

Approved Building Consent Documents

Please Note: A copy of the stamped approved documents must be available on site for all inspections.

Inspection booking timeframes

| Call received | before 3pm inspection will be done | after 3pm inspection will be done |
|---------------|------------------------------------|-----------------------------------|
| Monday | Wednesday | Thursday |
| Tuesday | Thursday | Friday |
| Wednesday | Friday | Monday |
| Thursday | Monday | Tuesday |
| Friday | Tuesday | Wednesday |

Please ensure all work for inspection is ready the day before. Incomplete work requiring re-inspection will incur an additional inspection fee.

Building inspections and enquiries phone: 03 347 2839

SPECIFICATION

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

LOT 452 New Dwelling

(project name)

Lot 452. 48 Kemble Drive, Faringdon, Rolleston, New Zealand

(project address)

Summit Developments LTD

(client)

Project Ref:

Date: 25 November 2019

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1220 PROJECT

1 GENERAL

This general section describes the project including:

- A description of the work
- Site description, features and restrictions
- Design parameters for design by contractor
- Archaeological discovery

1.1 READ ALL SECTIONS TOGETHER

Read all general sections together with all other sections.

Description of the work

1.2 RESTRICTED BUILDING WORK

This project includes Restricted Building Work.

Site

1.3 SITE

as shown on A-01
drawing no.

1.4 LEGAL DESCRIPTION

The site of the works, the street address and the legal description are shown on the drawings.

1.5 EXISTING SERVICES

The following are the network utility services:

| | |
|--------------------|-----------------|
| Electrical: | Orion |
| Telecommunication: | Spark/Chorus |
| Water: | SDC |
| Gas: | NA |
| Stormwater: | Soakpit |
| Foul water: | SDC reticulated |

The services are also shown on drawing(s) no(s) A-01

1.6 SITE FEATURES

A-01

Site environment - Wind

1.7 WIND DESIGN PARAMETERS - NON SPECIFIC DESIGN

The design wind pressures are to [NZS 3604](#), Table 5.4 Determination of wind zone, up to and including Extra High Wind Zone.

Building wind High (refer to [NZS 3604](#), table 5.4)
zone

Site environment - Durability

1.8 EXPOSURE ZONE

The exposure zone is to [NZS 3604](#), Section 4 Durability, 4.2 Exposure zones and [NZBC E2/AS1](#).

The site zone is: B

Site environment - Seismic

1.9 EARTHQUAKE ZONE - NON SPECIFIC DESIGN

The zone is to [NZS 3604](#), Section 5 Bracing design, 5.3 Earthquake bracing demand.

The earthquake zone is: 2

Archaeological discovery

1.10 ANTIQUITIES AND ITEMS OF VALUE

Report the finding of any fossils, antiquities and other items of value, to the Contract Administrator. All to remain undisturbed until approval is given for removal.

Pre-1900, items or evidence of human activity on the site, come under the Heritage New Zealand Pouhere Taonga Act 2014. If such items or evidence is discovered work must stop immediately and the Contract Administrator must be notified immediately. The site may be classified as an Archaeological Site under the Act, and the Contract Administrator or Owner must contact the Heritage New Zealand for authority to proceed.

Post-1900 items remain the property of the owner, pre-1900 items may remain the property of the owner or the Crown subject to what is found.

1232 INTERPRETATION & DEFINITIONS

1 GENERAL

This general section relates to interpretation and definitions that are used in this specification.

1.1 DEFINITIONS

- Required: Required by the documents, the New Zealand Building Code or by a statutory authority.
- Proprietary: Identifiable by naming the manufacturer, supplier, installer, trade name, brand name, catalogue or reference number.
- Provide and fix: "Provide" or "fix" or "supply" or "fix" if used separately mean provide and fix unless explicitly stated otherwise.
- Review: Review by the contract administrator is for general compliance only. Review does not remove the need for the contractor to comply with the stated requirements, details and specifications of the manufacturers and suppliers of individual components, materials and finishes. Neither can the review be construed as authorising departures from the contract documents.
- Working Day: Working Day means a calendar day other than any Saturday, Sunday, public holiday or any day falling within the period from 24 December to 5 January, both days inclusive, irrespective of the days on which work is actually carried out.

