section 3, **Site requirements**, and section 6, **Foundations and subfloor framing**. Excavate for pile footings as detailed on the drawings.

Application - Placed piles

3.3 INSTALL SQUARE TIMBER PILES

Prepare, place, locate and secure to NZS 3604, section 6, **Foundations and subfloor framing**, and as detailed on the drawings. Cast piles in concrete footings.

Application - General

3.4 NOTCHES AND HOLES

Minimise notching and drilling of piles and poles within 300mm of the ground level.

3.5 TREAT CUTS

Brush-treat timber piles and poles cut after treatment with preservative to NZS 3640 appendix B4.

3.6 PILE BRACING

Brace piles to NZS 3604, clause 6.8, **Braced pile systems**. Refer to bracing plan for location of braces and to drawings for bracing details.

Completion

3.7 LEAVE

Leave work to the standard required by following procedures.

4 SELECTIONS

4.1 ORDINARY TIMBER PILES

Brand/type:	"Triangle" branded
Size:	125 x 125mm square
Treatment:	H5 CCA (preservative code 01 or 02)

4.2 BRACE TIMBER PILES

Brand/type:	"A" branded
Size:	125 x 125mm square
Treatment:	H5 CCA (preservative code 01 or 02)
Location:	Refer to bracing plan

4.3 SUB-FLOOR/PILE TIMBER BRACING

Species:	Pinus Radiata
Size:	100x75mm up to 3.0m long, 100x100mm up to 5.0m long
Treatment:	H1.2
Location:	

4.4 NAILS / NAIL PLATES / WIRE DOGS

Brand/type:	Lumberlok
Material < 600mm from ground:	Stainless steel 304
Material > 600mm from ground:	Hot dipped galvanized steel.
Location:	Refer to foundation plan.

4.5 PROPRIETARY CONNECTORS

Brand/type:	Lumberlok 12kn pile fixing
Material < 600mm from ground:	Stainless steel 304
Material > 600mm from ground:	Hot dipped galvanized steel.
Location:	Refer to foundation plan

4.6 BOLT FIXINGS

Brand/type:	M12
Material < 600mm from ground:	Stainless steel 305
Material > 600mm from ground:	Hot dipped galvanized steel.
Size:	12mm diameter
Washers:	50 x 50mm 3mm square
Location:	Refer to foundation plan.

3102 CONCRETE WORK - STANDARD

1 GENERAL

This section relates to formwork, reinforcement, concrete mixes and the placing of concrete.

1.1 RELATED WORK

Refer to drawings.

1.2 ABBREVIATIONS AND DEFINITIONS

Refer to the general section 1232 INTERPRETATION & DEFINITIONS for abbreviations and definitions used throughout the specification.

The following abbreviations apply specifically to this section:

DPM	Damp proof membrane
MPa	Megapascal
CCANZ	Cement and Concrete Association of New Zealand

The following definitions apply specifically to this section:

ACRS	Australian Certification Authority for Reinforcing Steels - An independent certification scheme for reinforcing steel and structural steel, by product and manufacturer/processor. Certifies compliance with Australia/New Zealand Standards. Web site - www.steelcertification.com

Documents

1.3 DOCUMENTS

Refer to the general section 1233 REFERENCED DOCUMENTS. The following documents are specifically referred to in this section:

NZBC B1/AS1	Structure
NZBC E2/AS3	External moisture
AS 1366.3	Rigid cellular plastics for thermal insulation - Rigid cellular polystyrene - Moulded (RC/PS - M)
AS 1478	Chemical admixtures for concrete, mortar and grout - Admixtures for concrete.
AS/NZS 2269.0	Plywood - Structural - Specifications
NZS 3101.1	Concrete structures standard
NZS 3104	Specification for concrete production
NZS 3109	Concrete construction
NZS 3112.1	Methods of test for concrete - Tests relating to fresh concrete
NZS 3114	Specification for concrete surface finishes
NZS 3121	Water and aggregate for concrete
NZS 3122	Specification for Portland and blended cements (General and special purpose)
NZS 3125	Specification for Portland-limestone filler cement
NZS 3604	Timber-framed buildings
NZS 3631	New Zealand timber grading rules
NZS 4229	Concrete masonry buildings not requiring specific engineering design
AS/NZS 4671	Steel reinforcing materials
AS/NZS 4672.1	Steel prestressing materials - General requirements
AS/NZS 4858	Wet area membranes
CCANZ CP 01	Code of practice for weathertight concrete and concrete masonry construction

1.4 MANUFACTURER/SUPPLIER DOCUMENTS

Manufacturer's and supplier's documents relating to this part of the work:
~

Manufacturer/supplier contact details

Company:	~
Web:	~
Email:	~
Telephone:	~

Requirements

1.5 QUALIFICATIONS

Workers to be experienced, competent trades people familiar with the materials and techniques specified.

Performance

1.6 TESTING

Carry out sampling and concrete acceptance tests during construction to NZS 3109.9. **Concrete acceptance tests during construction**. Conduct 7 day strength tests. After a 7 day test result of less than 60% of the specified strength, stop concrete placement until it is shown that the suspect concrete compiles with the specification.

Carry out slump tests, yield tests and air content tests to NZS 3112.1, sections 4, 5 and 9, and evaluate to NZS 3104.2.15. **Control tests and their evaluation**. Make available all test records to the contract administrator on request.

1.7 STEEL REINFORCING COMPLIANCE

Steel reinforcing and steel prestressing materials for concrete to AS/NZS 4671 or AS/NZS 4672.1, respectively. Steel to be manufactured in New Zealand, or by an overseas manufacturer holding a current valid NZ S Mark or ACRS certificate for that type of steel. Confirm compliance and provide evidence if requested.
Steel that fails to meet these requirements is not to be used (or ordered) without the contract administrators written approval, further proof and/or testing may be required.

1.8 QUALITY ASSURANCE

Carry out the whole of this work to the requirements of NZS 3109.

Quality assurance procedures to include all aspects of concrete construction including;

- Formwork quality
- Reinforcing steel placing
- Cast in items
- Concrete quality
- Concrete finishes
- Construction tolerances

Advise the name of the suitably qualified and experienced representative who is responsible for quality control of the concrete work. The representative is to sign a written quality control checklist for each on-site concrete pour. Provide a copy to the construction reviewer in sufficient time for a pre-pour inspection on request.

1.9 INSPECTION NOTIFICATION REQUIREMENTS

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1.10 INSPECTIONS BY CONSTRUCTION REVIEWER

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1.11 INSPECTIONS BY BUILDING CONSENT AUTHORITY

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2 PRODUCTS

Materials

2.1 CEMENT

Portland cement to NZS 3122.

2.2 CEMENT, FILLER

Portland limestone filler cement to NZS 3125.

2.3 SAND

To NZS 3121.

2.4 COARSE AGGREGATE, NORMAL CONCRETE

To NZS 3121, except as modified by NZS 3104: clause 2.4.3, Coarse aggregate. The total mass of reactive alkali in the concrete mix to not exceed the requirements of section 2 of the Cement and Concrete Association, Alkali Aggregate Reaction publication.

2.5 WATER

To NZS 3121.

Concrete

2.6 NORMAL CONCRETE

Normal concrete 17.5, 20, 25 MPA up to 50 MPa grade, (refer to SELECTIONS), maximum aggregate size 19mm ready-mixed to NZS 3104. Provide delivery dockets listing mix and despatch details.

2.7 MASS CONCRETE

Concrete having a minimum strength of 10 MPa at 28 days

Reinforcement

2.8 GRADE 300E STEEL

To AS/NZS 4671. Round bars are shown by symbol "R" and deformed bars by symbol "D", followed by the diameter in millimetres.

2.9 GRADE 500E STEEL

To AS/NZS 4671. Round bars shown by symbol "HR" and deformed bars by symbol "HD" followed by diameter in millimetres.

2.10 WELDED WIRE FABRIC

Hard drawn steel wire spot welded with correct gauge to AS/NZS 4671 Class E, smooth or deformed and to the spacings and dimensions either specified or shown on the drawings.

2.11 TYING WIRE

Mild drawn steel wire not less than 1.2mm diameter.

2.12 SPACERS AND CHAIRS

Precast concrete or purpose made moulded PVC to approval. Where concrete spacer blocks are used in exposed concrete work use blocks similar to surrounding concrete.

Formwork

2.13 TIMBER BOARDS

Dressing or merchantable grade radiata pine to NZS 3631 for shutter face, to obtain the concrete finish specified.

2.14 PROPRIETARY STEEL

An approved proprietary steel formwork and shutter system.

2.15 STRUCTURAL PLYWOOD

To AS/NZS 2269.0 for shutter face with plywood grade as necessary to obtain the concrete finish specified.

2.16 TIMBER FALSEWORK

No. 2 framing radiata pine or as required to construct the required formwork.

2.17 RELEASE AGENT

A release agent that will not stain or adhere to the concrete, contaminate reinforcing steel or construction joints, or have a detrimental effect on any finished surface or applied finishes.

3 EXECUTION

3.1 HANDLE AND STORE

Handle and store reinforcing steel and accessories without damage or contamination. Store on timber fillets on hard ground in a secure area clear of any building operation. Lay steel fabric flat.
Ensure reinforcement is clean and remains clean so that at the time of placing concrete it is free of all loose mill scale, loose rust and any other contamination that may reduce bonding capacity.

Fix formwork

3.2 LOADINGS

Design and construct formwork and falsework in accordance with sound engineering principles to withstand the worst combination of:

- dead loads of formwork, reinforcement, concrete and precast elements such as floor planks
- construction loads including dynamic effects of placing, compacting and construction traffic
- wind and snow loads

3.3 PROVIDE ALL FORMWORK

Provide all formwork necessary to support and confine the concrete and shape it to the required dimensions. Fabricate in a manner permitting its easy removal without damage to the concrete.

Provide a 20mm x 20mm chamfer to all corners unless detailed otherwise. Protect corners from damage during and after stripping.
Keep absorbent formwork wet before concrete is placed. Clean formwork by waterblasting.

3.4 FALSEWORK

Carry strutting down to a construction sufficiently strong and stable to afford the required support without permissible stress or deflections being exceeded. Prop through to other floors if the construction load on a particular suspended floor exceeds the design load.

3.5 ACCURACY

Unless stated otherwise on the drawings permissible deviations from established lines, grades, dimensions and cambers to remain within the tolerances laid down in NZS 3109: table 5.1, **Tolerances for precast components** and table 5.2, **Tolerances for in situ construction**.

3.6 TOLERANCES OF CONCRETE SURFACE FINISHES

Unless stated otherwise on the drawings, permissible abrupt, offset and gradual deviations for the specified surface finish to remain within the tolerances laid down in NZS 3114: table 3, **Tolerances for abrupt deviations or offsets and gradual deviations**.

3.7 EXPOSED CONCRETE

Formwork linings and surface finishes as nominated for both fair face and concealed or exposed surfaces. Unless detailed, obtain written confirmation of the type and pattern of all joints.

3.8 JOINTS IN FORMS

Construct joints to prevent loss of grout between joints in form linings, as well as between forms and completed work. Column forms to have full height linings so that no horizontal joints occur on exposed faces.

3.9 CAMBERS

Cambers shown on the drawings or specified, relate to the concrete immediately before formwork is struck. Unless otherwise shown on drawings, construct forms to achieve the following:

- maximum deflection of face materials between strutting: 1/240th of span, but not exceeding 6mm.
- maximum deflection of beams: 1/900th of span
- maximum deflection of cantilevers supporting construction loads: 1/300th of cantilever length.

3.10 STRIKING FORMWORK

Ensure the safe removal of all or any part of the formwork. Remove without shock, vibration or damage to the concrete and in such a manner as to take the imposed stresses gradually to NZS 3109.5.4. Stripping times to NZS 3109 table 5.3.

Install reinforcing

3.11 CUT AND BEND

Cut and bend bars using proper bending tools to avoid notching and to the requirements of NZS 3101.1, 8 and NZS 3109: 3.3 **Hooks and bends**. Minimum radii of reinforcement bends to NZS 3101.1, 8 and NZS 3109: table 3.1, **Minimum radii of reinforcement bends**. Do not rebend grade 500E bars. Where rebending is necessary for grade 300E bars, use a purpose built tool, proper preparation and preheating.

3.12 ADJUSTMENTS

Use a purpose built tool for on site bending and to deal with minor adjustments to steel reinforcement.

3.13 TOLERANCES, BENDING

To NZS 3109, 3.9, Tolerances for reinforcement.

3.14 SECURE REINFORCEMENT

Secure reinforcement adequately with tying wire and place, support and secure against displacement when concreting. Bend tying wire back well clear of the formwork. Spacing as dimensioned, or if not shown, to the clear distance minimums in NZS 3109, 3.6, **Spacing of reinforcement**.

3.15 LAPPED SPLICES

Length of laps where not dimensioned on the drawings in accordance with the SELECTIONS. Increase laps of plain round steel by 100%. Provide laps only where indicated on the drawings. Tie all lapping bars to each other.
Welded wire mesh laps to NZS 3101, lap one mesh square plus 50mm minimum (do not count bar extension beyond the outermost wire).

3.16 REINFORCEMENT COVER TO NZS 3604 OR NZS 4229

For in-situ concrete, foundations and interior slabs on ground, to NZS 3604 or NZS 4229, the reinforcement and welded mesh cover to be:

Location, cover to	NZS 3604	NZS 4229
Footing, to earth	75mm	75mm
Footing, to DPM	75mm	50mm
Foundation, to edge	75mm	75mm
Slab, to slab top	30mm	30mm
Slab, to slab edge	50mm to 75mm	50mm to 75mm

3.17 CASTING IN

Build in all grounds, bolts and fixings for wall plates and bracing elements, holding down bolts, pipes, sleeves and fixings as required by all trades and as shown on the drawings, prior to pouring the concrete.

Do not use grounds exceeding 100mm in length. Location and form of conduits to be approved in writing by the Contract Administrator. Minimum cover 40mm. Do not encase aluminium items in concrete. Do not paint steel embedded items more than 25mm into the concrete encasement. Cut back form ties to specified cover and fill the cavities with mortar.

Form all pockets, chases and flashing grooves as required by all trades and as shown on the drawings.

Wrap all pipes embedded in concrete with tape to break the bond and to accommodate expansion. Do not embed pipes for conveying liquids exceeding a temperature of 50°C in concrete.

Place concrete

3.18 PRE-PLACEMENT INSPECTION

Do not place concrete until all excavations, boxing and reinforcing have been inspected and passed by the Building Consent Authority.

3.19 UNFAVOURABLE CONDITIONS

Do not place concrete in high winds or other unfavourable conditions. Refer to NZS 3109: 7.2 Unfavourable conditions, for when concrete may not be placed. Remove and make good concrete damaged by frost, dry and wet conditions.

3.20 PROTECT CONCRETE WORK

Protect formwork, reinforcement, "build in" items and fresh concrete from damage, as the pour is placed, making good any damage if it occurs.

3.21 TRANSPORT CONCRETE

Transport concrete from agitator to final placement as quickly as possible using means that avoid segregation.

3.22 PUMPING CONCRETE

Set up and supervise pump operation, placing and compaction of the mix to NZS 3109, 7.4, Handling and placing and NZS 3109, 7.6, Compaction Advise the ready-mix supplier of the type of pump and the slump required, in addition to the concrete grade, strength and quantity.

3.23 PLACE CONCRETE

Place concrete in layers not more than 500mm deep, compacted and vibrated. Do not place fresh concrete against the preceding layer after more than 45 minutes, or such lesser time as required by the circumstances, to NZS 3109: clause 7.4, Handling and placing.

3.24 COMPACT CONCRETE

To NZS 3109: clause 7.6, **Compaction**. Compact by vibration of the concrete to expel entrapped air and until settlement of the concrete is visibly evident over all areas of the surface. Maintain vibration until settlement ceases and coarse aggregate at the surface is embedded. Do not continue vibration beyond reaching this condition.

3.25 VIBRATORS

Use sufficient immersion vibrators, with one spare for emergency, to ensure that vibration is achieved throughout the entire volume of each layer of concrete, and until complete compaction is reached, to NZS 3109: clause 7.6, **Compaction**.

Finishing

3.26 SURFACE FINISHES

To NZS 3114, 105, **Specification of finishes**, for off the form finishes and to NZS 3114, Part 3, **Floors, exterior pavements, and inverts**, for slabs and pavements. Refer SELECTIONS.

3.27 SAW CUTS TO NZS 3604 OR NZS 4229

Cut slabs where indicated on the drawings as required to control shrinkage cracking. Form by saw cutting the slab (blade width approximately 5 mm) to a quarter of the depth of the slab after it has hardened (saw cutting shall take place no later than 24 hours after initial set for average ambient temperatures above 20 ºC, and 48 hours for average ambient temperatures below 20 ºC).

3.28 SAW CUTS

Cut slabs where indicated on the drawings and as required to control shrinkage cracking. Carry out cutting as soon as possible, without causing tear-out of aggregate and before shrinkage cracking has occurred, generally within 24 hours of pouring. Where saw cuts are to be made, cut out 100mm of every second wire of the mesh for a length of 50mm each side of the saw cut position. Saw cuts: 1/3rd slab depth or 30mm minimum

3.29 SPACING OF SAW CUTS

Floor situation	Maximum spacing of sawcuts both ways
Industrial floor	5m
Architectural, exposed floor, thin finishes, rigid finishes	4m
Carpet on underlay flooring	6m
Supermarket floor	5m

Curing

3.30 CURING PERIOD

Cure all concrete of normal cement type and mixing proportions for a minimum of 7 days. Keep time between placing of concrete and the start of curing to an absolute minimum. Ensure curing is continuous.

3.31 CURING METHOD

Notify the curing method to be used for this work. Select from the following methods;

- Ponding
- Sprinkling
- Wet coverings
- Plastic sheet
- Curing compound

3.32 KEEP ABSORBENT FORMWORK MOIST

Keep formwork left in place continuously moist by sprinkling with water over the curing period. Continue sprinkling the exposed surface if the formwork is removed before the end of the curing period.

3.33 SECURE COVERINGS

When covering with sheet materials, ensure that edges are well secured throughout the specified curing period, to prevent draughts passing over the surfaces of the concrete.

3.34 COLD WEATHER

Do not use coverings employing water at times of freezing weather.

Protect

3.35 PROTECT PLASTIC CONCRETE

Protect plastic concrete from indentation and surface marking.

3.36 PROTECT HARDENED CONCRETE

Protect surfaces of stripped concrete from damage especially at arrises.

3.37 PROTECT EXPOSED SURFACES

Protect from rust marks and other surface disfigurements.

Defects

3.38 DEFECTS

Reject concrete with structural defects. Immediately after stripping formwork, identify all defects and obtain direction. Do not carry out any repair work until directed and then only in accordance with the direction. Repair defects by cutting out, making good and replacing, or otherwise as directed.

3.39 SURFACE DEFECTS

Make good surface defects immediately after forms are stripped. Make good hollows or bony areas with 1:2 mortar or plaster, finished to the same tolerances as the parent concrete. Fill any tie rod holes with 1:2 mortar.

Completion

3.40 REMOVE

Remove all unused materials and all concrete and reinforcing debris from the site.

4 SELECTIONS

4.1 REINFORCEMENT LAPS

Where reinforcement laps are not shown on the drawings, lap as follows:

Bar Diameter	Grade 300E deformed	Grade 500E deformed
10mm	400mm	650mm
12mm	500mm	750mm
16mm	650mm	1000mm
20mm	800mm	1250mm
25mm	1000mm	1600mm
32mm	1200mm	2000mm

4.2 NORMAL CONCRETE

Location:	Refer to drawings.
Concrete grade:	17.5 MPa.
Add to mix:	N/A

4.3 SURFACE FINISHES PAVEMENTS AND DRIVEWAYS

Surface finish class to NZS 3114: table 2, Classes of floor, exterior pavement and invert finishes.

Finish class	Location
U2 wood float finish	new exterior paving to match existing.

3811M MITEK (GANG-NAIL) PREFABRICATED TIMBER TRUSSES

1 GENERAL

This section relates to the manufacture, supply and erection, of prefabricated:

- MiTek® timber roof trusses (GANG-NAIL® roof trusses)
- MiTek® bolted style timber roof trusses - (GANG-NAIL®) XPOTRUSS roof trusses
- MiTek® floor trusses (Posi-STRUT® truss systems)
- MiTek® rafter and purlin trusses (Posi-STRUT® truss systems)

1.1 RELATED WORK

Refer to 3821M MITEK TIMBER FRAMING for general timber framing, bracing, lintels, beams etc.

1.2 ABBREVIATIONS AND DEFINITIONS

Refer to the general section 1232 INTERPRETATION & DEFINITIONS for abbreviations and definitions used throughout the specification.

The following abbreviations apply specifically to this section:

FTMA	Frame and Truss Manufacturers Association of New Zealand Inc.
SED	Specific Engineering Design

Documents

1.3 DOCUMENTS

Refer to the general section 1233 REFERENCED DOCUMENTS. The following documents are specifically referred to in this section:

NZBC B1/VM1	Structure
NZBC B2/AS1	Durability
AS/NZS 1170.0	Structural Design Actions - General principles
AS/NZS 1170.2	Structural Design Actions - Wind actions
NZS 1170.5	Structural Design Actions - Earthquake actions - New Zealand
NZS 3602	Timber and wood-based products for use in building
NZS 3603	Timber structures standard
NZS 3604	Timber-framed buildings
NZS 3640	Chemical preservation of round and sawn timber
FTMA CoP	Frame and Truss Manufacturers Association Code of Practice

1.4 MANUFACTURER/SUPPLIER DOCUMENTS

Manufacturer's and supplier's documents relating to this part of the work:
MiTek® (GANG-NAIL®) Roof Truss System Manual
MiTek® (GANG-NAIL®) Roof Truss Installation manual
MiTek® (GANG-NAIL®) XPOTRUSS Roof Truss System brochure
MiTek® (GANG-NAIL®) Posi-STRUT® Truss System Manual
MiTek® Structural Fixings On-site guide for Building Code Compliance (2012)
For the latest version of the documents refer to the manufacturer's web site.

Manufacturer/supplier contact details

Company:	**MiTek NewZealand Limited**
Web:	www.miteknz.co.nz
Email:	design@miteknz.co.nz
Telephone:	09 274 7109 or 03 348 8691

Requirements

1.5 QUALIFICATIONS

Fabricators to be experienced competent workers, familiar with the materials and the techniques specified. Fabrication companies to be MiTek® accredited fabricators.

1.6 NO SUBSTITUTIONS

Substitutions are not permitted to any of the specified systems, components and associated products listed in this section.

1.7 DESIGN CRITERIA NON-SPECIFIC DESIGN

Individual timber framing members used separately, but in association with the trusses, to NZS 3604.

1.8 DESIGN CRITERIA SED

Frames and trusses to, Alternative Solution MiTek® 20/20 Design Programme, NZBC B1/VM1, AS/NZS 1170.0, AS/NZS 1170.2, NZS 1170.5 and NZS 3603.

Documentation for Building Consent/Code Compliance Certificate

1.9 DOCUMENTATION - FABRICATOR / MANUFACTURER

To NZS 3604, 10.2.2.3 **Drawings and Specifications** and the provisions/requirements of the following related clauses.

1.10 PROVISION OF STATEMENTS

Provide the following documentation. The statements shall include the name and position within the company of the person providing the statement.
Fabricator Design and Manufacturing Statements shall be noted as being:

- Issued by a named company, accredited as a fabricator by the nail plate manufacturer
- Issued to the named Owner and available for use by a BCA to assist in determining compliance with the NZBC.

1.11 SHOP DRAWINGS

Provide drawings showing the trusses and their layout;

- one prior to fabrication (buildable truss layout) for consent purposes.
- one post fabrication As Built (as fabricated layout) for construction and code compliance purposes.

The drawing shall be identified as 'Buildable' or 'As Built' (as fabricated) and shall include the following:

- The name and contact details of the accredited fabricator
- The job/design reference name or number
- The site address/location

Site specific structural and loading information including

- Pitch
- Cladding type
- Wind and snow loading values
- Date drawn
- A truss layout with truss labels and dimensions to locate the trusses on the supporting structure
- Identification of all load bearing walls/beams used to support trusses
- Specification and location of truss to truss and truss to top plate fixings or notification that such items are specified by others
- Identification of the location of any resulting loads where the design of the supporting member will be outside the scope of NZS 3604 (point loaded lintels and point loads on internal walls where the downward and upward loads are higher than 16kN) and where appropriate, any slab thickening required
- Reference to the Fabricator Design Statement

1.12 AS BUILT DOCUMENTS

Refer to the general section 1238 AS BUILT DOCUMENTATION for the requirements for submission and review of as built documents and records.

Provide the following as built documents and records:
~

- Provide final post fabrication as built information for construction and code compliance purposes. .

1.13 DESIGN STATEMENT - FABRICATOR

Provide a Design Statement issued by the fabricator listing the job specific inputs used in the design process.

The Design Statement shall identify:

- The name and contact details of the accredited fabricator
- The name of the software/nail plate manufacturer that has accredited the fabricator
- Software date/version
- Reference to the Producer Statement - Design
- Supporting compliance documents including standards for material grades and sizes
- The job/design reference name or number
- The site address/location

Job specific information:

- Loads allowed for in the specific design including dead loads (cladding and ceiling) and live loads (wind and snow)
- Roof pitch
- Nominal overhang length
- Importance Level

Design working life:

- A list of the designed trusses, spans and maximum spacing
- Date of design

1.14 PRODUCER STATEMENT - DESIGN

Provide a Producer Statement - Design issued by the software provider, supporting the software and the engineering principles being applied by the software.

The Producer Statement shall:

- Have a level of detail consistent with that of an IPENZ Producer Statement PS1
- State the means of compliance with NZBC
- Reference the truss layout and Fabricator Design Statements
- Identify the job/design reference name or number
- Identify the software date/version
- Be signed by a Chartered Professional Engineer

1.15 MANUFACTURING STATEMENT

Provide a statement to support the manufacture of the roof trusses, issued by a fabricator after manufacture has occurred and identifying:

- The job/design reference name or number
- The site address/location
- The name and contact details of the accredited fabricator
- The name of the software/nail plate manufacturer that has accredited the fabricator
- That the trusses were manufactured in accordance with the Fabricator Design Statement
- The name and position within the company of the person providing the statement

Truss identification

1.16 IDENTIFICATION OF TRUSSES ON-SITE

A selection of trusses in a job lot manufactured by a fabricator shall carry identification labels or markings fitted during manufacture, to NZS 3604, 10.2.2.5, **Truss identification**.

Identification shall be evident on the bottom chords of main rafter or girder trusses on a minimum of 6 trusses in a job lot, or on every truss where there are less than 6 trusses in the job lot.

Identification text shall be a minimum of 10mm high and shall include:

- The fabricator name
- The nail-plate manufacturer name
- The job/design reference name or number

2 PRODUCTS

Materials

2.1 MITEK TRUSSES - TIMBER

Structural grade timber to NZS 3602, NZBC B2/AS1, gauged, maximum moisture content of 20%, treated to NZS 3640, NZBC B2/AS1, hazard class H1.2 and identified with its unique identifier.

2.2 MITEK ROOF TRUSSES - TOOTHED PLATE

MiTek® (GANG-NAIL®) timber roof trusses with toothed plate connectors. Design and layout to be determined by a MiTek® accredited fabricator, refer SELECTIONS.

Accessories

2.3 STEEL TOOTHED CONNECTOR PLATES

GANG-NAIL® 1.0mm to 2.0mm thick steel sheet, Z275 galvanized to NZS 3604, table 4.2, **Galvanizing of steel components other than nails and screws** and punched to form a toothed connector. For (roof) spaces designated closed environments to NZS 3604.

2.4 STAINLESS STEEL TOOTHED CONNECTOR PLATES

GANG-NAIL® 1.2mm to 2.0mm thick 316 grade, GS12 stainless steel sheet, punched to form a toothed connector.

2.5 BOWMAC GALVANIZED STRUCTURAL BRACKETS

MiTek® BOWMAC® >3mm thick steel plate brackets, hot-dip galvanized to NZS 3604, table 4.2, **Galvanizing of steel components other than nails and screws** with hot-dip galvanised bolts/screws and washers.

2.6 BOWMAC STAINLESS STEEL STRUCTURAL BRACKETS

MiTek® BOWMAC® >3mm thick, 304 stainless steel plate brackets with stainless steel bolts/screws and washers.

2.7 CORROSION RISKS

For interior timber, treated with copper-based timber preservatives (H3.2 or higher), use a minimum of hot-dipped galvanized steel fixings and fasteners.

For exterior timber, timber in damp areas and timber subject to occasional wetting, use only stainless steel (or equivalent) fixings and connectors, when the timber is treated with; Copper Azole (CuAz, Preservative code 58), Alkaline Copper Quaternary (ACQ, Preservative code 90), Micronise Copper Azole (code 88) or Micronised Copper Quaternary (code 89).

3 EXECUTION

Conditions

3.1 COMPLY

Comply with current standards, code requirements and the FTMA CoP in the design and fabrication of trusses and frames.

3.2 DELIVER, HANDLE AND STORE TRUSSES AND FRAMES

Deliver, handle and store frames and trusses so no structural damage occurs, corners and edges are not damaged, or surfaces marked or stained. Follow manufacturer's requirements. Handle all frames and trusses with nylon strops or similar to prevent damage. Store under cover and clear of the ground, to keep dry prior to installation.

Fabrication

3.3 DIMENSIONS, NOT EXPOSED ELEMENTS

Each member calculated length ±3mm. Width and thickness to gauging tolerances. Each overall joint within ±3mm of correct outside profile (including camber allowance).

3.4 FABRICATION

Factory fabricate to the GANG-NAIL® Manufacturing System. Build camber into all elements to accommodate normal deflection under load. Lay up members accurately with all joints tight fitting. Mechanically press plates to manufacturer's tolerances, fully and flat over their whole area into the members forming the joint.

Site installation

3.5 MITEK (GANG-NAIL) ROOF TRUSS ERECTION

To MiTek® (GANG-NAIL®) Roof Truss Installation manual.
Lift, place and fix trusses without overstressing or deformation. Use temporary supports as needed without causing damage. Fit trusses to wall plates and beams to MiTek® (GANG-NAIL®) requirements, but no less than NZS 3604, section 10, **Roof framing** and in particular section 10.2.2, **Roof trusses**. Fit and fix bracing as detailed and to NZS 3604: section 10.2.2, **Roof trusses** and section 10.3, **Systems to resist horizontal loads**. Ensure all trusses are correctly located, plumb and true to line and face.

3.6 MITEK (GANG-NAIL) ROOF TRUSS CONNECTION AND FIXING

To MiTek® (GANG-NAIL®) Roof Truss Installation manual.
Fit connectors and fixings to obtain full bearing over all contact surfaces and ensure the required loading capacity for the truss and frame roof is maintained. Fix each roof framing member in accordance with MiTek® (GANG-NAIL®) requirements and NZS 3604, Section 10, **Roof framing.** Ensure the size, number and location of nails to be used in roof framing comply with requirements of Table 10.8, **Nailing schedule for hand-driven and power-driven nails**, or to engineering specific design. Ensure all elements are correctly located, plumb and true to line and face.

3.7 ROOF BRACING

Refer to 3821M MITEK TIMBER FRAMING for roof bracing of trussed roofs.

3.8 WALL BRACING

Refer to 3821M MITEK TIMBER FRAMING for wall bracing.

3.9 DPC TO TIMBER

Lay DPC between all timber frames and concrete, in a single layer with 50mm overlaps at joints to provide a waterproof barrier. For LOSP treated timber use only a DPC specifically suitable with LOSP treatment.

3.10 TIGHTEN BOLTS

Check and tighten any related fixing bolts after erection is completed.

Completion

3.11 REPLACE

Replace or repair damaged elements.

3.12 REMOVE

Remove debris, unused materials and elements from the site.

3.13 LEAVE

Leave work to the standard required by following procedures.

4 SELECTIONS

For further details on selections go to www.miteknz.co.nz.
Substitutions are not permitted to the following, unless stated otherwise.

4.1 MITEK (GANG-NAIL) ROOF TRUSSES

Location:	Refer to drawings.
Brand/type:	**MiTek® (GANG-NAIL®) timber roof trusses**
Species:	Radiata pine (gauged)
Moisture content:	20% maximum
Treatment:	H1.2
Connector finish:	Refer to Carters Truss Design, JOB No. FW97616
End connectors:	LUMBERLOK® Refer to Carters Truss Design, JOB No. FW97616

3813F CHH WOODPRODUCTS NZ - LVL STRUCTURAL FRAMING

1 GENERAL

This section relates to the supply and installation of Carter Holt Harvey engineered wood products including:

- Hyjoist®
- Hyspan®
- Hychord®
- Hy90®
- Hyone®

1.1 RELATED WORK

Refer to 3811 PREFABRICATED STRUCTURAL TIMBER FRAMING for supply of trusses and frames.

Documents

1.2 DOCUMENTS

Refer to the general section 1233 REFERENCED DOCUMENTS. The following documents are specifically referred to in this section:

NZBC B1	Structure
AS/NZS 2269.0	Plywood - Structural - Specifications
NZS 3604	Timber-framed buildings
AS/NZS 4357.0	Structural laminated veneer lumber - Specifications

Documents listed above and cited in the clauses that follow are part of this specification. However, this specification takes precedence in the event of it being at variance with the cited document.

1.3 MANUFACTURER'S DOCUMENTS

CHH **Woodproducts NZ** documents relating to work in this section are:

Hyone®	Product information and span tables on high stiffness beams where depth is limited
Hyspan®	Span tables for residential building
Hyjoist®	Design and Installation Guide
Hy90®	Lintels for residential construction - Information for design and installation
Hychord®	Technical note
designIT®	Software including installation details and design certificate

Copies of the above literature are available from CHH **Woodproducts NZ**

Web:	www.chhfuturebuild.com in the New Zealand section
Email:	futurebuild@chhwoodproducts.co.nz
Telephone:	0800 808 131 Technical Helpline

Requirements

1.4 NO SUBSTITUTIONS

Substitutions are not permitted to any specified Carter Holt Harvey engineered wood products or associated components or accessories. The structural properties of other manufactures LVL products may not be comparable.

1.5 QUALIFICATIONS

Carry out the installation of the structural LVL work with experienced and competent tradesmen familiar with the materials and techniques specified.

1.6 CO-ORDINATION

Refer to all drawings to ensure details and fixings required are provided for in the structural LVL work.

2 PRODUCTS

Materials - laminated veneer lumber

2.1 HY90 LINTEL

Structural LVL lintels to AS/NZS 4357.0.

Components

2.2 STEEL STRAPS

Mild steel galvanized steel straps to suit application, 27mm x 0.6mm, 25mm x 0.8mm and 25mm x 1.0mm.

3 EXECUTION

Conditions

3.1 DELIVER AND HANDLE

Deliver and handle members so no structural damage occurs, corners and edges are not damaged, or surfaces marked or stained.

3.2 HANDLING

Handle LVL with nylon strops or similar to prevent damage.

3.3 STORE

Stack on level bearers, 150mm minimum clear of the ground. Store under cover to keep dry prior to installation.

3.4 DEFECTS

Discard material showing visual defects affecting its structural integrity.

3.5 ERECTION GENERALLY

Carry out the erection of LVL and associated support framing for houses and similar structures to the requirements of NZS 3604. Comply with NZBC B1/VM1, 6.0 Timber. Refer to CHH **Woodproducts NZ** guidelines for the installation of LVL structural framing. Reseal cut ends, holes, notches and the like of treated LVL with a brush on solvent based preservative. Prop long length beams and lintels at the mid span until the moisture content has reached a suitable level for the application of internal linings.

Application - Hy90 & Hyone

3.6 ERECTION GENERALLY

Lift, place and fix Hy90 and Hyone without overstressing or deformation. Use temporary supports as needed without causing damage. Fix Hy90 to NZS 3604 and to CHH **Woodproducts NZ** requirements. Ensure all Hy90 is correctly located, plumb and true to line and face.

3.7 LINTEL END CONNECTIONS

To Hy90 and Hyone Lintels for residential construction - Information for design and installation for lintel end connections and cantilevered lintel connections construction details and to NZS 3604 for trimming stud connections and to strap where required for wind uplift.

3.8 CANTILEVERED LINTEL CONNECTIONS

To Hy90 and Hyone Lintels for residential construction - Information for design and installation for lintel end connections and cantilevered lintel connections construction details and to NZS 3604 for trimming stud connections and nail plate, on plate and on cleat fixings as required for wind uplift.

Completion

3.9 REPLACE

Replace or repair damaged elements.

3.10 REMOVE

Remove debris, unused materials and elements from the site.

3.11 LEAVE

Leave work to the standard required by following procedures.

4 SELECTIONS

Substitutions are not permitted to the following, unless stated otherwise.

4.1 HY90® LINTELS

Location:	Refer to attached Carters design. JOB No. FW97616
Type/size:	Hy90 150mm x 90mm
Treatment	H3.1

4.2 HY90® LINTELS

Location:	Refer to attached Carters design.
Type/size:	Hy90 200mm x 90mm
Treatment	H3.1

4.3 HY90® LINTELS

Location:	Refer to attached Carters design. JOB No. FW97616
Type/size:	Hy90 400mm x 90mm
Treatment	H3.1

3821 TIMBER FRAMING

1 GENERAL

This section relates to the supply and erection of timber framing, as a framed structure, or as part of a partitioning system.

1.1 RELATED WORK

Refer to drawings.
Refer to 2323 TIMBER PILE FOUNDATIONS for piles.
Refer to 4161 UNDERLAYS, FOIL AND DPC for underlays, foils and DPC.
Refer to 4711E for Expol Insulation.

1.2 ABBREVIATIONS AND DEFINITIONS

Refer to the general section 1232 INTERPRETATION & DEFINITIONS for abbreviations and definitions used throughout the specification.

The following abbreviations apply specifically to this section:
SG Structural grade to NZS 3604, 1.3 **Definitions**

Documents

1.3 DOCUMENTS

Refer to the general section 1233 REFERENCED DOCUMENTS. The following documents are specifically referred to in this section:

NZBC B2/AS1	Durability
AS/NZS 2904	Damp-proof courses and flashings
NZS 3602	Timber and wood-based products for use in building
NZS 3603	Timber structures standard
NZS 3604	Timber-framed buildings
NZS 3622	Verification of timber properties
NZS 3631	New Zealand timber grading rules
NZS 3640	Chemical preservation of round and sawn timber
WorkSafe NZ	Guidelines for the provision of facilities and general safety in the construction industry.
BRANZ BU 582	Structurally fixed cavity battens

A copy of** NZS 3604 **Timber-framed building, must be held on site.