1.2 PERSONNEL

- Owner: The person defined as "owner" in the New Zealand Building Code.
- Principal: The person defined as "principal" in the conditions of contract.
- Contractor: The person contracted by the principal to carry out the contract.
- Contract Administrator:
The person appointed by the principal to administer the contract on the principal's behalf. Where no person has been appointed by the Principal, it means the Principal or the Principal's representative.

1.3 ABBREVIATIONS

The following abbreviations are used throughout the specification:

| | |
|--------|--|
| AAMA | American Architectural Manufacturers Association |
| AS | Australian Standard |
| AS/NZS | Joint Australian/New Zealand Standard |
| ASTM | American Society for Testing and Materials |
| AWCINZ | Association of Wall and Ceiling Industries of New Zealand Inc. |
| BCA | Building Consent Authority |
| BRANZ | Building Research Association of New Zealand |
| BS | British Standard |
| CSIRO | Commonwealth Scientific and Industrial Research Organisation |
| HERA | Heavy Engineering Research Association |
| LBP | Licensed Building Practitioner |
| MBIE | Ministry of Business, Innovation and Employment (includes the old DBH) |
| MPNZA | Master Painters New Zealand Association Inc |
| NZBC | New Zealand Building Code |
| NZS | New Zealand Standard |
| NZS/AS | Joint New Zealand/Australian Standard |
| NZTA | New Zealand Transport Agency (previously TNZ) |
| NUO | Network Utility Operator |
| PS1 | Producer Statement – Design |
| PS2 | Producer Statement – Design Review |
| PS3 | Producer Statement - Construction |
| PS4 | Producer Statement – Construction Review |
| RBW | Restricted Building Work |
| SARNZ | Scaffolding and Rigging Association New Zealand Inc |
| SED | Specific Engineering Design |
| TA | Territorial Authority |
| TNZ | Transit New Zealand (Transit New Zealand is now New Zealand Transport Agency NZTA, some specifications are still prefixed TNZ) |

1.4 DEFINED WORDS

Words defined in the conditions of contract, New Zealand Standards, or other reference documents, to have the same interpretation and meaning when used in their lower case, title case or upper case form in the specification text.

1.5 WORDS IMPORTING PLURAL AND SINGULAR

Where the context requires, words importing singular only, also include plural and vice versa.

1240 ESTABLISHMENT

1 GENERAL

This general section relates to site establishment including:

- Notices and approvals
- Inspections
- Site preparation

Notices and approvals

1.1 STATUTORY OBLIGATIONS

Comply with all statutory obligations and regulations of regulatory bodies controlling the execution of the works.

1.2 BUILDING CONSENT AUTHORITY AND NETWORK UTILITY APPROVALS

Attend on Building Consent Authority officers, statutory and network utility inspectors, as necessary to obtain approvals (in addition to building consent approval) for and the satisfactory completion of, the works.

1.3 NOTIFY NETWORK UTILITY OPERATORS

Notify all network utility operators of proposed works before commencing site operations. Ascertain location of services or confirm that none exist in the vicinity of the works. Take all necessary precautions to avoid damage to existing services.

Inspections

Site preparation

1.4 SITE ACCESS

Access to the site is limited to: Access shown on drawing.

1.5 SITE AND SOIL SURVEYS

Carry out all investigations necessary and peruse all information available to determine ground conditions and likely ground performance both on the site and adjacent to it. Also refer to the territorial authority project information memorandum (PIM).

1.6 GROUND CONDITIONS

Refer to the soils investigation report included with this specification.

1250 TEMPORARY WORKS & SERVICES

1 GENERAL

This general section relates to temporary works and services required for the construction of the contract works. It includes:

- Temporary works and services including temporary fencing and hoardings
- Scaffolding and shoring
- General care and protection

Temporary works

1.1 COMPLY WITH NEW ZEALAND BUILDING CODE

Refer to New Zealand Building Code clauses and approved document paragraphs for the criteria and/or methods that must be used in this section to establish compliance with the code.

1.2 COSTS RELATING TO TEMPORARY WORKS

Pay all rates/fees in respect of temporary works.

1.3 MAINTENANCE OF TEMPORARY WORKS

Maintain alter, adapt and move temporary works and services as necessary. Clear away when no longer required and make good.

1.4 SAFEGUARD THE SITE, THE WORKS AND MATERIALS

Take all precautions to prevent unauthorised access, including access outside working hours, to the site, the works and adjoining property. Safeguard the site, the works, materials and plant from damage and theft.

1.5 SITE FENCING

Provide and maintain a site fence, 2 metres high from ground level on the side accessible to the public. Construct to comply with [NZBC F5/AS1](#) Construction and demolition hazards. Construct as required for public areas and as shown on the drawings.

Construct the fence with:

- galvanized chain link netting with a 50mm x 50mm maximum grid size
- posts at 2.5 metre centres maximum
- gap at the bottom of the fence no greater than 100mm

1.6 SITE FENCING - NON-PUBLIC AREAS

Provide and maintain a 1 metre high site fence to non-public areas. Construct using:

- warratah stakes at 1.5 metre centres fitted with safety caps
- plastic safety mesh

1.7 PROVIDE SEDIMENT AND SILT RUN OFF PROTECTION

Provide appropriate measures to prevent or minimise sediment generation and silt run off. Comply with territorial and other authority requirements relating to carrying out earthworks.

Prevent silt run off by:

- exposing only as much ground as required at any time
- providing run off channels, contour drains or earth bunds to divert clean water away from the site on to stable sealed or grassed ground
- capture silt by the use of silt fences, vegetation buffer strips, sediment ponds or earth bunds.

Provide sediment control by:

- earth bunds constructed across the slope to control and detain run off
- silt fences constructed using filter fabric stretched between posts at a maximum of 1 metre spacing.

Pump water from trenches and other areas of the site using methods to prevent sediment entering any drain or watercourse. Filter dirty water before discharging into drainage system.

1.8 PROVIDE CONCRETE WASHWATER RUN OFF PROTECTION

Provide appropriate measures to prevent cement/concrete washwater or slurry run off to; drains or waterways, landscaped areas new or remaining and adjoining public or private properties. Comply with territorial and other authority requirements relating to cement/concrete washwater.

Control run off from:

- Cement/concrete based material production, placing and finishing.
- Hosing down and cleaning of, tools and equipment, fresh material, and spilt or surplus material, pumps and mixers etc.
- Wet cutting or grinding.
- Slab watering etc.
- Water cleaning of new concrete elements, fresh used formwork etc.

Small project with relatively large exposed ground areas - prevent run off by:

- directing small amounts of washwater onto the area of ground closest to the work.
- for larger amounts provide run off channels, and small soak pits
- very small amounts of washwater with no aggregate and only a small amount of sand may be spread over existing lawns.

Large project and those without suitable ground area - prevent run off by:

- plan and implement washwater control measures based on the expected volumes, allow for the timely removal and safe disposal of liquids and solids.
- control the volumes of water used for washing down, the more water used the bigger the problem.
- Control the flow of washwater so that it is directed to proper catchments.
- providing watertight bunds, pits or tanks, filtered washwater is not to be discharged to drains.

Spilt or surplus material:

- if possible allow to set and either use or dispose of as hardfill.
- pre-made concrete items, either use or dispose of as hardfill.

Pump washwater away from drains, waterways and adjoining property.

Temporary services

- 1.9 WATER
Provide clean, fresh water for the works and make arrangements for distributing about the site.
- 1.10 ELECTRICITY
To AS/NZS 3012.
Nominate the person to install and be responsible for the complete temporary electrical installation. The name and designation of the person responsible is to be displayed prominently and close to the main switch or circuit breaker.