1.4 MANUFACTURER/SUPPLIER DOCUMENTS

Manufacturer's and supplier's documents relating to this part of the work:
Contractor to supply.

Manufacturer/supplier contact details

Company:	~
Web:	~
Email:	~
Telephone:	~

1.5 DIMENSIONS

All timber sizes except for roof battens are actual minimum dried sizes.

2 PRODUCTS

Materials

2.1 TIMBER FRAMING, TREATED

Species, grade and in service moisture content to NZS 3602, NZBC B2/AS1 and treatment to NZS 3640, NZBC B2/AS1. Structural grade (SG) to NZS 3604, NZS 3622 with properties to NZS 3603.

2.2 APPEARANCE TIMBERS

Graded to NZS 3631, treated where required by NZBC B2/AS1, NZS 3602, table 1, and treatment to NZS 3640.

2.3 STRAPPING

Treated to NZBC B2/AS1, NZS 3602, table 1 and to NZS 3640, clause 6.3.1.

Species:	Radiata pine
Grade:	SG6
Size:	70mm x 45mm, 45mm x 45mm or 45mm x 19mm

2.4 DPC

Refer to 4161 UNDERLAYS, FOIL AND DPC section

Components

2.5 NAILS

Type to NZS 3604, section 4, **Durability**, and of the size and number for each particular types of joint as laid down in the nailing schedules of NZS 3604, sections 6-10.

2.6 BOLTS AND SCREWS

Bolts and screws of engineering and/or coach type complete with washers, to the requirements of NZS 3604, section 4, **Durability**, and of the number and form required for each particular junction to NZS 3604, sections 6-10.

2.7 THREADED RODS

Use stainless steel threaded rods of the required length, with washers and nuts at both ends, when stainless steel bolts of the required length are not available.

2.8 TIMBER CONNECTORS AND FIXINGS

Supply for each particular joint the connectors and fixings as noted on the drawings. Comply with the requirements of the manufacturer, NZS 3604, section 4, **Durability**, and of the number and form required for each particular junction to NZS 3604, sections 6-10.

2.9 BRACING STRAPS

Nail-on type to the requirements of NZS 3604, section 4, **Durability**, and of the number and form required for each particular application to NZS 3604, sections 6-10.

2.10 POWDER ACTUATED FASTENERS

To type, size and charge required by the powder actuated tool manufacturer for each particular member and the substrate.

2.11 CORROSION RISKS

For interior timber, treated with copper-based timber preservatives (H3.2 or higher), use a minimum of hot-dipped galvanized steel fixings and fasteners.

For exterior timber, timber in damp areas and timber subject to occasional wetting, use only stainless steel (or equivalent) fixings and connectors, when the timber is treated with; Copper Azole (CuAz, Preservative code 58), Alkaline Copper Quaternary (ACQ, Preservative code 90), Micronise Copper Azole (code 88) or Micronised Copper Quaternary (code 89).

3 EXECUTION

Conditions

3.1 PROTECT TIMBER

Protect all timber against damage and from inclement weather. Ensure that any variation in moisture content is kept to a minimum, before and after erection and before enclosure.

3.2 EXECUTION

Execution to comply with NZS 3604, except as varied in this specification. Execution to include those methods, practices and processes contained in the unit standards for the National Certificate in Carpentry and the National Certificate in Joinery (cabinetry, exterior joinery, stairs).

3.3 SEPARATION

Separate all timber framing timbers from concrete, masonry and brick by: -

- a full length polyethylene damp-proof membrane overlapping timber by at least 6mm; or
- a 12mm minimum free draining air space

3.4 FRAMING MOISTURE CONTENT

Maximum allowable equilibrium moisture content (EMC) for non air-conditioned or centrally heated buildings, for framing to which linings are attached.

- At erection: 24% EMC maximum
- At enclosure: 20% EMC maximum
- At lining: 16% EMC maximum

3.5 TOLERANCES

Permissible deviations from established lines, grades and dimensions equal to or less than the following. Multiples of given limits are not cumulative.

- Deviation in plan, up to 10 metres, 5mm
- Deviation in plan, over 10 metres, 10mm total

- Deviation from horizontal, up to 10 metres, 5mm
- Deviation from horizontal, over 10 metres, 10mm total

- Deviation from vertical position per 3 metres, 3mm

- Deviation from horizontal and vertical, within openings, 3mm.

Application

3.6 SET-OUT

Set-out framing generally in accordance with the requirements of NZS 3604, to carry superimposed loads and as required to support sheet linings and claddings. Set back nogs 12.5mm from face of studs where required for back-blocking of plasterboard non-tapered ends or edges.

3.7 SET TIMBERS

Set timbers true to required lines and levels with mitres, butt joints, laps and housings cut accurately to provide full and even contact over the whole of the bearing surface.

3.8 TIMBER CUTTING

Select and cut spanning members to minimise allowable defects and avoiding knots and short grain on edges in the middle third, and shakes, splits and checks at mid-span and close to ends.

3.9 TIMBER PLATES AND FURRING

Fix to steelwork with bolts and washers or approved proprietary fastenings at 1 metre maximum spacing and not less than 2 fixings to each member, or to engineering specific design.

3.10 HOLES AND NOTCHES

Limit holes and notches, checks and half-housing for the structure to those allowable in NZS 3604. Neatly form holes and notches for services without lessening the structural integrity of the member.

3.11 CUTTING

Cutting for straightening to comply with NZS 3604, 8.5.3, **Straightening studs**.

3.12 EXPOSED TIMBER CONNECTORS AND FIXINGS

Do not use steel timber connectors and fixings on any structural framing exposed to view unless detailed on the drawings.

3.13 POWDER ACTUATED AND MECHANICALLY POWERED FIXING

Comply with the WorkSafe NZ: Guidelines for the provision of facilities and general safety in the construction industry, part 5, section 5.7. To be operated by a licensed applicator.

3.14 ADDITIONAL FRAMING

Position and fix all necessary members for the fixing of all services, fittings, fixtures, edges of linings or claddings, and to provide lateral support to load carrying framing.

3.15 FORM NAILED JOINTS

Fully drive nails in all structural joints with the number and location for each particular joint, to the requirements of the nailing schedules of NZS 3604. Where splitting could occur, pre-drill to 80% of nail diameter.

3.16 FORM BOLTED JOINTS

Drill for and set bolts to ensure full bearing and development of the joint strength, with tension to just set the washers into timber or to engineering specific design.

3.17 FIT CONNECTORS AND FIXINGS

Fit connectors and fixings to obtain full bearing over all contact surfaces and full development of the required loading capacity for that particular joint and in accordance with the manufacturer's requirements or to engineering specific design.

3.18 FIT JAMB BATTENS

For walls with direct fix cladding, fit 20mm (nominal) jamb battens over the wall underlay, to the jambs of window and door rough openings, to NZBC E2/AS1, fig 72A. Cut around sill flashings. Fix with 60 x 2.8 flat head galvanized nails at 300mm centres.

3.19 FIT BRACING

Fit and fix subfloor, wall and roof bracing elements to the requirements of the manufacturer or to NZS 3604, to develop the full number of bracing units required.

3.20 DPC TO LOSP TREATED TIMBER

Refer to 4161 UNDERLAYS, FOIL AND DPC section

3.21 DPC TO TIMBER

Refer to 4161 UNDERLAYS, FOIL AND DPC section

Completion

3.22 CLEAN UP

Clean up timber framing as the work proceeds so no offcuts, chips, sawdust or any other matter or items remain behind the claddings or linings.

3.23 LEAVE

Leave work to the standard required by following procedures.

3.24 REMOVE

Remove debris, unused materials and elements from the site.

4 SELECTIONS

4.1 SUB-FLOOR FRAMING - RADIATA PINE

Member	Species	Grade	Treatment
Bearers:	Radiata pine	SG8	H1.2
Ground floor joists:	Radiata pine	SG8	H1.2

4.2 FLOOR FRAMING - RADIATA PINE

Member	Species	Grade	Treatment
Mid floor joists:	Radiata pine	SG8	H1.2
Boundary joists:	Radiata pine	SG8	H1.2

4.3 EXTERIOR WALL FRAMING - RADIATA PINE

Member	Species	Grade	Treatment
Exterior walls:	Radiata pine	SG8	H1.2
Parapets:	Radiata pine	SG8	H1.2
Enclosed decks and balconies:	Radiata pine	SG8	H1.2
Cantilevered joists enclosed decks and balconies:	Radiata pine	SG8	H3.2
Wall battens (not cavity):	Radiata pine	Merch	H1.2
Jamb battens	Radiata pine	Merch	H3.1

4.4 ROOF FRAMING - RADIATA PINE

Member	Species	Grade	Treatment
Rafters:	Radiata pine	SG8	H1.2
Trusses:	Radiata pine	SG8	H1.2
Purlins:	Radiata pine	SG8	H1.2
Valley boards:	Radiata pine	Merch	H1.2
Sarking:	Radiata pine	Merch	H1.2
Skillion roof framing:	Radiata pine	SG8	H1.2
Enclosed flat roof framing:	Radiata pine	SG8	H1.2

4.5 INTERIOR WALL FRAMING - RADIATA PINE

Member	Species	Grade	Treatment
Non structural walls:	Radiata pine	SG8	H1.2
Structural and braced walls:	Radiata pine	SG8	H1.2

4.6 CEILING FRAMING - RADIATA PINE

Member	Species	Grade	Treatment
Ceiling joists:	Radiata pine	SG8	H1.2
Timber ceiling battens:	Radiata pine	SG8	H1.2
Proprietary ceiling battens:	Manufacturer ~	Type ~	Reference ~

4.7 EXTERIOR EXPOSED TIMBER

Member	Species	Grade	Treatment
Posts:	Radiata pine	SG8	H3.2 CCA
Joists:	Radiata pine	SG8	H3.2 CCA
Exterior stairs and steps:	Radiata pine	SG8	H3.2 CCA
Pergola:	Radiata pine	SG8	H3.2 CCA
Ground contact members	Radiata pine	SG8	H5 CCA

Note: All CCA preservative code 01 or 02

4.8 DPC

Refer to 4161 UNDERLAYS, FOIL AND DPC section

4.9 NAILS

Location	Type	Material	Finish
Refer NZS 3604:2011 - Section 4 and architectural drawings.			

4.10 BOLTS AND SCREWS

Location	Type	Material	Finish
Refer NZS 3604:2011 - Section 4 and architectural drawings.			

4.11 NAIL PLATES

Location	Type	Material	Finish
Refer NZS 3604:2011 - Section 4 and architectural drawings.			

4.12 CONNECTORS

Location	Type	Material	Finish
Lumberlok - Refer to attached lumberlok specifications.			

4161T THERMAKRAFT UNDERLAYS, FOILS & DPC

1 GENERAL

This section relates to the application of **Thermakraft Industries (NZ) Ltd**, DPC, DPM, underfloor foil insulation, wall underlays and roofing underlays.

1.1 RELATED WORK

Refer to drawings.

1.2 ABBREVIATIONS AND DEFINITIONS

Refer to the general section 1232 INTERPRETATION & DEFINITIONS for abbreviations and definitions used throughout the specification.

The following abbreviations apply specifically to this section:

NZMRM	New Zealand Metal Roofing Manufacturers Inc.

The following definitions apply specifically to this section:

Wall underlay	the same meaning as defined in NZBC E2/AS1, covering kraft based and synthetic wall underlays, sometimes called, wall wraps, building wraps or building papers.

Documents

1.3 DOCUMENTS

Refer to the general section 1233 REFERENCED DOCUMENTS. The following documents are specifically referred to in this section:

NZBC C/AS1-AS7	Protection from fire
NZBC E2/AS1	External moisture
AS 1530.2	Methods for fire tests on building materials, components and structures - Test for flammability of materials
NZS 2295	Pliable, permeable building underlays
AS/NZS 2904	Damp-proof courses and flashings
NZS 3604	Timber-framed buildings
AS/NZS 4200.1	Pliable building membranes and underlays - Materials
NZS 4214	Methods of determining the total thermal resistance of parts of buildings
AS/NZS 4389	Roof safety mesh
AS/NZS 4534	Zinc and zinc/aluminium-alloy coatings on steel wire
NZMRM CoP	NZ metal roof and wall cladding Code of Practice

1.4 MANUFACTURER/SUPPLIER DOCUMENTS

Thermakraft documents relating to work in this section are:
Thermakraft product manual and technical data sheets.
BRANZ Appraisal 329 - Supercourse 500 Damp-Proof Course and Concealed Flashing
BRANZ Appraisal 651 - Thermakraft Covertek™ 407 Fire Retardant Self Supporting Synthetic Roofing Underlay
BRANZ Appraisal 695 - Watergate-Plus Fire Retardant Wall Underlay
BRANZ Appraisal 711 - Thermakraft Covertek 403 Fire Retardant Absorbent Breathable Wall Underlay
BRANZ Appraisal 743 - Thermakraft Covertek 405 Absorbent Breathable Roof Underlay
BRANZ Appraisal 803 - Bulldog™/Aluminium Window Sealing System
BRANZ Appraisal 878 - Thermakraft Aluband Window Flashing Tape
Code Mark Certificate 30029 - Thermakraft Covertek 403 Absorbent Breathable Roof Underlay
Code Mark Certificate 30030 - Thermakraft Covertek 405 Absorbent Breathable Roof Underlay
Code Mark Certificate 30028 - Thermakraft Covertek 407 Absorbent Breathable Roof Underlay

Manufacturer/supplier contact details

Company:	Thermakraft Industries (NZ) Ltd
Web:	www.thermakraft.co.nz
Email:	info@thermakraft.co.nz
Telephone:	0800 806 595

Warranties

1.5 WARRANTY - MANUFACTURER/SUPPLIER

Warrant this work under normal environmental and use conditions against failure of materials and execution. Thermakraft Industries Ltd warrant performance of products if design and installation complies with relevant technical literature, NZBC, and recognised industry Codes of Practice. Copy of Thermakraft Product Warranty available on request.

Requirements

1.6 NO SUBSTITUTIONS

Substitutions are not permitted to any specified materials, or associated products, components or accessories.

1.7 INSTALLATION SKILL LEVELS

Installers to be experienced in the installation of Thermakraft products and familiar with Thermakraft Industries technical literature and the related documents listed in this design i.e. NZMRM CoP NZ metal roof and wall cladding Code of Practice.

2 PRODUCTS

Materials

Wall underlays

2.1 BITUMINOUS HEAVY WEIGHT UNDERLAY

Thermakraft 213™, bituminous heavy weight underlay to NZS 2295.

Roofing underlays

2.2 SYNTHETIC FIRE RETARDANT SELF SUPPORTING NON-WOVEN ROOFING UNDERLAY

CoverTek™ 407, a fire retardant non-woven self supporting roofing underlay, consisting of two spun-bonded polyolefin fabric layers bonded to a micro porous inner layer, designed for use as a water absorbent, breathable, water resistant roofing underlay for sloped roofs. CoverTek™ 407 has a flammability index of ≤ 5, tested to AS 1530.2, to NZBC C/AS1-AS7, meets the requirements for suspended fabrics, BRANZ Appraisal 651 and Code Mark Certificate 30028. Can be used in areas exposed to view in occupied spaces.

2.3 SYNTHETIC NON-WOVEN SELF SUPPORTING ROOFING UNDERLAY

CoverTek™405, a non-woven self-supporting roofing underlay, consisting of two spun-bonded polyolefin fabric layers bonded to a micro porous inner layer, designed for use as a water absorbent, breathable, water resistant roofing underlay for sloped roofs. Covertek™ 405 has a flammability Index of ≤ 5 tested to AS 1530.2, to NZBC C/AS1-AS7, meets the requirements for suspended fabrics, BRANZ Appraisal 743 and Code Mark Certificate 30030. Can be used in areas exposed to view in occupied spaces.

2.4 SYNTHETIC NON-WOVEN HEAVYWEIGHT ROOFING UNDERLAY

CoverTek™ 403, a non-woven roofing underlay, consisting of two spun-bonded polyolefin fabric layers bonded to a micro porous inner layer, designed for use as a water absorbent, breathable, water resistant roofing underlay for sloped roofs. Covertek™ 403 has a flammability Index of ≤5 tested to AS 1530.2, and meets the requirements of NZBC C/AS2-AS7, 4.17.8. (b) for suspended flexible fabrics.

Commercial roofing foils

2.5 FIRE RETARDANT LIGHT DIFFUSER FOIL INSULATION

Thermabar 344 F.R, a layer of highly burnished aluminium foil bonded with flame retardant adhesive to a white synthetic woven fabric. Fire retardant to AS 1530 2 and has achieved a Flammability Index ≤ 5. To NZS 4214, Methods of determining the total thermal resistance of parts of buildings. Refer to SELECTIONS for type of foil tape.

2.6 FIRE RETARDANT LIGHT DIFFUSER DOUBLE SIDED FOIL INSULATION

Thermabar 346 F.R,two layers of highly burnished aluminium foil bonded with flame retardant adhesive. Fire retardant to AS 1530 2 and has achieved a Flammability Index ≤ 5. To NZS 4214, Methods of determining the total thermal resistance of parts of buildings. Refer to SELECTIONS for type of foil tape.

2.7 FIRE RETARDANT LIGHT DIFFUSER SYNTHETIC FOIL INSULATION

Thermakraft 397, a fire retardant light diffuser foil insulation / vapour control layer comprised of a fully synthetic laminated insulating foil with a spun bonded fabric core encased in polyolefin film. Fire retardant to AS 1530 2 and has achieved a Flammability Index ≤ 5. To NZS 4214, Methods of determining the total thermal resistance of parts of buildings. Usedto line walls and under roofs in commercial and industrial buildings to give aclean white finish.Refer to SELECTIONS for type of foil tape.

Accessories

2.8 WINDOW AND DOOR SEALING TAPE

Thermakraft Aluband™ Window Sealing Tape system consists of synthetic faced reinforced bituminous window sealing tape, Thermakraft Aluband™ Corner Moulding™ piece, used in conjunction with the Thermakraft Aluband™ Hand Tool to ensure good adhesion and a tight fit into corners. See Thermakraft Data Sheet 312 for installation details and BRANZ Appraisal 878.

2.9 WINDOW AND DOOR SEALING TAPE

Thermakraft Bulldog™ Window Sealing Tape system consists of synthetic faced bituminous window sealing tape, Thermakraft Aluband™ Corner Moulding™ piece, used in conjunction with the Thermakraft Aluband™ Hand Tool to ensure good adhesion and a tight fit into corners. See Thermakraft Data Sheet 312 for installation details and BRANZ Appraisal 803.

2.10 GUTTER AND UNDER FLASHINGS

Thermakraft 215™, bituminous breather type underlay to NZS 2295 cut to width for use under valley, apron flashing and internal gutters.
Soffit liner cut to width from Thermakraft 215™ bituminous breather type underlay. Refer to SELECTIONS.

2.11 TAPE

Thermakraft tapes to compliment the underlay. Pressure sensitive aluminium foil tapes for joining foil insulation and vapour barriers. These include:

- Thermakraft White General Purpose Underlay Tape
- Thermakraft Window Sealing Tapes, used to repair damaged bituminous underlays

2.12 DRAINAGE MATT

Thermakraft Drainage Matt, an extruded 3 dimensional synthetic black mesh, used as an air separation layer between fully sarked roof and roof cladding. Used in wall applications to allow air passage and drainage where no other cavity is provided.

3 EXECUTION

Conditions

3.1 GENERAL REQUIREMENTS

Design application and installation of Thermakraft Building products to NZBC E2/AS1, BRANZ Appraisals, Thermakraft Technical Literature and Industry Codes of Practice.

3.2 STORAGE

Store building underlays and accessory materials, under conditions that ensure no deterioration or damage. Store rolls in an upright position on a smooth floor and protected from sunlight, UV radiation and moisture.

3.3 INSPECTION

Before starting work, check that the building construction phase will allow work of the required standard. Carry out remedial work identified before laying underlay.

Application - wall underlay

3.4 WALL UNDERLAY

Fix horizontally to outside face of framing in true alignment, with succeeding sheets overlapping 150mm to NZBC E2/AS1, 9.1.7, Wall underlay, and refer to Thermakraft Industries for requirement for fastenings. Fix to Thermakraft Industries Technical Data specifications. Scribe neatly around penetrations and openings to leave no gaps. Tape all penetrations. Keep clean, undamaged and without visible weather deterioration until closed in.

3.5 METAL CLADDING ON TIMBER CAVITY BATTENS

Fix strip of Thermakraft DPC as a separator between the timber and metal cladding.

Application - roofing underlay

3.6 ROOF UNDERLAY

Lay vertically over purlins on wire netting with a 150mm side lap. Fix securely to purlins with galvanized fixing clips. Lay underlay to avoid excessive dishing between purlins. When used vertically limit individual runs to 10 metres for bituminous underlays. Do not lay vertically on roof pitches under 10° without support.

Lay horizontally across the rafter/trusses starting at the gutter line with succeeding sheets in true alignment and lapping 150mm. Scribe around and fit neatly to all penetrations. Avoid prolong exposure by installing the roof immediately.

3.7 GUTTER AND UNDER FLASHINGS

Lay Thermakraft 215™ bituminous breather type underlay cut to width by manufacturer for use as an underlay to valley, apron flashings, and internal gutters. Lap under flashings with adjoining underlays. Fix Thermakraft 215™ bituminous breather type underlay soffit liner from top plate down 150mm past ribbon plate.

Application - commercial roof underlays

3.8 FOIL ROOF UNDERLAY

Lay vertically over purlins with a 150mm side lap. Fix securely to purlins with galvanized fixing clips. Lay underlay to avoid excessive dishing between purlins.

Alternatively lay horizontally across the rafter/trusses starting at the gutter line with succeeding sheets in true alignment and lapping 150mm. Scribe around and fit neatly to all penetrations. Avoid prolong exposure by installing the roof immediately.

3.9 FOIL ROOF UNDERLAY AS VAPOUR BARRIER

Lay horizontally or vertically on safety mesh. Start at the gutter and work towards the ridge with a minimum lap of 150mm. Tape joints using F150 Foil Tape x 48mm.

3.10 ROOF UNDERLAY INSTALLATION

Apply from the lowest point to allow laps to shed water. All edge and end laps must be overlapped by a minimum of 150mm. Ensure that the underlay is properly fixed to the surface at perimeters or around penetrations.

Completion

3.11 CLEAN UP

Clean up as the work proceeds.

3.12 LEAVE

Leave work to the standard required by following procedures.

3.13 REMOVE

Remove debris, unused materials and elements from the site.

4 SELECTIONS

For further details on selections go to www.thermakraft.co.nz.
Substitutions are not permitted to the following, unless stated otherwise.

Wall Underlays

4.1 THERMAKRAFT 213™

Location:	Refer to drawings
Type:	Thermakraft 213™
Jointing tape:	Thermakraft window sill tape 75mm Aluband™

Roofing Underlays

4.2 COVERTEK 407 ROOFING UNDERLAY

Location:	Refer to drawings
Type:	CoverTek™ 407 fire retardant non-woven roofing underlay
Jointing tape:	Thermakraft window sill tape 75mm Aluband™

Window / Door Sealing System

4.3 THERMAKRAFT - ALUBAND™

Location:	Refer to drawings
Type:	Thermakraft window sill tape 75mm Aluband™

4224 TIMBER EXTERIOR TRIM

1 GENERAL

This section relates to lengths of timber fixed on site, either associated with timber cladding, or used as isolated trim with other wall cladding or soffit materials:

- trim
- fascia boards
- cover boards

Related work

1.1 RELATED SECTIONS

Refer to drawings A310 to A313.

Documents

1.2 DOCUMENTS REFERRED TO

Documents referred to in this section are:

NZS 3602	Timber and wood-based products for use in building
NZS 3604	Timber-framed buildings

Documents listed above and cited in the clauses that follow are part of this specification. However, this specification takes precedence in the event of it being at variance with the cited document.

1.3 MANUFACTURER'S DOCUMENTS

Manufacturer's and supplier's documents relating to work in this section are:

Copies of the above literature are available from Southern Pine Products Ltd

Web:	http://www.sppnz.co.nz/
Email:	sales@sppauck.co.nz
Telephone:	AKL (09) 573 0484 & CHCH (03) 349 9175
Facsimile:	~

2 PRODUCTS

Materials

2.1 TIMBER TRIM

To NZS 3602, treated H3.1 unless durable heart wood, to profiles detailed/scheduled.

2.2 PROPRIETARY TIMBER TRIM

To NZS 3602, treated H3.1.

Components

2.3 NAILS, GALVANIZED

60mm x 2.8mm galvanized steel wire jolt/flat/raised head generally. Use other sizes to suit profiles being fixed.

2.4 NAILS, STAINLESS STEEL

60mm x 2.8mm stainless steel wire jolt/flat/raised head generally. Use other sizes to suit profiles being fixed.

Finishes

2.5 PRIMER

Water borne acrylic or solvent borne oil-alkyd primer to suit the timber and proposed painting system.

3 EXECUTION

Conditions

3.1 STORAGE

Take delivery of trims undamaged and unmarked and store on site flat and true, under cover, and clear of areas where work is in progress, to ensure materials are of the required standard when fixed in place.

3.2 SUBSTRATE

Ensure that the substrate to trims will allow work of the required standard. If it does not, do not proceed until the substrate has been rectified.

Application - preparation

3.3 PRIMING AND SEALING

If not pre-finished before delivery, coat all faces and edges immediately. Then fillet stack trim until fixed. Keep dry and undamaged. Coat to suit the paint system specified in painting section/s. Allow to re-coat if exposed for more than one month before the final coating is applied.

Application

3.4 EXECUTION

To NZS 3604, except as varied in this specification. Execution to include those methods, practices and processes contained in the unit standards for the National Certificate in Carpentry and the National Certificate in Joinery (cabinetry, exterior joinery, stairs).

3.5 TIMBER TRIM

Using full lengths, scribe internal joints and mitre external and running joints. Fully support all joints and fix securely, plumb, level and true to line and face, fully nailed. For paint finish prime joint edges before fixing, otherwise seal them without runs onto any exposed face.

3.6 NAILING, PAINT FINISH

Punch nails and patch prime external trim being painted, before stopping as specified under painting preparation.

Completion

3.7 LEAVE

Leave the whole of this work free of blemishes, undamaged and to the standard of finish required for following procedures.

3.8 PROTECTION

Protect the completed work and make good before any surface finish is applied.

3.9 REPLACE

Replace all damaged or marked elements.

3.10 REMOVE

Remove debris, unused materials and elements from the site.

4 SELECTIONS

4.1 TIMBER TRIM

Manufacturer:	Southern Pine
Species/grade:	Pine
Treatment:	H3.1
Finish:	Treated primed

4.2 PROPRIETARY TIMBER TRIM: FASCIA

Location:	Refer to drawings A310 to A313
Reference:	Southern Pine
Code reference:	FAS 180x18
Species/grade:	Pine
Treatment:	H.31
Finish:	Treated primed

4.3 PROPRIETARY TIMBER TRIM: SCRIBER

Location:	Refer to drawings A400
Reference:	Southern Pine
Code reference:	~
Species/grade:	Pine
Treatment:	H3.1
Finish:	Treated primed

4231HW JAMES HARDIE WEATHERBOARD CLADDING

1 GENERAL

This section relates to the supply and fixing of the following fibre cement products:

- James Hardie Linea® Weatherboard cladding
- James Hardie Linea® Oblique Weatherboard cladding
- James Hardie Weatherboard cladding
- James Hardie Villaboard® Soffit Lining
- James Hardie selected soffit lining

1.1 RELATED WORK

Refer to drawings.
Refer to painting section/s for the protective coating required to meet the NZBC durability requirements.

Documents

1.2 DOCUMENTS

Refer to the general section 1233 REFERENCED DOCUMENTS. The following documents are specifically referred to in this section:

NZBC E2/AS1	External moisture
NZBC E2/VM1	Weathertightness
AS/NZS 1170.2	Structural design actions - Wind actions
AS/NZS 2908.2	Cellulose-cement products - Flat sheet
NZS 3602	Timber and wood-based products for use in building
NZS 3604	Timber-framed buildings

1.3 MANUFACTURER/SUPPLIER DOCUMENTS

James Hardie documents relating to this part of the work:
Linea® Weatherboard technical specification
Linea® Oblique Weatherboard horizontal installation technical specification
Linea® Oblique Weatherboard vertical installation technical specification
James Hardie Weatherboards technical specification
Eaves and Soffit Linings installation manual
BRANZ Appraisal 446 - Linea® Weatherboard Direct Fixed Cladding
BRANZ Appraisal 447 - Linea® Weatherboard Cavity Cladding
BRANZ Appraisal 896 - Linea® Oblique Weatherboard (Horizontal) Cavity Cladding
BRANZ Appraisal 897 - Linea® Oblique Weatherboard (Vertical) Cavity Cladding
CodeMark™ Certificate Number GM-10-30018 James Hardie Linea™ Weatherboard Direct fixed and Cavity Cladding

Manufacturer/supplier contact details

Company:	James Hardie New Zealand
Web:	www.jameshardie.co.nz
Email:	info@jameshardie.co.nz
Telephone:	Contact James Hardie™ on 0800 808 868

BRANZ appraisal is available at www.branz.co.nz.

Warranties

1.4 WARRANTY - MANUFACTURER/SUPPLIER

Provide a material manufacturer/supplier warranty:

25 years:	For Linea® Weatherboard / Linea® Oblique Weatherboard product (refer to James Hardie™ product warranty)
15 year:	For accessories supplied by James Hardie (refer to James Hardie™ product warranty)
From:	Date of purchase

- Provide this warranty on the manufacturer's standard form.

Refer to the general section 1237 WARRANTIES for additional requirements.

1.5 WARRANTY - MANUFACTURER/SUPPLIER

Provide a material manufacturer/supplier warranty:

15 years:	For James Hardie™ ~. (refer to James Hardie™ product warranty)
15 year:	For accessories supplied by James Hardie (refer to James Hardie™ product warranty)
From:	Date of purchase

- Provide this warranty on the manufacturer's standard form.

Refer to the general section 1237 WARRANTIES for additional requirements.

1.6 WARRANTY - MANUFACTURER/SUPPLIER

Provide a material manufacturer/supplier warranty:

15 years:	For Eclipsa™ Eaves Lining base sheet (refer to James Hardie™ product warranty)
10 years:	For coating on Eclipsa™ Eaves Lining (refer to James Hardie™ product warranty)
15 year:	For accessories supplied by James Hardie (refer to James Hardie™ product warranty)
From:	Date of purchase

- Provide this warranty on the manufacturer's standard form.

Refer to the general section 1237 WARRANTIES for additional requirements.

Requirements

1.7 NO SUBSTITUTIONS

Substitutions are not permitted to any specified system, or associated components and products.

1.8 INFORMATION FOR OPERATION AND MAINTENANCE

Provide relevant James Hardie maintenance requirements at completion of the work.

Requirements - Linea Weatherboard with CodeMark™ Certificate

1.9 QUALIFICATIONS - LINEA® INSTALLER

Installer to be experienced in the application and a;

- A Licenced Building Practitioner; or,
- A person with a trade certificate being a current member of a Building Trade Association.

If requested provide evidence of qualification prior to commencing work.

1.10 LINEA® WEATHERBOARD INSTALLATION INFORMATION

Installer to comply with all the relevant information in;

- Linea® Weatherboard Technical Specification (Mar 2015); and,
- BRANZ Appraisal 446 or BRANZ Appraisal 447

1.11 LINEA® WEATHERBOARD INSTALLATION CHECKLIST

Installer to complete, sign and provide a James Hardie Installation Checklist incorporating the Certificate of Installation requirements of Global-Mark CodeMark Certification program. Contact James Hardie for a copy of the Installation Checklist.

Performance

1.12 PERFORMANCE, WIND

The design wind pressures are to NZS 3604, up to and including Extra High Wind Zone. James Hardie Technical Specifications are suitable for these conditions.

1.13 SPECIFIC DESIGN, WIND

The design wind pressures are to AS/NZS 1170.2, for specific design wind zone (beyond Extra High Wind Zone). Only specifically designed or approved details included in the Contract Documents can be used.

2 PRODUCTS

Materials

2.1 RIGID AIR BARRIERS

Refer to section 4171HR JAMES HARDIE RIGID AIR BARRIERS.

2.2 WALL UNDERLAY

For flexible wall underlays and rigid wall underlays, refer to the appropriate separate section(s).

2.3 LINEA® WEATHERBOARDS

James Hardie Linea® Weatherboards, 16mm thick, pre-primed, manufactured from a reduced density cellulose fibre cement formulation and cured by high pressure autoclaving, manufactured to AS/NZS 2908.2, tested to NZBC E2/VM1 for weathertightness and complying with the NZBC.

2.4 FLUSH JOINTED SOFFIT LINING

James Hardie Villaboard® Lining 6mm and 9mm thick manufactured from treated cellulose fibre, Portland cement, sand and water, cured by high pressure autoclaving and manufactured to AS/NZS 2908.2.

2.5 SOFFIT LINING

James Hardie 4.5mm HardieSoffit™ Lining, HardieFlex™ Eaves Lining, Eclipsa™ Eaves Lining, HardieGroove™ Lining and 6mm HardieFlex™ Lining soffit manufactured from treated cellulose fibre, Portland cement, sand and water and cured by high pressure autoclaving manufactured to AS/NZS 2908.2.

Components

2.6 FASTENER TYPE

Fasteners to minimum durability requirements of the NZBC. Refer to NZS 3604, section 4, **Durability**, for requirements for fixing's material to be used in relation to the exposure conditions.

Refer to NZBC E2/AS1, Table 20, Material selection, and NZBC E2/AS1, Table 21, Compatibility of materials in contact, for selection of suitable fixing materials and their compatibility with other materials.

Zone	Fixings Material
Zone D, Zone E / Microclimates (incl. Geothermal)	Grade 316 Stainless
Zone B, Zone C	Hot-dipped galvanized
Bracing - All zones	Grade 316 Stainless

Check against SED (specific engineering design) requirements for microclimate conditions.

2.7 SCREWS

30mm x 7 gauge stainless steel HardieDrive screws

2.8 GALVANIZED NAILS

60mm x 3.15mm diameter jolt head
65mm x 2.87mm diameter D head ring shank nail
65mm x 2.87mm diameter RoundDrive ring shank nail
75mm x 3.15mm diameter jolt head
90mm x 4.0mm diameter jolt head
HardieFlex™ Nail 40mm x 2.8mm diameter
HardieFlex™ Nail 50mm x 2.8mm diameter
HardieFlex™ Nail 60mm x 3.15mm diameter
HardieFlex™ Nail 75mm x 3.15mm diameter

2.9 STAINLESS STEEL NAILS

60mm x 3.15mm diameter jolt head 316 grade
65mm x 2.87mm diameter D head ring shank nail
65mm x 2.87mm diameter RoundDrive ring shank nail
75mm x 3.15mm diameter jolt head 316 grade
90mm x 4.0mm diameter jolthead 316 grade
HardieFlex™ Nail 40mm x 2.8mm diameter 316 grade
HardieFlex™ Nail 50mm x 2.8mm diameter 316 grade
HardieFlex™ Nail 60mm x 3.15mm diameter 316 grade
HardieFlex™ Nail 75mm x 3.15mm diameter 316 grade

2.10 SOFFIT JOINTERS AND CAPPING MOULDS

Extruded uPVC jointer, 2 way jointer, capping and scotia mould.

Accessories

2.11 SEALANT

Silaflex AT-Facade sealant or similar. Refer to James Hardie technical specifications for application requirements.

3 EXECUTION

Conditions

3.1 STORAGE

Take delivery of products dry and undamaged on pallets, and keep on pallet. Protect edges and corners from damage and covered to keep dry until fixed.

3.2 HANDLING

Avoid distortion and contact with potentially damaging surfaces. Carry weatherboards in vertical position. Do not drag weatherboards across each other, or across other materials. Protect edges, corner and surface finish from damage.

3.3 SUBSTRATE

Do not commence work until the substrate is of the standard required by James Hardie for the specified finish; plumb, level and in true alignment. Moisture content of timber framing must not exceed the requirements specified by NZS 3602 to minimise shrinkage and movement after sheets are fixed.

Application - particular installations

3.4 FIRE RESISTANCE RATING, FIBRE CEMENT

Install mineral fibre insulation or glass fibre insulation fitted tightly in the timber framing cavity. Apply fire retardant wall underlay to the exterior face of the framing and fix fibre cement cladding and lining sheets, direct or on cavity. Refer to project drawings for FRR system construction details and James Hardie Fire and Acoustic Design Manuals for further information.

3.5 BRACING SYSTEM

Fix Linea® Weatherboards to James Hardie Bracing Design Manual.

Application - generally

3.6 INSTALL CAVITY BATTENS

Install 18mm minimum thick cavity battens to NZBC E2/AS1: 9.0 **Wall claddings**, where required. Fix vertical cavity battens to wall framing studs. The battens are fixed by the cladding fixings which will penetrate the wall framing studs under the wall underlay. Seal the top of the cavity and install cavity closer/vermin-proofing at base of walls, open horizontal (or raking) junctions, over openings (windows, meters etc). Do not use horizontal cavity battens. Use cavity spacers where fixing is required between cavity battens.

3.7 PENETRATIONS AND FLASHINGS

Confirm that exterior wall openings have been prepared ready for the installation of all window and door frames and other penetrations through the cladding. Required preparatory work includes the following:

- Wall underlay appropriately incorporated with penetration and junction flashings.
- Materials lapped in a way that water tracks down to the exterior face of the wall underlay.
- Wall underlay to openings finished and dressed off ready for the installation of window and door frames and other penetrations
- Claddings neatly finished off to all sides of openings
- Installation of flashings (those required to be installed prior to installation of penetrating elements).

3.8 INSTALL LINEA® WEATHERBOARDS

Cut weatherboards to required lengths and fit joints off-stud using tongue and groove ends. Fit internal corners and fix weatherboards as per Linea® Weatherboard technical specifications. Fit and fix external corners and joint soakers as required.

3.9 INSTALL FLASHINGS

Install flashings at all wall openings, penetrations, junctions, connections, window sills, heads and jambs to NZBC E2/AS1.

3.10 INSTALL SOFFIT SHEETS

Cut sheets dry and ensure all edges and joints are fully supported. Nail and insert uPVC fasteners to James Hardie requirements. Fit complete with jointers and capping moulds. Refer to Eaves and Soffit Linings installation manual.

3.11 INSTALL FLUSH JOINTED SOFFIT SHEETS

Cut sheets dry and ensure all edges and joints are fully supported. Fit expansion joints to limit finished areas to 9 metre x 6 metres for large soffits or 7.2 metres for narrow soffits. Flush joints with James Hardie Base Coat, paper reinforcing tape and James Hardie Top Coat to flush width of 180mm. Refer to Eaves and Soffit Linings installation manual.