Inspect and overhaul the installation at such intervals as are prescribed by the network utility operator but not exceeding three monthly intervals.
- 1.11 TELEPHONE
Provide on-site temporary telephone facilities.
- Scaffolding and shoring**
- 1.12 GENERAL SCAFFOLDING
Provide as necessary general scaffolding for the efficient execution of the works. Placement, erection and structure to be by certified suppliers/erectors and approved by the WorkSafe NZ inspectors before being used. Comply with the SARNZ publication: "[Best practice guideline for scaffolding in New Zealand.](#)"

Care and protection
- 1.13 PROTECT ACCESS ROUTES
Protect access routes through the building and areas adjacent to the work area that are to remain in place. These include lifts and stairs. Comply with all fire egress requirements at all times.
- 1.14 PROTECT EXISTING SERVICES
Protect existing services and parts of service systems that are to remain in place during the execution of the works. Provide temporary caps or covers to prevent the ingress of dust and other contaminants into the systems, ducts, pipes etc.
- 1.15 MAKE GOOD EXISTING SERVICES
Make good all damage to existing roads, footpaths, grounds, sewers or other services, caused in carrying out the contract works.
- 1.16 PROTECT EXISTING TREES
Protect existing trees, fences, gates, walls, gardens and other designated site features which are to remain in position during the execution of the works. Construct a temporary fence at the outer edge of the drip line of trees to be protected. Comply with territorial authority requirements.
- 1.17 CONSTRUCTION KEYING AND SECURITY
Provide locksets with temporary keying, or install with the cylinders removed.

1.18 TEMPORARY STORAGE

Provide temporary storage areas and protective covers and screens. Fillet stack and protect all framing and structural members from moisture and contamination. Completely protect finishing materials from the weather and damage and store in accordance with the manufacturer's requirements.

Protect fabricated elements from the weather and damage, and store in accordance with suppliers' requirements.

1.19 PERIODIC SITE CLEANING

Carry out periodic site cleaning during the contract period. Place waste material in appropriate storage pending removal from the site.

1.20 PERIODIC RUBBISH REMOVAL

Maintain on site appropriate means for the storage and removal of construction waste material. Where required or appropriate provide for the separate storage of recyclable waste and other materials requiring special disposal. Keep food waste separate from construction waste.

1270 CONSTRUCTION

1 GENERAL

This GENERAL section relates to common requirements for construction issues including: -

- Quality assurance
- Noise and nuisance
- Set out
- Common execution requirements
- Common materials requirements
- Supply of spare materials
- Common requirements for samples and tests
- Final presentation and cleaning
- Commissioning

Quality control and assurance

1.1 QUALITY ASSURANCE

Carry out and record regular checks of material quality and accuracy, including:

- Concrete quality and finish.
- Dimensional accuracy of structural column locations (following completion of foundations).
- All perimeter columns and frames for plumb.
- Levels of all floors relative to the site datum.
- Framing timber moisture content.

Where any material, quality or dimension falls outside specified or required tolerances, obtain written direction from the contract administrator. Where building consent approval is affected, confirm remedial action with the Building Consent Authority.

Provide all materials, plant, attendances, supervision, inspections and programming to ensure the required quality standards are met by all project personnel.

Noise and nuisance

1.2 DIRT AND DROPPINGS

Remove dirt and droppings deposited on public or private thoroughfares from vehicles servicing the site to the satisfaction of the appropriate authorities and the contract administrator.

1.3 DAMAGE AND NUISANCE

Take all precautions to prevent damage and nuisance from water, fire, smoke, dust, rubbish and all other causes resulting from the construction works.

Set-out and tolerances

1.4 SURVEY INFORMATION

Locate and verify survey marks and datum points required to set out the works. Record and maintain their position. Re-establish and replace disturbed or obliterated marks.

1.5 SET-OUT AND DATUM

Set out the work to conform with the drawings. Establish a permanent site datum to confirm the proposed building ground floor level and its relationship to all other existing and new building levels.

1.6 SET-OUT BY LICENSED CADASTRAL SURVEYOR

Before commencing construction provide the contract administrator with a certificate prepared by a licensed cadastral surveyor that the set-out is complete and that the building is accurately placed on the site.

During construction provide the contract administrator with a certificate, prepared by the same licensed cadastral surveyor confirming the set-out of the foundations and grid lines. Necessary adjustments are to be determined and agreed to by the contract administrator before proceeding further.