Completion

3.12 REPLACE

Replace all damaged or marked elements.

3.13 LEAVE

Leave work to the standard required for following procedures.

3.14 REMOVE

Remove debris, unused materials and elements from the site.

4 SELECTIONS

For further details on selections go to www.jameshardie.co.nz.
Substitutions are not permitted to the following, unless stated otherwise.

Linea® Weatherboards

4.1 JAMES HARDIE LINEA® WEATHERBOARDS

Location:	Refer to drawings.
Brand/type:	James Hardie Linea® Weatherboard
Thickness:	16mm
Width:	180mm - to match existing.
Construction:	Direct fix.
Nail pattern:	Face nailing.
Nail finish:	Galvanized.
Nails:	60 x 3.15mm jolt head Nails

4.2 JAMES HARDIE LINEA® WEATHERBOARD CORNERS

Type:	Soaker
Soaker type:	Aluminium

Soffits

4.3 JAMES HARDIE SOFFIT SHEETS

Brand/type:	James Hardie~
Thickness:4	4.5mm
Jointer type:	PVC joiner - James Hardie
Nails:	40 x 2.8mm HardieFlex™ Nails

Finishing

4.4 PAINTING

Refer to painting section(s) for details.

4239 SOFFIT CLADDING

1 GENERAL

This section relates to the supply and fixing of cladding to the underside of exterior soffits, verges and eaves and includes:

- Fibre cement sheet
- Plywood
- Timber board
- Jointers
- Trim

1.1 RELATED WORK

Refer to drawings.
Refer to painting section/s for the protective coating required to meet the NZBC durability requirements.

Documents

1.2 DOCUMENTS

Refer to the general section 1233 REFERENCED DOCUMENTS. The following documents are specifically referred to in this section:

NZBC E2/AS1	External moisture
AS/NZS 1604.3	Specification for preservative treatment - Plywood
AS/NZS 2269.0	Plywood - structural - Specifications
AS/NZS 1170.2	Structural design actions - Wind actions
AS/NZS 2908.2	Cellulose-cement products - Flat sheet
NZS 3602	Timber and wood-based products for use in building
NZS 3604	Timber-framed buildings
NZS 3617	Profiles of weatherboards, fascia boards and flooring
NZS 4251.1	Solid plastering: Cement plasters for walls, ceilings and soffits

1.3 MANUFACTURER/SUPPLIER DOCUMENTS

Manufacturer's and supplier's documents relating to this part of the work:
http://www.jameshardie.co.nz/ http://www.jameshardie.co.nz/assets/Uploads/downloads/Eaves-and-Soffits-Installation-Manual-Feb-2013.pdf

Warranties

1.4 WARRANTY - MANUFACTURER/SUPPLIER

Provide a manufacturer/supplier coating warranty:
15 years

- Provide this warranty on the manufacturer/supplier standard form.
- Commence the warranty from the date of practical completion of the contract works.

Refer to the general section 1237 WARRANTIES for additional requirements

Requirements

1.5 QUALIFICATIONS

Workers / Installers / applicators to be experienced, competent trades people familiar with the materials and techniques specified.

1.6 HEALTH AND SAFETY

Comply with all manufacturer/supplier and WorkSafe New Zealand requirements for health and safety.

1.7 NO SUBSTITUTIONS

Substitutions are not permitted to any specified system, or associated components and products.

1.8 INFORMATION FOR OPERATION AND MAINTENANCE

Refer to the general section 1239 OPERATION & MAINTENANCE for provision of the following general operation and maintenance information as electronic PDF format documents:
~

Provide this information prior to practical completion.

2 PRODUCTS

Fibre cement soffit cladding

2.1 FIBRE CEMENT SOFFIT CLADDING

Fibre cement soffit cladding, manufactured from treated cellulose fibre, Portland cement, sand and water, cured by high pressure autoclaving and manufactured to AS/NZS 2908.2. Refer to SELECTIONS.

2.2 FLUSH JOINTED FIBRE CEMENT SOFFIT CLADDING

Fibre cement soffit cladding with recessed edges for flush jointing. Manufactured from treated cellulose fibre, Portland cement, sand and water, cured by high pressure autoclaving and manufactured to AS/NZS 2908.2. Refer to SELECTIONS.

2.3 PRE-FINISHED FIBRE CEMENT SOFFIT CLADDING

Fibre cement soffit cladding, manufactured from treated cellulose fibre, Portland cement, sand and water, cured by high pressure autoclaving and manufactured to AS/NZS 2908.2. Pre-finished to exposed face. Refer to SELECTIONS

2.4 IMITATION TONGUE AND GROOVE FIBRE CEMENT SOFFIT CLADDING

Fibre cement soffit cladding with grooved face to imitate TG&V timber appearance. Manufactured from treated cellulose fibre, Portland cement, sand and water, cured by high pressure autoclaving and manufactured to AS/NZS 2908.2. Refer to SELECTIONS.

2.5 NAILS - GALVANIZED

Hot-dip galvanized nails for fibre cement sheet as required by Manufacturer's / supplier's documents. Refer to SELECTIONS.

2.6 NAILS - STAINLESS STEEL

316 Stainless steel nails for fibre cement sheet as required by Manufacturer's / supplier's documents. Refer to SELECTIONS.

2.7 SCREWS - STAINLESS STEEL

Stainless steel screws for fibre cement sheet as required by Manufacturer's / supplier's documents. Refer to SELECTIONS.

2.8 PROPRIETARY FASTENERS

Proprietary nylon insert fasteners for use with pre-finished fibre cement soffit cladding. Refer to SELECTIONS.

2.9 ADHESIVE

Adhesive for fibre cement sheet, used in conjunction with mechanical fixings, as required by Manufacturer's / supplier's documents. Refer to SELECTIONS.

Fibre cement soffit cladding - Components

2.10 SOFFIT JOINTERS

Extruded uPVC jointer.

2.11 CAPPING MOULDS

Extruded uPVC capping mould.

2.12 SCOTIA MOULDS

Extruded uPVC scotia mould.

Flush finished fibre cement soffit cladding - Components

2.13 CORNER ANGLE

Extruded uPVC jointer corner angle.

2.14 CONTROL JOINT

Extruded uPVC jointer control joint.

2.15 JOINT REINFORCING TAPE

Perforated paper tape as required by Manufacturer's / supplier's documents.

2.16 JOINTING COMPOUND

Proprietary jointing compounds as required by Manufacturer's / supplier's documents. Refer to SELECTIONS.

Fibre cement - Accessories

2.17 TIMBER BATTENS

Timber battens as detailed/scheduled. Refer to SELECTIONS.

2.18 STEEL BATTENS

Galvanized steel battens as detailed/scheduled fixed to manufacturers requirements. Refer to SELECTIONS.

2.19 FLASHING TAPES

Single sided medium density closed cell PVC foam tape, with pressure sensitive acrylic adhesive on one side of tape. Tape thickness and width to manufacturer's technical literature.

2.20 SEALANT

Facade sealant or similar. Refer to the sheet manufacturer's technical literature for selection and use requirements.

2.21 SEALER

For jointed systems, seal all sheet edges prior to fixing.

Flush jointed fibre cement soffit cladding - Accessories

2.22 ACRYLIC SEALER

Acrylic sealer to site cut and site recessed sheet edges. Refer to SELECTIONS.

2.23 WATERPROOFING ADMIXTURE

Waterproofing admixture to control moisture suction prior to stopping, as required by Manufacturer's / supplier's documents. Refer to SELECTIONS.

2.24 NAILS - GALVANIZED

Refer to the plywood cladding manufacturer's requirements. Use annular grooved or twisted shank nails for soffit cladding. Refer to SELECTIONS.

2.25 NAILS - STAINLESS STEEL

Refer to the plywood cladding manufacturer's requirements. Use annular grooved or twisted shank nails for soffit cladding. Refer to SELECTIONS.

2.26 SCREWS - STAINLESS STEEL

Refer to the manufacturer's requirements for size and use; galvanized countersunk or stainless steel to NZS 3604, Table 4.1.

2.27 ADHESIVE

Adhesive for plywood soffit cladding, used in conjunction with mechanical fixings, as required by Manufacturer's / supplier's documents. Refer to SELECTIONS.

2.28 NAILS - GALVANIZED

Refer to SELECTIONS for size and use; galvanized countersunk or stainless steel to NZS 3604, Table 4.1.

2.29 NAILS - STAINLESS STEEL

Refer to SELECTIONS for size and use; galvanized countersunk or stainless steel to NZS 3604, Table 4.1.

2.30 SCREWS - STAINLESS STEEL

Refer to SELECTIONS for size and use; galvanized countersunk or stainless steel to NZS 3604, Table 4.1.

Timber profiles

2.31 TIMBER COVER BATTENS

To profiles detailed/scheduled with 6x6 mm weather grooves. Species and grading to the requirements of NZS 3602 , table 2, Requirements for wood-based building components to achieve a 15-year durability performance, treated H3.1 unless durable heart wood., Select appearance grades to NZS 3631 requirements, but with all knots excluded.

2.32 TIMBER TRIM

18 x 18 mm timber trim with 6 mm minimum chamfer to internal corner. Species and grading to the requirements of NZS 3602 , table 2, Requirements for wood-based building components to achieve a 15-year durability performance, treated H3.1 unless durable heartwood. Select appearance grades to NZS 3631 requirements, but with all knots excluded.

2.33 DECORATIVE TIMBER TRIM

To profiles detailed/scheduled. Species and grading to the requirements of NZS 3602 , table 2, Requirements for wood-based building components to achieve a 15-year durability performance, treated H3.1 unless durable heartwood. Select appearance grades to NZS 3631 requirements, but with all knots excluded.

2.34 DECORATIVE EAVES BRACKET

To profiles detailed/scheduled. Species and grading to the requirements of NZS 3602 , table 2, Requirements for wood-based building components to achieve a 15-year durability performance, treated H3.1 unless durable heartwood. Select appearance grades to NZS 3631 requirements, but with all knots excluded.

Flashing

2.35 SOFFIT CLADDING/WALL CLADDING JUNCTION FLASHING

Flashing as detailed with minimum 50 mm return behind soffit cladding and 35 mm cover to wall cladding, complete with hook and kick-out. Refer to SELECTIONS for flashing material.

3 EXECUTION

Conditions

3.1 STORAGE FIBRE CEMENT

Take delivery of products dry and undamaged on pallets, and keep on pallet. Protect edges and corners from damage, cover to keep dry until fixed.

3.2 STORAGE PLYWOOD SHEET

Store sheets in stacks clear of the ground, supported flat and true, without sagging on evenly spaced horizontal bearers. Protect from damage and weather.

3.3 STORAGE TIMBER PRODUCTS

Take delivery of timber, dry, unmarked and undamaged. Store on site, laid flat and true under cover.

3.4 HANDLING

Avoid distortion and contact with potentially damaging surfaces. Do not drag sheets across each other, or across other materials. Protect edges, corner and surface finish from damage. Reject all product with damaged faces or edges

3.5 SUBSTRATE

Do not commence work until the substrate is of the standard required for the specified finish; level and in true alignment. Moisture content of timber framing must not exceed the requirements specified by NZS 3602 to minimise shrinkage and movement after soffits are fixed.

3.6 MOISTURE CONTENT TIMBER BOARD

Immediately before starting fixing, test the moisture content of the boards. Use an electrical moisture meter to test 5% of boards, but not less than 10 boards in the centre of the length. Do not start fixing until 90% of the values obtained are within the range in NZS 3602 table 4, Allowable moisture content (%) at time of installation.

3.7 PLYWOOD CLADDING SUPPORT

Fully support all edges and joints.

3.8 EXPANSION PLYWOOD CLADDING

Provide 2-3mm gap at all edges of cladding for sheet expansion.

3.9 PLYWOOD CUT EDGE TREATMENT

Brush on surface treatment to all edges of plywood cut after treatment.

3.10 SEAL FIBRE CEMENT SHEET EDGES

Seal site cut sheet edges prior to installation. Seal sheet edges around penetrations.

3.11 PENETRATIONS

Form small holes to accommodate penetrations through the soffit as per the method detailed in the sheet manufacturer's technical literature.

Application - fire rated soffits

3.12 FIRE RESISTANCE RATING, FIBRE CEMENT SOFFIT CLADDING

Install fibre cement soffit cladding as part of an overall fire rated wall/soffit construction, to the drawn details and the manufacturer's requirements.

Install fibre cement sheets

3.13 SHEET LAYOUT

All sheet edges must be supported by framing and/or rebates in fascia and barge boards.

3.14 INSTALL SOFFIT CLADDING - JOINTERS AND CAPPING MOULDS

Cut sheets dry using score and snap method, hand guillotine or fibre cement shears. If these methods are not feasible, use an alternative manufacturer approved method. Ensure all edges and joints are fully supported. Insert uPVC jointers and capping moulds to manufacturer's requirements. Fix sheets complete with jointers and capping moulds. Refer to manufacturer's installation manual and SELECTIONS.

3.15 INSTALL SOFFIT CLADDING - EXPRESSED JOINTS

Cut sheets dry using score and snap method or hand guillotine. Ensure all edges and joints are fully supported. Install inseal sealing strip to framing at expressed joint locations. Fix sheets complete with required gap to form expressed joint detail. Refer to manufacturer's installation manual and SELECTIONS.

3.16 INSTALL FLUSH FINISHED SOFFIT CLADDING

Cut sheets dry using score and snap method, hand guillotine or fibre cement shears. If these methods are not feasible, use an alternative manufacturer approved method. Seal site cut and site recessed sheet edges with acrylic sealer. Ensure all edges and joints are fully supported. Fit expansion/control joints as detailed and as required by fibre cement sheet manufacturer's requirements. Flush joints with proprietary Base Coat, paper reinforcing tape and proprietary top coat to required flush finish. Refer to manufacturer's installation manual and SELECTIONS.

3.17 INSTALL PRE-FINISHED FIBRE CEMENT SOFFIT CLADDING

Cut sheets dry using score and snap method, hand guillotine or fibre cement shears. If these methods are not feasible, use an alternative manufacturer approved method. Ensure all edges and joints are fully supported. Install as per the pre-finished fibre cement manufacturer's requirements with adhesive, proprietary fixings and mechanical fasteners as required.

3.18 INSTALL IMITATION TONGUE AND GROOVE FIBRE CEMENT SOFFIT CLADDING

Cut sheets dry using score and snap method, hand guillotine or fibre cement shears. If these methods are not feasible, use an alternative manufacturer approved method Ensure all edges and joints are fully supported. Butt joint short ends of cladding (cut square and form chamfer to match) and align to provide continuation of grooved profile line. Install as per the pre-finished fibre cement manufacturer's requirements and with the fixing method as nominated in SELECTIONS.

3.19 FIBRE CEMENT CLADDING CONTROL JOINT

Install control joint to fibre cement sheet manufacturer's requirements and type as nominated in SELECTION.

3.20 FIBRE CEMENT CLADDING FASTENER - SIZE AND LAYOUT

Fix sheets to framing using fixings and fixing methods as nominated in SELECTIONS. Fix to manufacturer's requirements.

3.21 SEALANTS - FIBRE CEMENT

Application and use of sealants to manufacturer's instructions. Check with sealant manufacturer prior to coating over sealants.

3.22 PAINTING - FIBRE CEMENT

Refer to painting section/s for protective coating system.

Install plywood sheets

3.23 EXECUTION

Execution to include those methods, practices and processes contained in the unit standards for the National Certificate in Carpentry and the National Certificate in Joinery (cabinetry, exterior joinery, stairs).

3.24 PLYWOOD EDGE TREATMENT

Treat cut edges of plywood with edge treatment solution before fixing.

3.25 PLYWOOD SEALING

Seal cut edges of plywood before fixing with primer or sealer to suit the surface finish being used.

3.26 FIXING PLYWOOD SOFFIT CLADDINGS

Fit and fix to E2/AS1, 9.8 **Plywood sheet** and the plywood manufacturer's requirements with sheets and trim in square, true alignment and plane. Allow a 2-3 mm expansion gap between square edge sheets.

3.27 GROOVED PLYWOOD SOFFIT FIXINGS

Fit and fix to E2/AS1, 9.8 **Plywood sheet** and the plywood manufacturer's requirements with sheets and trim in square, true alignment and plane. Ensure alignment of grooves between adjacent sheets.

3.28 FIXING NAILS - PLYWOOD PAINT FINISH

Punch nails before finishing and apply a first coat of selected primer or sealer to suit the surface finish being used.

3.29 FIXING NAILS - PLYWOOD CLEAR FINISH

Punch nails flush with the face of external trim being stained or clear finished.

Install timber board soffit cladding

3.30 FIXING SHIPLAP WEATHERBOARDS AS SOFFIT CLADDING

Adjust set-out to ensure there is a 2mm expansion gap between successive boards. Using full length boards only, clench nail tongue to every fixing point. Nail other side of board just clear of lap.

3.31 FIXING SOFFIT BOARD

Using full length boards only, nail from the centre of the board width (nogs at 480mm centres). Nail the batten with a single fixing through the gap between boards at every fixing point.

3.32 FIXING TONGUE AND GROOVE SARKING

Using full length sarking as soffit cladding, ~

3.33 SCARF JOINTS

Where possible run boards/sarking full length. If this is not possible, provide scarf joints over framed support.

3.34 FIXING, PAINT FINISH

Prime all cut ends before fixing. Drill all fixings located within 25mm of board ends. Punch all fixings.

3.35 FIXING, CLEAR FINISH

Coat all cut ends before fixing. Drill all fixings located within 25mm of board ends. Finish fixings flush.

Install timber profiles

3.36 EXECUTION

To NZS 3604, except as varied in this specification. Execution to include those methods, practices and processes contained in the unit standards for the National Certificate in Carpentry and the National Certificate in Joinery (cabinetry, exterior joinery, stairs).

3.37 TIMBER TRIM

Using full lengths, scribe internal joints and mitre external and running joints. Fully support all joints and fix securely and true to line and face, fully nailed. For paint finish prime joint edges before fixing, otherwise seal them without runs onto any exposed face.

3.38 TIMBER COVER BATTENS

Using full lengths, scribe internal joints and mitre external and running joints. Fully support all joints and fix securely and true to line and face, fully nailed. For paint finish prime joint edges before fixing, otherwise seal them without runs onto any exposed face.

3.39 DECORATIVE EAVES BRACKET

Fix securely, plumb, level and true to line and face, fully nailed. For paint finish prime joint edges before fixing, otherwise seal them without runs onto any exposed face.

3.40 NAILING, PAINT FINISH

Punch nails and patch prime external trim being painted, before stopping as specified under painting preparation.

3.41 NAILING, CLEAR FINISH

Punch nails flush with the face of external trim being stained or clear finished.

Completion

3.42 COMPLETE

Ensure the work is complete with all components, accessories, finishings and trim properly installed so the soffit cladding system is completely weathertight.

3.43 REPLACE

Replace all damaged or marked elements.

3.44 LEAVE

Leave work to the standard required for following procedures.

3.45 REMOVE

Remove debris, unused materials and elements from the site.

4 SELECTIONS

Fibre cement soffit cladding

4.1 FIBRE CEMENT SOFFIT CLADDING

Location:	Refer to drawings.
Brand/ID:	James Hardie - HardieSoffit™ Lining
Thickness:	4.5mm
Edge detail:	Square
Fixings/finish:	Refer to manufactures specification / Galvanized.
Joints:	UPVC

Accessories

4.2 TIMBER TRIM

Profile:	Refer to 4224_4.1
Timber species:	Radiata pine
Treatment:	H3.1

4.3 CONTROL JOINTS

Location:	Refer to manufactures specification.
Type:	Refer to manufactures specification.

Finishes - materials supplied unfinished

4.4 MATERIALS SUPPLIED UNFINISHED FOR ON SITE FINISHING

Soffit:	Refer to appropriate painting section/s for finishes
Trim:	Refer to appropriate painting section/s for finishes
Cover batten:	Refer to appropriate painting section/s for finishes

Finishes - factory applied

4.5 MATERIALS SUPPLIED PRE-PRIMED

Soffit:	Refer to appropriate painting section/s for finishes
Trim:	Refer to appropriate painting section/s for finishes
Cover batten:	Refer to appropriate painting section/s for finishes

Finishes - cut edges

4.6 SITE FINISHES - CUT EDGES

Soffit:	~

Finishes - applied on site

4.7 SITE FINISHES - FINAL FINISH COAT ONLY

Soffit:	Refer to appropriate painting section/s for finishes
Trim	Refer to appropriate painting section/s for finishes
Cover batten	Refer to appropriate painting section/s for finishes

4311D DIMOND PROFILED METAL ROOFING

1 GENERAL

This section relates to the supply and fixing of **Dimond** profiled roofing and includes:

- Metal roofing
- Duraclad roofing
- accessories

1.1 RELATED WORK

Refer to 4161 UNDERLAYS, FOIL AND DPC for underlays, foils and DPC.
Refer to drawings.

1.2 ABBREVIATIONS

The following abbreviations are used throughout this part of the specification:

BMT	Base metal thickness
NZMRM	New Zealand Metal Roofing Manufacturers Inc
MS	Modified silicone

Documents

1.3 DOCUMENTS

Refer to the general section 1233 REFERENCED DOCUMENTS. The following documents are specifically referred to in this section:

NZBC E2/AS1	External Moisture
AS/NZS 1170.2	Structural design actions - Wind actions
AS 1397	Continuous hot-dip metallic coated steel sheet and strip - Coatings of zinc and zinc alloyed with aluminium and magnesium
AS 3566	Self-drilling screws for the building and construction industries
NZS 3604	Timber-framed buildings
ISO 9223	Corrosion of metals and alloys - Corrosivity of atmosphere - Classification determination and estimation
NZMRM CoP	NZ Metal Roof and Wall Cladding - Code of Practice

Documents listed above and cited in the clauses that follow are part of this specification. However, this specification takes precedence in the event of it being at variance with the cited document.

1.4 MANUFACTURER'S DOCUMENTS

Manufacturer's and supplier's documents relating to work in this section are:
Web only based: **Dimond** Roofing and Cladding Systems Manual

Available from: **Dimond** web site

Web:	www.dimond.co.nz
Telephone	0800 346 663 (0800 DIMOND)

Warranties

1.5 WARRANTY - MANUFACTURER/SUPPLIER

Provide a material manufacturer/supplier warranty:.

~ years:	for failure of coating adhesion
~ years:	for weatherproofing by material penetration

- Provide this warranty on **Dimond** standard form.
- Commence the warranty from the date of practical completion of the contract works

Refer to the general section 1237 WARRANTIES for additional requirements.

1.6 WARRANTY - INSTALLER/APPLICATOR

Provide an installer/applicator warranty:

5 years	from the date of completion of the roof

- Provide this warranty on Roofing installers standard form.
- Commence the warranty from the date of practical completion of the contract works.

Include a copy of the **Dimond** maintenance requirements with the warranty.

Refer to the general section 1237 WARRANTIES - INSTALLER/APPLICATOR for additional requirements.

Provide all relevant **Dimond** maintenance information on completion of the roofing work, as required by the GENERAL sections.

Requirements

1.7 NO SUBSTITUTIONS

Substitutions are not permitted to any specified system, or associated components and products.

1.8 QUALIFICATIONS

Roofers to be Dimond Recommended Installer, or experienced, competent roofers familiar with **Dimond** products. And for Restricted Building Work, shall also be an LBP or supervised by an LBP.
Carry out work with experienced, competent installers familiar with the products being used and with appropriate qualifications such as the National Certificate in Metal Roofing and Cladding

Performance - Wind

1.9 DESIGN PARAMETERS - NON SPECIFIC DESIGN

Building wind zone:
44 m/s / 1.20kPa ULS(refer to NZS 3604, table 5.4)
Refer to Dimond for "Wind Load Span Capacity charts".

1.10 FIXINGS, WIND

Design and use the fixings/fixing pattern appropriate for the wind design parameters. Refer to **Dimond** Technical Information for load span tables and fixing charts for the selected profile. Allow for specific loadings at corners and the periphery of the roof, where localised pressure factors apply. Fixing pattern to also take into account fixing method and purlin spacings.

Performance - General

1.11 CO-ORDINATE

Co-ordinate to ensure substrate and preparatory work is complete and other work programmed in the order required for access and completion of the roof. Ensure that all necessary members are positioned so that flashings can be fastened at both edges through the roof profile or cladding to the primary structure.

1.12 PERFORMANCE

Select installation method of the roof materials and accept responsibility for the weather-tight performance of the completed roofing system including penetrations through the roof and junctions with walls and parapets.

2 PRODUCTS

Materials

2.1 HOT-DIPPED ALUMINIUM/ZINC COATED STEEL, UNPAINTED

Formability steel sheet, G550 for roll forming or G300 for flashings, coated to AS 1397.

Fixings

2.2 FASTENERS GENERALLY

Fixings and fasteners are to be compatible with all materials, the environment and meeting the requirements of the NZ Building Code. Installation is to be in accordance with E2/AS1 and/or the NZ Metal Roof and Wall Cladding - Code of Practice and Dmond requirements.
For fixing patterns refer to **Dimond** Fixing Charts for the selected profile.

2.3 FIXING SCREWS

To AS 3566. Screws appropriate to the roofing material and the supporting structure, as required by Dimond and with a minimum Class 4 or 5 durability and not less than the material being fixed. Screw into timber to penetrate by minimum 30mm. Screw fasteners to be head stamped identifying the manufacturer and class. Use Alutite or stainless steel with aluminium based sheets. Refer to SELECTIONS.

2.4 RIVETS

Sealed aluminium, minimum diameter 4mm, for use with zinc coated, zinc/aluminium coated or aluminium roofing.

Components

2.5 FLASHINGS GENERALLY

To NZBC E2/AS1, 4.0 **Flashings**.

Formable grade 0.55 BMT for galvanized, aluminium/zinc, aluminium/zinc/magnesium - coated and pre-painted steel, and 0.90 for aluminium to the same standards as the profiled sheets, notched where across profile or provided with a soft edge.

2.6 FLASHINGS TO VERGE, RIDGE AND HIP

Supplied by the roofing manufacturer to match or to suit the roofing in the same material as the roof.

2.7 BOOT FLASHINGS

Generally to E2/AS1, 8.4.17 **Roof penetrations**(note; E2/AS1, Figure.54 **Soaker flashing for pipe penetration**, has an error, use as guide only)
EPDM proprietary pipe flashing laid on 45° bias to roofing, with over-flashing (soaker flashing) if required.
A boot flashing should be positioned so that it dams a roofing pan no more than 50%, if this cannot be avoided use an over-flashing back to the ridge and fix the boot flashing to that.

2.8 NATURAL LIGHTING

Refer to 4312D DIMOND PROFILED GRP NATURAL LIGHTING.

Accessories

2.9 WIRE NETTING AND SAFETY MESH

Refer to 4161 UNDERLAYS, FOIL AND DPC.

2.10 UNDERLAY AND REFLECTIVE FOIL

Refer to 4161 UNDERLAYS, FOIL AND DPC

2.11 SEALANT

Neutral curing MS sealant or polymer sealant as required by the roofing manufacturer and used as directed.

2.12 CLOSURE STRIPS

Non-bituminous compressible, profiled foam strips to fit the sheet profile.

2.13 LAP SEALING TAPE

Closed cell self adhesive nitrile tape.

3 EXECUTION

Conditions

3.1 INSPECTION

Inspect the roof framing and supporting structure to ensure that it is complete and fully braced ready for roofing and free from any misalignments or protrusions that could damage the roofing.

3.2 FRAMING TIMBER MOISTURE

When continuous metal cladding etc. Runs along a long continuous timber member and is directly fixed to it, the timbers equilibrium moisture content (EMC) to be 18% or less. For flashings in this situation (sometimes called transverse flashings) the framing EMC to be maximum 16%, and preferably as low as 12%. Transverse flashings can be temporarily tacked in place and final fixing done when moisture content is acceptable.

3.3 STORAGE

Upon delivery, visually inspect all sheets for any damage and accept packs of roofing undamaged on delivery. Reject all damaged material. Store on a level firm base with packs well ventilated and completely protected from weather and damage. Do not allow moisture to build up between sheets. If sheet packs become wet, fillet or cross stack to allow air movement between sheets.

3.4 HANDLING

Avoid distortion and contact with damaging substances, including cement. Do not drag sheets across each other and other materials. Protect edges and surface finishes from damage. Use soft, flat sole shoes when fixing and for all other work on the roof. Walk along the purlin line whenever possible.

3.5 SEPARATION

Isolate dissimilar materials in close proximity as necessary by painting the surfaces or fitting separator strips of compatible or inert materials. Place isolators between metals and treated timber, cement based materials, and mixing aluminium sheet and steel mesh. Do not use unpainted lead sheet or copper in contact with or allow water run-off onto galvanized or aluminium/zinc coated steel.

Application

3.6 FIX INSULATION

Refer to Thermal Insulation sections.

3.7 SET-OUT

Carefully set out with consideration of the position of side laps to take account of the prevailing wind and line of sight. Ensure all sheets are square and oversailing the gutter true to line. Check during fixing to eliminate creep or spread and string lines along purlin centres to keep fastenings in line.

3.8 END LAPS

End laps should be avoided, except where specifically detailed.

3.9 THERMAL MOVEMENT

For sheet lengths more than 18 metres, make provision for thermal expansion where required

3.10 FIXING GENERALLY

Install and fix in accordance with the Dimond required fixing patterns and details for each area of the building roofing. Use only screws as required by the roofing manufacturer. Paint colour matched fixings and accessories before installation.

3.11 MARKING AND CUTTING

Use chalk line, Chinagraph pencils or coloured pencil for marking roof sheets prior to cutting. Do not use lead pencil for marking Zincalume®, ZAM®, Colorsteel® and Colorcote®. Cut by shear only, using nibblers or hand snips. Remove all cutting and drilling debris from the roof.

3.12 FIX SHEETS

Fix sheets in place using the fastening system required by Dimond for specified profiles, making due allowance for dynamic local wind pressures on the building and thermal movement in the sheet.

3.13 STOP ENDS AND DOWNTURNS

Form stop-ends at the upper end of sheets. Form downturns at the gutter line where the roof pitch is less than 8 degrees. Form using the required tools.

3.14 FLASHINGS

Flash roof to parapets, walls and penetrations to detail. Flashings to be installed on timber framing with moisture content of less than 18%. Where no detail is provided flash to NZMRM CoP NZ metal roof and wall cladding Code of Practice recommendations and Dimond requirements. Cut accurately and fix using sealant and rivets to detail and to Dimond requirements to form a weatherproof cover. For highly visible flashings, plan joints/junction to take account of the aesthetic requirements.

3.15 SEPARATION

Separate metal sheeting from CCA treated timber with an inert isolation material such as flashing tape, underlayment mat or similar. Contact Dimond for other options.

3.16 USE OF SEALANTS

Select and use sealants only as recommended by Dimond. Remove any swarf and clean down, apply sealant in two narrow beads transversely across flashing intersections, close to the two edges. Avoid exposing sealant on outside surfaces.

3.17 FLASHING PENETRATIONS

Flash all penetrations through the roof. Fit pipe flashings with a proprietary collar flashing, with other penetrations flashed as detailed and to provide a weathertight installation. Ensure that flashings are set to avoid any ponding of water.

Completion

3.18 REPLACE

Replace damaged or marked elements.

3.19 LEAVE

Leave this work complete with all necessary flashings, undercloaks, valleys, ridges and hips all properly installed as the work proceeds so the finished roof is completely weathertight.

3.20 REMOVE

Remove trade rubbish and unused materials from the roof and surrounds daily during the work. Sweep down at the end of each day, and clean out spouting, gutters and rainwater pipes on completion of the roof. Remove debris, unused materials and elements from the site.

4 SELECTIONS

For further details on selections go to www.dimond.co.nz.
Substitutions are not permitted to the following, unless stated otherwise.

Coating system

4.1 COATING SYSTEM - EXPOSURE ZONE B-C (CAT 1-3)

Project Exposure Zone B-C to NZS 3604, C 1-3 to ISO 9223.

Profile/location:	Corrugate
Base material:	Zincalume® on steel
Coating system:	Colorcote ZinaCore™
Paint colour:	White - To match existing roofing

Roofing

4.2 DIMOND CORRUGATE ROOFING

BMT/material	.55mm Steel
Purlin material:	Timber
Fixing:	12-11x50 Type 17 Woodteks or M6x50HG Roofzips with neos.
Fixing pattern:	Refer to Dimond Corrugated literature for details

Accessories

4.3 FLASHINGS - GENERALLY

Profile:	Refer to drawing A401
BMT/material:	Alum/Zinc coated steel 0.55mm
Coating system:	To match roofing
Paint colour:	To match roofing

4383 TIMBER DECKING

1 GENERAL

This section relates to the fabrication and installation of exterior timber
- spaced boarding to decks
- steps and landings

Related work

1.1 RELATED SECTIONS

Refer to drawings.

Documents

1.2 DOCUMENTS

Refer to the general section 1233 REFERENCED DOCUMENTS. The following documents are specifically referred to in this section:

NZBC D1/AS1	Access routes
NZBC D1/VM1	Access routes
NZS 3602	Timber and wood-based products for use in building
NZS 3604	Timber-framed buildings
AS/NZS 3661.1	Slip resistance of pedestrian surfaces - Requirements
BRANZ BU 497	Stair construction

1.3 MANUFACTURER'S DOCUMENTS

Manufacturer's and supplier's documents relating to work in this section are:
Web only based: JSC product specifications.

Copies of the above literature are available from ~

Web:	http://www.jsctimber.co.nz/
Email:	~
Telephone:	~
Facsimile:	~

Performance

1.4 SLIP RESISTANCE FOR ACCESS ROUTES

Slip resistance for decking to comply with NZBC D1/AS1: 2.0 Level access routes and 3.0 Ramps; NZS 3604, 7.4.4 Surface.
- when in place on a level access route, to have a mean coefficient of friction (μ) not less than 0.4 when tested in accordance with AS/NZS 3661.1.
- when in place on a sloping access route, to have a coefficient of friction (μ) not less than 0.4 + 0.0125S (S = slope of surface expressed as a percentage).

2 PRODUCTS

Materials

2.1 SOLID TIMBER COMPONENTS

Selection to NZS 3602.

2.2 HARDWOOD SPACED BOARDING FOR EXTERIOR DECKS

Plantation-grown hardwood. Dressed four sides and with arrises, or specifically profiled decking. Provide a timber sample for review prior to laying.

3 EXECUTION

Conditions

3.1 GENERALLY

Execution to include those methods, practices and processes contained in the current syllabus for the National Certificate in Carpentry and the National Certificate in Joinery (cabinetry, exterior joinery, stairs).

Check site dimensions. Carry out machining within the practices recommended for the particular timber, wood product or pre-finished wood product being used. Machine drill and cut holes and recesses and form joints to the componentry manufacturer's recommendations. Work to be accurate, square and true to line and face.

3.2 PREPARATION, PRE-COATING

For decking to be, stained, sealed or oiled, ensure underside face, edges and cuts of the decking are pre-coated prior to installation. Refer to SELECTIONS for finish.

Application

3.3 LAYING TIMBER SPACED BOARDING - EXTERIOR DECKS

Confirm whether the grooved side of the boards is face up or face down. Avoid excessively short or long lengths. Drill for all fixings. Stagger end joints. Space narrow boards (<100mm) a minimum of 2mm apart in general conditions, or minimum 3mm to 4mm apart if wide boards (>100mm) or narrow boards that are likely to swell after fixing, or 5mm apart for wide boards that are likely to swell. Leave a 12mm minimum gap between the exterior wall and the adjacent decking board.

3.4 NAIL FIXING

Pre-drill boards if necessary to prevent splitting.
Fix using annular grooved decking nails, flat heads driven flush with the board surface. Refer to SELECTIONS.

3.5 SCREW FIXING

Pre-drill for all fixings, where the screws allow, use a proprietary deck pre-drilling and countersinking tool. Use decking screws and power drive into the deck surface to just slightly below the board surface (approx. 0.5mm). Take care to not overdrive the screw as this may result in the screw heads or the boards being damaged. Refer to SELECTIONS.

3.6 CORROSION RISKS

For exterior timber, timber in damp areas and timber subject to occasional wetting, use only stainless steel or silicon bronze, fixings and connectors, if decking or framing timber is treated with; Copper Azole (CuAz, Preservative code 58), Alkaline Copper Quaternary (ACQ, Preservative code 90), Micronise Copper Azole (code 88) or Micronised Copper Quaternary (code 89).

Completion

3.7 LEAVE

Leave work to the standard required by following procedures.

3.8 REMOVE

Remove all debris, unused materials and elements from the site.

4 SELECTIONS

4.1 SLIP RESISTANCE REQUIREMENTS FOR WALKING SURFACES

Location:	Refer to A121a
Slip resistance boarding:	JSC SlippFree Anti Slip Protection System

4.2 EXTERIOR DECKING - HARDWOOD SPACED BOARDING

Species:	Kwila
Size:	100mm x 25mm
Grooved face:	Down
Finish:	Natural stain finish

4.3 NAIL FIXING

Location:	Refer to A121a
Nail type:	Galvanized annual grooved decking nail
Nail size:	75 x 3.15mm

4.4 SCREW FIXING

Location:	Refer to A121a
Screw type:	Silicone bronze decking screw
Screw size:	75 x 10g

4521AR APL RESIDENTIAL ALUMINIUM WINDOWS & DOORS

1 GENERAL

This section relates to the fabrication, supply and installation by either an **Altherm, First** or **Vantage** fabricator of:

- Residential aluminium windows and doors
- Metro Series aluminium windows and doors
- APL Architectural Series aluminium windows and doors
- Metro Thermal Heart aluminium windows and doors
- Smartwood composite aluminium / timber windows and doors
- Roof windows and overhead glazing
- Balustrading
- Hardware and furniture
- Flashings and sealants

1.1 RELATED WORK

Refer to drawings.

1.2 ABBREVIATIONS AND TERMS

SLS	Serviceability limit state
ULS	Ultimate limit state
WANZ	Windows Association of New Zealand
PQAS	Powder Coating Quality Assurance System

Documents

1.3 DOCUMENTS

Refer to the general section 1233 REFERENCED DOCUMENTS. The following documents are specifically referred to in this section:

NZBC E2/AS1	External moisture
NZBC F4/AS1	Safety from falling
NZBC H1/VM1	Energy efficiency
NZBC H1/AS1	Energy efficiency
AS/NZS 1580.108.1	Methods of test for paints and related materials - Determination of dry film thickness on metallic substrates - Non destructive methods
AS/NZS 1170.2	Structural design actions - Wind loads
NZS 1170.5	Structural design actions - Earthquake actions - New Zealand
AS/NZS 1734	Aluminium and aluminium alloys - Flat sheet, coiled sheet and plate
AS/NZS 1866	Aluminium and aluminium alloys - Extruded rod, bar, solid and hollow shapes
AAMA 2604.05	Performance requirements and test procedures for high performance organic coatings on aluminium extrusions and panels
NZS 3604	Timber-framed buildings
AS 3715	Metal finishing - Thermoset powder coatings for architectural applications
BS 3900	Methods of tests for paints, Part C5: Determination of film thickness
NZS 4211	Specification for performance of windows
NZS 4223.3	Glazing in buildings - Human impact safety requirements
AS/NZS 4680	Hot-dip galvanized (zinc) coatings on fabricated ferrous articles
WANZ Installation Guide	The WANZ Guide to Window Installation as described in E2/AS1 Amendment 5
WANZ PQAS	Powder Coating Quality Assurance System
WANZ SFA 3503-03	Anodic Oxide coatings on wrought aluminium for external architectural application (2005)
BRANZ BU 337	Protecting Window Glass from Surface Damage
AAMA 2604	Voluntary specification, performance requirements and test procedures for high performance organic coatings on aluminium extrusions and panels
AAMA 2605	Voluntary specification, performance requirements and test procedures for superior performing organic coatings on aluminium extrusions and panels

US Federal Specification

TT-S-001543A	Sealing compound, silicone rubber base (for caulking, sealing and glazing in buildings and other structures)
TT-S-00230C	Sealing compound, elastomeric type, single component (for caulking, sealing and glazing in buildings and other structures)

1.4 MANUFACTURER'S DOCUMENTS

Manufacturer's and supplier's documents relating to work in this section are contained within:
Altherm Specifier's Guide
First Specifier's Guide
Vantage Specifier's Guide

Copies of the above literature are available from:

Web:	www.altherm.co.nz
	www.firstwindows.co.nz
	www.vantagejoinery.com
Email:	specifiersguide@aplnz.co.nz
Telephone:	09 309 3251
Facsimile:	09 309 3298

Warranties

1.5 WARRANTY - MANUFACTURER/SUPPLIER

Provide a material manufacturer/fabricator warranty:
5 years: For fabrication

Refer to the general section for the required form of 1237WA WARRANTY AGREEMENT and details of when completed warranty must be submitted.

1.6 WARRANTY - INSTALLER/APPLICATOR

Provide an installer warranty:
2 years: For installation

- Provide this warranty in the installer standard form.

Refer to the general section 1237 WARRANTIES for additional requirements.

Requirements

1.7 NO SUBSTITUTIONS

Substitutions are not permitted to any specified **APL** aluminium system, or associated components and products.

1.8 QUALIFICATIONS

Work to be carried out by tradesmen experienced, competent and familiar with the materials and techniques specified.

1.9 COMPLIANCE

Windows and doors to be manufactured and installed to NZBC E2/AS1.

1.10 CERTIFICATION

Provide evidence of a certificate by a laboratory accredited by International Accreditation of New Zealand that the windows and doors offered comply with the requirements of NZS 4211

Performance

1.11 PERFORMANCE - WINDOWS AND DOORS

To NZS 4211, including:

- deflection, opening sashes, air infiltration, water penetration, ultimate strength, torsional strength of sashes, marking.

Refer to SELECTIONS.

1.12 STRUCTURAL/WEATHER-TIGHTNESS

The structural and weather-tight performance of the completed joinery, the glazing and infill panels is the responsibility of the window fabricator.

Performance - Wind (design by contractor)

1.13 DESIGN PARAMETERS - NON SPECIFIC DESIGN

Design the installation to the wind zone parameters of NZS 3604, table 5.1.

Refer to SELECTIONS for wind zone.

Finishes

1.14 CERTIFY COATINGS - POWDER COATING

Certify on request, compliance with this specification and support with control and sampling records. Test for film thickness to BS 3900, part C5, method No. 4, using method (b) or to AS/NZ 1580.108.1 for certifying thickness and method (a) where any dispute arises as to the thickness provided.
The coating should be applied by an applicator who can certify that the coating has been applied in accordance with the specification.

2 PRODUCTS

2.1 WINDOWS

Refer to SELECTIONS for type and finish.

2.2 DOORS

Refer to SELECTIONS for type and finish.

Materials

2.3 ALUMINIUM EXTRUSIONS

Alloy designation to comply with AS/NZS 1866. Branded and extruded for anodising or powder coating.

2.4 ALUMINIUM SHEET AND STRIP

Complying with AS/NZS 1734 of suitable thickness. Rolled for anodising or powder coating.
Alloy designation: 5251 - H16 or 5005 - H16

2.5 STAINLESS STEEL SHEET AND STRIP

Type:	316 austenitic steel
Finish grade:	2B (satin lustre)

2.6 GLASS

Refer to the glazing section for glass types and installation.

Reveals

2.7 REVEALS - TIMBER PAINTED

Timber reveals for paint finish with all sides primed grooved for wall linings or flush finished for architraves.

Flashings

2.8 FLASHINGS GENERALLY

To NZBC E2/AS1, 9.1.10 **Windows and Doors**. Material, grade and colour of head flashings to match the window frames. Ensure that materials used for head, jamb and sill flashings are compatible with the window frame materials and fixings and cladding materials.

Components for installation - direct fix systems

2.9 SILL PAN FLASHING

To NZBC E2/AS1, 9.1.10.5 **Windows and Door Sills**. Flashing for direct fix claddings to collect and drain water that may penetrate through the window or door unit. Size to extend from the inner most point of the aluminium frame out over the external face of the cladding.

2.10 SUPPORT ANGLE

A Standard aluminium support angle for use below the sill pan for deeper claddings to transfer the weight of the window back to the frame. Size to suit cladding thickness.

Components

2.11 GLAZING GASKETS

Thermoplastic rubber. Do not stretch glazing gaskets during installation. Measure and cut gaskets 5-10% over length before installation.

2.12 HARDWARE AND FURNITURE

Hinges, stays, catches, fasteners, latches, locks and furniture as offered by the window and door manufacturer. Refer to SELECTIONS for type and finish. Key alike all lockable window hardware able to be keyed alike.

2.13 SAFETY STAYS

Stainless steel non releasable restrictors to limit window opening to NZBC F4/AS1, Table 2, Acceptable opening sizes for barriers.

2.14 FIXING BRACKETS

Designed by manufacturer to specific design.

2.15 WEATHERING/INSTALLATION SEALANT

Building sealant used in accordance with manufacturer's instructions for weather sealing aluminium frames to the cladding, complying with US Federal Specification TT S 0011534A, or a one-part polyurethane moisture curing, elastic joint sealant of medium modulus (± 25% movement) to US Federal Specification TT S 00230C.

Finishes

2.16 DURALLOY POWDER COATED ALUMINIUM

Polyester powder organic coating in accordance with WANZ PQAS and AS 3715.

2.17 DURATEC POWDER COATED ALUMINIUM

Polyester powder organic coating in accordance with WANZ PQAS and AAMA 2604.

2.18 FLUROSET POWDER COATED ALUMINIUM

PVF² fluoropolymer powder coating in accordance with AAMA 2605 and WANZ PQAS.

3 EXECUTION

Conditions - generally

3.1 DO NOT DELIVER

Do not deliver to site any elements which cannot be unloaded immediately into suitable conditions of storage.

3.2 UNLOAD WINDOW JOINERY

Unload, handle and store elements in accordance with the window manufacturer's requirements.

3.3 AVOID DISTORTION

Avoid distortion of elements during transit, storage and handling.

3.4 PREVENT DAMAGE

Store windows and doors on site in a clean and dry environment in such a manner as to prevent damage to prefinished surfaces. Stack the units in a vertical position resting on their sills, with layers interleaved between to prevent rubbing. Keep paper and cardboard wrappings dry.

3.5 PROPRIETARY ELEMENTS

Fix in accordance with the window manufacturer's requirements.

3.6 PROTECTIVE COVERINGS

Retain protective coverings and coatings to BRANZ BU 337 and keep in place during the fixing process. Provide protective coverings and coatings where required to prevent marking of surfaces visible in the completed work and to protect aluminium joinery from following trades. Remove protection on completion.

3.7 ADDITIONAL PROTECTION

Supply and fix additional protection as necessary to prevent marking of surfaces which will be visible on completed work.

Conditions - fixings and fastenings

3.8 SUPPLY OF FIXINGS

Use only fixings and fastenings recommended by the manufacturer of the component being fixed and to comply with the ULS wind pressure stated in SELECTIONS. Ensure fixings and fastenings exposed to the weather are of aluminium, or Type 316 stainless steel or if not exposed to the weather may they be hot-dip galvanized steel with a coating weight of 610 g/m² complying with AS/NZS 4680.

3.9 INSTALLATION FIXING

To NZBC E2/AS1, 9.1.10.8, **Attachments for windows and doors**. Fix windows/doors through reveal to frame with a pair of 75 x 3.15mm minimum galvanised jolt head nails or a pair of 8 gauge x 65mm minimum stainless steel screws. Fix at a maximum of 450 centres along all reveals and a maximum of 150mm from reveal ends. Ensure fixings do not penetrate metal flashings.
Install packers between reveals and framing at fixing points, except at the head.

Assembly

3.10 FABRICATION

Fabricate frames as detailed on shop drawings. Install glazing, hinges, stays and running gear as scheduled. Provide temporary bracing and protection. Temporarily secure all opening elements for transportation.

3.11 TIMBER / PVC REVEALS

Before fixing to aluminium frames, ensure that timber reveals which are being painted have been primed on all surfaces. Securely fix reveals through aluminium fin.

3.12 HARDWARE GENERALLY

Factory fit all required and scheduled hardware. Account for all keys and deliver separately to the site manager.

3.13 SAFETY STAYS

Factory fit safety stays to all windows scheduled for safety stays and to all windows where safety stays are required to comply with NZBC F4/AS1 4.0, Opening windows.

Installation - windows and doors

3.14 SUPPLY OF FIXINGS

Use only fixings and fastenings recommended by the manufacturer of the component being fixed and to comply with the ULS wind pressure stated in SELECTIONS.

3.15 EXPOSED FIXINGS AND FASTENINGS

Ensure fixings and fastenings exposed to the weather are of aluminium, or Type 304 stainless steel.

3.16 PROTECTED FIXINGS AND FASTENINGS

Fixings and fastenings not exposed to the weather may be hot-dip galvanized steel with a coating weight of 610 g/m² complying with AS/NZS 4680.

3.17 CORROSION PROTECTION

Before fixing, apply suitable barriers of bituminous coatings, stops or underlays between dissimilar metals in contact, or between aluminium in contact with concrete.

3.18 CONFIRM PREPARATION OF EXTERIOR WALL OPENINGS

Confirm that exterior wall openings have been prepared ready for the installation of all window and door frames. Do not proceed with the window and door installation until required preparatory work has been completed.

Required preparatory work includes the following:

- wall cladding underlay/building wrap to openings finished and dressed off ready for the installation of window and door frames to NZBC E2/AS1:9.1.5 **Wall underlays to wall openings.**
- Full height 20mm jamb battens to NZBC E2/AS1 figure 72A (direct fix only)
- claddings neatly finished off to all sides of openings
- installation of flashings (those which are required to be installed prior to frames).
- application of waterproof sealer to all door and window sills in concrete floor or concrete sill situations. To door sills only, apply a suitable membrane over the sealer
- all in accordance with the shop drawings, where applicable.

3.19 INSTALLATION

Fix to comply with the reviewed shop drawings and installation details including flashings and bedding compounds, pointing sealants and weathering sealants.

3.20 INSTALLATION DIRECT FIX

Install to window manufacturers details and drawings including sill pans to window and door units.

3.21 INSTALL FLASHINGS

Install flashings to heads, jambs and sills of frames as supplied and required by the window manufacturer and as detailed on the drawings. Finish head flashings to match window finish.

Place all flashings so that the head flashing weathers the jamb flashings, which in turn weathers over the upstand of the sill flashing. Ensure that sill flashings drain to the outside air.

Except where window/door frames are recessed, ensure that head flashings over-sail unit by 20mm plus any jamb scriber width at each end.

3.22 COMPLETE AIR SEAL

To NZBC E2/AS1:9.1.6 **Air seals**. Form an air-tight seal by means of proprietary expanding foam or sealants used with PEF backing rods, applied between the window / door reveal and structural framing to a depth of 10 - 20mm, to provide a continuous air tight seal to the perimeter of the window or door.

3.23 FIX HARDWARE

Fix all sash and door hardware and furniture as scheduled.

Application - jointing and sealing

3.24 SEAL FRAMES ON SITE

Seal frames to each other and to adjoining structure and finishes, all as required by the window and sealant manufacturer and to make the installation weathertight.. In very high and extra high or greater wind zones, seal between the window head and the head flashing. Do not seal the junction between the sill member and the cladding or sill flashing which must remain open.

3.25 PREPARE JOINTS

Ensure joints are dry. Remove loose material, dust and grease. Prepare joints in accordance with the sealant manufacturer's requirements, using required solvents and primers where necessary. Mask adjoining surfaces which would be difficult to clean if smeared with sealant.

3.26 BACK UP

When using back-up materials do not reduce depth of joint for sealant to less than the minimum required by the manufacturer of the sealant. Insert polyethylene rod or tape back-up behind joints being pointed with sealant.

3.27 SEALANT FINISH

Tool sealant to form a smooth fillet with a profile and dimensions required by the sealant manufacturer. Remove excess sealant from adjoining surfaces, using the cleaning materials nominated by the sealant manufacturer and leave clean.

Cleaning

3.28 REMOVE TRADE DEBRIS

Remove trade debris by appropriate means on a floor by floor basis as each floor is completed and again before any work is covered up by others. Arrange for general removal.

3.29 TRADE CLEAN

Trade clean window frames, operable windows and doors, glass and other related surfaces inside and out at the time of installation to remove marks, dust and dirt, to enable a visual inspection of all surfaces.

Completion

3.30 PROTECTIVE COVERINGS

Retain protective coverings and coatings and keep in place during the fixing process. Provide protective coverings and coatings where required to prevent marking of surfaces visible in the completed work and to protect aluminium joinery from following trades. Remove protection on completion.

3.31 REPLACE

Replace damaged, cracked or marked elements.

3.32 PROTECTION

Protect finishes against damage from adjacent and following work.

3.33 IN-SITU TOUCH-UP TO POWDER COATED ALUMINIUM

In situ touch-up of polyester or fluoropolymer coated aluminium is only permitted to minor surface scratching. Otherwise replace all damaged material.

3.34 SAFETY

Indicate the presence of transparent glasses for the remainder of the contract period, with whiting, tape or signs compatible with the glass type. Indicators other than whiting must not be applied to the glass surface. Masking tape must not be used for this purpose.

4 SELECTIONS

Substitutions are not permitted to the following selections.

4.1 SUPPLY AND INSTALLATION

Supply and installation of the specified **APL** aluminium joinery.

Supply:	By fabricator
Installation:	By contractor

Performance

4.2 THERMAL PERFORMANCE

R-value: Climate zone 1: R 0.26 (as determined from NZBC H1/VM1 or H1/AS1)

4.3 AIR INFILTRATION

For NZS 4211, table 3 **Air infiltration**.

Non-air conditioned zones: T.B.C

Air conditioned zones: T.B.C

Performance - Wind (design by contractor)

4.4 DESIGN PARAMETERS - NON SPECIFIC DESIGN

Building wind zone: H (High wind speed of 44 m/s) 1200 Pa ULS (refer to NZS 3604, table 5.1)

Finishes

4.5 DURALLOY - POWDER COATING FINISH

Type: Polyester organic powder coating
System integrity: ~
Thickness: Average of 80 microns with a minimum of 50 microns
Colour: ~

4.6 DURATEC - POWDER COATING FINISH

Type: Polyester organic powder coating
System integrity: ~
Thickness: Average of 80 microns with a minimum of 50 microns
Colour: ~

4.7 FLUOROSET - POWDER COATING FINISH

Type: PVF2 fluoropolymer powder coating
System integrity: ~
Thickness: Average of 80 microns with a minimum of 50 microns
Colour: ~

Glazing

4.8 GLASS

Type/thickness: Refer to glazing section/s for type and thickness.

Hardware

4.9 WINDOW HARDWARE

Window fastener: ~

Location	Item
Contractor liase with client.	Safety stays - non releasable
	Safety stays - disconnectable
	Sash locks
	Louvres

4.10 DOOR HARDWARE

Locks & handles: ~

Location	Item
Contractor liase with client.	Parliament hinges
	Hold back devices
	Patio bolts
	Door restrictors
	Twin bolt bifold lock

4.11 HARDWARE FINISH

Finish: Powder coat
Colour: Black

Flashings and Sealant

4.12 FLASHINGS

Material/type:	As per APL flashing specifications.
Pattern:	Formed to suit and comply with NZBC's

4.13 WEATHERING SEALANT

Type:	1-part polyurethane moisture curing, elastic joint sealant
Colour:	White

Reveals

4.14 TIMBER JAMB REVEALS

Timber species:	Finger jointed pine to AS/NZS 1491
Grade/treatment:	H3.1
Thickness:	19mm
Reveals:	Flush finish for architraves
Finish:	Pre-primed

Window and door system - RESIDENTIAL

4.15 APL RESIDENTIAL AWNING WINDOW

Brand/type:	**Altherm, First** or **Vantage RESIDENTIAL Series**
Window No.:	As per window included on drawings.

4.16 APL RESIDENTIAL CASEMENT WINDOW

Brand/type:	**Altherm, First** or **Vantage RESIDENTIAL Series**
Window No.:	As per window included on drawings.

4.17 APL RESIDENTIAL SLIDING DOOR

Brand/type:	**Altherm, First** or **Vantage RESIDENTIAL Series**
Door No.:	As per door schedule included on drawings.

4611ME METRO GLASSTECH EXTERIOR GLAZING

1 GENERAL

This section relates to the supply and fixing of **Metro GlassTech** products for external joinery in complex residential and commercial buildings, including:

- window and doors
- curtain wall systems
- balustrade/barriers-pool fences and screens
- canopies and Rooflights

1.1 RELATED WORK

Refer to drawing A900

1.2 ABBREVIATIONS AND DEFINITIONS

Refer to the general section 1232 INTERPRETATION & DEFINITIONS for abbreviations and definitions used throughout the specification.

The following abbreviations apply specifically to this section:

PVB	Polyvinyl Butyral
CIP	Cast in place

Documents

1.3 DOCUMENTS

Refer to the general section 1233 REFERENCED DOCUMENTS. The following documents are specifically referred to in this section:

NZBC F4/AS1	Safety from falling
NZBC H1/AS1	Energy Efficiency
AS/NZS 1170.2	Structural design actions - Wind loads
NZS 3604	Timber-framed buildings
NZS 4211	Specification for performance of windows
NZS 4218	Thermal insulation - Housing and Small Buildings
NZS 4223.1	Glazing in buildings - Glass selection and glazing
NZS 4223.3	Glazing in buildings - Human impact safety requirements
NZS 4223.4	Glazing in buildings - Wind, dead, snow and live action
NZS 4223.Supp1	Glazing in buildings - Supplement 1 to NZS 4223.1:2008 and NZS 4223.4:2008
NZS 4243.1	Energy Efficiency - Large Buildings - Building thermal envelope
AS/NZS 2208	Safety glazing materials in buildings
AS/NZS 4666	Insulating glass units
BRANZ BU 337	Protecting window glass from damage

1.4 MANUFACTURER/SUPPLIER DOCUMENTS

Manufacturer's and supplier's documents relating to this part of the work:
Metro GlassTech Catalogue & Reference Guide - 6th edition

Manufacturer/supplier contact details

Company:	**Metro GlassTech**
Web:	www.metroglasstech.co.nz
Email:	info@metroglasstech.co.nz
Telephone:	0800 65 89 45

Warranties

1.5 WARRANTY - MANUFACTURER/SUPPLIER

Provide a material manufacturer/supplier warranty:

10 years:	for insulating glass units
10 years:	for laminated safety glass
10 years:	for toughened safety glass
10 years:	for screen printed glass

- Provide this warranty on the manufacturer/supplier standard form.
- Commence the warranty from the date of completion of this part of the contract work.

Refer to the general section for the required form of 1237WA WARRANTY AGREEMENT and details of when completed warranty must be submitted.

Performance

1.6 THERMAL STRESS ANALYSIS

For non heat treated glass obtain a thermal stress analysis for spandrel panels, tinted, reflective and other solar control vision glass including IGU's for review before placing final order.

1.7 ENERGY EFFICIENCY

Provide glazing to meet the energy requirements of, NZS 4218 and NZBC H1/AS1 for housing small buildings, or NZS 4243.1 for large buildings.
Refer to SELECTIONS and schedules for location and type of glazing.

2 PRODUCTS

2.1 NO SUBSTITUTIONS

Substitutions are not permitted to any specified **Metro GlassTech**, products or systems.

Materials

2.2 CLEAR FLOAT GLASS

Clear ordinary annealed transparent float glass for general window glazing. Thickness to NZS 4223.1 and NZS 4223. Supp 1.

2.3 TEXTURED, PATTERNED OR OBSCURE GLASS

Translucent, annealed, rolled glass with a decorative pattern on one surface.

2.4 LAMINATED GLASS

Safelite Grade A Safety Glass to AS/NZS 2208 with PVB or CIP resin interlayer.

2.5 TOUGHENED GLASS

Tempafloat Grade A Safety Glass to AS/NZS 2208.

2.6 HEAT STRENGTHENED GLASS

Heat treated glass for spandrel, curtain wall and other special applications

Components, general

2.7 JOINTING, PUTTY AND SEALING MATERIALS

Ensure jointing, putty and sealing materials are compatible with glass substrates. Confirm compatibility with laminated glass, IGU's and coatings.

Components, timber glazing

2.8 PUTTY, TIMBER FRAME

Linseed oil base glazing putty. Not to be used with Tinted, Laminate or IGU's

2.9 SPRIGS

Diamond metal pieces to retain glass in timber sashes and frames.

2.10 GLAZING TAPE

Single/double sided pressure sensitive self-adhesive low/medium/high density foam tapes/butyl tapes for bead glazing.

2.11 GASKETS

PVC or Santoprene to window manufacturers' requirements.

2.12 SETTING BLOCKS

Santoprene/Neoprene, 80-90 Shore A hardness, set at quarter points or to detail, to support the weight of glass panes. Use with bead glazing and for IGU's.

Components, aluminium glazing

2.13 GLAZING TAPE AND GASKETS

Single/double sided pressure sensitive self-adhesive low/medium/high density foam tapes/butyl tapes selected to suit the glazing detail to window manufacturers' requirements.

2.14 SETTING BLOCKS

Santoprene/Neoprene, 80-90 Shore A hardness, set at quarter points or to detail, to support the weight of glass panes.

3 EXECUTION

Conditions

3.1 GENERAL REQUIREMENTS

To NZS 4223.1, NZS 4223.2, NZS 4223.3 and NZS 4223.4. All external glazing to be wind and watertight on completion.

3.2 DELIVERY

Keep glass dry and clean during delivery and bring on to site when ready to glaze directly into place. Comply also with the storage requirements set out in BRANZ BU 337.

3.3 GLASS CONDITION

All glass to have undamaged edges and surfaces in accordance with AS/NZS 4667.

3.4 GLASS THICKNESS

If not specifically stated in the glazing schedule determine the minimum thickness of glass for each sheet as required by NZS 4223.1, NZS 4223.3 and NZS 4223.4 and NZS 4223. Supp 1. For windows tested to NZS 4211, ensure glass meets the requirements of the window testing.
Determine the final glass thickness based on whether wind loading or human impact considerations govern.

3.5 REBATE DIMENSIONS

Provide rebates for glazing to the widths and depths necessary for each situation including minimum glass edge cover to NZS 4223.1, Section 4 Glazing.

Conditions - human impact safety requirements

3.6 SAFETY GLAZING, GENERAL REQUIREMENTS

Glazing of doors, side panels, low level and window seat glazing, bathrooms, stairwell landings and similar locations, to NZS 4223.3 for thickness and maximum areas of safety glass.

3.7 SAFETY GLAZING MATERIAL

Use only safety glazing materials defined in NZS 4223.3, that also comply with the relevant requirements of AS/NZS 2208. Ensure material is permanently marked and if cut by the distributor or installer mark each piece to NZS 4223.3, 2.8 Identification.

3.8 CONTAINMENT

Edge cover to comply with NZS 4223.1, Section 4 Glazing, table 5. Otherwise to NZS 4223.3, 2.3 Edge cover.

Assembly

3.9 WORKING OF GLASS

All working of glass as required in NZS 4223.1.

3.10 EDGE WORK AND BEVELLING

Edgework other than a clean cut. Refer to SELECTIONS/drawings for type.

3.11 SURFACE TREATMENT

Refer to SELECTIONS/drawings for finish.

3.12 SURFACE CUTTING

Refer to SELECTIONS/drawings for finish.

Application - timber glazing

3.13 PREPARE REBATES

Ensure all rebates and grooves are clean, dry and unobstructed at time of priming, sealing and glazing.

3.14 PREPARE TIMBER SURROUNDS

Ensure that all rebates have been primed with a primer suitable for this purpose and applied to the requirements of the painting section/s.

3.15 PREPARE TIMBER BEADS

Before fixing ensure that timber beads are sealed and painted to match the timber surround.

3.16 LOCATE BLOCKS

Centralise the glass in the rebate opening using setting, location and spacer blocks as required in NZS 4223.1, Section 4 Glazing, to prevent movement of glass in the rebate, and cushion the effect of wind loading on the sealing system.

3.17 INSTALL PUTTY FRONTING

Back putty to give a bedding of not less than 1 to 2mm between the glass and the back of the rebate when the glass has been pressed back. Strip off squeezed out putty at a positive angle. Fix glass to wooden surrounds with diamond points or sprigs at maximum 460mm centres. Fix glass to metal surrounds with spring clips or pins provided by the sash manufacturers. Apply putty to the face to form a triangular fillet stopping 1-2mm below sight line. Finish putty smooth and true to line and face and with a light brushing.

Leave all windows and doors closed until putty has set sufficiently to prevent glass displacement.

Prime putty fronting once surface has skinned - normally within 10 - 15 days of completion of glazing, but this can be reduced with special XHP putty.

3.18 BEAD GLAZING, PREFORMED STRIPS

Apply the preformed tape to the rebate upstand with securely formed (or sealed) butt joints at corners. Place setting blocks, offer the glass and press back against the tape centralised in the opening and apply the second tape. Press the beads against and compressing the tapes and fix true to line and face sufficiently rigid to prevent flexing or movement. Trim off excess strip.
If a capping bead is required clean and paint the timber surface and when dry apply sealant capping between bead and glass and tool to a smooth camber.

3.19 BEAD GLAZING, NON SETTING COMPOUNDS

Apply compound to the rebate. Push setting blocks into place with distance pieces against the rebate upstand before offering the glass to the surround on setting blocks, centralised in the opening and pushed back into the glazing compound. Fill all voids with compound and apply more compound before setting distance pieces in it opposite the distance pieces already in place. Bed the beads to the glass and rebate and fix true to line and face sufficiently rigid to prevent flexing or movement. Finish compound off at an angle both sides of the glass.

3.20 INSTALLING INSULATING GLASS UNITS

Refer to the glazing manufacturer's requirements before glazing to ensure that the materials forming the opening are strong enough to accept the weight and the rebates are the correct size and prepared to receive the units to AS/NZS 4666. Fit setting and location blocks and bead glaze units using a compatible sealant to AS/NZS 4666 section 3 Glazing, and to the glazing manufacturer's requirements.

3.21 INSTALLING REFLECTIVE AND COATED GLASS

In addition to the type of glazing specified refer to the requirements of the glass manufacturer and ensure that the rebate dimensions, clearances and edge cover are sufficient to allow for the movement created by the particular solar glass being used. Check thermal stability for the particular location and ensure any sealant or compound is compatible with the coating. Do not glaze with putty.

Application aluminium

3.22 INSTALL GLASS TO ALUMINIUM FRAMES

Install glass to NZS 4223.1.

- Bead glaze to Section 4 Glazing.
- Channel glaze to Section 4 Glazing, and Section 5 for Framed, Unframed, Partly Framed Glass Assemblies.

3.23 INSTALL SAFETY GLASS

To NZS 4223.3.

Finishing

3.24 SAFETY

Indicate the presence of transparent glass for the construction period with tape or signs compatible with the glass type. Indicators other than whiting must not be applied to the glass surface.

3.25 MANIFESTATIONS

To NZS 4223.3, 2.2 Manifestation (making glass visible).

Completion

3.26 TRADE CLEAN

Remove safety indicators and trade clean at completion of the building.

3.27 REPLACE

Replace damaged, cracked or marked glass that occurs during glazing.

3.28 LEAVE

Leave work to the standard required by following procedures.

3.29 REMOVE

Remove debris, unused materials and elements from the site.

4 SELECTIONS

For further details on selections go to www.metroglasstech.co.nz
Substitutions are not permitted to the following, unless stated otherwise.

Performance - wind

4.1 WIND ZONE - NON-SPECIFIC DESIGN

Building wind zone: H (as determined from NZS 3604, NZS 4223.4)

Glass by type

4.2 CLEAR FLOAT GLASS

Location:	Refer to A900
Brand/type:	N/A
Thickness:	5mm

4.3 TEXTURED, PATTERNED OR OBSCURE GLASS

Location:	Refer to A900
Brand/pattern:	Obscured
Pattern:	N/A
Thickness:	4mm

4.4 TOUGHENED GLASS

Location:	Refer to A900 & A901
Brand/type:	Tempafloat
Thickness:	6mm

4711E EXPOL UNDERFLOOR INSULATION

1 GENERAL

This section relates to **Expol** expanded polystyrene (EPS) panels fitted as underfloor thermal insulation to:

- timber framed floors

1.1 RELATED WORK

Refer to drawings.

Documents

1.2 DOCUMENTS

Refer to the general section 1233 REFERENCED DOCUMENTS. The following documents are specifically referred to in this section:

NZBC B2/AS1	Durability
NZBC H1/AS1	Energy efficiency
AS/NZS 3000	Electrical installations
AS 1366.3	Rigid cellular plastic sheets for thermal insulation - Rigid cellular polystyrene - Moulded (RC/PS - M)
NZS 4218:2004	Energy efficiency - Small building envelope
NZS 4243.1	Energy efficiency - Large buildings - Building thermal envelope
NZS 4859.1	Materials for the thermal insulation of buildings - General criteria and technical provisions

1.3 MANUFACTURER/SUPPLIER DOCUMENTS

Manufacturer's and supplier's documents relating to this part of the work:
Expol UnderFloor Insulation brochure
Expol Technical Product Guide
BRANZ Appraisal 256 - EXPOL UnderFloor Insulation

Copies of the above literature are available from:

Web:	www.expol.co.nz
Email:	sales@expol.co.nz
Telephone:	09 634 3449 / 0800 863373
Facsimile:	09 634 0756

Requirements

1.4 QUALIFICATIONS

Work to be carried out by tradesmen experienced, competent and familiar with the materials and techniques specified.

Performance

1.5 EXPOL INSULATION

Expol will contribute to meeting the requirements of NZBC H1/AS1: Energy efficiency, 2.0 Building thermal envelope. Install to NZS 4218 for small building envelope, to NZS 4243.1 for large buildings and to the Expol technical requirements.

1.6 DURABILITY

Expol EPS insulation to comply with NZBC B2/AS1 Table 1, Durability requirements of nominated building elements.

50 years	For Expol UnderFloor thermal insulation panels

Refer to the Manufacturer's literature for additional requirements.

2 PRODUCTS

Materials

2.1 EXPOL BLACK INSULATION - TIMBER FLOOR R1.8

Expol Black, flame retardant polystyrene panels (EPS) with added graphite to AS 1366.3, and to NZS 4859.1. Panels are 60mm thick.

Components

2.2 WIRE GUARD - TIMBER FLOORS

Expol Wire Guard, a paper strip used to separate exposed electrical cables from Expol UnderFloor insulation.

2.3 FIXINGS - TIMBER FLOORS

Expol non corrosive nylon fixings with a stainless steel nail to secure panels.

3 EXECUTION

Conditions

3.1 DELIVERY

Keep materials dry in transit. Take delivery of materials in an undamaged in condition. Reject all damaged materials.

3.2 STORAGE

Accept materials undamaged and dry and store in a location that protects them from the weather and damage. Avoid distortion, stretching, puncturing and damage to edges of sheet materials. Do not use damaged sheets.

3.3 HANDLING

Wear protective clothing as necessary and when handling, avoid delamination or distortion of the rectangular form. Maintain full thickness unless compression is an installation system requirement.

3.4 PROTECT

Do not subject the polystyrene to prolonged saturation or exposure to sunlight. Do not allow the polystyrene come into contact with solvents.

Installation

3.5 SECURE PANELS NEW FLOORS

Nail two fixings at opposite corners per panel, flush with the top of the joist to ensure the panel sits just below the underside of the floor.

3.6 FIT PANELS

Friction fit Expol UnderFloor panels between floor joists, with one face touching the underside of the floor. Select the correct panel width for the correct joist space. Ensure width of panel is oversize to create a snug fit. Trim edges of panel when oversize by cutting one or more of the concertina edges. Ensure separation from electric cabling. Install to Expol Technical literature and to BRANZ Appraisal 256 - Expol UnderFloor Insulation.

3.7 SECURE PANELS EXISTING FLOORS

With panels in place, nail two fixings under opposite corners per panel, to ensure the panel sits secure and flush with the underside of the floor.

3.8 ELECTRICAL CABLES

Separate all electrical cables from Expol UnderFloor insulation using Expol Wire Guard, applied to the joist area to separate the cables from polystyrene. Take extreme caution when working around electrical cables.

CAUTION: Electrical cables and equipment partially or completely surrounded with bulk thermal insulation may overheat and fail. For cables installed prior to 1989 ensure all insulation is fitted leaving the cables exposed. When fitting around recessed downlights / uplights or other electrical appliances, leave a 150mm clearance around the appliance and comply with AS/NZS 3000.

3.9 PIPES AND PLUMBING

Cut the panel and notch around difficult areas to accommodate obstacles. A polyurethane foam material may be used to seal off more difficult areas. Ensure all air gaps are sealed around the outside perimeter to retain maximum insulation.

Completion

3.10 CLEANING

Remove debris, unused materials and elements from the site. Clean soiled or marked work. Replace damaged, cracked or marked elements. Leave the whole of this work to the standard required by following the execution procedures.

3.11 PROTECT

Protect new work from damage.

4 SELECTIONS

4.1 EXPOL BLACK INSULATION - TIMBER FLOORS

Location:	Refer to drawings A310 - A313
Brand:	Expol Black
Layers:	Single
Size:	1200mm x 470mm x 60mm
kPa:	105
R value:	R1.8
Options:	

4711P PINK® BATTS® & BIB INSULATION

1 GENERAL

This section relates to Tasman Insulation **Pink**® **Batts**® insulation materials installed, laid, hung or fitted as thermal insulation:
It includes:

- **Pink® Batts® Wall Insulation** (**Pink® Batts® Classic** and **Pink® Batts® Ultra®)**
- **Pink® Batts® Ceiling Insulation** (**Pink® Batts® Classic** and **Pink® Batts® Ultra®)**

1.1 RELATED WORK

Refer to 4721P PINK® BATTS® SILENCER® ACOUSTIC INSULATION for acoustic insulation.

1.2 ABBREVIATIONS AND DEFINITIONS

Refer to the general section 1232 INTERPRETATION & DEFINITIONS for abbreviations and definitions used throughout the specification.

The following abbreviations apply specifically to this section:

BIB	Building Insulation Blanket

Documents

1.3 DOCUMENTS

Refer to the general section 1233 REFERENCED DOCUMENTS. The following documents are specifically referred to in this section:

NZBC C/AS1-AS6	Protection from fire
NZBC H1/AS1	Energy efficiency, 2.0 Building thermal envelope
NZS/AS 1530.1	Methods for fire tests on building materials, components and structures - Combustibility test for materials
AS/NZS 3000	Electrical installations
NZS 4218:2004	Energy efficiency - Small building envelope
NZS 4220	Code of practice for energy conservation in non-residential buildings
NZS 4243.1	Energy efficiency - Large buildings - Building thermal envelope
NZS 4246	Energy efficiency - Installing insulation in residential buildings
AS/NZS 4534	Zinc and zinc/aluminium-alloy coatings on steel wire
AS/NZS 60598.2.2:2001	Luminaires- Particular Requirements - Recessed luminaires
AS/NZS 60695.11.5	Fire hazard testing - Test flames - Needle-flame test method - Apparatus, conformity test arrangement and guidance

1.4 MANUFACTURER/SUPPLIER DOCUMENTS

Manufacturer's and supplier's documents related to this section are:
Tasman Insulation New Zealand: Product Data Sheets and installation Instructions
BRANZ Appraisal 238 - Pink® Batts® Insulation
BRANZ Appraisal 632 - Pink® Batts® SnugFloor® Underfloor Insulation
BRANZ Appraisal 767 - Pink® Batts® Skillion Roof Insulation

Manufacturer/supplier contact details

Company:	**Tasman Insulation New Zealand**
Web:	www.pinkbatts.co.nz
Telephone:	0800 746 522

Warranties

1.5 WARRANTY - MANUFACTURER/SUPPLIER

Provide a material manufacturer/supplier warranty:

Lifetime Warranty	For **Pink® Batts®** insulation products

- Provide this Warranty on the **Pink® Batts® Lifetime Warranty Certificate** form.
- Commence the warranty from the date of practical completion of the contract works.

Refer to the general section 1237 WARRANTIES for additional requirements.

Requirements

1.6 QUALIFICATIONS

Installers to be **PinkFit® - Preferred Pink® Batts® installers**. A list of approved installers can be obtained from the web, by telephone or from the local building supplies merchant.

Web: www.pinkbatts.co.nz
Telephone: Freephone 0800 746 534

1.7 NO SUBSTITUTIONS

Substitutions are not permitted to any specified Tasman Insulation **Pink® Batts®** insulation or associated products, components or accessories.

Performance - combustibility

1.8 FIRE PREVENTION

Pink® Batts® insulation materials are considered a non-combustible material to NZS/AS 1530.1 and need not be separated from heat sources such as fire places, heating appliances, flues and chimneys to NZBC C/AS1 to C/AS6, except if used in conjunction with or attached to other heat sensitive materials.