1.7 USE OF SET-OUT INSTRUMENTS

Permit without charge, the use of instruments already on site for checking, setting out and levels.

1.8 CHECK DIMENSIONS

Check all dimensions both on drawings and site, particularly the correlation between components and work in place. Take all dimensions on drawings to be between structural elements before linings or finishes, unless clearly stated otherwise.

1.9 TOLERANCES

All work to be level, plumb, and true to line and face. Unless otherwise specified in specific work sections of this specification, tolerances for structural work shall comply with the following:

| | |
|------------------------|---|
| Concrete construction: | To NZS 3109 Concrete construction Clause 3.9 Tolerances for reinforcement Table 5.1 Tolerance for precast components Table 5.2 Tolerance for in situ construction To NZS 3114 Concrete surface finishes |
| Masonry construction: | To NZS 4210 Masonry construction: Materials and workmanship Clause 2.6.5 Tolerances Table 2.2 Maximum tolerances |
| Structural steelwork: | To NZS 3404:1997 Steel structures standard Section 14.4 Tolerances (after fabrication) Section 15.3 Tolerances (erection) |
| Timber framing: | To NZS 3604 Timber-framed buildings Clause 2.2 Tolerances Table 2.1 Timber framing tolerances |

Refer to work sections for tolerance requirements for finishes.

Execution

1.10 EXAMINE PREVIOUS WORK

Before commencing any part of the work carefully examine the previous work on which it may depend. Report in writing to the contract administrator defects that may affect the quality of the proposed work and obtain instructions.

Commencing work on any part means that previous work is accepted as being satisfactory for work of the required standard.

1.11 WORKER QUALIFICATIONS

All work to be level, plumb, and true to line and face. Employ only experienced workers familiar with the materials and techniques specified.

1.12 MINIMISE DELAYS DUE TO WEATHER

Use appropriate techniques and methods to prevent damage and minimise delays due to weather.

Materials**1.13 NEW PRODUCTS AND MATERIALS**

Materials and products to be new unless stated otherwise, of the specified standard, and complying with all cited documents.

1.14 COMPATIBILITY OF MATERIALS AND FINISHES

Ensure all parts of a construction or finish are compatible and their individual use approved by the manufacturers and suppliers of other parts of the system. Source all parts of a system from a single manufacturer or supplier.

1.15 STORING PRODUCTS AND MATERIALS

Take delivery of and store products, materials and components in accordance with codes of practice and the product manufacturer's or supplier's stated requirements. Maintain the proper condition of any protective packaging, wrappings or supports during delivery, unloading and storage.

1.16 HANDLING PRODUCTS AND MATERIALS

Handle products, materials and components in accordance with codes of practice and the manufacturer's or supplier's stated guidelines. Avoid distortion and any contact with potentially damaging surfaces or conditions.

1.17 SUBSTRATE CONDITIONS

Ensure substrate conditions are within the manufacturer's or supplier's stated guidelines both before and during the installation of any material, product or system. Obtain written instructions on the necessary action to rectify unsatisfactory conditions.

1.18 INSTALLING PRODUCTS AND MATERIALS

Install in accordance with the manufacturer's or supplier's technical literature. Ensure that all installers are familiar with the required substrate conditions and the manufacturer's or supplier's specified preparation, fixing and finishing techniques.

1.19 COMPLY WITH STANDARDS

Comply with the relevant and/or cited Standard for any material or component. Obtain certificates of compliance when requested by the contract administrator.

1.20 CONDITION OF MATERIALS AND COMPONENTS

To be in perfect condition when incorporated into the work.

1.21 INCOMPATIBLE MATERIALS AND METALS

Separate incompatible materials and metals with separation layers, sleeves or gaskets of plastic film, bituminous felt or mastic or paint coatings, installed so that none are visible on exposed surfaces.

Samples and tests

1.22 SAMPLES AND PROTOTYPES

Where specified in the work sections, submit samples, prepare sample panels, and construct prototypes for review as to appearance, form and conformance with the drawings and specifications. Submit all information required to assist the review process, including technical data, manufacturer's literature, independent appraisals and producer statements.