2 PRODUCTS

Materials

2.1 PINK® BATTS® CEILING INSULATION

Pink® Batts® Ceiling Insulation (**Pink® Batts® Classic** and **Pink® Batts® Ultra®**) is a light weight flexible bio-soluble glass wool manufactured from up to 80% recycled glass, bonded with a thermosetting resin to form rectangular slabs. Refer to SELECTIONS for R-values and thickness options.
NOTE: When insulation abutting or covering recessed downlights is intended to be in contact with IC, CA 80, CA 135 luminaries the insulation must withstand a 30s Needle Flame test to AS/NZS 60695.11.5. Pink® Batts® insulation meets this requirement.

2.2 PINK® BATTS® WALL INSULATION

Pink® Batts® Wall Insulation (**Pink® Batts® Classic** and **Pink® Batts® Ultra®**) is a light weight flexible bio-soluble glass wool manufactured from up to 80% recycled glass, bonded with a thermosetting resin to form rectangular slabs. Refer to SELECTIONS for R-values and thickness options.

Components

2.3 FASTENERS

Insulation anchors complete with retaining washer.

2.4 TAPES

Proprietary plastic tape stapled across framing to retain insulation in unlined wall and ceiling locations.

2.5 ADHESIVE TAPE

Pressure sensitive adhesive tape.

Accessories

2.6 WIRE NETTING

Refer to 4161 UNDERLAYS, FOIL AND DPC for wire netting used to support the insulation.

3 EXECUTION

Conditions

3.1 STORAGE

Only accept materials undamaged and dry and store in a location that protects them from the weather and damage. Avoid distortion, stretching, compression, puncturing and damage to edges of materials. Do not use damaged or wet insulation materials.

3.2 HANDLING

Wear protective clothing as necessary and when handling, avoid delamination or distortion of the rectangular form. Maintain full thickness unless compression is an installation system requirement.

3.3 INSPECTION

Before starting installation of **Pink® Batts® Insulation** blankets and slabs, check that the location and framing are free from moisture, that the cavities are not interconnected and that mesh, wall underlays and vapour barriers are in place.

Application

3.4 INSTALL INSULATION - GENERAL

Lay, install, fit and fix to NZBC H1/AS1: Energy efficiency, 2.0 Building thermal envelope, and to manufacturer's requirements. Install in housing to NZS 4218 and NZS 4246. Install in large buildings to NZS 4243.1 and NZS 4220. Allow insulation to re-loft/relax prior to installation. Do not cover vents. Confirm with fireplace manufacturer for clearances; **Pink® Batts®** insulation need not be separated except if used in conjunction with, or attached to other heat sensitive materials. Lift up electrical wires, lighting transformers/controllers and lay the insulation underneath.

3.5 RECESSED LIGHT FITTINGS - CLEARANCE

General applications;
The clearance between insulation and recessed downlights;

- 100mm gap to AS/NZS 3000, figure 4.9
- Provide larger clearances where required by the light manufacturer.

Residential applications;

- Ensure new recessed downlights are one of the new classes classified in AS/NZS 60598.2.2; CA 80, CA 135, IC and IC - F
- Classification type CA 80, CA 135, to AS/NZS 60598.2.2; insulation can abut the sides (wrapping around the sides)
- Classification type IC and IC - F, to AS/NZS 60598.2.2; insulation can abut and cover over the top of the downlight
- Provide larger clearance where required by the light manufacturer.
- In a retrofit situation where recessed downlights are unclassified or unknown, ensure 100mm clearance from the insulation to AS/NZS 3000, figure 4.9

3.6 CHECK FOILS

Ensure foils are dry, clean, bright, undamaged and free of debris before installing insulation.

3.7 CHECK WALL AND ROOF UNDERLAYS

Ensure foils are dry, clean, bright, undamaged and free of debris before installing insulation.

3.8 CHECK VAPOUR BARRIERS

Ensure vapour barriers form a homogeneous sheet vapour barrier before installing insulation.

3.9 INSTALL PINK® BATTS® CEILING INSULATION

Ensure that the product is installed dry; if wet replace before installation. If cutting is required, cut oversize by 5-10mm to ensure a friction fit. Insulate around vents (not over them) to allow unhindered ventilation.

Fit **Pink® Batts® Ceiling Insulation** beneath electrical wiring and plumbing. Install to the outer edge of the top plate. Maintain a 25mm gap clearance between the **Pink® Batts®** insulation and roof underlay. Refer to NZS 4246 for installation guidelines and Pink® Batts® installation instructions for detailed information.

3.10 INSTALL PINK® BATTS® WALL INSULATION

Ensure the product is installed dry; if wet replace before installation. If cutting is required, cut oversize by 5-10mm to ensure a friction fit. Fill gaps around windows and doors with off-cuts. Insulate around vents (not over them) to allow unhindered ventilation.

Fit **Pink® Batts® Wall Insulation** behind electrical wiring and plumbing. Ensure there are no gaps, folds or undesirable compression at edges.

Refer to NZS 4246 for installation guidelines and **Pink® Batts®** installation instructions for detailed information.

3.11 WIRE NETTING TO SUBSTRATE

Lay at right angles across the rafters/roof joists. Pull tight and temporarily fix. Tie edges of netting together with galvanized wire clips.

3.12 LAY WIRE NETTING

Lay at right angles across the purlins with enough slack to allow insulation to retain its nominal thickness between. Tie edges of netting together with galvanized wire clips.

Completion

3.13 CLEAN UP

Clean up as the work proceeds, so no spare offcuts or any other matter or item remain behind claddings or linings.

3.14 LEAVE

Leave work to the standard required by following procedures.

3.15 REMOVE

Remove debris, unused materials and elements from the site.

4 SELECTIONS

For further details on selections go to www.pinkbatts.co.nz.
Substitutions are not permitted to the following, unless stated otherwise.

Thermal insulation

4.1 PINK® BATTS® CLASSIC CEILING INSULATION

Location:	Refer to architectural drawings.
Brand:	**Pink® Batts® Classic Ceiling**
R value:	R3.2
Thickness:	170mm

4.2 PINK® BATTS® CLASSIC WALL INSULATION

Location:	Refer to architectural drawings.
Brand:	**Pink® Batts® Classic Wall**
R value:	R2.4
Thickness:	90mm

4821 FLASHINGS

1 GENERAL

This section relates to the fabrication and installation of flashing systems not forming part of a proprietary system.

1.1 RELATED WORK

Refer to ~ for ~.

Documents

1.2 DOCUMENTS

Refer to the general section 1233 REFERENCED DOCUMENTS. The following documents are specifically referred to in this section:

NZBC B2/AS1	Durability
NZBC E2/AS1	External moisture
AS/NZS 2728	Prefinished/prepainted sheet metal products for interior/exterior building applications - Performance requirements
AS 3566	Self-drilling screws for the building and construction industries - General requirements and mechanical properties
NZS 3604	Timber-framed buildings
NZMRM CoP	NZ metal roof and wall cladding Code of Practice

Requirements

1.3 QUALIFICATIONS

Work to be carried out by tradesmen experienced, competent and familiar with the materials and techniques specified.

1.4 VERIFY DIMENSIONS

Verify dimensions against site measurements prior to fabrication.

Standards of performance

1.5 DURABILITY REQUIREMENTS

Design and install the flashings appropriate for the durability applications in accordance with NZBC B2/AS1. The Building Code B2, 3.2 requires that all hidden elements have at least the same durability as that of the element that covers it. Refer to NZBC B2/AS1 Table 1: Durability Requirements of Nominated Building Elements and NZBC E2/AS1 Table 20 Material selection.

1.6 COMPATIBILITY REQUIREMENTS

Each flashing material shall be selected in accordance with NZBC E2/AS1 Table 20 to minimise corrosion. Refer to either NZS 3604 Clause 4.2 or AS/NZS 2728 for the relevant exposure conditions. For compatibility of materials in contact and subject to run-off, refer to NZBC E2/AS1 table 21 and NZBC E2/AS1 table 22.

1.7 DESIGN

For flashings where there are no specific details or drawings, provide a full size mock-up of the flashing to integrate components into the weathertight system. Co-ordinate with the trades affected by the installation.

2 PRODUCTS

2.1 FLASHING MATERIALS

Acceptable materials for flashings are described in NZBC E2/AS1, 4.0. Material, grade and colour as detailed and scheduled. Ensure that materials used for flashings are compatible with the building and cladding materials and their fixings.

2.2 FLASHING FABRICATION

Fabricate flashings generally to NZBC E2/AS1, 4.0, from a ductile grade of metal designed for lateral strength by folding, stiffening or ribbing on external edges, having a maximum un-stiffened width of 300mm. Provide all hooks, hems, kick outs, bird's beaks, stop ends, soft edges and turn downs etc. to NZBC E2/AS1, 4.0, or as shown on the drawings.

2.3 FIXINGS

Rivets, screws, nails and cleats to be compatible with the materials being fastened. Fasteners complying with the corrosion requirements of AS 3566 are suitable for use with ZINCALUME® steel products. Use only low carbon non-conductive sealing washers.

2.4 JOINTS - SEALANTS

Neutral Curing silicone or MS polymer sealant as required, with low resistance to compression and be-able to withstand large temperature variations. MS polymer sealant to be used where the sealant is exposed and the surrounding surfaces are to be subsequently painted or coated.

2.5 JOINTS - SOLDER

Eutectic solder of 60% tin/40% lead using a suitable proprietary flux.

3 EXECUTION

Conditions

3.1 DELIVERY

Keep flashings dry in transit. Take delivery of flashings in an undamaged condition. Reject all damaged materials.

3.2 STORAGE

Store materials and accessories on a level, firm base, in dry conditions, well ventilated, out of direct sunlight and completely protected from weather and damage. Ensure storage areas are away from current work areas. Cover to keep dry until fixed.

3.3 HANDLING

Avoid distortion and contact with potentially damaging surfaces/substances. Do not drag flashings across each other, or across other surfaces. Protect edges, corners and surfaces from damage.

3.4 SUBSTRATE

Do not commence work until the substrate is of the standard required by the installer for the specified flashings, level and in true alignment.

3.5 PROTECT

Protect surfaces, window and door joinery, and finishes already in place, from the possibility of damage during the installation process.

3.6 CONFIRM LAYOUT

Before commencing work confirm the proposed installation of the flashings and expansion joints and other visual considerations of the finished work.

3.7 CO-ORDINATE INSTALLATION

Co-ordinate installation of flashings with associated trades.

Application

3.8 INSTALLATION

Install flashings in accordance with NZMRM CoP and in compliance with NZBC E2/AS1, 4.0 Flashings. For very high wind zones and where the pitch of the roof is below 15° the flashing joint laps shall be sealed with sealant at each end of the lap to prevent the ingress of water.

Refer to NZBC E2/AS1 Table 7 for general dimensions of flashings.

3.9 FIXINGS

Fix flashings with fasteners appropriate to the situation. For fixing flashings with proprietary brackets or clips ensure they are aligned to allow for movement and are compatible with the flashing material.

Fix screws with the shank perpendicular to the surface of the flashing with the washer fitted firmly against the flashing. Screws to be compatible with the flashing material.

Rivets 'blind' or 'pop' are to be sealed when used. Aluminium rivets are compatible with zinc or AZ coated steel. Monel and stainless steel rivets can be used to fix galvanized steel flashings. Minimum diameter of rivet to be used is 4.0mm. Drill hole 1mm larger than the rivet size. Seal head of rivet with neutral cured silicone.

3.10 JOINTING - SEALANTS

Clean surfaces to be lapped using a solvent ensuring all traces of the solvent are removed with a clean rag. Apply sealant by gun in a continuous bead of approximately 5mm diameter. Width of sealant when compressed should not exceed 25mm. Sealant joints shall be mechanically fixed for strength. Refer to NZMRM CoP for details.

3.11 JOINTING - SOLDER

Solder joints in galvanized steel and non-ferrous metals when specified with lead/tin solder. Clean joint ensuring it is dry and free of grease immediately prior to applying a proprietary flux. Lap the flashing 25mm in the direction of the water flow and fasten the lap with rivets or screws at 50mm centres. Completely sweat the joint to avoid leaving any flux residue. Wash down the joint to remove any trace of flux.

3.12 FINAL INSPECTION

A final inspection by the installer to take place after completion of the flashing work. Any defects or subsequent damage to be made good.

Completion

3.13 PROTECT

Protect new work from damage.

3.14 REPLACE

Replace all damaged or marked elements.

3.15 LEAVE

Leave work to the standard required for following procedures.

3.16 REMOVE

Remove debris, unused materials and elements from the site.

4 SELECTIONS

4.1 FLASHINGS

Type	Material and finish/colour
General flashings:	0,55mm Colorsteel
Window/doors:	
- Head:	Refer to product specification details.
- Sill:	Refer to product specification details.
Beam caps:	0.55mm Colorsteel to match.
Cladding:	
- External corner:	Refer to manufactures details.
- Internal corner:	Refer to manufactures details.

4851 EXTERIOR HANDRAILS AND TIMBER BALUSTRADES

1 GENERAL

This section relates to the fabrication and installation of exterior timber balustrades and handrails.

Related work

1.1 RELATED SECTIONS

Refer to drawings.

Documents

1.2 DOCUMENTS REFERRED TO

Documents referred to in this section are:

NZBC B2/AS1	Durability
NZBC F4/AS1	Safety from falling
NZS 3602	Timber and wood-based products for use in building

1.3 MANUFACTURER'S DOCUMENTS

Manufacturer's and supplier's documents relating to work in this section are:
~

Copies of the above literature are available from ~

Web:	~
Email:	~
Telephone:	~
Facsimile:	~

2 PRODUCTS

2.1 SOLID TIMBER COMPONENTS

Timber species, grade, installation moisture and treatment to NZS 3602, table 2, and NZBC B2/AS1. Refer to SELECTIONS/DRAWINGS.

2.2 HARDWARE

Handrail brackets, metal supports, angles and sundry fittings, all as shown and described on the drawings.

3 EXECUTION

Conditions

3.1 GENERALLY

Execution to include those methods, practices and processes contained in the current syllabus for the National Certificate in Carpentry and the National Certificate in Joinery (cabinetry, exterior joinery, stairs).

Check site dimensions. Carry out machining within the practices recommended for the particular timber, wood product or pre-finished wood product being used. Machine drill and cut holes and recesses and form joints to the componentry manufacturer's recommendations. Work to be accurate, square and true to line and face.

Application

3.2 HANDRAILS

Fabricate and install the handrails and balustrading as detailed, complete with all associated metal componentry and hardware. Unless otherwise detailed construct to comply with NZBC F4/AS1.

3.3 BALUSTRADING

Fabricate and install the balustrading as detailed, complete with all associated metal componentry and hardware. Unless otherwise detailed construct to comply with NZBC F4/AS1.

Completion

3.4 LEAVE

Leave work to the standard required by following procedures.

3.5 REMOVE

Remove all debris, unused materials and elements from the site.

4 SELECTIONS

4.1 TIMBER BALUSTRADE

Timber:	H3.2 45x35mm
Finish:	Natural stain finish.

4.2 TIMBER HANDRAIL

Timber:	H3.2 Accessible compliant profiled.
Finish:	Natural stain finish.

4.3 ACCESSORIES

Brackets:	Miles Nelson - Bannister Brackets **310SC**
Finish:	Stainless steel

5113G GIB® PLASTERBOARD LININGS

1 GENERAL

This section relates to the supply, fixing and jointing of GIB® plasterboard linings and accessories to timber and steel framed walls and ceilings to form:

- standard systems
- bracing systems
- fire rated garage boundary wall systems
- wet area systems

1.1 RELATED WORK

Refer to architecural drawings.

1.2 ABBREVIATIONS AND DEFINITIONS

Refer to the general section 1232 INTERPRETATION & DEFINITIONS for abbreviations and definitions used throughout the specification.

The following abbreviations apply specifically to this section:

AWCINZ	Association of Wall and Ceiling Industries New Zealand

Documents

1.3 DOCUMENTS

Refer to the general section 1233 REFERENCED DOCUMENTS. The following documents are specifically referred to in this section:

NZBC C/AS2-AS6	Protection from fire
NZBC E2/AS1	External moisture
AS 1397	Continuous hot-dip metallic coated steel sheet and strip - Coatings of zinc and zinc alloyed with aluminium and magnesium
AS/NZS 2588	Gypsum plasterboard
AS/NZS 2589	Gypsum linings - Application and finishing
NZS 3604	Timber-framed buildings
AS/NZS 4600	Cold-formed steel structures
ISO 5660.1	Reaction-to-fire tests - Heat release, smoke production and mass loss rate - Part 1: Heat release rate (cone calorimeter method)
ISO 5660.2	Reaction-to-fire tests - Heat release, smoke production and mass loss rate - Part 2: Smoke production rate (dynamic measurement)
BRANZ Technical Paper P21	BRANZ Technical Paper P21: A wall bracing test and evaluation procedure (2010)
NASH	Residential and Low-Rise Steel Framing Part 1 2010 Design Criteria

1.4 MANUFACTURER/SUPPLIER DOCUMENTS

Manufacturer's and supplier's documents relating to this part of the work:

- GIB® Site Guide (Dec 2014)
- GIB Ultraline® Plus lining system (February 2006)
- GIB® Noise Control Systems (March 2006)
- GIB® Fire Rated Systems (Oct 2012)
- GIB Aqualine® Wet Area Systems (March 2007)
- GIB Superline® (June 2013)
- GIB® Ezybrace® Systems (June 2011), with amendments (Dec 2014)
- GIB® Ezybrace® Software (2011), with amendments (Dec 2014)
- GIB® Ezybrace® for Steel Frame Housing (NASH) Software (2011)
- GIB® Rondo® Metal Ceiling Batten Systems
- GIB-Cove®
- GIB® Goldline™ Platinum Tape-on Trims (Jan 2006)
- GIB® UltraFlex® high impact corner mould (Sept 2004)
- GIB® Tough Systems (Nov 2014)

BRANZ Appraisal 294 (2011) - GIB® Ezybrace® Systems
BRANZ Appraisal 427 (2007) - GIB Aqualine® Wet Area Systems

GreenTag Certification - GreenTag™ GreenRate/Level C for:

- GIB® Standard (10mm & 13mm)
- GIB Fyreline®(10mm, 13mm, 16mm &19mm)
- GIB Braceline® (10mm & 13mm)
- GIB® Noiseline® (10mm & 13mm)

- GIB Toughline® (13mm)

Copies of the above literature are available at

Company:	Winstone Wallboards
Web:	www.gib.co.nz
Telephone:	0800 100 442

Requirements

1.5 NO SUBSTITUTIONS

Substitutions are not permitted to any specified GIB® systems, GIB® system components, GIB® plasterboard, associated GIB® products or GIB® accessories.

1.6 INSTALLER WORK SKILLS AND QUALIFICATIONS

GIB® plasterboard fixers and plasterers to be experienced competent workers, familiar with GIB® plasterboard lining systems installation and finishing techniques. Submit evidence of experience on request. For example:

- National Certificate of Interior Systems; or
- Certified Business member of AWCINZ.

Performance

1.7 INSPECTIONS AND ACCEPTANCE

Allow for inspection of the finished plasterboard surface:

- before applying sealer and
- before applying finish coatings or decorative papers,

so that after assessment of the type and/or angle of illumination and its effect on the completed decorative treatment, group approval and acceptance of the surface can be given.

1.8 FIRE RATING REQUIREMENTS

Provide the GIB® fire resistant rated garage boundary wall systems. Refer to SELECTIONS for system/FRR.

1.9 BRACING REQUIREMENTS

Provide braced wall systems using GIB® Ezybrace® Systems (June 2011) or GIB® Ezybrace® Software (2011) to meet the requirements of NZS 3604 when tested to BRANZ Technical Paper P21. Alternatively use GIB® Ezybrace® for Steel Frame Housing (NASH) Software 2011 to meet the requirements of NASH Residential and Low-Rise Steel Framing Part 1 2010 Design Criteria. Refer to drawings for location and type.

1.10 SURFACE FIRE PROPERTIES - UNFINISHED BOARD

All GIB® unfinished plasterboard sheet materials achieve a Group Classification of, Group 1-S to NZBC C/AS2-AS6, Table 4.1, following testing in accordance with ISO 5660.1 and ISO 5660.2.

2 PRODUCTS

Materials

2.1 GIB® PLASTERBOARD

Gypsum plaster core encased in a face and backing paper formed for standard and water resistance use to AS/NZS 2588. Refer to SELECTIONS for location, type, thickness and finish.
GIB® Standard plasterboard
GIB Fyreline® fire resistant plasterboard
GIB Braceline® & GIB® Noiseline® dual purpose wall bracing & noise control plasterboard
GIB Aqualine® wet area plasterboard

Components

2.2 SCREWS

GIB® Grabber® drywall screws.

2.3 NAILS

GIB® Nails (gold passivated).

Size:	30mm, 40mm

2.4 METAL ANGLE TRIMS

GIB® galvanized steel slim angle trims.

2.5 CONTROL JOINTS

GIB® Rondo® P35 control joints.
GIB® Goldline™ tape-on trims

Accessories

2.6 ADHESIVE

Timber frame and/or steel frame:
GIBFix® One ultra low VOC water based wallboard adhesive
GIBFix® All-Bond solvent based wallboard adhesive

2.7 JOINTING COMPOUND

Bedding compound:	GIB Tradeset®, GIB Lite Blue®, GIB MaxSet®, GIB ProMix® All Purpose, GIB Plus 4®
Finishing compound:	GIB ProMix® All Purpose, GIB® Trade Finish®, GIB® Trade Finish® Lite, GIB ProMix® Lite, GIB® U-Mix, GIB Plus 4®, GIB Trade Finish® Multi
Cove:	GIB-Cove® Bond

2.8 JOINTING TAPE

GIB® paper jointing tape.

2.9 GAP FILLER

GIB® Gap Filler ultra low VOC multi-purpose acrylic flexible filler

3 EXECUTION

Conditions

3.1 STORAGE

Store GIB® plasterboard sheets and accessories in dry conditions stored indoors out of direct sunlight in neat flat stacks on either an impervious plastic sheet or clear of the floor with no sagging and avoiding damage to ends, edges and surfaces. Reject damaged material. Refer to GIB® Site Guide (Dec 2014).

3.2 LEVELS OF PLASTERBOARD FINISH

Provide the selected plasterboard surfaces to the pre decorative levels of finish specified in AS/NZS 2589.

3.3 CONFIRM LEVELS OF PLASTERBOARD FINISH ACCEPTANCE

Before commencing work, agree in writing upon the surface finish assessment procedure towards ensuring that the quality of finish expectations are reasonable and are subsequently obtained and acceptable.

Do not apply decorative treatment until it is agreed in writing by the contractor, subcontractors and decorator that the specified plasterboard Level of Finish has been achieved.

"Levels of plasterboard finish" is a tool for specifying the required quality of finish when installing and flush stopping GIB® plasterboard **prior** to the application of a range of decorative finishes under various lighting conditions. Refer to **AS/NZS** 2589.

3.4 SUBSTRATE

Do not commence work until the substrate is plumb, level and to the standard required by the sheet manufacturer's requirements. Refer to GIB® Site Guide (Dec 2014).

3.5 TIMBER FRAME MOISTURE CONTENT

Maximum allowable moisture content to AS/NZS 2589 for timber framing at lining: 18% or less for plasterboard linings. Refer to NZBC E2/AS1 and GIB® Site Guide (Dec 2014).

3.6 PROTECTION

Protect surfaces; cabinetwork, fittings, equipment and finishes already in place from the possibility of water staining and stopping damage. Refer to GIB® Site Guide (Dec 2014).

Application

3.7 INSTALL CEILING BATTENS

Install to GIB® Rondo® Ceiling Batten Systems requirements.

3.8 LINING WALLS AND CEILINGS GENERALLY

Form to GIB® Site Guide (Jan 2010). Ensure bulk insulation thickness shall not exceed that of the wall framing.

3.9 BOARD ORIENTATION

Minimise joints by careful sheet layout using the largest sheet sizes possible, and generally fixing horizontally. Where part sheets are required for various stud heights they should be positioned so the cut sheet is as low as possible to keep joints below eye level.

3.10 FORM WET AREA SYSTEMS

Form to GIB Aqualine® Wet Area Systems requirements.

3.11 FORM BRACING SYSTEMS

Form to GIB® Ezybrace® Systems (June 2011) requirements.

3.12 FORM CONTROL JOINTS

Form control joints to GIB® Site Guide (Dec 2014) requirements.

3.13 INSTALL TAPE-ON TRIMS

Install to GIB® Goldline™ Tape-on trims literature and/or GIB® Ultraflex high impact corner mould literature.

Finishing

3.14 FINISHING GENERALLY

To GIB® Site Guide (Dec 2014) and AS/NZS 2589.

Completion

3.15 REPLACE

Replace damaged sheets or elements.

3.16 CLEAN DOWN

Clean down completed surfaces to remove irregularities and finally sand down with fine paper to the sheet manufacturer's requirements, to leave completely smooth and clean.

3.17 REMOVE

Remove debris, unused materials and elements from the site.

3.18 LEAVE

Leave work to the standard required by following procedures.

4 SELECTIONS

Plasterboard

4.1 GIB® STANDARD SYSTEMS WALLS

Location	Plasterboard type / Lining requirements	Thickness	Finish Level
Refer to architecural drawings	GIB® Standard plasterboard	13mm	L5

4.2 GIB® WATER RESISTANT SYSTEMS WALLS

Location	Plasterboard type / Lining requirements	Thickness	Finish Level
Refer to architecural drawings	GIB Aqualine® plasterboard	13mm	L5

4.3 GIB® BRACING SYSTEMS

Refer to GIB® Ezybrace® Systems. For bracing element location refer to drawn documentation.

5151 INTERNAL TRIM

1 GENERAL

This section relates to simple lengths of trim fixed on site as of isolated internal members, with simple end joints.
It includes:

- timber
- MDF
- metal
- plastic

1.1 RELATED WORK

Refer to drawings..

Documents

1.2 DOCUMENTS

Refer to the general section 1233 REFERENCED DOCUMENTS. The following documents are specifically referred to in this section:

NZBC C/AS1-AS7	Protection from fire
NZS 3602	Timber and wood-based products for use in building
NZS 3604	Timber-framed buildings
NZS 3610	Specification for profiles of mouldings and joinery

1.3 MANUFACTURER/SUPPLIER DOCUMENTS

Manufacturer's and supplier's documents relating to this part of the work:
Refer to Web site

Manufacturer/supplier contact details

Company:	Southern Pine Product Ltd
Web:	http://www.sppnz.co.nz/
Email:	sales@sppauck.co.nz and sales@sppchch.co.nz
Telephone:	AKL (09) 573 0484 and CHCH (03) 349 9175

Performance

1.4 FIRE PROPERTIES

For all Risk Groups covered by NZBC C/AS2-AS7.
All trim to have the appropriate Group Number to match that of the wall or ceiling to NZBC C/AS2-AS7, table 4.1. Except that, there is no requirement for trim that does not exceed 5% of the wall or ceiling area to NZBC C/AS2-AS7, 4.17.6.d).

2 PRODUCTS

Materials

2.1 TIMBER TRIM

To NZS 3610 and to profiles detailed on the drawings. Timber species, grade and treatment to NZS 3602.

2.2 METAL TRIM

Refer to SELECTIONS for type.

2.3 PLASTIC SKIRTING

Refer to SELECTIONS for type.

2.4 PROPRIETARY TRIM

Refer to SELECTIONS for type.

Components

2.5 NAILS

Bright steel to dimension requirements of NZS 3604. Use galvanized where prone to dampness.

2.6 BRADS

Bright steel of a length three times the thickness of the member being fixed. Use cadmium plated where prone to dampness.

2.7 SCREWS, STEEL

Bright steel of a length to penetrate the substrate up to the shank. Use stainless steel in wet areas.

2.8 SCREWS, CHROME PLATED

Chrome plated of a length to penetrate the substrate up to the shank.

3 EXECUTION

Conditions

3.1 GENERALLY

To comply with NZS 3604, except as varied in this specification. Execution to include those methods, practices and processes contained in the unit standards for the National Certificate in Carpentry and the National Certificate in Joinery (cabinetry, exterior joinery, stairs).

3.2 STORAGE

Take delivery of trims undamaged and unmarked and store on site under cover, away from moisture, heat and direct sunlight in adequately ventilated area and clear of areas where work is in progress, to ensure materials are of the required standard when fixed in place.

3.3 ACCLIMATISE MATERIALS

Remove materials from packaging, separate and allow to acclimatise in the proposed installation area for 48 hours minimum prior to installation.

3.4 ENSURE

Ensure that the substrate to trims will allow work of the required standard. If it does not, do not proceed until the substrate has been remedied.

Application - Generally

3.5 INSTALL TIMBER TRIM

Use full lengths. Fit with scribed internal joints, mitred external joints and, mitred and returned at stop ends. Fix plumb, level and true to line and face using nails or brads to suit. Leave secure and with no movement possible.

3.6 INSTALL PLASTIC SKIRTING

Joint fit and fix, level and true to line and face all to the skirting manufacturer's requirements.

3.7 INSTALL PROPRIETARY TRIM

Use full lengths. Scribe joint and fix securely, plumb, level and true to line and face to the trim manufacturer's requirements.

3.8 INSTALL PROPRIETARY METAL TRIM

Mitre and weld where direction changes. Fold and weld stop ends. Site measure and carry out all fabrication in a workshop. Screw fix securely, plumb, level and true to line and face, all as detailed.

Finishing

3.9 PUNCH

Punch all nail heads below the face of trim ready to receive stopping, as specified under painting preparation.

3.10 COUNTERSINK

Countersink screw heads not less than 2mm below the faces of trim to be painted. Stop and finish off flush with the face, as specified under painting preparation.

3.11 PELLETING

Countersink screw head 6mm below the faces of trim which is to be clear finished. Glue in grain-matched pellets not less than 6mm thick and cut from matching timber. Finish off flush with the face.

Completion

3.12 LEAVE

Leave the whole of this work free of blemishes, undamaged and to the standard of finish required for following procedures.

3.13 PROTECTION

Protect the completed work and make good before any surface finish is applied.

3.14 REPLACE

Replace damaged or marked elements.

3.15 REMOVE

Remove debris, unused materials and elements from the site.

4 SELECTIONS

4.1 INTERNAL TIMBER TRIM

Manufacturer: Southern PIne Products Ltd
Species/grade: Pine - untreated
Finish: To match existing

Member	R**eference**	**Code reference**
Architrave	Maron Skirting 40x10mm	DBA 40x10
Skirting	Bevelled Architrave 60x10mm	BA 60x10
Cornice	Bevelled Architrave 60x10mm	BA 60x10

5171G GIB® PLASTERBOARD FIRE & SOUND LININGS

1 GENERAL

This section relates to the supply, fixing and jointing of **GIB®** plasterboard linings and accessories to timber and steel framed walls and ceilings to form:

- fire rated systems including lift shafts and ducting
- sound rated systems

1.1 RELATED WORK

Refer to 5113G GIB® PLASTERBOARD LININGS for standard linings
Refer to 5171G GIB® PLASTERBOARD Fyreline® fire resistant plasterboard

1.2 ABBREVIATIONS AND DEFINITIONS

Refer to the general section 1232 INTERPRETATION & DEFINITIONS for abbreviations and definitions used throughout the specification.
The following abbreviations apply specifically to this section:

FRR	Fire resistance rating
IIC	Impact insulation class
STC	Sound transmission class
AWCINZ	Association of Wall and Ceiling Industries New Zealand

Documents

1.3 DOCUMENTS

Refer to the general section 1233 REFERENCED DOCUMENTS. The following documents are specifically referred to in this section:

NZBC C/AS2-AS6	Protection from fire
NZBC E2/AS1	External moisture
AS 1397	Continuous hot-dip metallic coated steel sheet and strip - Coatings of zinc and zinc alloyed with aluminium and magnesium
AS/NZS 2588	Gypsum plasterboard
AS/NZS 2589	Gypsum linings - Application and finishing
AS/NZS 4600	Cold-formed steel structures
ISO 5660.1	Reaction-to-fire tests - Heat release, smoke production and mass loss rate - Part 1: Heat release rate (cone calorimeter method)
ISO 5660.2	Reaction-to-fire tests - Heat release, smoke production and mass loss rate - Part 2: Smoke production rate (dynamic measurement)

1.4 MANUFACTURER/SUPPLIER DOCUMENTS

Manufacturer's and supplier's documents relating to this part of the work:
GIB® Site Guide (Dec 2014)
GIB® Noise Control Systems (March 2006)
GIB® Fire Rated Systems (October 2012)
GIB® Rondo® Metal Ceiling Batten Systems
GIB-Cove®
GIB® Goldline™ Platinum Tape-on Trims
GIB® UltraFlex® high impact corner mould
GIB Aqualine® Wet Area Systems (March 2007)
GIB® Tough Systems (Nov 2014)
GIB Superline® (June 2013)
BRANZ Appraisal 289 - GIB® Fire Rated Systems
BRANZ Appraisal 394 - GIB® Noise Control Systems

GreenTag Certification - GreenTag™ GreenRate/Level C for:

- GIB® Standard (10mm & 13mm)
- GIB Fyreline® (10mm, 13mm, 16mm &19mm)
- GIB Braceline® (10mm & 13mm)
- GIB® Noiseline® (10mm & 13mm)
- GIB Toughline® (13mm)

Manufacturer/supplier contact details

Company:	Winstone Wallboards
Web:	www.gib.co.nz
Telephone:	0800 100 442

Requirements

1.5 NO SUBSTITUTIONS

Substitutions are not permitted to any specified GIB® systems, GIB® system components, GIB® plasterboard, associated GIB® products or GIB® accessories.

1.6 INSTALLER WORK SKILLS AND QUALIFICATIONS

GIB® plasterboard fixers and plasterers to be experienced competent workers, familiar with GIB® plasterboard lining systems installation and finishing techniques. Submit evidence of experience on request. For example:

- National Certificate of Interior Systems; or
- Certified Business members of AWCINZ.

Performance

1.7 INSPECTIONS AND ACCEPTANCE

Allow for inspection of the finished plasterboard surface:

- before applying sealer and
- before applying finish coatings or decorative papers,

so that after assessment of the type and/or angle of illumination and its effect on the completed decorative treatment, group approval and acceptance of the surface can be given.

1.8 FIRE RATING REQUIREMENTS

Provide the GIB® fire rated systems. Refer to SELECTIONS for system/FRR.

1.9 SURFACE FIRE PROPERTIES - UNFINISHED BOARD

All GIB® unfinished plasterboard sheet materials achieve a Group Classification of, Group 1-S to NZBC C/AS2-AS6, Table 4.1, following testing in accordance with ISO 5660.1 and ISO 5660.2.

2 PRODUCTS

Materials

2.1 GIB® PLASTERBOARD

Gypsum plaster core encased in a face and backing paper formed for standard and water resistance use to AS/NZS 2588. Refer to SELECTIONS for location, type, thickness and finish.
GIB® Standard plasterboard
GIB Fyreline® fire resistant plasterboard
GIB Braceline® and Noiseline® Dual purpose high density sound control plasterboard
GIB Aqualine® wet area plasterboard

2.2 CORNICE

GIB-Cove® plasterboard cornice. Refer to SELECTIONS for profile and size.

Components

2.3 SCREWS

GIB® Grabber® drywall screws.

2.4 NAILS

GIB® Nails (gold passivated).
Size: 30mm, 40mm

2.5 METAL ANGLE TRIMS

GIB® galvanized steel slim angle trims.

2.6 METAL SHAFTWALL FRAMING

GIB® RONDO® Shaftwall framing comprising CH stud, E stud and J track.

2.7 CONTROL JOINTS

GIB® Rondo® P35 control joints.
GIB® Goldline™ tape-on trims

2.8 TAPE ON TRIMS AND EDGES

GIB® Goldline™ tape-on trims and edges or GIB® UltraFlex® high impact corner mould or GIB® Levelline® Tape on trim.

Accessories

2.9 ADHESIVE

Timber frame and/or steel frame:
GIBFix® One ultra low VOC water based wallboard adhesive.
GIBFix® All-Bond solvent based wallboard adhesive

2.10 JOINTING COMPOUND

Bedding compound:	GIB Tradeset®, GIB Lite Blue®, GIB MaxSet®, GIB ProMix® All Purpose, GIB Plus 4®, GIB Trade Finish® Multi
Finishing compound:	GIB ProMix® All Purpose, GIB ProMix® Lite, GIB Trade Finish®, GIB Trade Finish® Lite, GIB Trade Finish® Multi, GIB® U-Mix, GIB Plus 4®
Cove:	GIB-Cove® Bond

2.11 JOINTING TAPE

GIB® paper jointing tape.

2.12 GAP FILLER

GIB® Gap Filler low VOC multi-purpose acrylic flexible filler.

3 EXECUTION

Conditions

3.1 STORAGE

Store GIB® plasterboard sheets and accessories in dry conditions stored indoors out of direct sunlight in neat flat stacks on either an impervious plastic sheet or clear of the floor with no sagging and avoiding damage to ends, edges and surfaces. Reject damaged material. Refer to GIB® Site Guide (Dec 2014).

3.2 LEVELS OF PLASTERBOARD FINISH

Provide the selected plasterboard surfaces to the pre decorative Levels of Finish specified in AS/NZS 2589.

3.3 CONFIRM LEVELS OF PLASTERBOARD FINISH ACCEPTANCE

Before commencing work, agree in writing upon the surface finish assessment procedure towards ensuring that the quality of finish expectations are reasonable and are subsequently obtained and acceptable.

Do not apply decorative treatment until it is agreed in writing by the contractor, subcontractors and decorator that the specified plasterboard Level of Finish has been achieved.

"Levels of plasterboard finish" is a tool for specifying the required quality of finish when installing and flush stopping GIB® plasterboard **prior** to the application of a range of decorative finishes under various lighting conditions. Refer to AS/NZS 2589.

3.4 SUBSTRATE

Do not commence work until the substrate is plumb, level and to the standard required by the sheet manufacturer's requirements. Refer to GIB® Site Guide (Dec 2014).

3.5 TIMBER FRAME MOISTURE CONTENT

Maximum allowable moisture content to AS/NZS 2589 for timber framing at lining: 18% or less for plasterboard linings. Refer to NZBC E2/AS1 and GIB® Site Guide (Dec 2014).

3.6 METAL FRAMING

Metal framing, to which gypsum lining is fixed, shall comply with AS 1397 or AS/NZS 4600, as applicable. Where adhesion of gypsum linings is required, surfaces shall be free of oil, grease, dust and other foreign materials. Refer to the metal framing manufacturers specifications where high density gypsum linings (>800 kg/m³) such as GIB® Braceline and GIB® Noiseline are specified for fixing to light gauge steel framing.

3.7 PROTECTION

Protect surfaces; cabinetwork, fittings, equipment and finishes already in place from the possibility of water staining and stopping damage. Refer to GIB® Site Guide (Dec 2014).

Application

3.8 INSTALL CEILING BATTENS

Install to GIB® Rond® Ceiling Batten Systems.

3.9 LINING WALLS AND CEILINGS GENERALLY

Form to GIB® Site Guide (Dec 2014). Ensure bulk insulation thickness shall not exceed that of the wall framing.

3.10 BOARD ORIENTATION

~

3.11 FORM FIRE RATED SYSTEMS

Form to GIB® Fire Rated Systems and Penetrations in GIB® Fire Rated Systems.

3.12 FORM STEEL BEAM ENCLOSURES

Form to GIB® Fire Rated Systems.

3.13 RISERS, SHAFTS AND DUCTS

Form to GIB® Fire Rated Systems.

3.14 FORM CONTROL JOINTS

Form control joints to AS/NZS 2589 and GIB® Site Guide (Dec 2014).

3.15 INSTALL COVES

Install to GIB-Cove® literature using GIB-Cove® Bond.

3.16 INSTALL TAPE-ON TRIMS

Install to GIB® Goldline™ Tape-on trims literature and/or GIB® Ultraflex® high impact corner mould literature and/or GIB®Levelline® to GIB® Site Guide (Dec 2014).

Finishing

3.17 FINISHING GENERALLY

To GIB® Site Guide (Dec 2014) and AS/NZS 2589.

Completion

3.18 REPLACE

Replace damaged sheets or elements.

3.19 CLEAN DOWN

Clean down completed surfaces to remove irregularities and finally sand down with fine paper to the sheet manufacturer's requirements, to leave completely smooth and clean.

3.20 REMOVE

Remove debris, unused materials and elements from the site.

3.21 LEAVE

Leave work to the standard required by following procedures.

4 SELECTIONS

For further details on selections go to www.gib.co.nz.
Substitutions are not permitted to the following, unless stated otherwise.

Plasterboard

4.1 GIB® FIRE RATED SYSTEM

Refer to GIB® Fire Rated Systems and Penetrations in GIB® Fire Rated Systems.

Location / Type	Plasterboard type / Lining requirements	FRR / System specification	Finish level
Refer to Drawing	GIB® Fire Rated Systems.	60 minutes.	L4

5231 INTERIOR DOORS & WINDOWS

1 GENERAL

This section relates to the supply and installation of interior:

- doors
- windows
- doors and frames
- doorsets

1.1 RELATED WORK

Refer to drawings.
Refer to glazing sections for glazing
Refer to painting sections for finishes

Documents

1.2 DOCUMENTS

Refer to the general section 1233 REFERENCED DOCUMENTS. The following documents are specifically referred to in this section:

AS/NZS 1170.1	Structural design actions - Permanent, imposed and other actions
NZS 3602	Timber and wood-based products for use in building
NZS 3604	Timber-framed buildings
NZS 3610	Specification for profiles of mouldings and joinery
NZS 4223.3	Glazing in buildings - Human impact safety requirements

WANZ PQAS: Powder Coating Quality Assurance System
WANZ SFA 3503-03: Anodic Oxide coatings on wrought aluminium for external architectural application (2005).

1.3 MANUFACTURER'S DOCUMENTS

Manufacturer's and supplier's documents relating to work in this section are:
~

Copies of the above literature are available from ~

Web:	~
Email:	~
Telephone:	~
Facsimile:	~

Requirements

1.4 SHOP DRAWINGS

Refer to the general section 1235 SHOP DRAWINGS for the requirements for submission and review and the provision of final shop drawings.

Provide shop drawings to show the general arrangement including, but not be limited to:
~

If requested provide the following additional information:
~

Submit shop drawings for review to ~. ~ working days (at least) before fabrication is planned to commence.

Complete shop drawing review before commencing fabrication.

Performance - doorsets

1.5 PERFORMANCE REQUIREMENTS

Refer to 5241 FIRE AND ACOUSTIC INTERIOR DOORS AND WINDOWS for fire and acoustic performance details.

2 PRODUCTS

Materials - door and window frames general

2.1 TIMBER DOORS AND WINDOWS

To NZS 3602. Moisture content 10-14%. To NZS 3610.

2.2 DOOR FRAMES, FIBREBOARD

To profile as detailed and dimensioned, including stops.

2.3 ALUMINIUM EXTRUSIONS

Alloy designation to comply with AS/NZS 1866. Branded and extruded for anodising or powder coating.

2.4 GLAZING

Refer to glazing section/s for glass type and thickness.

Materials - doors general

2.5 TIMBER

To NZS 3602. Moisture content 10-14%. To NZS 3610. Solid or hollow core.

2.6 ALUMINIUM

Alloy designation to comply with AS/NZS 1866. Branded and extruded for anodising or powder coating.

Materials - doorsets

2.7 STANDARD DOORSETS, SIDE HUNG DOOR

Frames to profile as detailed and dimensioned, fitted with solid or hollow core door.
Refer to SELECTIONS.

2.8 STANDARD DOORSETS, SLIDING

Frames to profile as detailed and dimensioned, fitted with solid or hollow core door.
Refer to SELECTIONS.

Components

2.9 WINDOW AND DOOR FURNITURE

Refer to 5521 HARDWARE for type and finish.

2.10 SCREWS

Stainless steel or non-corrodible metal. Length sufficient to penetrate into the background support up to the shank. Screws for fixing hinges, hardware or furniture to match the item being attached.

2.11 NAILS

Length sufficient to penetrate into the background support at least half the nail length, except if into radiata pine then three-fifths their length.

2.12 DOOR HINGES

Size and gauge to carry door size and weight. 3 hinges per door.

Type:	Loose pin
Size:	89mm
Material:	Zinc-plated steel
Pin:	Loose-pin zinc-plated steel

2.13 INTERIOR SLIDING DOOR GEAR

To suit door size and weight and as detailed.

2.14 DOOR SKIN (FACINGS)

Doors skins as detailed and dimensioned.

Finish

2.15 TIMBER - PAINT FINISH

Factory applied coating system.

2.16 TIMBER - CLEAR FINISH

Factory applied coating system.

2.17 TIMBER - LACQUER FINISH

Factory applied coating system.

2.18 ALUMINIUM - POWDER COATED

Polyester powder organic coating in accordance with WANZPQAS and AS 3715.

2.19 ALUMINIUM - ANODISED

To WANZ SFA 3503-03. Refer to SELECTIONS for thickness and colour.

3 EXECUTION

Conditions

3.1 GENERALLY

Execution to include those methods, practices and processes contained in the unit standards for the National Certificate in Carpentry and the National Certificate in Joinery (cabinetry, exterior joinery, stairs).

3.2 DO NOT DELIVER

Do not deliver any elements which cannot be unloaded immediately into suitable storage conditions.

3.3 HANDLE

Handle, unload and store elements without distortion and avoiding pre-finished surfaces rubbing together, and contact with mud, moisture and other damaging materials.

3.4 PROTECT

Protect all elements against damage to arrises and glazing beads. Store frames and doors flat and away from moisture or direct sunlight.

3.5 FABRICATE DOORSETS

Fabricate doorsets and windows in the factory with doors hung, provision for furniture made, finishes applied and fully operable.

3.6 FABRICATE DOORS

Fabricate doors in the factory, with provision for door furniture.

3.7 CHECK ALL OPENINGS

To NZS 3604.Check all openings on site for size and standard of execution before installing window or door frames. Installation tolerances of windows subject to earthquake design to comply with AS/NZS 1170.1.

Assembly

3.8 FABRICATION GENERALLY

Manufacture and fabricate frames and doors as detailed. Install hinges and running gear as scheduled. Provide temporary bracing and protection. Temporarily secure all opening elements for transportation.

Application - generally

3.9 FIXING FRAMES

Fix and assemble frames rigidly in place, plumb, level and true to line and face without distortion and with all opening sashes fully and easily operating. Fit architraves.

3.10 DISTORTION

Do not distort frames when wedging or other packing, or when tightening fixings. If necessary adjust packing and fixings to eliminate binding. Do not cut, plane or sand frames to remedy distortion.

3.11 FIXINGS

Fix frames so that nail heads are covered by applied stops and beads. Punch all nail heads below timber surfaces which will be visible in completed work. Ensure that at least one frame fixing is adjacent to each hanging point.

Application - doorsets

3.12 PROPRIETARY ELEMENTS

Fix in accordance with the door manufacturer's requirements.

3.13 INSTALLATION GENERALLY

Wedge frames into opening and fix through into the wall framing. Locate all wedges and fixing at hinge positions and opposite, with one fixing in the vicinity of the lock. Fixings concealed behind planted stops. Hang doors on hinges, sliding or bi-fold gear as specified and to operate freely. Fit all hardware and door furniture.

3.14 TIMBER STUD WALLS - STEEL AND ALUMINIUM FRAMES

Using a pilot hole in the frame, fix to timber studs with countersunk self-drilling corrosion proof screws. Fix at hinges and opposite, with one fixing in the vicinity of the lock.

3.15 TIMBER STUD WALLS - TIMBER FRAMES

Wedge into opening and nail through into the studs. All wedges and fixing to be at hinge positions and opposite, with one fixing in the vicinity of the lock.

3.16 BOTTOM CLEARANCE

Provide for specified floor coverings plus 5mm clearance at any point of swing. When floor covering is not specified, allow 25mm total.

For ventilated and/or air conditioned spaces allow 20mm clearance above finished floor coverings for supply/return air.

3.17 REMOVE DOORS

Remove doors from the frames if necessary to protect them, or for re-finishing, store safely and near completion refit them, all without any damage.

3.18 INSTALL PANELS

Prime rebates and beads, install sealant backing strips or silicone. Install dry beading to outside of panels as selected. Do not mitre corners of beads.

3.19 MANIFESTATIONS

To comply with NZS 4223.3, section 303.1: Manifestation (making glass visible).

3.20 INSTALL FURNITURE

Install latches, locks and door furniture as scheduled.

3.21 CHECK

Check and adjust operation of all doors, hardware and furniture.

Application - windows

3.22 CONFIRM PREPARATION OF WALL OPENINGS

Confirm that wall openings have been prepared ready for the installation of all window frames. Do not proceed with the window installation until required preparatory work has been completed.

3.23 INSTALLATION

Fix to comply with the installation details including bedding compounds and pointing sealants.

3.24 FIX HARDWARE

Fix all sash and door hardware and furniture as scheduled.

Completion

3.25 PROTECTION

Protect all finishes against damage from adjacent and following work.

3.26 REPLACE

Replace damaged, cracked or marked elements.

3.27 TRADE CLEAN

Clean off or remove safety indicators at completion of the building.

3.28 LEAVE

Leave work to the standard required for following procedures.

3.29 REMOVE

Remove safety indicators and protective coverings, and wipe down all doorsets thoroughly to leave them perfectly clean. Remove all debris, unused materials and elements from the site.

4 SELECTIONS

Frames

4.1 DOOR FRAMES - TIMBER

Location:	Refer to Window & Door Schedule A900 A901 and details provided.
Door reference:	~
Timber species:	~
Grade:	~
Treatment:	~
Finish:	~
Leaf size:	~mm high x ~mm wide
Thickness:	~mm

4.2 WINDOW FRAMES - TIMBER

Location:	
Window reference:	~
Timber species:	~
Grade:	~
Treatment:	~
Finish:	~
Size:	~mm high x ~mm wide

4.3 DOOR LINERS - TIMBER

Refer to Window & Door Schedule A900 A901 and details provided.

Location:	
Door reference:	~
Timber species:	~
Grade:	~
Treatment:	~
Finish:	~
Leaf size:	~mm high x ~mm wide
Thickness:	~mm

Doors

4.4 STANDARD DOORS

Manufacturer:	
Door type:	~
Material:	~
Door leaf size:	~mm high x ~mm wide
Edge clashing:	~/~sides
Door finish:	~
Hinge type/finish:	~/~

4.5 STANDARD DOORSETS, SIDE HUNG DOOR

Manufacturer:	Refer to Window & Door Schedule A900 A901 and details provided.
Door type:	~
Material:	~
Door leaf size:	~mm high x ~mm wide
Edge clashing:	~/~sides
Door finish:	~
Frame:	~
Frame finish:	~
Hinge type/finish:	~

4.6 STANDARD DOORSETS, SLIDING

Manufacturer:	
Door type:	~
Material:	~
Door leaf size:	~mm high x ~mm wide
Edge clashing:	~/~sides
Door finish:	~
Frame:	~
Frame finish:	~
Hinge type/finish:	~

4.7 SLIDING DOOR GEAR

Brand/type:	T.B.C

Glazing

4.8 GLAZING

Refer to glazing section.

Finish

4.9 PAINT FINISH

Brand:	Resene
System name:	T.B.C
Finish/colours:	To match existing.

4.10 POWDER COATING

Refer to 6746D DULUX POWDER AND INDUSTRIAL COATINGS for powder coating products.
Refer to 6746IP INTERPON POWDER COATINGS for powder coating products.

Hardware

4.11 HARDWARE SCHEDULE

Location	Type of hardware	Number off
Contractor liase with client on site.		

4.12 HARDWARE

Refer to 5521 HARDWARE section.

5241NZ NZ FIRE DOORS FIRE & ACOUSTIC DOORS & WINDOWS

1 GENERAL

This section relates to the manufacture, supply and installation of **NZ Fire Doors** interior fire, smokestop and acoustic:

- timber framed windows
- doorsets
- timber frames and steel frames for doorsets
- hinged or pivot doors

1.1 RELATED WORK

Refer to 4581NZ NZ FIRE DOORS EXTERIOR FIRE & ACOUSTIC DOORSETS for exterior fire and acoustic doors
Refer to painting sections for finishing

1.2 ABBREVIATIONS

The following abbreviations are used throughout this part of the specification:

FRR	Fire-resistance rating
Sm	Smoke stopping capability level
STC	Sound transmission class

Documents

1.3 DOCUMENTS

Refer to the general section 1233 REFERENCED DOCUMENTS. The following documents are specifically referred to in this section:

NZBC C/AS1-AS7	Protection from Fire
NZBC F8/AS1	Signs
AS 1530.4	Methods for fire tests on building materials, components and structures - Fire-resistance test of elements of construction
AS 1191	Acoustics - method of laboratory measurement of airborne sound transmission insulation of building elements.
NZS 3602	Timber and wood-based products for use in building
AS 3894.3	Site testing of protective coatings - Determination of dry film thickness
NZS 4223.3	Glazing in buildings - Human impact safety requirements
NZS 4232.2	Performance criteria for fire resisting enclosures - Fire resisting glazing systems
NZS 4520	Fire resistant doorsets
AS/NZS 4666	Insulating glass units
AS/NZS 4680	Hot-dip galvanized (zinc) coatings on fabricated ferrous articles
ISO 717.1	Acoustics - rating of sound insulation in buildings and of building elements - airborne sound insulation.

1.4 MANUFACTURER'S DOCUMENTS

Manufacturer's and supplier's documents relating to this part of the work:

NZ Fire Doors	Design Guide (April 2010)
NZ Fire Doors	Approved Hardware (use latest pdf from web site)

Manufacturer/supplier contact details

Company:	**New Zealand Fire Doors**
Web:	www.nzfiredoors.co.nz
Email:	sales@nzfiredoors.co.nz
Telephone:	09 579 8895

Warranties

1.5 WARRANTY - MANUFACTURER/SUPPLIER

Provide a **NZ Fire Doors** warranty:

1 years:	For materials and manufacturing workmanship

- Provide this warranty on the **NZ Fire Doors** standard form.
- Commence the warranty from the date of supply.

Refer to general section 1237 WARRANTIES for additional requirements.

Requirements

1.6 QUALIFICATIONS

Work to be carried out by tradesmen experienced, competent and familiar with the joinery system materials and techniques specified.

1.7 NO SUBSTITUTIONS

Substitutions are not permitted to any of the specified systems, components and associated products listed in this section.

Performance

1.8 CERTIFY PERFORMANCE

Provide certificate of compliance with the requirements of this specification for fire and/or acoustics.

Performance - fire - doorsets and windows

1.9 FIRE REQUIREMENTS

To NZBC C/AS1-AS7, Appendix C: Test methods: 6.1: **Fire doors and smoke control doors.** Provide doorsets of the scheduled fire resistance rating, tested to NZS 4520.

1.10 VARIATIONS FROM STANDARD - FIRE

Submit before manufacture a written opinion from a registered testing laboratory, that any variation from a production model satisfies the criteria laid down in NZS 4520.

1.11 FIRE DOORSET DECLARATION

Fill in the **NZ Fire Doors**, "Installers Declaration" for all fire resisting doorsets and return to **NZ Fire Doors** within 60 days of dispatch of doorset. **NZ Fire Doors** to list doorsets in their "Register of Doorsets". Supply to building owner at practical completion.

1.12 EVIDENCE OF COMPLIANCE

When installation is completed provide written confirmation to NZS 4520, 6.4.2.

1.13 FIRE AND SMOKE SEALS

To NZBC C/AS1-AS7, Appendix C: Test methods: 6.1: Fire doors and smoke control doors.

2 PRODUCTS

Materials - general - fire

2.1 INTERIOR TIMBER

To NZS 3602. Moisture content 8 to14%.

2.2 FIRE WINDOWS

Timber frames to **NZ Fire Doors** profiles and as detailed and dimensioned on the drawings. Refer to SELECTIONS for details.

2.3 FIRE DOORSETS

NZ Fire Doors to NZS 4520. Timber or steel frames to **NZ Fire Doors** profiles and as detailed and dimensioned.
Refer to SELECTIONS for details.

Make provision for the scheduled fire-rated hardware to be supplied and fitted. Make arrangements on delivery to the site, for the "Installer's Declaration" to be returned to **NZ Fire Doors**.

2.4 SMOKESTOP DOORSETS

NZ Fire Doors to NZS 4520 and NZBC C AS1-AS7, C6.1.2 Smoke Control Doors. Timber frames to **NZ Fire Doors** profiles and as detailed and dimensioned.
Refer to SELECTIONS for details.

2.5 GLAZING

NZ Fire Doors approved glass to NZS 4232.2 and AS 1530.4 in the specified fire rated window, door and doorset system assembly. Glass to NZS 4223.3 for areas subject to human impact.

Components

2.6 WINDOW AND DOOR FURNITURE

NZ Fire Doors approved hardware for fire and acoustics.
Refer to SELECTIONS for details.

2.7 SCREWS

Zinc plate, zinc chromate, nickel plate or stainless steel. Length sufficient to penetrate into the background support up to the shank. Screws for fixing hinges, hardware or furniture to match the item being attached.

2.8 NAILS

Length sufficient to penetrate into the background support at least half the nail length, except if into radiata pine then three-fifths their length.

2.9 INSERTS, BOLTS AND FASTENERS

Fixings to be the appropriate type, finish, size and spacing to **NZ Fire Doors** details.
Items to be built into corrosive environments, to be hot-dip galvanized to AS/NZS 4680.

2.10 DOOR HINGES

NZ Fire Doors approved hinges with size and gauge to carry door size and weight. Refer to SELECTIONS for details.

2.11 FIRE AND SMOKE SEALS

NZ Fire Doors approved seals, suitable for plain or rebated frames.

Finishes - General

2.12 PAINT FINISH

Refer PAINT section for details.

3 EXECUTION

Conditions

3.1 GENERALLY

Execution to include those methods, practices and processes contained in the unit standards for the National Certificate in Carpentry and the National Certificate in Joinery (cabinetry, exterior joinery, and stairs).

3.2 CHECK ALL OPENINGS

Check all openings prior to manufacture for size and standard of execution before installing frames.

3.3 DELIVERY, STORAGE AND HANDLING

Take delivery of materials and goods and store on site and protect from damage.
Protect finished surfaces, edges and corners from damage.
Move/handle goods in accordance with manufactures requirements.
Reject and replace goods that are damaged or will not provide the required finish

3.4 CONFIRM PREPARATION OF WALL OPENINGS

Confirm that wall openings have been prepared ready for the installation of all window and door frames. Do not proceed with the window and door installation until required preparatory work has been completed.

3.5 PROTECT

Protect all elements against damage to arrises and glazing beads. Store frames and doors flat on pallet or upright at an angle no greater than 15 degrees from perpendicular, and away from moisture or direct sunlight.

Fabrication

3.6 FABRICATION GENERALLY

Manufacture and fabricate frames and doors as detailed. Install hinges and running gear as scheduled. Provide temporary bracing and protection. Temporarily secure all opening elements for transportation.

3.7 FABRICATE WINDOWS

Fabricate windows in the factory, with provision for window furniture.

3.8 FABRICATE DOORSETS

Fabricate doorsets in the factory with doors hung and provision for furniture made as required.

3.9 HARDWARE GENERALLY

Make provision for the scheduled fire-rated hardware to be supplied and fitted either in the factory or on site. Key alike all lockable hardware able to be keyed alike, including other interior doors. Account for all keys and deliver separately to the site manager.

3.10 HINGES

Fit approved hinges to doors to support the door size and weight.

3.11 FACTORY FINISHING

Brace square and provide protection to assemblies during delivery to site. Where factory glazed, indicate the presence of transparent glasses with whiting, tape or signs compatible with the glass type.

3.12 ON SITE FINISHING - TIMBER FRAMES

Before installation:

- Prime both faces and all edges of timber doors not primed with an alkyd wood primer.
- Re-prime any subsequently cut edge.
- Refer to painting section/s for finishing.

Installation - generally

3.13 INSTALL FIRE WINDOWS AND DOORSETS

Install and fix to comply with NZS 4520, NZS 4232.2, the stated fire rating requirements and **NZ Fire Doors** installation details.

3.14 INSTALL FRAMES

Fix and assemble frames rigidly in place, plumb, level and true to line and face without distortion to **NZ Fire Doors** requirements.

3.15 DISTORTION

Do not distort frames when wedging or other packing, or when tightening fixings. If necessary adjust packing and fixings to eliminate binding. Do not cut, plane or sand frames to remedy distortion.

3.16 FIXINGS - TIMBER FRAMES

Fix frames to manufacturers requirements. Punch all nail heads below timber surfaces which will be visible in completed work. Ensure that at least one frame fixing is adjacent to each hanging point when fixing timber frames.

3.17 ANCHORAGES

Install all required anchorages to the manufacturers requirements, for the fire rated windows and doors, including sleeves, concrete inserts, anchor bolts and items with integral anchors that are to be embedded in concrete and/or masonry.

3.18 TOLERANCES

Install the finished prehung door to a dimensional accuracy of ± 2mm.

Installation - fire and acoustic doorsets and windows

3.19 FIXING FIRE, SMOKESTOP AND ACOUSTIC FRAMES

Fix in accordance with NZS 4520 and **NZ Fire Doors** instructions.

3.20 TIMBER STUD WALLS - TIMBER FRAMES

Wedge into opening and nail through into the studs. All wedges and fixing to be at hinge positions and opposite, with one fixing in the vicinity of the lock. Seal between back of frame and wall lining with, intumescent sealant for fire walls and acoustic sealant for acoustic walls.

3.21 HANG DOORS

Hang doors on hinges as specified and to operate freely.

3.22 BOTTOM CLEARANCE

For fire and smokestop doorsets, the clearance above finished floor coverings must not exceed 10mm. Provide for specified floor coverings.

3.23 REMOVE DOORS

Remove doors from the frames prior to, or on installation, and immediately seal on all 6 sides. Finish as required, store safely and near completion refit to avoid any damage.

3.24 GLAZING

Install approved glazing to NZS 4232.2 and AS 1530.4 into the specified window, door and doorset system assembly.

3.25 MANIFESTATIONS

To NZS 4223.3, 2.2 Manifestation (making glass visible).

3.26 INSTALL FURNITURE

Install to NZS 4520. Install latches, locks and door furniture as scheduled.

Finishing

3.27 CHECK

Check and adjust operation of all doors.

3.28 MARKING OF FIRE-RATED WINDOWS

Mark fire-rated windows and screens to NZS 4232 2; section 211 Marking of fire windows.

3.29 MARKING OF FIRE-RATED DOORSETS

The marking of fire-rated doorsets to be according to NZS 4520, 6 **Marking and Documentation**.

3.30 FIRE-RATED DOORSET SIGNS

To NZBC F8/AS1, 5.2, **Fire and smoke control doors.**
Refer to SELECTIONS for details.

3.31 SAFETY

Indicate the presence of transparent glasses for the remainder of the contract period, with whiting, tape or signs compatible with the glass type. Indicators other than whiting must not be applied to the glass surface. Masking tape must not be used for this purpose.

Completion

3.32 ROUTINE CLEANING

Carry out routine trade cleaning of this part of the work including periodic removal all debris, unused materials and elements from the site.

3.33 DEFECTIVE OR DAMAGED WORK

Repair damaged or marked elements. Replace damaged or marked elements where repair is not possible or will not be acceptable. Adjust operation of equipment and moving parts not working correctly. Leave work to the standard required for following procedures.

3.34 REMOVE

Remove safety indicators and protective coverings, and wipe down all joinery thoroughly to leave it perfectly clean. Remove debris, unused materials and elements from the site.

4 SELECTIONS

Substitutions are not permitted to the following, unless stated otherwise.

Fire

4.1 NZ FIRE DOORS DOORSET - FIRE DOORS

Door Reference:	Refer to Door Schedule A901
Manufacturer:	**NZ Fire Doors**
Door function:	Double hinged
Door type:	NZFD45
Wall type:	Timber framed
FRR/Sm:	-/60/30 Sm
Leaf size:	~mm high x ~mm wide
Thickness:	~mm
Leaf material:	MDF faced
Leaf core:	Solid core
Leaf skin:	MDF
Leaf facing:	Formica 1mm
Leaf finish:	To match existing
Frame material:	32mm pine
Frame finish:	To match existing
Edge clashing:	Clashed 2 vertical edges
Seals:	Smoke seals

Glazing

4.2 GLAZING - WINDOW FRAMES - FIRE AND SMOKESTOP

Window Reference:	Refer to Door Schedule A901
Brand/type:	NZFD45 -/60/30sm
Insulating:	Non-insulated
Safety grade:	A
Thickness:	6mm
Bead:	Timber beaded

Hardware

4.3 HARDWARE SCHEDULE - REFER TO DOOR SCHEDULE A901 AND CONTRACTOR TO LIASE WITH CLIENT.

Item	Type of hardware	Number off	Supply by
Lockset & latch			others
Roller catch			others
Door closer			others
Floor spring			NZFD
Top pivot closer			NZFD
Push/pull handles			others
Eye viewers			others
Magnetic clamps			others
Power transfer			others
Door coordinator			others
Jamb seals			NZFD
Sill seals			NZFD
Threshold strip			NZFD
Signs			others
Grilles			others

4.4 HINGES

Type:	Radius with bearings
Size:	100mm x 75mm
Pin:	fixed pin
Material:	Satin chrome

Finishes

4.5 PAINTING

Refer to painting section/s for painting.

5433E ECOPLY® FLOORS

1 GENERAL

This section relates to the use of plywood sheets for floors.

1.1 RELATED WORK

Refer to ~ for ~.

Documents

1.2 DOCUMENTS

Refer to the general section 1233 REFERENCED DOCUMENTS. The following documents are specifically referred to in this section:

NZBC B1/AS1	Structure
NZS 1170.5	Structural design actions - Earthquake actions - New Zealand
AS/NZS 1604.3	Specification for preservative treatment - Plywood
AS/NZS 2269.0	Plywood - structural - specifications
NZS 3604	Timber-framed buildings

Documents listed above and cited in the clauses that follow are part of this specification. However, this specification takes precedence in the event of it being at variance with the cited document.

1.3 MANUFACTURER'S DOCUMENTS

CHH Woodproducts documents relating to work in this section are:
Ecoply® Structural plywood properties and application manual (March 2009)
Ecoply® Specification and installation guide December 2011

Copies of the above literature are available from Carter Holt Harvey Woodproducts Ltd

Web:	www.chhwoodproducts.co.nz/
Telephone:	0800 326 759

1.4 NO SUBSTITUTIONS

Substitutions are not permitted to any specified system, or associated components and products.

Performance

1.5 STRUCTURAL FIXINGS, EARTHQUAKE

Use fixings and methods capable of sustaining the loads appropriate to the area as set out in NZS 3604 and as required by NZS 1170.5.

2 PRODUCTS

Materials

2.1 ECOPLY® FLOORING (T&G) F8 GRADE / LONGSPAN

Radiata pine veneer ply to AS/NZS 2269.0, CD grade face sanded with red plastic tongue and grooved long edges and H3.2 CCA treated to AS/NZS 1604.3 when used as a waterproofing membrane substrate.

Components

2.2 NAILS

Galvanized flat head, annular grooved or twisted shank. Stainless steel nails annular grooved. Refer to CHH Woodproducts requirements for size and use.

15mm plywood:	50mm x 2.8mm
17-21mm plywood:	60mm x 2.8mm
25mm plywood:	75mm x 3.15mm

2.3 SCREWS IN TIMBER

Stainless steel, counter-sunk. Refer to CHH Woodproducts requirements for size and use.

15mm plywood:	No. 8 x 40mm
17mm plywood:	No. 10 x 50mm
19-21mm plywood:	No. 10 x 50mm
25mm plywood:	No. 10 x 50mm

2.4 ADHESIVE

Polyurethane adhesive to American Plywood Association specification AFG 01.

3 EXECUTION

Conditions

3.1 HANDLE

Handle sheets carefully and reject those with damaged faces or edges.

3.2 STORE

Store sheets in stacks clear of the ground, supported without sagging on evenly spaced horizontal bearers. Protect from damage and weather.

3.3 SUPPORT FRAMING

Ensure support framing is completed to CHH Woodproducts stated requirements for laying plywood sheets.

Application

3.4 ADHESIVE FIXING

Apply a 10mm adhesive bead to joists.

3.5 FIXINGS

Minimum 7mm, maximum 15mm from the edge, 150mm centres along edges and 300mm centres on intermediate supports.

3.6 FIXING ECOPLY PLYWOOD SHEETS

Fix sheets to CHH Woodproducts requirements. Lay sheets in a staggered layout, face-grain of sheet at right-angles to support and with sheets in square, true alignment and plane with a 2mm expansion gap for square edge sheets. Nail fix to CHH Woodproducts requirements.

3.7 ADHESIVE FIXING PLYWOOD SHEETS

Fix sheets to CHH Woodproducts requirements. Lay sheets in a staggered layout, face-grain of sheet at right-angles to support and with sheets in square, true alignment and plane with a 2mm expansion gap for square edge sheets. Nail and adhesive fix to CHH Woodproducts requirements.

Completion

3.8 PROTECTION

Protect work from the weather until it is covered, coated or sealed.

3.9 REPLACE

Replace damaged or marked elements.

3.10 LEAVE

Leave work to the standard required by following procedures.

3.11 REMOVE

Remove all debris, unused materials and elements from the site.

4 SELECTIONS

Substitutions are not permitted to the following, unless stated otherwise.

4.1 ECOPLY T&G FLOORING

Location:	Refer to architectural drawing A111
Manufacturer:	CHH Woodproducts
Brand/grade:	Ecoply® (T&G) CD
Stress grade:	F8 (red tongue)
Thickness:	19mm
Treatment:	H3.2 CCA
Fixing:	Screw

4.2 NAILS

Type/size/material:	Refer to NZS 3604:2011 - Section 4

4.3 SCREWS

Type/size/material:

4.4 ADHESIVE

Type:	Refer to CHH Woodproducts literature and/or membrane supplier for recommended adhesives.

5574 INTERIOR HANDRAILS AND TIMBER BALUSTRADES

1 GENERAL

This section relates to the fabrication and installation of interior timber balustrades.

1.1 RELATED WORK

Refer to ~ for ~.

Documents

1.2 DOCUMENTS REFERRED TO

Refer to the general section 1233 REFERENCED DOCUMENTS. The following documents are specifically referred to in this section:

NZBC B2/AS1	Durability
NZBC F4/AS1	Safety from falling
NZS 3602	Timber and wood-based products for use in building

1.3 MANUFACTURER'S DOCUMENTS

Manufacturer's and supplier's documents relating to work in this section are:
~

Copies of the above literature are available from ~

Web:	~
Email:	~
Telephone:	~
Facsimile:	~

2 PRODUCTS

2.1 SOLID TIMBER COMPONENTS

Timber species, grade, installation moisture and treatment to NZS 3602, table 2, and NZBC B2/AS1. Refer to SELECTIONS/DRAWINGS.

2.2 HARDWARE

Handrail brackets, metal supports, angles and sundry fittings, all as shown and described on the drawings.

3 EXECUTION

Conditions

3.1 GENERALLY

Execution to include those methods, practices and processes contained in the current syllabus for the National Certificate in Carpentry and the National Certificate in Joinery (cabinetry, exterior joinery, stairs).

Check site dimensions. Carry out machining within the practices recommended for the particular timber, wood product or pre-finished wood product being used. Machine drill and cut holes and recesses and form joints to the componentry manufacturer's recommendations. Work to be accurate, square and true to line and face.

Application

3.2 HANDRAILS

Fabricate and install the handrails as detailed, complete with all associated metal componentry and hardware. Unless otherwise detailed construct to comply with NZBC F4/AS1.

Completion

3.3 LEAVE

Leave work to the standard required by following procedures.

3.4 REMOVE

Remove all debris, unused materials and elements from the site.

4 SELECTIONS

4.1 TIMBER HANDRAIL

Location:	Refer to drawings.
Timber:	Accessible compliant profiled.
Finish:	To match existing.

4.2 ACCESSORIES

Brackets:	Miles Nelson - Bannister Brackets - 310SC
Finish:	Stain Crome

6411J JACOBSEN VINYL SURFACING

1 GENERAL

This section relates to the supply and installation of Jacobsen vinyl surfacing complete with skirtings, nosings, trims and edgings and including static control sheet to floors.
It includes:

- PVC sheet
- PVC tiles

Related work

1.1 RELATED SECTIONS

Refer to drawings.

Documents

1.2 DOCUMENTS

Refer to the general section 1233 REFERENCED DOCUMENTS. The following documents are specifically referred to in this section:

NZBC C/AS2-AS7	Protection from fire
NZS/AS 1884	Floor coverings - Resilient sheet and tiles - Installation practices
AS/NZS 3661.1	Slip resistance of pedestrian surfaces - Requirements
IEC 61340.4.1	Electrostatics - Part 4.1: Standard test methods for specific applications - Electrical resistance of floor coverings and installed floors
EN 1081	Resilient Floor Coverings - Determination of the Electrical Resistance
BRANZ BU 330	Thin flooring materials - 2 Preparation and laying

1.3 MANUFACTURER/SUPPLIER DOCUMENTS

Manufacturer's and Jacobsen Ltd documents relating to this part of the work:
~

Manufacturer/supplier contact details

Company:	Jacobsen
Web:	www.jacobsens.co.nz
Telephone:	0-9-574 0640 Auckland
	0-4-495 4300 Wellington
	0-3-366 4153 Christchurch

Warranties

1.4 WARRANTY - MANUFACTURER/SUPPLIER

Provide a material manufacturer/supplier warranty:

5 years:	Materials

- Provide this warranty on the standard form in the general section 1237WA WARRANTY AGREEMENT.
- Commence the warranty from the date of practical completion of the contract works.

Refer to the general section 1237 WARRANTIES for additional requirements.

1.5 WARRANTY - INSTALLER/APPLICATOR

Provide an installer/applicator warranty:

1 year:	Execution

- Provide this warranty on the standard form in the general section 1237WA WARRANTY AGREEMENT.
- Commence the warranty from the date of practical completion of the contract works.

Refer to the general section 1237 WARRANTIES for additional requirements.

Requirements

1.6 NO SUBSTITUTIONS

Substitutions are not permitted to any specified system, or associated components and products.

1.7 QUALIFICATIONS

Layers to be experienced competent workers, familiar with the materials and the techniques specified.

Performance

1.8 SLIP RESISTANCE

Slip resistance for vinyl to comply with NZBC acceptable solution D1/AS1, clause 2.0, Level access routes and clause 3.0, Ramps.

- Sheet and tiles when in place on a level access route to have a mean coefficient of friction (μ) not less than 0.4 when tested wet in accordance with AS/NZS 3661.1.
- Sheet and tiles when in place on a sloping access route to have a coefficient of friction (μ) not less than μ = 0.4 + 0.0125S, where S is the slope of the walking surface expressed as a percentage.

Provide evidence that the vinyl complies with the standard of performance specified.

1.9 CERTIFY SLIP RESISTANCE

Provide certificates and any other evidence at the time of selection/supply that the vinyl complies with NZBC verification method D1/VM1 and acceptable solution D1/AS1.

1.10 TEST STATIC CONTROL

Test static control flooring to IEC 61340.4.1 or EN 1081 and provide a certificate of compliance.

1.11 SURFACE FIRE PERFORMANCE

Flooring to meet the fire performance requirements of NZBC C/AS2-AS7, 4.17.3, by:
Either,
Flooring is tested and achieved the minimum Critical Radiant Flux requirements of NZBC C/AS2-AS6, Table 4.2. Provide certificates or other evidence that the flooring will comply.
or,
Critical Radiant Flux not required if area of non-conforming products have an aggregate surface area of not greater than 5m² within a firecell, to NZBC C/AS2-AS7, 4.17.6.a.

2 PRODUCTS

Materials

2.1 VINYL SHEET

Tarkett, with factory applied PUR (polyurethane) to ensure a low maintenance system requiring no sealers or polish.

2.2 COVINGS

Form commercial coving using pencil cove method, with butterfly mitres to external and internal corners. Form domestic coving using either pencil cove or fillet cove method.

2.3 VINYL SHEET, STATIC CONTROL

High vinyl content monolayer flexible PVC sheet static control flooring to IEC 61340.4.1 or EN 1081 complete with 12mm x 0.1mm copper foil strip.

2.4 VINYL SHEET WALLCOVERING

0.92mm Tarkett Aquarelle, 1.3mm Tarkett Wallgard or 2.0mm Tarkett Wallgard.

2.5 2MM VINYL SHEET WALLCOVERING

Tarkett, with factory applied PUR (polyurethane) to ensure a low maintenance system requiring no sealers or polish.

2.6 VINYL SKIRTING

Cove based skirting. Refer to SELECTIONS for height and colour.

2.7 STAIR NOSINGS

Tredsafe stair nosing with Diamondtred Safety Insert.

2.8 TRIMS AND EDGING

Black 2.0mm bevel edge strip.

2.9 FINISHING TRIM & TRANSITION BARS

Jacobsen Tredsafe's aluminium finishing trims and transition bars.

2.10 COVE CAPPING

Jacobsen PVC top cap to top of coved vinyl.

2.11 WALL AND FLOOR VINYL JOINING STRIP

Jacobsen white PVC floor to wall finishing strip.

Accessories

2.12 ADHESIVE

UZIN KE2000S or Jacobsen ProBond acrylic floor and wall adhesive.