Timing for the provision and review of samples, sample panels and prototypes to be included in the contract programme. Allow a minimum of 10 working days for each review. Proceed only after instructions to proceed have been issued in writing by the contract administrator.

In situ work may be incorporated in the finished work if so confirmed, otherwise allow to remove completely and replace.

Spares

1.23 SPARES

Collect, protect and store safely all spare materials required under the contract. Give the contract administrator an inventory of all spares.

Final presentation and cleaning

1.24 REMOVE TEMPORARY PROTECTION

Remove all temporary markings, coverings, labels and protective wrappings unless instructed otherwise.

1.25 REPLACE DAMAGED MATERIALS

Replace all materials or component damaged during the works to the standard of and integral with the original.

1.26 COMPLETE ALL SERVICES

Ensure all services are complete and operational, with all temporary labelling removed, required labelling fixed and service instructions provided.

1.27 CLEANING BY CONTRACTOR

Clear the contract works of all construction materials, waste, dirt and debris. Clean the contract works including:

- Wipe all surfaces to remove construction dust
- Clean out service ducts and accessible concealed spaces
- Clean out all gutters and rainwater heads
- Wipe dust from both sides of glass. Take particular care when removing paint or cementitious materials to not damage the glass.
- Remove adhesive residue left by labels and other temporary protection/markings
- Clean out the interior of all cabinetry
- Wash down external concrete including driveways and concrete masonry. Take care when waterblasting to not cause damage to the surface or allow water to enter the building.
- Remove rubbish and building material from the area immediately adjacent to the contract works

Commissioning

1.28 MOVING PARTS

Adjust, ease and lubricate all doors, windows, drawers, hardware, appliances, controls and all moving parts to give easy and efficient operation.

1.29 SECURITY AT COMPLETION

Remove any temporary lock cylinders and complete final keying prior to handing over keys to the principal on completion of the works. Leave the works secure with all accesses locked. Account for all keys/cards/codes and hand to the principal along with an itemised schedule, retaining a duplicate schedule signed by the principal as a receipt.

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2210 PREPARATION & GROUNDWORK

1 GENERAL

This section relates to the clearance, excavation and backfilling of the site area in preparation for:

- footings and floor slabs

Documents

1.1 DOCUMENTS

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

[NZS 3604](#) Timber-framed buildings
 WorkSafe NZ [Good Practice Guidelines - Excavation Safety](#)

1.2 SITE SAFETY

Provide adequate support for all excavations. Cover holes and fence off open trenches and banks.

1.3 ARCHAEOLOGICAL DISCOVERY

If fossils, antiquities and other items of value are found refer to the general section 1220 PROJECT for actions to be taken with archaeological discovery.

2 PRODUCTS

2.1 EXCAVATED CLEAN FILL

Clean, free of contamination, mineral soil from other formations in the excavation which may be selected and approved as suitable for filling by having grading and moisture content properties that will allow recompaction to 95% of maximum density.

2.2 SAND FILL

Clean sand of such grading in particle size to achieve mechanical compaction to 90% maximum density.

2.3 HARD FILL

Scoria or crushed rock to GAP (General All Passing) 40 grading.

2.4 GRANULAR FILL

Approved screened crushed gravel or scoria, graded in size from 20mm to 7mm, clean. When tested with a standard sieve of 4.75 opening no material is to pass.

3 EXECUTION

3.1 WASHOUT BAY FOR TRUCK

Provide a designated area for trucks to be washed down to avoid mud and dirt being carried off site.

3.2 EXCAVATION GENERALLY

Carry out excavation, using plant suitable for the purpose, to the guidelines set by the WorkSafe NZ, [Good Practice Guidelines - Excavation Safety](#).

3.3 BURNING OF MATERIALS

Burning of materials is not permitted on site.

3.4 PROTECT EXISTING WORK

Protect from damage existing buildings, structures, roads, paving and services nominated on the drawings as being retained.

3.5 EROSION CONTROL

Ensure measures are in place to contain silt dislodged as a result of water infiltration and to prevent it being carried off site with stormwater.