2.13 PRIMER AND SEALER

To the adhesive manufacturer's requirements for the particular substrate.

2.14 FLOOR LEVELLING COMPOUND

Roberts floor levelling compound.

2.15 THERMOWELDING

Manufacturer supplied colour matched weld rod using the Tarkett weld nozzle.

2.16 CHEMICAL WELDING

Chemical weld heterogeneous vinyl to manufacturer's instructions. Obtain a copy of instructions and follow specified procedures.

3 EXECUTION

Conditions

3.1 GENERALLY

To manufacturer's requirements and NZS/AS 1884.

3.2 STORAGE

Accept rolls of sheet, packages of tiles and accessories undamaged and dry. Store rolls upright with other material on level surfaces in non-traffic, non-work areas that are enclosed, clean and dry.

3.3 HANDLING

Avoid distortion, stretching, marking and damage to edges while shifting unrolling and handling sheet, tiles and accessories. Do not use damaged material.

3.4 PREPARATION

Check that each colour supplied is from the same batch. Follow the vinyl manufacturer's requirements for preparatory conditioning of rolls and working temperatures and conditions before, during and after laying the selected vinyl. Protect work from solar heat gain and switch off under-floor heating during and for 48 hours either side of the work period.

3.5 DO NOT START

Do not start work before the building is enclosed, wet work is complete, doors are hung and lockable, finishes and trim complete and good lighting is available.

3.6 INSPECT

Inspect the substrate to ensure it is a suitable finish

3.7 PROTECTION

Protect adjoining work surfaces and finishes during the vinyl installation.

3.8 LAYING GENERALLY

Carry out the whole of this work to NZS/AS 1884, BRANZ BU 330 and the flooring manufacturer's requirements.

3.9 TECHNIQUE

Before beginning the installation confirm the proposed layout of material, location of seams and other visual considerations of the finished work.

Application - substrate preparation

3.10 PREPARING NEW CONCRETE

Clear substrate of debris, clean off surface contamination and carry out surface repairs using Roberts levelling compound. Carefully feather out at perimeters of repaired areas. Grind level, then vacuum to remove dust. Check moisture content to NZS/AS 1884, Appendix A and do not commence laying vinyl until readings for the whole area show 75% relative humidity or less.

3.11 PREPARING NEW TIMBER BOARD OR PARTICLEBOARD

Clear substrate of debris, clean off surface contamination and carry out surface repairs using Roberts levelling compound. Carefully feather out at perimeters of repaired areas. Grind smooth, then vacuum to remove dust. Check for moisture content to NZS/AS 1884, Appendix A, and do not commence final sanding or laying until readings for the whole area show a moisture content of:

8-12% for air conditioned buildings
10-14% for intermittently heated buildings
12-16% for unheated buildings
Prime or seal if required.

3.12 WALL SURFACES

Clean off surface contamination, carry out minor repairs as possible by this trade and bring to a smooth even surface.

3.13 APPLYING PRIMER OR SEALER FOR VINYL SHEET

Prime and/or seal porous plaster, concrete and timber substrates to the adhesive manufacturer's requirements.

Application - laying floors

3.14 APPLICATION OF ADHESIVE

Apply UZIN KE2000S or Jacobsen ProBond at the required spread rate, without leaving trowel marks after setting. Follow requirements for open time, taking note of the substrate porosity, ambient temperature and relative humidity. Remove excess adhesive as the work proceeds using required techniques.

3.15 LAYING FLOOR SHEET

Roll out, cut, leave to condition and install sheet vinyl to Tarkett's recommended installation procedure, ensuring there are no air bubbles or twisting, the seams are kept clear of adhesive and immediately the sheet is adhered it is rolled with a 68 kg roller.

3.16 THERMOWELDING

Machine groove and thermoweld seams in designated areas, using the Tarkett weld nozzle, heating the sheet and weld rod to a sufficient temperature to melt and fuse them together in a single mass. Trim the weld to leave a smooth, flush surface with the sheet.

3.17 CHEMICAL WELDING HETEROGENEOUS VINYL

Prepare join by overlapping vinyl sheets by 30mm. Tape join and cut along straightedge through both thicknesses simultaneously. Inject type A chemical weld ensuring the liquid penetrates total thickness of the joint in a single application. Remove tape.

3.18 CROSS JOINS

Plan and allow cuts to avoid cross joins. Obtain written approval before proceeding if cross joins are unavoidable. Cross joins are not acceptable in wet areas.

3.19 COVING VINYL

Pencil cove flooring to the specified height and finish off as detailed.

3.20 COMPLETE MITRES

Perform butterfly method to internal and external mitres, allowing to thermoweld mitres.

3.21 VINYL TO STAIRCASES

Fit selected nosing to each tread and at the top of each stair flight, in accordance with the nosing manufacturer's requirements. Lay pre-cut vinyl sheets to each tread and riser, pencil coved at the rear of each tread.

3.22 FIT VINYL EDGING

Fit tapered vinyl edging to borders, except where abutting carpet.

3.23 LAYING STATIC CONTROL SHEET

Lay out and adhere to the substrate to Tarkett's required installation procedures. Roll out, cut, leave to condition and install static control sheet with approved adhesive, ensuring there are no air bubbles or twisting and the seams are kept clear of adhesives. Immediately the sheet is adhered, roll with a 68 kg roller. Tarkett Granit SD should give average resistance readings of 1 x 106 to 1 x 108 ohms.

Application - to walls

3.24 APPLYING PRIMER OR SEALER FOR VINYL SHEET

Prime and/or seal porous plaster, concrete and timber substrates using oil pigmented paint sealer to the adhesive manufacturer's requirements.

3.25 APPLYING WALL SHEET

Adhesive fix Wallgard either vertical or T-method, using UZIN KE2000S , ensuring corners are wrapped and joins are no closer than 200mm from internal or external corners. Cut Wallgard neatly to recess on the Floor/Wall Finishing Strip, and chemically weld this joint using Werner Mueller Type C Welding Compound.

3.26 THERMOWELDING WALL VINYL

Hand groove and thermo-weld seams, heating the sheet and weld rod using Tarkett Speed Tip Nozzle to a sufficient temperature to melt and fuse them together in a single mass. Trim the weld to leave a smooth, flush surface with the sheet.

3.27 FLOOR TO WALL FINISHING STRIP

Adhere to walls in a true, straight line using contact adhesive. Roll immediately using a seam roller to ensure maximum bond strength is achieved.

Application - general

3.28 FIT VINYL SKIRTINGS

Fit skirtings in accordance with Tarkett's required installation procedures.

3.29 INSTALLING ACCESSORIES

Scribe fit, adhere or otherwise fix true to line and face to the sheet manufacturer's requirements for each particular location.

Completion

3.30 REPLACE

Replace damaged or marked elements.

3.31 CLEAN COMMERCIAL VINYL FLOORING

Obtain a copy of the Tarkett cleaning instructions and carry out initial clean to those instructions.

3.32 REMOVE

Remove debris, unused materials and elements from the site.

3.33 PROTECT

Protect completed work from damage for the period between completion of laying and completion of the contract works, or until acceptance/sign-off by ~.

3.34 LEAVE

Leave work to the standard required by following procedures.

4 SELECTIONS

For further details on selections go to www.jacobsens.co.nz.
Substitutions are not permitted to the following, unless stated otherwise.

4.1 VINYL SHEET FLOORING - WET AREA

Product:	Tarkett Granit Multisafe
Colour/number:	NZ Stock 76741
Thickness:	2mm
Seam welding:	Grooved

4.2 VINYL SHEET FLOORING

Product:	Tarkett Standard Plus
Colour/number:	NZ Stock 499
Thickness:	2mm
Seam welding:	Grooved

4.3 COVINGS

Height:	150mm
Type:	Continuos

4.4 2MM VINYL SHEET WALL COVERING

Product:	AQUARELLE WALLGARD
Colour/number:	NZ Stock 42033
Gauge:	2mm
Installation type:	Vertical

4.5 JACOBSEN ADHESIVE

Adhesive:	UZIN KE2000S or Jacobsen ProBond acrylic floor and wall adhesive.

4.6 VINYL EDGINGS

Type:	Black 2.0mm bevel edge strip.

4.7 COVE CAPPING

Type: Jacobsen PVC top cap.

4.8 WALL AND FLOOR VINYL JOINING STRIP

Type: Jacobsen white PVC floor to wall finishing strip.

6512J JACOBSEN CARPET TILES

1 GENERAL

This section relates to the supply and installation of **Jacobsen** modular commercial carpet tiles.

1.1 RELATED WORK

Refer to drawings.

Documents

1.2 DOCUMENTS

Refer to the general section 1233 REFERENCED DOCUMENTS. The following documents are specifically referred to in this section:

NZBC C/AS2-AS7	Protection from fire
AS/NZS 2455.1	Textile floor coverings - installation practice - General
AS/NZS 2455.2	Textile floor coverings - installation practice - Carpet tiles

1.3 MANUFACTURER/SUPPLIER DOCUMENTS

Manufacturer's and supplier's documents relating to this part of the work:
Shaw/Tarkett installation
Textile flooring maintenance
Selected range colours
Selected range technical

Manufacturer/supplier contact details

Company:	Jacobsen	
Web:	www.jacobsens.co.nz	
Telephone:	Auckland	09 574 0640
	Wellington	04 495 4300
	Christchurch	03 366 4153

Warranties

1.4 WARRANTY

Warrant this work under normal environmental and use conditions against failure.

10 years:	Carpet tile material
1 year:	Execution

Provide the execution warranty in the standard form in the general section 1237WA WARRANTY AGREEMENT.
Refer to the general section 1237 WARRANTIES for additional requirements.

Requirements

1.5 NO SUBSTITUTIONS

Substitutions are not permitted to any specified system, or associated components and products.

1.6 QUALIFICATIONS

Carpet tile layers to be competent, experienced workers familiar with the materials and techniques specified.

1.7 RESERVE MATERIAL

Supply reserve carpet tiles, suitably packaged for delivery and storage. Refer to SELECTIONS for details.

Performance

1.8 SURFACE FIRE PERFORMANCE

Flooring to meet the fire performance requirements of NZBC C/AS2-AS7, 4.17.3, by:
Either,
Flooring is tested and achieved the minimum Critical Radiant Flux requirements of NZBC C/AS2-AS6, Table 4.2. Provide certificates or other evidence that the flooring will comply.
or,
Critical Radiant Flux not required if area of non-conforming products have an aggregate surface area of not greater than 5m² within a firecell, to NZBC C/AS2-AS7, 4.17.6.a.

2 PRODUCTS

Materials

2.1 CARPET TILES

Refer to SELECTIONS.

2.2 ADHESIVE

Refer to Jacobsen for product specific adhesives.

3 EXECUTION

Conditions

3.1 INSPECTION

Before starting work inspect the substrate to ensure that it will allow work of the required standard and that fittings and fixtures, around which the carpet is to be scribed, are in place.

3.2 PROTECTION

Protect adjoining work surfaces and finishes during the carpet installation.

3.3 LAYOUT

Plan the general layout to:

- to conform with any special pattern requirements as detailed
- to maximise perimeter and cut module sizes and
- subject to any specific design instructions, to ensure that tiles are laid parallel to the longest wall.

3.4 TEMPERATURE

Floor temperature:	Minimum 16°C.
Concrete pH:	No more than 10.0.
Carpet tiles:	Conditioned at 16°C for a minimum of 24 hours prior to installation.

3.5 HANDLE AND STORE

Keep carpet tiles dry. Protect from damage.

Application - substrate preparation

3.6 PREPARING NEW WOOD PRODUCT FLOOR

To be level, sanded smooth and dry with loose material and dust removed. Check for moisture content and do not commence laying until readings for the whole area show a moisture content of:
8 - 12% for air conditioned buildings
10 - 14% for intermittently heated buildings
12 - 16% for unheated buildings

3.7 PREPARING EXISTING TIMBER OR WOOD PRODUCT FLOOR

Remove existing coverings completely including adhesives, bituminous materials, waxes and paints. Check for soundness, replace any substandard boards or panels and nail down loose boards. Sand smooth and remove loose material and dust.

Application - carpet tile laying

3.8 LAYING GENERALLY

Lay in accordance with AS/NZS 2455.1, AS/NZS 2455.2 and **Jacobsen** installation instructions.

3.9 ADHESIVE

Prepare surfaces and apply adhesive compound strictly in accordance with the carpet tile and adhesive manufacturer's instructions.

3.10 LAYING DIRECTION

Lay in a mono direction, except where specifically instructed otherwise.

3.11 CUTTING OF TILES

Cut tiles from the back, using the carpet tile manufacturer's required cutting technique.

Completion

3.12 REPLACE

Replace damaged or marked carpet tiles.

3.13 LEAVE

On completion of the flooring installation thoroughly vacuum the finished carpet, using the vacuuming technique recommended by the carpet tile manufacturer. Leave surfaces free of adhesive, dirt and debris and to the standard required by following procedures.

3.14 REMOVE

Remove debris, unused materials and elements from the site.

3.15 PROTECT

Protect completed work from damage for the period between completion of laying and completion of the contract works.

3.16 SPECIAL PROTECTION

~

4 SELECTIONS

For further details on selections go to www.jacobsens.co.nz.
Substitutions are not permitted to the following, unless stated otherwise.

4.1 JACOBSEN CARPET TILES

Location:	Refer to drawings.
Brand/Type:	DESSO CARPET TILES
Range:	NZ STOCK RANGES
Colour:	9502

4.2 ADHESIVE

Brand/Type:	Refer to product recommendation.

7151 SANITARY FIXTURES, TAPWARE & ACCESSORIES

1 GENERAL

This section relates to the supply and installation of sanitary fixtures, tapware and sanitary accessories.

1.1 RELATED WORK

Refer to 7120 or 7123 HOT AND COLD WATER SYSTEM for hot water cylinders.
Refer to 7420 or 7421 SANITARY SYSTEMS for the supply and fitting of waste disposal pipework
Refer to the electrical section/s for electrical connection of accessories.

Documents

1.2 DOCUMENTS

Refer to the general section 1233 REFERENCED DOCUMENTS. The following documents are specifically referred to in this section:

NZBC E3/AS1	Internal moisture
NZBC F2/AS1	Hazardous building materials
NZBC G1/AS1	Personal hygiene
NZBC G12/VM1	Water supplies
NZBC G12/AS1	Water supplies
NZBC G13/AS1	Foul water
NZBC G13/AS3	Plumbing and drainage
AS/NZS 1730	Washbasins
AS/NZS 2023	Baths for ablutionary purposes
AS/NZS 3500.1:2003	Plumbing and drainage - water services
AS/NZS 3500.2:2003	Plumbing and drainage - sanitary plumbing and drainage
AS/NZS 3662	Performance of showers for bathing
NZS 4121	Design for access and mobility - buildings and associated facilities
NZS 4223.3	Glazing in buildings - Human impact safety requirements
Plumbers, Gasfitters and Drainlayers Act 2006	

Documents listed above and cited in the clauses that follow are part of this specification. However, this specification takes precedence in the event of it being at variance with the cited document.

1.3 MANUFACTURER'S DOCUMENTS

Manufacturer's and supplier's documents relating to work in this section are:
~

Copies of the above literature are available from ~

Web:	~
Email:	~
Telephone:	~
Facsimile:	~

Requirements

1.4 QUALIFICATIONS

Plumbers to be experienced competent workers, familiar with the materials and the techniques specified. Carry out all work under the direct supervision of a Certifying Plumber under the Plumbers, Gasfitters and Drainlayers Act 2006.

1.5 SUPPLIER

A specialist in the supply of tapware, and employing experienced architectural representatives available to assist during the course of the installation.

1.6 SUBMIT A SUPPLIER'S SCHEDULE

~

2 PRODUCTS

2.1 SANITARY FIXTURES

Refer to SELECTIONS for product selection.

2.2 TAPWARE

Refer to SELECTIONS for product selection.

2.3 SANITARY APPLIANCES

Refer to SELECTIONS for product selection.

2.4 SANITARY ACCESSORIES

Refer to SELECTIONS for product selection.

3 EXECUTION

Conditions - sanitary fixtures

3.1 DELIVERY

Only deliver to the site fixtures or fittings that can be immediately unloaded into suitable storage or be placed for direct installation.

3.2 STORAGE AND HANDLING

Take delivery of and store components complete with protective casings and coverings in areas that are enclosed, clean and dry and where no work is being done. Remove protection only to the extent that will allow installation.

3.3 QUALITY STANDARDS INCLUDING AS/NZS 3500.2

Installation work to comply with NZBC G1/AS1, NZBC G12/VM1, NZBC G12/AS1, AS/NZS 3500.2:2003, as modified by NZBC G13/AS3, and the fixture manufacturer's requirements.

3.4 SUBSTRATE

Ensure substrate and fixings will allow work of the specified standard.

3.5 CO-ORDINATION

Do not proceed if the points of supply and drainage services do not match the points of the fixtures without force or distortion.

3.6 INSTALLATION REQUIREMENTS INCLUDING AS/NZS 3500.2

Install to NZBC G1/AS1, NZBC G12/VM1, NZBC G12/AS1, NZBC E3/AS1, AS/NZS 3500.2:2003, as modified by NZBC G13/AS3, and to the fixture manufacturer's installation requirements for each component. Carry out preparatory and assembly work, including connections to supply and drainage services and the application of slurries and sealants in sequence.
Seal between all sanitary fixtures and wall linings, fixtures and the tops they are in, the tops and wall linings, to NZBC E3/AS1, 3.2.2. Fixtures include baths, basins, tubs or sinks, Tops include, vanities, bath surrounds, sink benches, etc, and there upstands.

3.7 PROVIDE SUPPORT

Confirm fixing points needed for each unit and provide solid blocking at each fixing bracket location.

Conditions - tapware

3.8 RETAIN

Retain tapware in the manufacturer's original packaging and ensure that units are complete with fixings and installation instructions. Label each unit separately with its fitting name and space number.

3.9 STORE

Store tapware packages in a shelved, dry and securely locked area. Provide supervision when the secure area is unlocked and packages and cartons are being distributed; signing off each package from the schedule as released.

Conditions - sanitary accessories

3.10 RETAIN

Retain fixtures, fittings and hardware in the manufacturer's original packaging and ensure that units are complete with associated fixings and installation instructions. Label each unit separately to match the submitted and approved schedule.

3.11 PACKAGE

Package fixtures, fittings and hardware units required in clear plastic and label each to match the drawings and the submitted schedule. Place packages in cartons selected for 'level', 'location', and/or 'sector' and label the packages and the cartons similarly.

3.12 STORE

Store items in a shelved, dry and securely locked area. Provide supervision when the secure area is unlocked and packages and cartons are being distributed; signing off each package from the schedule as released.

3.13 INSPECTION

Before starting the installation of proprietary items, check relevant spaces and wall and floor finishes for any condition that would not allow the proper installation of any unit. Do not proceed until such conditions have been remedied.

Installation - sanitary fixtures

3.14 INSTALLING TOILET PAN

Carry out preparatory and assembly work, including connections to supply and drainage services and the application of slurries/bedding and sealants in sequence. Fit the toilet pan in position, plumb, level, flush and rigid without stressing the attachment points of the component. Fixings to be corrosive resistant. Fit seat.

3.15 INSTALLING CISTERNS

Fit firmly in place and connect the specified cisterns from the supply services through the flush pipes to the relative fixtures in the positions as detailed all plumb and level.

Installation - Basins

3.16 INSTALLING WASHBASINS

Install to NZBC G1/AS1, AS/NZS 1730. Set basins firmly to walls or vanities as detailed and to comply with NZBC E3/AS1. Connect to supply and drains through trap to the drainage system.

3.17 INSTALLING VANITIES - INTEGRAL BASINS

Install in accordance with the manufacturer's requirements. Connect to supply and drains through trap to the drainage system. Seal top and upstand to wall surface to comply with NZBC E3/AS1.

Installation - Showers

3.18 INSTALLING SHOWER FITTINGS

Shower waste, mixer and rose to be install to NZBC G1/AS1 and to AS/NZS 3662.

Installation - Sinks

3.19 INSTALLING SINK BENCHES

Install in accordance with manufacturer's/supplier's requirements. Connect to supply and drainage services.

3.20 INSTALLING CLEANERS SINKS AND TUB UNITS

Install in accordance with manufacturer's requirements. Connect to supply and drainage services.

Installation - Miscellaneous

3.21 INSTALLING STAINLESS STEEL FIXTURES

Carry out preparatory work and fit elements in position plumb, level, flush and rigid without stressing the attachment points in sequence. Connect to supply and drainage services.

3.22 INSTALLING SANITARY FIXTURES & ACCESSORIES - PEOPLE WITH DISABILITIES

Install fixtures to NZBC G1/AS1: Part 3 and Part 4 and to comply with the relevant layouts shown in Figures 5,6,7,8 and 9. Provide number of facilities in accordance with NZBC G1/AS1 tables 1, and 2.

Application - tapware

3.23 GENERAL

To AS/NZS 3500.1 dated 2003 and in accordance with the manufacturer's requirements. Maintain safe water temperatures to comply with NZBC G12/AS1.

Application - sanitary accessories

3.24 INSTALLING ACCESSORIES

Fit specified fittings firmly in place at required dimensions relative to floor and adjoining sanitaryware fittings, all plumb and level.

3.25 LOCATE

Locate units at heights and/or locations shown on the drawings, or as required to comply with NZBC G1/AS1. For any dimension not shown or known, request direction before proceeding.

3.26 CUTTING AND FITTING

Where cutting and fitting of the substrate is necessary for installing any unit, carry out this work before the painting or finishing of that surface. Remove any hardware when required for painting, placing it in the packaging or carton originally supplied and returning it to the secure store until ready for re-installation.

3.27 INSTALLING UNITS

Install each unit in accordance with the proprietary fixture manufacturer's requirements, using the templates and tools supplied or recommended by them. Set units level, plumb and true to line and required location, with moving parts and actions freely and easily operating. Do not make any modifications to supplied units.

Completion

3.28 REPLACE

Replace damaged or marked elements.

3.29 PROTECTIVE COVERINGS

Leave fixtures, fittings and accessories clean and unblemished with stickers and protective coverings removed, with supply and drainage connections and all parts fully operating and working. Leave the whole of this work free of blemishes, undamaged and to the standard of finish required for following work.

3.30 REMOVE

Remove debris, unused materials and elements from the site.

4 SELECTIONS

4.1 TOILET

Location:	Refer to drawings
Toilet pan:	Caroma - Care 100 - Accessible Toilet Suite
Trap type:	P trap
Toilet seat:	Refer to manufactures specifications
Flush system:	Refer to manufactures specifications
Isolating valve:	Refer to manufactures specifications

4.2 BASIN

Location:	Refer to drawings
Basin:	Caroma - Cosmo Wall Basin
Basin taps/mixer:	T.B.C
Waste/plug:	Pop-up
Trap:	S trap - PVC
Isolating valves:	Refer to manufactures specifications

4.3 VANITY UNIT - INTEGRAL BASINS

Location:	Refer to drawings
Vanity:	T.B.C
Colour:	T.B.C
Taps/mixer:	T.B.C
Waste/plug:	Pop-up
Trap:	S trap - PVC
Isolating valves:	T.B.C

4.4 KITCHEN SINK BOWL

Location:	Refer to drawings
Sink bowl model:	T.B.C
Accessories	T.B.C
Mixer:	T.B.C
Waste/plug:	T.B.C
Trap:	T.B.C
Isolating valves:	T.B.C

4.5 CLEANERS SINK

Location:	Refer to drawings
Sink model:	T.B.C
Taps:	T.B.C
Isolating valves:	T.B.C
Waste/plug:	T.B.C
Trap:	S trap - Copper (for the first 2 meters)
Accessories:	T.B.C

4.6 SANITARY ACCESSORIES

Location:	Refer to drawings
Grab rail - Accessible:	750x750mm 90° in accordance with NZS 4121:2001
Shower bench - Accessible:	Accessible shower bench in accordance with NZS 4121:2001
Shower rose - Accessible:	Shower rose in accordance with NZS 4121:2001 - Type T.B.C
Shower mixer:	Shower mixer in accordance with NZS 4121:2001 - Type T.B.C
Roll holder:	T.B.C
Hooks:	Miles Nelson - Hook No.273
Soap Dispenser	Contractor to liease with client. T.B.C
Paper towel dispenser	Contractor to liease with client. T.B.C

7312 AUTOMATIC FIRE SPRINKLER SYSTEMS

1 GENERAL

This section relates to the design, approval, installation and commissioning of a wet pipe automatic sprinkler system.

1.1 RELATED WORK

Refer to drawings.
Refer to 7352 AUTOMATIC FIRE AND SMOKE ALARM SYSTEM for types 3, 4, 5, 7 or 7e fire alarms

1.2 ABBREVIATIONS AND DEFINITIONS

Refer to the general section 1232 INTERPRETATION & DEFINITIONS for abbreviations and definitions used throughout the specification.

The following abbreviations apply specifically to this section:

FRR	Fire Resistance Rating
SSC	Sprinkler System Certifier

Documents

1.3 DOCUMENTS

Documents referred to in this section are:

NZBC C/AS1-AS7	Protection from Fire
AS/NZS 1170.0	Structural design actions - General principles
NZS 1170.5	Structural design actions - Earthquake actions - New Zealand
AS/NZS 2980	Qualification of welders for fusion welding of steel
NZS 4541	Automatic fire sprinkler systems
AS/NZS 4765	Modified PVC (PVC-M) pipes for pressure applications
NZS 4515	Fire sprinkler systems for life safety in sleeping occupancies (up to 2000 square metres)

Documents listed above and cited in the clauses that follow are part of this specification. However, this specification takes precedence in the event of it being at variance with the cited document.

1.4 MANUFACTURER'S DOCUMENTS

Manufacturer's and supplier's documents relating to work in this section are:
~

Copies of the above literature are available from ~

Web:	~
Email:	~
Telephone:	~
Facsimile:	~

Warranties

1.5 WARRANTY

Provide warranty for:

1 years:	For materials and execution

- Provide the warranty in the standard form in the general section 1237WA WARRANTY AGREEMENT.
- Commence the warranty from the date of practical completion of the contract works.

Requirements

1.6 SAMPLES, DRAWINGS AND BROCHURES

Submit, on request, for review, samples, drawings and brochures on request of sprinklers, escutcheons, penetration plates and any other elements that affect the interior finishes.

1.7 QUALIFICATIONS

Employ only companies listed with a Sprinkler System Certifier and holding a current certificate, to design, supply, erect and maintain sprinkler systems installations.

1.8 SHOP DRAWINGS

Provide shop drawings, calculations, installation details and other descriptive information for review before commencing manufacture.
Shop drawings to include the installation control valves and enclosures as called for in NZS 4541. Include all the requirements of the project Fire Report.
Refer to the general section 1235 SHOP DRAWINGS for the requirements for submission and review and the provision of final shop drawings.

1.9 NOTICES AND FEES

Give notices and obtain from authorities and network utility operators permits, authorisations and approvals required for the carrying out of this work. Pay fees and levies in respect of the same and including inspection and re-inspection fees.

1.10 INFORMATION FOR OPERATION AND MAINTENANCE

Supply maintenance information to requirements set out in the general section 1239 OPERATION & MAINTENANCE and any notes relating to the provision of a compliance schedule by the Territorial Authority.

1.11 MAINTENANCE CONTRACT PROPOSAL

Provide a proposed contract for the ongoing servicing of the automatic fire sprinkler system specified, to NZS 4541, part 12. Refer to SELECTIONS.

Compliance information

1.12 INFORMATION REQUIRED FOR CODE COMPLIANCE

Provide the following compliance documentation: -

- Compliance schedule - All relevant details covering Scope, Inspections and Maintenance for the Compliance Schedule
- Warranty
- Producer Statement - Construction from the installer
- Completion Certificate - from Sprinkler System Certifier

Performance

1.13 CONTROL VALVE LOCATION

Obtain New Zealand Fire Service approval of the control valve location - and the Fire Service inlet connection location, if not at the same place.

1.14 WELD TESTING

Test welds hydrostatically to 1.5 times the working pressure as part of the final commissioning tests.

1.15 SYSTEM DESIGN - ACCEPTABLE SOLUTION

Design by an automatic sprinkler systems designer listed with a Sprinkler System Certifier, designed in accordance with NZS 4541, the appropriate Acceptable Solution(s) of NZBC C/AS1-AS7 and the project Fire Report.

1.16 SEISMIC RESISTANCE

Design and support, pipes and units to NZS 4541, 105 and 403.12, AS/NZS 1170.0 and NZS 1170.5.

1.17 APPROVAL OF COMPLIANCE

Before commencing installation, obtain approval from a SSC that the proposed sprinkler system does comply, and pay required fees. Supply them with the basic design decisions, drawings, calculation and other descriptive information as required by NZS 4541, 112.1.

1.18 FINAL INSPECTION

Prior to final inspection at completion, supply to the SSC, a notice of completion, drawings, calculation and other descriptive information as required by NZS 4541, 112.2.
Notify an accredited inspector, as per NZS 4541 113.5, when the installation is ready for final inspection and attend upon them for the operation of any pumps or equipment. Supply a written completion certificate to a SSC.

1.19 BRIGADE CONNECTION

Arrange for connection of the fire alarm system to New Zealand Fire Service receiving equipment and pay the required connection costs.

2 PRODUCTS

Materials

2.1 PIPEWORK UPSTREAM OF ALARM VALVES

To comply with NZS 4541, section 403, AS/NZS 4765 Modified PVC (PVC-M) pipes for pressure applications and water supply authority requirements.

2.2 PIPEWORK DOWNSTREAM OF ALARM VALVES

Steel, copper, chlorinated PVC and other approved pipe to NZS 4541, section 403.

2.3 PIPE SUPPORTS

Heat and corrosion resistant to NZS 4541, clause 403.9.

2.4 SPRINKLERS

To NZS 4541 section 402.

2.5 PRESSURE GAUGES

To indicate pressure above alarm valves and pressure at fire brigade alarm release mechanism to NZS 4541, section 406.

2.6 ALARM DEVICES

Hydraulic water flow alarm including hydraulic gong, to NZS 4541, section 407.1. Fire brigade alarm to NZS 4541, Section 407.2.

Accessories

2.7 FIRE RESISTANT SEALER

Gunnable inorganic or silicone elastomer sealant, packed to maintain the specified fire resistance rating of the floor/ceiling or wall to NZBC C/AS1-AS7, 4.4 Fire Stopping.

2.8 FIRE RESISTANT FOAM SEALER

Two-part silicone foam elastomer sealant, packed to maintain the specified fire resistance rating of the floor or wall to NZBC C/AS1-AS7, 4.4 Fire Stopping.

2.9 FIRE RESISTANT COLLARS

Corrosion resistant proprietary collar or canister with intumescent packing to maintain the specified fire resistant rating of the floor or wall.

3 EXECUTION

Conditions

3.1 CONFORM

Sprinkler system to conform to the required standard in all parts of the so that it completely fulfils its designed function.

3.2 APPROVALS

Ensure materials and elements used in the sprinkler system are listed with a SSC.

3.3 CORE HOLES AND SLEEVES

Review location and fit core holes and sleeves as needed throughout the structure in conjunction with the boxing, reinforcing and placing of concrete. Strip core holes and make good after installation of the pipework. Complete required fire resistance ratings.

Application - pipework

3.4 PIPEWORK INSTALLATION

Locate and lay out pipework parallel with, square to and co-ordinated with the form of the building and its structure. Fix rigidly in place, allowing for drainage of the system to NZS 4541, clause 403.11 and support to clause 403.9.

3.5 WELDING

Welders to hold current certification under AS/NZS 2980.

3.6 SITE WELD

Pipes of 50mm nominal bore and above may be welded on site.

3.7 CONCEALMENT

Confirm the location of riser, distribution and range pipes that need concealing within the interior design elements of the building.

3.8 PROTECTION

Protect those parts of the sprinkler system subject to damage by building use. Provide sprinkler guards to NZS 4541, section 402.5.

Application - controls

3.9 VALVES

Locate stop valves, non-return valves, alarm valves to NZS 4541, and fit to the valve manufacturer's requirements.

3.10 INSTALLATION CONTROL

Provide a set of installation control valves to NZS 4541, clause 404.1. Provide an enclosure as required by NZS 4541, clause 404.1.2.

3.11 PRESSURE GAUGES

Locate to NZS 4541 and fit to the gauge manufacturer's requirements.

3.12 ALARM DEVICES

Fit a hydraulic water flow alarm to NZS 4541, clause 407.1 with a fire brigade alarm to NZS 4541, clause 407.2.

3.13 SPRINKLER HEADS

Fit to NZS 4541 and the sprinkler manufacturer's requirements, with location to match the module of the relevant interior design element. Install heads at a uniform adjustment level.

Application - water supply

3.14 PROVIDE PRIMARY SUPPLY

Provide a primary supply from either a town main, a boosted town main using a diesel pump unit, or a supplemented town supply using a diesel pump unit, or storage tank supply, to the requirements of NZS 4541.

3.15 INLET CONNECTION

To consist of an inlet pipe to the sprinkler system complete with hose connection, stop valves and pressure gauges to NZS 4541.

3.16 BRIGADE INLET CONNECTION

Fit where shown on the drawings to the requirements of NZS 4541, section 610.

Application - fire resistant work

3.17 FIRE RESISTANT SEALER

Thoroughly clean the penetration of the floor/ceiling or wall. Pack if necessary to support the sealant. Implant the sealant to the manufacturer's requirements to ensure full penetration and to obtain the required fire resistance rating. Tool the surface flush and smooth and allow to cure.

3.18 FIRE RESISTANT FOAM SEALER

Thoroughly clean the opening and box each side with fibreboard to contain the sealer. Mix sealer and inject into the opening to the volume and time limits in the sealer manufacturer's requirements to obtain the required fire resistance rating. Allow to cure, remove boxing and make good any voids with sealer.

3.19 FIRE RESISTANT COLLARS

Insert circular type collars into the holes provided in the building element. Or supply canister type collars and locate and fix to boxing before the concrete is placed. Comply with the manufacturer's requirement for use of these elements complete with accessories, tapes and sealants.

Finishing

3.20 PAINTING OF PIPES

Prime pipe and fittings with approved primer, and paint exposed pipe and fittings with one coat of approved solvent based paint.

3.21 PROTECT FROM CORROSION

Protect those parts of the sprinkler system that may be subject to corrosion by the building use with a proprietary coating system.

Completion

3.22 ROUTINE CLEANING

Carry out routine trade cleaning of this part of the work including periodic removal all debris, unused materials and elements from the site.

3.23 DEFECTIVE OR DAMAGED WORK

Repair damaged or marked elements. Replace damaged or marked elements where repair is not possible or will not be acceptable. Adjust operation of equipment and moving parts not working correctly. Leave work to the standard required for following procedures.

Leave the whole of the sprinkler system in full operational order ready for final inspection.

3.24 PROTECTION

Provide the following temporary protection of the finished work:
~

4 SELECTIONS

4.1 MAINTENANCE CONTRACT PROPOSAL

Contract to commence from: T.B.C
Contract period: 1 year

4.2 SPRINKLER HEADS

Finish: Chrome

4.3 ESCUTCHEON PLATES

Type: ~
Finish: ~

4.4 PAINTING OF PIPES

Brand: ~
Primer: ~
Top coat: ~

4.5 PROTECT FROM CORROSION

Brand: ~

Fire resistant sealers

4.6 FIRE RESISTANT SEALER

Manufacturer: refer to separate section 7382 FIRE STOPPING SYSTEMS.
Type/number:

4.7 FIRE RESISTANT FOAM SEALER

Manufacturer: refer to separate section 7382 FIRE STOPPING SYSTEMS.

4.8 FIRE COLLARS

Manufacturer: refer to separate section 7382 FIRE STOPPING SYSTEMS.
Type/number:
Pipe size: Varies
FRR: 60/60/60

7352 AUTOMATIC FIRE & SMOKE ALARM SYSTEM

1 GENERAL

This section relates to the design, installation and commissioning of automatic fire alarm systems types 3, 4, 5, 7 and 7e as described in NZBC F7/AS1: Warning systems.

1.1 RELATED WORK

Refer to drawings.

1.2 ABBREVIATIONS

Refer to the general section 1232 INTERPRETATION & DEFINITIONS for abbreviations and definitions used throughout the specification.

The following abbreviations apply specifically to this section:

FRR	Fire Resistance Rating

Documents

1.3 DOCUMENTS

Refer to the general section 1233 REFERENCED DOCUMENTS. The following documents are specifically referred to in this section:

NZBC C/AS1-AS7	Protection from Fire
NZBC F7/AS1	Warning systems
NZBC F8/AS1	Signs
AS/NZS 3000	Electrical installations (known as the Australian/New Zealand Wiring Rules)
NZS 4512	Fire detection and alarm systems in buildings
AS/NZS 5000.2	Electric cables - polymeric insulated - For working voltages up to and including 450/750V

Fire Protection Association register of approved equipment
Building Regulations 1992

1.4 MANUFACTURER'S DOCUMENTS

Manufacturer's and supplier's documents relating to this part of the work:
~

Copies of the above literature are available from ~

Web:	~
Email:	~
Telephone:	~
Facsimile:	~

Requirements

1.5 SAMPLES

Submit samples on request of manual call points, audible alarms, detector heads and accompanying signs that form part of the system offered. Submit manufacturer's literature confirming the selected indicating panel and signs, and approvals of additional equipment.

1.6 QUALIFICATIONS

Fire alarm installers to be a Fire Protection Association of New Zealand certified fire alarm contractor, employing experienced competent workers, familiar with the materials and the techniques specified.

1.7 OPERATION AND MAINTENANCE MANUALS

Supply maintenance manual information to requirements set out in the general section 1239 OPERATION & MAINTENANCE and including the following:
The manual is to set out the monthly and annual checking and testing of the system as required by NZS 4512, part 6: "Maintaining systems in compliance and good working order", for the compliance schedule required by the second schedule of the Building Regulations 1992 and a copy of the certificate of completion.

1.8 MAINTENANCE CONTRACT PROPOSAL

Provide a priced proposed maintenance contract for the ongoing servicing of the fire alarm system specified to NZS 4512, part 6 "Maintaining systems in compliance and good working order". Refer to SELECTIONS.

1.9 APPROVED EQUIPMENT

Select equipment from the Fire Protection Association register of approved equipment.

Performance

1.10 NEW ZEALAND FIRE SERVICE APPROVAL

Submit to the New Zealand Fire Service details of the proposed location of the fire detection indicator and the layout of the fire indicating panel and any mimic panels for their approval. Advise any required variation from the installation detailed.

1.11 COMMISSIONING

The completed system to be fully tested and commissioned in accordance with NZS 4512 part 5 "Commissioning" and as necessary to ensure the system is complete. Testing to include:

- visual examination
- testing the electrical equipment and
- testing to verify correct operation and function.

Carry out in the same manner as an annual survey. Record the results in a logbook to NZS 4512, appendix J "Certificate of completion for fire alarm system".

1.12 CERTIFICATE

Provide a certificate of compliance for the fire alarm system to NZS 4512, appendix J "Certificate of completion for fire alarm system".

2 PRODUCTS

Manufactured units

2.1 FIRE ALARM SYSTEM, TYPE 7 FIRE SAFETY PRECAUTION

Automatic sprinkler system with a Type 4 automatic fire alarm system activated by smoke detectors and/or manual call points to comply with the requirements of NZBC F7/AS1: Warning systems and NZS 4512.

2.2 FIRE SERVICE CONNECTION

Refer to SELECTIONS for required type of connection.

Materials

2.3 CABLE

To AS/NZS 5000.2.

Accessories

2.4 FIRE RESISTANT SEALER

Gunnable inorganic or silicone elastomer sealant, packed to maintain the specified fire resistance rating of the ceiling or wall to NZBC C/AS1-AS7, 4.4.

3 EXECUTION

Conditions

3.1 COMPLY

Comply with the requirements of NZS 4512, part 4 **Installation** and the following.

Multizone systems:	To NZS 4512 part 2 Design and construction - Multizone fire alarm systems
Single zone systems:	To NZS 4512 part 3 Single zone fire alarm systems

3.2 PROVIDE FOR

Provide for the system by way of conduit, chases, penetrations, spaces for equipment and trimming out for same.

3.3 CONFIRM LOCATION

Confirm location of equipment and their visual impact relative to surrounding materials and finishes.

Application

3.4 RUN CABLE

Run cabling concealed, using conduit, chases and penetrations, located and provided previously to NZS 4512.

3.5 INSTALL INDICATING PANEL

Set rigidly in place plumb and true to line and face in the space provided. Fit neatly and without damage to the surrounding finish.

3.6 INSTALL MANUAL CALL POINTS

Set rigidly in place plumb and true to line and face. Fit neatly and without damage to the surrounding finish.

3.7 INSTALL DETECTORS

Install detectors to the detector manufacturer's requirements fitted neatly and without damage to the surrounding finish. Wire back to the control panel to the requirements of AS/NZS 3000.

3.8 INSTALL ALERTING DEVICES

Install devices to the device manufacturer's requirements rigid plumb and true to line and face, and without damage to the surrounding finish. Wire back to the control panel to the requirements of AS/NZS 3000.

3.9 SIGNS

Install signs as required by NZBC F8/AS1: Signs, where required information is not already on the call point.

3.10 DC SUPPLY

Supply and fix the primary and secondary batteries and battery charger to the requirements of NZS 4512 and the fire alarm system offered. Indelibly mark batteries with the date of installation.

Application - fire resistant work

3.11 FIRE RESISTANT SEALER TO PENETRATIONS

Thoroughly clean the penetration of the ceiling or wall. Pack if necessary to support the sealant. Implant the sealant to the manufacturer's requirements to ensure full penetration and to obtain the required fire resistance rating. Tool the surface flush and smooth and allow to cure. Refer to SELECTION for details.
Service penetrations through fire rated construction to NZBC C/AS1-AS7, 4.4 and the project-specific Fire Resistance Rating (FRR).

Completion

3.12 REPLACE

Replace damaged, cracked or marked elements.

3.13 LEAVE

Leave units and fittings clean and in full working order, wiring concealed and fire protected as required and with adjacent surface finishes unmarked. Leave work to the standard required by following procedures.

3.14 REMOVE

Remove debris, unused materials and elements from inside fixtures and from the rest of the site.

4 SELECTIONS

4.1 AUTOMATIC FIRE ALARM SYSTEM TYPE

System type: Type 7

4.2 MAINTENANCE CONTRACT PROPOSAL

The maintenance contract is to commence from: T.B.C
The period for this maintenance contract to be: 1 Year

4.3 FIRE SERVICE CONNECTION

Means of alerting fire service: T.B.C

4.4 CONTROL PANEL

Brand/type: T.B.C

4.5 DETECTORS, SMOKE

Brand/type: T.B.C

4.6 MANUAL CALL POINTS

Brand/type: T.B.C

4.7 ALERTING DEVICES, AUDIBLE

Brand/type: T.B.C

4.8 ALERTING DEVICES, VISUAL

Brand/type: T.B.C

4.9 FIRE RESISTANT SEALER TO PENETRATIONS

Location:	Where penetrations occur through FRR walls
FRR:	60/60/60
Manufacture/type:	~

7382RF RYANFIRE FIRE STOPPING SYSTEMS

1 GENERAL

This section relates to **Ryanfire Products Ltd** (Firetherm NZ) fire rated service penetration systems and control joint fire stopping systems.
It includes:

- fire resistant boards and panels
- fire stop wraps
- fire stop sealants, joint fillers and compounds
- fire protection pad
- fire stop collars
- cable management duct
- smoke and fire curtains

1.1 RELATED WORK

Refer to drawings.

Documents

1.2 DOCUMENTS

Refer to the general section 1233 REFERENCED DOCUMENTS. The following documents are specifically referred to in this section:

NZBC C/AS1-AS7	Protection from fire
NZS/BS 476.20	Fire tests on buildings and structures - Method for determination of the fire resistance of elements of construction (general principles)
NZS/BS 476.21	Fire tests on buildings and structures - Method for determination of the fire resistance of load bearing elements of construction
NZS/BS 476.22	Fire tests on buildings and structures - Method for determination of the fire resistance of non load bearing elements of construction
BS 476.24	Fire tests of building materials and structures - Method for determination of the fire resistance of ventilation ducts.
ISO 1182	Reaction to fire tests for products - Non-combustibility test
AS 1530.4	Methods for fire tests on building materials, components and structures - Fire resistance test of elements of construction
AS 4072.1	Components for the protection of openings in fire-resistant separating elements - Service penetrations and control joints

1.3 MANUFACTURER/SUPPLIER DOCUMENTS

Manufacturer's and supplier's documents relating to this part of the work:
Firetherm System Drawings
Firetherm Technical Manual
Firetherm Product Data Sheets
Firetherm Material Safety Data Sheets
Certification references to AS1530.4 and AS 4072.1

BRANZ FAR 1628	Assessment report on Firefly Plus 60 material curtain
BRANZ FAR 2701	Assessment report on Firefly Phoenix material curtain
BRANZ FAR 3237	Assessment report on Firefly Timber Penowrap system

CSIRO Movement/Seismic Joint Systems Assessment Number FCO-2896

Manufacturer/supplier contact details

Company:	**Ryanfire Products Ltd**
Web:	www.ryanfire.co.nz www.firetherm.co.nz
Email:	sam.roiall@ryanfire.co.nz paul.ryan@firetherm.co.nz
Telephone:	09 443 0362

Warranties

1.4 WARRANTY - MANUFACTURER/SUPPLIER

Provide a material manufacturer/supplier warranty:

10 years:	For manufacture/supply of fire stopping systems

- Provide this warranty on the Ryanfire Products Ltd standard form.
- Commence the warranty from the date of practical completion of the contract works.

Refer to the general section 1237 WARRANTIES for additional requirements.

1.5 WARRANTY - INSTALLER/APPLICATOR

Provide an installer warranty:
5 years: For installation of fire stopping systems

- Provide this warranty on the installer/applicator standard form.
- Commence the warranty from the date of practical completion of the contract works.

Refer to the general section 1237 WARRANTIES for additional requirements.

Requirements

1.6 QUALIFICATIONS

Installers to be Ryanfire certified trades people trained with the materials and techniques specified.

1.7 NO SUBSTITUTIONS

Substitutions are not permitted to any of the specified systems, components and associated products listed in this section.

1.8 MANUFACTURERS INFORMATION

Submit type test certificates for each combination of fire stopping system, application, type of service, and substrate and penetration orientation. Include drawings of tested details.

- Submit report to AS 4072.1 Appendix C.
- Submit evidence that systems specified without reference to brand conform to specified requirements.
- Submit copies of relevant manufacturers' instructions, for systems specified without reference to brand.
- Material data sheets (MSDS): Submit MSDS for systems specified without references to brand.
- Give notice if substrate or penetrations or both are not suitable for fire stopping.

1.9 LABELLING AND IDENTIFICATION OF FIRE RATED SERVICES PENETRATIONS

All service penetrations to fire cells and fire separation systems are required to comply with all the designed fire integrity of the specified systems. Label all fire rated service penetrations to AS 4072.1.

Each fire stopping installation to have a permanently fixed tag or label with reference information containing the following information:

- Manufacturer's name
- Name and address of installer
- Date of installation
- System installed
- FRR
- Location of penetration on site
- Sign off by certified installer

1.10 INSPECTIONS

Give sufficient notice so that inspections may be made of the following:

- Service penetrations completed and ready for fire stopping.
- Finish fire stopping, before being concealed.

Compliance information

1.11 FIRE STOPPING SYSTEM COMPLIANCE

To NZBC C/AS2-AS7, 2.3 **Fire resistance ratings**, NZBC C/AS2-AS6, 4.4 **Fire stopping**, and NZBC C/AS2-AS6, 4.5 **Fire cell construction** for interior elements, and NZBC C/AS2-AS6, 5.7.14 for exterior wall cavities.

1.12 INFORMATION REQUIRED FOR CODE COMPLIANCE

Provide the following compliance documentation:

- Manufacturer's, and or supplier's warranty
- Installer's warranty
- Producer Statement - Construction from the installer
- Other information required by the BCA in the Building Consent Approval documents.

1.13 CERTIFICATION

Submit evidence of compliance, to the recommendations of AS 4072.1 Appendix B.
Submit a certification document for installed fire stopping penetration and control joints.

- Form: To figure B1 of AS 4072.1

Schedule: Submit a schedule of installed fire stopped penetrations and control joints.

- Form: To figure B2 of AS 4072.1

2 PRODUCTS

Fire wrap

2.1 INTUSTRAP INTUMESCENT WRAP

Firetherm Intustrap, a high pressure graphite loaded intumescent wrap, tested to NZS/BS 476.22, AS 1530.4, and AS 4072.1. Provides up to 4hr fire integrity. Wrapped around combustible and insulated metal pipes and PVC-U ducts, which pass through a fire compartment wall or floor. Supplied in 600mm x 60mm lengths x 4mm thick. Refer to SELECTIONS for options.

2.2 PENOWRAP FIRE BARRIER CLOTH

Firetherm Firefly Timber Penowrap, comprised of Plus 60 fire barrier cloth overwrapped with Green Colour Roll and Intumastic sealed, used to maintain fire rating of a fire compartment wall or fire barrier which is penetrated by timber members. Provides 2hrs fire rating. Tested to AS 1530.4 and is supplied in rolls 6m x 1.3m wide. Refer to SELECTIONS for options.

Fire sealants, joint filler and compound

2.3 INTUMASTIC FIRE RATED SEALANT

Firetherm Intumastic, an acrylic fire rated sealant, tested to NZS/BS 476.22, AS 1530.4, AS 4072.1, providing up to 4hrs fire integrity and insulation. Used to seal fire rated movement joints in walls and floors with a movement capability of +/- 15%, in joints up to 210mm wide. Available in standard colours white and grey. Refer to SELECTIONS for options.

Fire collar

2.4 INTUCOLLAR FIRE COLLAR

Firetherm Intucollar, a graphite lined pre-formed metal shell, hinged in two parts, tested to NZS/BS 476.20, AS 1530.4, and AS 4072.1. Used to fire seal combustible pipes (including plastic PVC-U, PP, PE, HPE and ABS) passing through fire rated walls and floors, providing up to 4hrs fire rating. Available in a range of standard sizes from 55mm to 200mm, other sizes upon special request. Refer to SELECTIONS for options.

3 EXECUTION

Installation - general

3.1 DELIVERY, STORAGE AND HANDLING

Take delivery of materials and goods and store on site and protect from damage.
Protect finished surfaces, edges and corners from damage.
Move/handle goods in accordance with manufactures requirements.
Reject and replace goods that are damaged or will not provide the required finish.

3.2 GENERAL PREPARATION

Fire stopping after services have been installed through penetrations and properly spaced and supported, after sleeving where appropriate, and after removal of temporary lines, but before restricting access to the penetrations, including before dry lining.

Ensure within aperture is clean and free of debris, loose cement. Remove dust from all surfaces.

Supply ventilation for non-aqueous solvent-cured materials. Apply fire stopping material to uniform density. Finish surfaces to a uniform and level condition. Maintain cable and pipe separation. Protect adjacent surfaces from damage arising through installation of fire stopping.

Allow for thermal movement for the pipes and ducts. Reinforce or support fire stopping materials with non combustible materials when:

- The unsupported span of the fire stopping materials > 100mm.
- The fire stopping materials are non-rigid.

To large openings provide fire stopping capable of supporting the same loads as the surrounding element or provide similar structural support around the opening.

Installation - fire wrap

3.3 INSTALL INTUSTRAP INTUMESCENT WRAP

Install Firetherm Intustrap in accordance with Firetherm installation instructions and system drawings. Wrap Intustrap around insulated pipe or duct twice and secure with duct tape. Push along pipe or duct until installed within the thickness of the wall/floor/fire stop. Where pipes pass through walls install Intustrap to both sides. For larger openings, fill open void using Intubatt or Intucompound around Intustrap wrapped around the service penetration.

3.4 INSTALL PENOWRAP FIRE BARRIER CLOTH

Install Firetherm Firefly Timber Penowrap in accordance with Firetherm installation instructions and system drawings. Wrap 300mm wide strips of Plus 60 around the timber and extend cloth 300mm from the face of the barrier, held temporarily in place with hammer tacker and staples. Wrap Green Collar Roll over the top of the Plus 60 and staple it in place with a R31 Staple Gun and 12mm stainless steel staples using the double fold jointing method. Shape the pre-cut 100mm wide skirt of the Green Collar Roll around the face of the compartment wall/fire barrier and glue it into position with Intumastic. Apply a bead of Intumastic at the other end of the green sleeve to seal it to the Plus 60 and the timber.

Apply treatment to both sides of the compartment wall/fire barrier. If only 3 sides of the timber are accessible, then the 3 sided treatment may be used. In this case use a 25mm x 25mm x 0.5mm galvanized angle to mechanically fix both layers to the timber.

Application - fire sealants, joint filler and compound

3.5 APPLY INTUMASTIC FIRE RATED SEALANT

Apply Firetherm Intumastic in accordance with Firetherm installation instructions and system drawings. Check gap widths are as specified and insert suitable backing rods under compression to control depth of sealant. Mask each side of joint as required. Apply Intumastic onto joint backing material and sides of joint, tool off to a good finish and remove tape if used.

Installation - fire collar

3.6 INSTALL INTUCOLLAR FIRE COLLAR

Install Firetherm Intucollar in accordance with Firetherm installation instructions and system drawings. Ensure substrate around pipe penetration is flat and free from obstructions. Seal the pipe at entry point with sealant to ensure a smoke and acoustic seal. For walls a fire collar is required on both sides. Fit Intucollar firmly around the pipe and face fix collar with structural fixings to each exposed side of the fire rated plasterboard lined /masonry wall.

For floor installation only one collar is required. Face fix fire collar to the underside of concrete floor penetration using appropriate size masonry anchors, in accordance with Firetherm installation instructions.

Completion

3.7 ROUTINE CLEANING

Carry out routine trade cleaning of this part of the work including periodic removal all debris, unused materials and elements from the site.

3.8 DEFECTIVE OR DAMAGED WORK

Repair damaged elements. Replace damaged where repair is not possible or will not be acceptable. Leave fire stopping system to the standard required for following trades.

4 SELECTIONS

For further details on selections go to www.ryanfire.co.nz.
Substitutions are not permitted to the following, unless stated otherwise.

Fire wrap

4.1 FIRETHERM INTUSTRAP INTUMESCENT WRAP

Location:Where	FRR wall penetrations occur.
Manufacturer:	Firetherm (NZ) Ltd
Type/brand:	Firetherm Intustrap
FRR:	-/60/60

4.2 FIRETHERM FIREFLY TIMBER PENOWRAP FIRE BARRIER CLOTH

Location:	FRR wall to roof junctions. Refer to **A401**.
Manufacturer:	Firetherm (NZ) Ltd
Type/brand:	Firetherm Firefly Timber Penowrap
FRR:	60/60/60

Fire sealants, joint filler and compound

4.3 FIRETHERM INTUMASTIC FIRE RATED SEALANT

Location:	Where wall fixtures occur to FRR walls
Manufacturer:	Firetherm (NZ) Ltd
Type/brand:	Firetherm Intumastic
FRR:	-/60/60
Joint width:	C.O.S - up to 210mm
Colour:	White

Fire collar

4.4 FIRETHERM INTUCOLLAR FIRE COLLAR

Location:	C.O.S
Manufacturer:	Firetherm (NZ) Ltd
Type/brand:	Firetherm Intucollar
Application:	Wall
FRR:	-/60/60
Size:	Varies
Colour:	Red

7411MA MARLEY RAINWATER DISPOSAL SYSTEMS

1 GENERAL

This section relates to **Marley** rainwater disposal systems.
It includes;

- uPVC spouting and downpipes
- Stratus Design Series® spouting and downpipes

1.1 RELATED WORK

Refer to drawings.

Documents

1.2 DOCUMENTS

Refer to the general section 1233 REFERENCED DOCUMENTS. The following documents are specifically referred to in this section:

NZBC E1/AS1	Surface water
NZBC E2/AS1	External moisture
AS/NZS 4020	Testing of products for use in contact with drinking water

1.3 MANUFACTURER/SUPPLIER DOCUMENTS

Manufacturer's and supplier's documents relating to this part of the work:
Marley Rainwater Brochures
Marley Product Catalogue
Marley uPVC spouting and downpipes - Your easy installation guide
Marley Stratus Design series - Design and installation guide

Manufacturer/supplier contact details

Company:	Marley New Zealand Limited
Web:	www.marley.co.nz
Email:	info@marley.co.nz
Telephone:	0800 MARLEY (0800 627 539)

WARRANTIES

1.4 WARRANTY - MANUFACTURER/SUPPLIER

Provide a material manufacturer/supplier Guarantee:

15 years:	Against defects in material and manufacture

- Commence the guarantee from the date of purchase
- Refer to Marley NZ Guarantee available at www.marley.co.nz

Refer to the general section 1237 WARRANTIES for additional requirements.

1.5 WARRANTY - INSTALLER/APPLICATOR

Provide an installer/applicator warranty:

~ years:	For installation

- When installed to Marley's published installation instructions at time of installation.
- Provide this warranty on the installer/applicator standard form.
- Workmanship warranty to be issued separately by the installer
- Commence the warranty from the date of practical completion of the contract works.

Refer to the general section 1237 WARRANTIES for additional requirements.

Requirements

1.6 QUALIFICATIONS

Installers to be experienced, competent workers familiar with the materials and techniques specified.

1.7 NO SUBSTITUTIONS

Substitutions are not permitted to any of the specified Marley systems, components and associated products listed in this section.

Performance

1.8 TEST

Test the completed Marley rainwater disposal system with water to ensure, spouting is laid to correct fall, that both spouting and downpipes are unobstructed and that no ponding occurs in spoutings.

1.9 DESIGN

Layout, falls and capacity of spouting to falls and the size and position of downpipes to comply with NZBC E1/AS1.

2 PRODUCTS

Materials

2.1 UPVC WHITE SPOUTING/DOWNPIPES

Marley uPVC spouting and downpipe systems in white uPVC.

Products

2.2 MARLEY SPOUTING

Marley spouting system, complete with Marley fittings including jointers, brackets, expansion outlets, end caps and corners supplied by Marley. Spouting to be sized to comply with NZBC E1/AS1 and installed to NZBC E2/AS1 8.1.6, **Gutters**. Refer to SELECTIONS for type.

2.3 MARLEY DOWNPIPES

Marley downpipes system, complete with Marley fittings including bends, clips, joiners and junctions supplied by Marley. Refer to SELECTIONS for type.

Components

2.4 MARLEY MCS SOLVENT WELDING CEMENT

Only Marley MCS® Solvent Welding Cement to be used in conjunction with the spouting and downpipe systems to manufacturer's instructions. Colour match to spouting or downpipes.

2.5 EXPANSION OUTLET/DROPPERS

Marley expansion outlet/droppers, compatible with spouting and downpipe profile.

2.6 SCREW FIXINGS - TIMBER FASCIA

Stainless steel, grade 304 finish, self tapping screws 6g x 20mm pan head or wafer head.

2.7 NAIL FIXINGS - TIMBER FASCIA

Marley galvanised nails (MCNAILS).

2.8 FABRICATION

Special items can be fabricated by Marley to specific dimensions on request including but not limited to angle flats, angle rakes, outlets and adaptors.

3 EXECUTION

Conditions

3.1 HANDLING AND STORAGE

Handle and store Marley downpipes, spouting and accessories to avoid damage. Store on site under cover, on a clean level area, stacked to eliminate movement and away from work in progress. Store out of direct sunlight. Refer to Marley installation guides for further details.

3.2 SUBSTRATE

Check that fascias, barges or cladding are level and true to line and face and will allow work of the required standard without distortion to the product alignment. Do not proceed until they are up to standard.

3.3 THERMAL MOVEMENT

Make adequate provision in the jointing of the spouting for thermal movement in the length of the spouting by using Marley expansion joiners and/or expansion outlets. Refer to Marley expansion technical information.

3.4 ENVIRONMENTAL

Marley Spouting and Downpipe systems are suitable for most environmental conditions and will never rust, rot or corrode.

3.5 RECYCLING

All Marley manufactured spouting and downpipe systems are 100% recyclable and Marley operates recycling programs with industry suppliers where uPVC pipes can be returned from site for recycling at Marley.

Application

3.6 INSTALL MARLEY SPOUTING

Install to Marley's current published installation instructions available at www.marley.co.nz. Ensure only Marley MCS® Solvent Welding Cement to be used in conjunction with the spouting systems to manufacturer's instructions. From high points fix brackets true-to-line to give a fall of 5mm every 10 metres to outlets. Set spouting brackets at 500mm centres; reduce to 300mm spacing for high wind zones or areas subject to occasional snowfalls. Make adequate provision for thermal movement.

3.7 INSTALL MARLEY DOWNPIPES

Install to Marley's current published installation instructions available at www.marley.co.nz. Ensure that all joints are sealed properly using Marley MCS® Solvent Welding Cement. Assemble downpipes, solvent cement jointed complete, fit to outlets, fix with pipe clips every 1.5 metres, fix pipe clips with 304 stainless steel screws, plumb and discharging into the stormwater gully or pipe inlet to the Marley required practice.

Completion

3.8 REPLACE

Replace damaged or marked elements.

3.9 LEAVE

Leave the whole of this work discharging completely and freely into the stormwater system and free of all debris. Leave work to the standard required by following procedures.

3.10 REMOVE

Remove debris, unused materials and elements from the site.

4 SELECTIONS

For further details on selections go to www.marley.co.nz
Substitutions are not permitted to the following, unless stated otherwise.

uPVC system

4.1 MARLEY UPVC SPOUTING

Manufacturer:	**Marley**
Profile/type:	Classic Spouting
Cross section:	6700mm²
Colour:	White
Bracket type:	External

4.2 MARLEY UPVC DOWNPIPES

Manufacturer:	**Marley**
Profile/type:	Round RP80
Size:	80mm
Colour:	White
Bracket type:	Flush bracket

4.3 MARLEY DOWNPIPE SPREADERS

Manufacturer:	**Marley**
Type:	~
Colour:	~

4.4 MARLEY RAINWATER GULLY

Manufacturer:	**Marley**
Type:	Untrapped rainwater gully

4.5 MARLEY LEAFSLIDE

Manufacturer:	**Marley**
Size:	To fit 80mm downpipe
Material:	uPVC
Colour:	White, Grey Friars, Ironsand, Titanium or Copper

7421 SANITARY SYSTEMS

1 GENERAL

This section relates to above ground gravity flow sanitary systems;

- for foul water
- from sanitary fixtures to first underground drain connection
- including system wastes, floor wastes, floor waste gullies, traps, vents and valves
- with associated components and accessories to make the system work

1.1 RELATED SECTIONS

Refer to 7151 SANITARY FIXTURES, TAPWARE & ACCESSORIES for sanitary fixtures.
Refer to 7123 HOT AND COLD WATER SYSTEM for potable water systems.
Refer to 7431 DRAINAGE COMMON REQUIREMENTS for underground drains.
Refer to 7142 GREYWATER SYSTEMS for greywater systems.

Documents

1.2 DOCUMENTS REFERRED TO

Documents referred to in this section are:

NZBC G1/AS1	Personal hygiene
NZBC G12/AS1	Water supplies
NZBC G13/AS1	Foul water - Sanitary plumbing
NZBC G13/AS3	Foul water - Plumbing and drainage
AS 2887	Plastic waste fittings
AS/NZS 1260	PVC-U pipes and fittings for drain, waste and vent applications
AS/NZS 2032	Installation of PVC pipe systems
AS/NZS 3500.2:2003	Plumbing and drainage - Sanitary plumbing and drainage
BS EN 12524	Corrosion protection of metals. Electrodeposited coatings of nickel, nickel plus chromium, copper plus nickel and copper plus nickel plus chromium

Plumbers, Gasfitters and Drainlayers Act 2006

Documents listed above and cited in the clauses that follow are part of this specification. However, this specification takes precedence in the event of it being at variance with the cited document.

1.3 MANUFACTURER'S DOCUMENTS

Manufacturer's and supplier's documents relating to work in this section are:
~

Copies of the above literature are available from ~

Web:	~
Email:	~
Telephone:	~
Facsimile:	~

Requirements

1.4 QUALIFICATIONS

Plumbers to be experienced competent workers, familiar with the materials and the techniques specified. Carry out all work under the direct supervision of a certifying plumber under the Plumbers, Gasfitters and Drainlayers Act 2006.

1.5 PIPEWORK LAYOUTS

~

1.6 OPERATION AND MAINTENANCE MANUALS

Supply maintenance manual information to requirements set out in the 1239 OPERATION & MAINTENANCE section.

Performance

1.7 TESTING

Confirm timing before carrying out any tests. Supply potable water and apparatus needed. Seal openings below the section being tested and slowly raise the water level to a minimum of 3 metres above the highest point of the section. Do not exceed 6 metres of head above the lowest point. Carry out and record a visual inspection that each joint showed no evidence of leaks.

2 PRODUCTS

Materials

2.1 COPPER PIPES AND TRAPS

Pipes complete with copper-alloy compression fittings and/or crox type joints and seal ring compression joints. Traps complete with screwed access ports. Exposed traps and wastes, complete with matching ferrules at penetration location, satin chrome plated to BS EN 12524.

2.2 PVC-U WASTE PIPES AND TRAPS

To AS/NZS 1260, complete with fittings and accessories to the pipe manufacturer's requirements, all brand matched.

2.3 PVC-U VENT PIPE

To AS/NZS 1260, complete with fittings and accessories to the pipe manufacturer's requirements and all brand matched.

2.4 EXPOSED PLASTIC PIPES AND TRAPS

To AS 2887. Exposed pipes and traps white polybutylene or PVC, including all associated fittings, refer to SELECTIONS.
Refer to 7151 SANITARY FIXTURES, TAPWARE & ACCESSORIES for locations and types of traps.

2.5 CHROME EXPOSED PIPES AND TRAPS

Chrome plate on copper pipes and associated copper and brass fittings, or chromed plastic.
Refer to 7151 SANITARY FIXTURES, TAPWARE & ACCESSORIES for locations and types of traps.

2.6 FLOOR WASTES

Floor wastes and floor waste gullies to AS/NZS 3500.2:2003, complete with chrome grates to suit flooring.

Components

2.7 PROTECTIVE TAPE

Plasticised PVC tape system with primer, mastic fixing and outer coating.

Accessories

2.8 FIRE RESISTANT SEALER

Gunnable inorganic or silicone elastomer sealant packed to maintain the specified fire resistance rating of the floor or wall.

3 EXECUTION

Conditions

3.1 EXECUTION GENERALLY - AS/NZS 3500.2

Carry out this work and complete all tests to NZBC G1/AS1: 2.0, 3.0 and AS/NZS 3500.2:2003, as modified by NZBC G13/AS3.

3.2 ELECTROLYTIC ACTION

Avoid electrolytic action by eliminating actual contact or continuity of water between dissimilar metals.

3.3 HANDLE AND STORE

Handle and store pipes, fittings and accessories to avoid damage. Store on site under cover on a clean level area, stacked to eliminate movement and away from work in progress.

3.4 SETTING OUT

Set out location of all stacks, discharge pipes, fittings and vent pipes and the completeness of their discharge into the drainage system.

3.5 CORE HOLES AND SLEEVES

Fit core holes and sleeves as needed throughout the structure in conjunction with the boxing, reinforcing and placing of concrete. Sleeve diameter to be 25mm larger than outside diameter of pipe accommodated. Strip core holes and make good after installation of pipework.

3.6 PIPE ACCESS

Fit and fix stacks, wastes and pipes in ducts independent of all other services so they are easily replaceable for their full length. Wrap or tape pipes buried in concrete.

3.7 FITTINGS ACCESS

Fit and fix traps and wastes to enable access for cleaning and for maintaining the total system.

3.8 CONFIRM LOCATIONS

Unless the location and height are clearly delineated on the drawings, confirm installation height and plan locations of sanitary fittings before commencing the piping installation.

3.9 TRAPS AND WASTES

Conceal traps and wastes in the fabric of the building unless detailed otherwise. Fit and fix satin chrome plated exposed pipes, traps and wastes unless detailed otherwise.
Refer to 7151 SANITARY FIXTURES, TAPWARE & ACCESSORIES for locations and types of traps.

3.10 CORROSION

Separate metals subject to electrolytic action from each other and from treated timber, concrete and other lime substances by space, painting of surfaces, taping, or separator strips.

Application - jointing

3.11 JOINTING COPPER PIPE - AS/NZS 3500.2

Braze pipe, fit alloy compression fittings, crox type joints and seal ring compression joints to AS/NZS 3500.2:2003, 2.6 **Joints**.

3.12 JOINTING PVC-U PIPE

Prime and solvent weld joints using spigots and sockets, flanged joints and seal ring compression joints to AS/NZS 2032.

Application - fixing

3.13 THERMAL MOVEMENT

Accommodate longitudinal movement in pipes resulting from temperature changes. Incorporate expansion joints in copper and PVC-U pipes. Install PVC pipes to AS/NZS 2032. Take particular care to allow for movement at horizontal take-off locations from stacks.

3.14 TRAPS AND FIXTURE DISCHARGE PIPES - AS/NZS 3500.2

Size traps and pipes as required for each fixture or appliance. Establish the developed length of waste pipes. Vent and allow access for cleaning as required. Follow the most direct line with the least number of bends to AS/NZS 3500.2:2003, table 3.1, for fixture loading and AS/NZS 3500.2:2003, table 9.1, distance between supports.

3.15 DISCHARGE STACKS AND VENTS - AS/NZS 3500.2

Size stacks and vents to AS/NZS 3500.2:2003, table 6.1, for fixture discharge pipe sizes and discharge units and AS/NZS 3500.2:2003, table 3.5, vent pipe sizes. Extend up past the highest branch to form a discharge stack vent terminating to AS/NZS 3500.2:2003, 6.8 **Vents**, and finishing at the base with a 45 degree bend. Support system to AS/NZS 3500.2:2003, table 9.1, for distances between supports.

3.16 FLASH ROOF PENETRATIONS

Flash or arrange for roofer to flash all penetrations to NZBC E2/AS1.
For profiled metal roofs, fit proprietary EPDM pipe collar flashings to NZBC E2/AS1, 8.4.17 Roof Penetrations, and manufacturer's requirements.

Application - fire resistant penetrations

3.17 FIRE RESISTANT SEALER

Thoroughly clean the penetration of the floor or wall. Pack if necessary to support sealant. Implant sealant to the sealant manufacturer's requirements to ensure full penetration and to obtain the fire resistance rating required. Tool surface flush and smooth and allow to cure. Inspect for and make good if adhesion and seal are not complete.

Completion

3.18 REPLACE

Replace damaged or marked elements.

3.19 LEAVE

Leave the whole of this work free of blemishes, undamaged and to the standard of finish required for following procedures.

3.20 REMOVE

Remove debris, unused materials and elements from site.

4 SELECTIONS

4.1 SANITARY SYSTEMS - COPPER PIPES AND TRAPS

Location:	Sluice Room - SluR.01
Manufacturer/Brand:	T.B.C
Wall thickness:	90mm
Exposed pipes/traps	N/A

4.2 SANITARY SYSTEMS - PVC-U WASTE PIPES AND TRAPS

Location:	Refer to drawings.
Manufacturer/Brand:	T.B.C

4.3 SANITARY SYSTEMS - PVC-U VENT PIPE

Manufacturer:	T.B.C
Brand:	T.B.C

4.4 SANITARY SYSTEMS - FLOOR WASTES

Manufacturer:	Allproof Industries.
Brand/type:	VR50CP
Grate/finish:	Chrome on brass clamp ring and grate.

4.5 SANITARY SYSTEMS - PROTECTIVE TAPE

Brand:	T.B.C
Width:	T.B.C

Fire stopping

4.6 FIRE RESISTANT SEALER

Manufacturer:	Refer to 7382RF
Type/number:	Refer to 7382RF

7461 FOUL WATER DRAINAGE

1 GENERAL

This section relates to below ground, non-pressure foul water pipework complete with all maintenance access and fittings and connected to network utility operator sewers.

1.1 RELATED WORK

Refer to 7431 DRAINAGE COMMON REQUIREMENTS for general matters
Refer to 7421 SANITARY SYSTEMS for above ground pipework
Refer to 7441 GROUNDWATER DRAINAGE for sub-soil drainage
Refer to 7451 SURFACE WATER DRAINAGE for storm/surface water drainage

Documents

1.2 MANUFACTURER'S DOCUMENTS

Manufacturer's and supplier's documents relating to work in this section are:
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Copies of the above literature are available from ~

Web:	~
Email:	~
Telephone:	~
Facsimile:	~

2 PRODUCTS

Materials

2.1 REINFORCING STEEL

Plain round and/or deformed steel bars, Grade 300 to AS/NZS 4671.

2.2 CONCRETE PIPES

Precast concrete to AS/NZS 4058.

2.3 STEEL PIPES AND FITTINGS

Welded steel pipes and fittings to NZS 4442.

2.4 PVC-U PIPES AND FITTINGS

Unplasticised PVC pipe and fittings to AS/NZS 1260, buried pipes classified as follows:

Classification	Use
SN4 - SN6	Domestic & light load areas
SN8 - SN10	Commercial & Industrial medium load areas
SN16	Public roads & high load areas

2.5 POLYETHYLENE PIPES AND FITTINGS

Polyethylene pipe and fittings to AS/NZS 5065.

2.6 INSPECTION OPENINGS & SMALL CHAMBERS - AS/NZS 3500.2

Circular precast concrete or plastic to AS/NZS 3500.2:2003, 4.7 **Inspection Openings** and/or 4.8 **Inspection Chambers**, as modified by NZBC G13/AS3, complete with cast iron lid and frame. All joints watertight (base/pipes, base/riser, riser/riser, riser/lid, lid throat and throat/frame). Use epoxy mortar joints in concrete chambers. Use ring seals in plastic chambers.

Accessories

2.7 BEDDING, SURROUND AND FILLING MATERIALS

Granular:	Clean gravel or crushed stone or a blend of these. Particle size from minimum 7mm to maximum 20mm.
Selected:	Fine grain soil or granular material suitable for bedding and excluding topsoil, organic matter and rubbish.
Ordinary:	Top soil or other excavated materials excluding organic matter and rubbish.

2.8 CONCRETE

To NZS 3104.

Prescribed mix 17.5 MPa:	For in situ bases, anchors and pipe surrounds.
Prescribed mix 14 MPa:	For bedding only.

3 EXECUTION

Application

3.1 BEDDING - AS/NZS 3500.2

Place to AS/NZS 3500.2:2003, 5.4, **Bedding of drains**, using compacted granular material to avoid differential settlement and to obtain longitudinal support of the pipe.

3.2 SURROUND AND BACKFILL - AS/NZS 3500.2

Place to AS/NZS 3500.2:2003, 5.4, **Bedding of drains**, and 5.5, **Installation of backfill material**, using compacted granular material and compacted fill. Compact in layers not exceeding 100mm.

3.3 SETTING OUT

Use string line, boning rod or laser equipment methods. Use surveying and levelling equipment to accurately set out design invert levels.

3.4 LAYING AND JOINTING

Lay in straight lines between changes of line or grade from the lower end of the drain with sockets pointing uphill. Set each pipe true to line and grade and each joint completed before the next pipe is laid. Install PVC-U pipes to AS/NZS 2032 or AS/NZS 2566.1 and AS/NZS 2566.2. Install polyethylene Pipes to AS/NZS 2033. Cap ends of uncompleted runs each day to prevent entry of foreign matter. Test drains and backfill progressively to minimise site disruption. Concrete cap trenches to drains with less than 375mm cover.

3.5 LAYING FOUL WATER DRAINS

Lay the drainage system from soil stacks and gully traps, including access chambers, inspection chambers, bends, junction inspections, and vents (fresh air inlets). Discharge into the network utility operator foul water system to their requirements.

3.6 DIFFERENTIAL SETTLEMENT

Provide flexible jointing, bedding and surrounding of pipes at junctions with manholes, foundation walls and other points where differential settlement may occur.

Application - fittings

3.7 CONSTRUCT SMALL INSPECTION CHAMBERS - AS/NZS 3500.2

Construct as detailed on a poured concrete footing to AS/NZS 3500.2:2003, 4.7 **Inspection openings** and 4.8 **Inspection chambers**, as modified by NZBC G13/AS3. Provide all necessary haunching to channels.

Application - connections

3.8 CONNECTION TO FOUL WATER - PUBLIC MAINS

Locate, excavate and expose the existing drain, connect new pipework to existing drain to the requirements of the network utility operator.

3.9 CONNECTION TO FOUL WATER - PUBLIC MAINS ACCESS CHAMBER

Locate, excavate and break into the existing chamber, modify as necessary and connect new pipes to the requirements of the network utility operator.

3.10 CONNECTION TO FOUL WATER - ON SITE

Locate, excavate and expose the existing drain, connect new pipework to existing drain using a 'Y' junction, to meet the standards of the new work.

4 SELECTIONS

4.1 INSPECTION OPENINGS & SMALL CHAMBERS - AS/NZS 3500.2:2003

Diameter:	Contractor to C.O.S
Type:	T.B>C