3.6 SURFACE PREPARATION

Comply with [NZS 3604](#), section 3.5, **Site preparation**. Remove all turf, vegetation, trees, topsoil, stumps, uncontrolled fill and rubbish from the area to be built on.

3.7 STOCKPILE TOPSOIL

Stockpile excavated topsoil on site where directed. Keep separate from other excavated materials. Spread and level where directed before completion of the works.

3.8 GENERAL EXCAVATION

Trim ground to required profiles, batters, falls and levels. Remove loose material. Protect cut faces from collapse. Keep excavations free from water.

3.9 GRANULAR BASE FOR SLABS

To conform to [NZS 3604](#), section 7.5.3, **Granular base**. Consolidate with a vibrating roller. Blind the surface with 20mm of coarse sand or sand/cement and roll ready to receive a damp-proof membrane.

3.10 GENERAL BACKFILLING

Obtain written confirmation from the owner before using any excavated material. Compact approved backfilling in 150mm layers with the last 200mm in clean topsoil, lightly compacted and neatly finished off.

3.11 SURPLUS MATERIAL

Remove surplus and excavated material from the site.

3101 CONCRETE WORK - BASIC

1 GENERAL

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

1.1 RELATED WORK

Refer to ~ for ~

1.2 ABBREVIATIONS AND DEFINITIONS

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.

ACRS 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 B1/VM1 | Structure |
| NZBC E2/AS3 | External moisture |
| AS 1366.3 | Rigid cellular plastics for thermal insulation - Rigid cellular polystyrene - Moulded (RC/PS - M) |
| NZS 3101.1 | Concrete structures standard |
| NZS 3104 | Specification for concrete production |
| NZS 3109 | Concrete construction |
| NZS 3114 | Specification for concrete surface finishes |
| NZS 3604 | Timber-framed buildings |
| NZS 4229 | Concrete masonry buildings not requiring specific engineering design |
| AS/NZS 4671 | Steel reinforcing materials |
| AS/NZS 4858 | Wet area membranes |
| CCANZ CP 01 | Code of practice for weathertight concrete and concrete masonry construction |

Requirements

1.4 QUALIFICATIONS

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

1.5 STEEL REINFORCING COMPLIANCE

Steel reinforcing materials for concrete to [AS/NZS 4671](#). Steel to be manufactured in New Zealand, or by an overseas manufacturer holding a current valid (or equivalent) NZ S Mark or ACRS certificate for that type of steel. Confirm compliance and provide evidence if requested.

2 PRODUCTS

2.1 NORMAL CONCRETE

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

2.2 REINFORCEMENT

Bars to [AS/NZS 4671](#). Grade 300E deformed, other than for ties, stirrups and spirals, unless shown otherwise on the drawings. Welded reinforcing mesh Class E to [AS/NZS 4671](#), and 500E mesh to [AS/NZS 4671](#) as modified by NZS B1/VM1.

2.3 MESH FOR SLABS TO NZS 3604 OR NZS 4229

For slabs on ground mesh to be welded reinforcing mesh to [AS/NZS 4671](#) as modified by NZS B1/VM1, Class E, minimum to B1/AS1 - Grade 500E, 2.27kg/m² (1.14kg/m² in each direction).

2.4 TYING WIRE

Mild drawn steel wire not less than 1.2mm diameter.

2.5 SPACERS AND CHAIRS

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

2.6 DAMP-PROOF MEMBRANE

0.25mm minimum polyethylene to [NZS 3604](#), 7.5.4, Damp-proof membrane.

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.

3.2 FALSEWORK AND FORMWORK

Use falsework and formwork of sufficient strength to retain and support the wet concrete to the required profiles and tolerances. Select formwork finish to produce the specified finished quality. Ensure timber or plywood used for formwork is non-staining to the set concrete.

Securely fix and brace formwork sufficiently to support loads and with joints and linings tight enough to prevent water loss. Do not use tie wires or rods unless approved in writing by the Contract Administrator. Unless detailed otherwise, provide a 19mm chamfer or fillet strip at all interior and exterior angles of beam and column forms. Mitre at intersections.

Water blast to clean formwork. Keep formwork wet before concrete is placed.

Unless detailed otherwise, set up soffit boxing for beams and slabs to provide a camber when forms are stripped, of 3mm rise for every 3 metres of total clear span.

3.3 INSTALL DAMP-PROOF MEMBRANE

Apply polythene membrane to prepared basecourse with 150mm laps between sheets. Tape seal laps and penetrations with 50mm wide pressure sensitive plastic tape. Refer to drawings for perimeter details.

3.4 CUT AND BEND REINFORCEMENT

Cut and bend bars using proper bending tools to avoid notching and to the requirements of [NZS 3109](#): 3.3 Hooks and bends. Minimum radii of reinforcement bends to [NZS 3109](#), table 3.1, Minimum radii of reinforcement bends. Do not rebend bars. Where rebending is approved, use a purpose built tool, proper preparation and preheating.

3.5 ADJUSTMENTS

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

3.6 TOLERANCES, BENDING

To [NZS 3109](#), 3.9, Tolerances for reinforcement.

3.7 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.

3.8 LAPPED SPLICES

Length of laps where not dimensioned on the drawings in accordance with the SELECTIONS. Provide laps only where indicated on the drawings. Tie all lapping bars to each other. Plain bars lapped splices must be hooked. Wire mesh laps to [NZS 3101](#).1, lap one mesh square plus 50mm minimum (do not count bar extension beyond the outermost wire).

3.9 MESH LAPS FOR SLABS TO NZS 3604 OR NZS 4229

For slabs on ground the welded reinforcing mesh to be lapped such that the outermost wires overlap by the greater of:

- the spacing of the cross wires plus 50mm
- 150mm or
- manufacturer's requirements

Do not count bar extensions beyond the outermost cross wire.

3.10 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 |

3.11 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.

3.12 CONSTRUCTION JOINTS

Locate and construct as shown on the drawings or in accordance with [NZS 3109](#), 5.6, Type B.

3.13 PRE-PLACEMENT INSPECTION

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

3.14 SURFACE FINISHES

To [NZS 3114](#), 105, Specification of finishes, as scheduled or as denoted on the drawings.

3.15 CONCRETE SURFACE TOLERANCES

To [NZS 3114](#), 104, Surface tolerances and [NZS 3114](#), 105, Specification of finishes, with the suggested tolerances becoming the required tolerances.

3.16 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.

3.17 COMPACTION

Use power operated vibrators on foundations, vertical constructions and beams.

3.18 FLOOR SLABS TO NZS 3604

Generally for slabs on ground to [NZS 3604](#) as modified by [NZBC B1/AS1](#) and [NZBC E2/AS3](#).

Construct to [NZS 3604](#), 4.5 **Concrete and concrete masonry** and [NZS 3604](#), 7.5, **Concrete slab-on-ground floors in timber buildings** as modified by [NZBC B1/AS1](#), 3.0 **Timber**. Lay to true and straight surfaces, screeded, floated and steel (manual or power) trowelled finish. Tolerance on flatness: maximum 3mm gradual deviation over a 3 metre straight-edge, to [NZS 3114](#), 304, **Surface tolerances**.

Allow for free joints maximum 24m centres to [NZBC B1/AS1](#), 3.1.13 [NZS 3604](#) **New clause**.

3.19 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 °C, and 48 hours for average ambient temperatures below 20°C).

3.20 SPACING OF SAW CUTS

Spacing of sawcuts

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

3.21 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.

3.22 CURING OF CONCRETE

Keep damp for not less than seven days. Ensure curing of slabs commences as soon as possible after final finishing, by the use of continuous water sprays, or ponding. Alternately, apply a curing membrane. Ensure any membrane used will not affect subsequent applied finishes.

3.23 STRIKE FORMWORK

Strike formwork without damaging or overloading structure. Do not remove formwork before the following minimum periods:

| | |
|-----------|--|
| 12 hours: | Sides of beams, walls and columns |
| 4 days: | Slabs in beam and slab construction (leave props under slab spans over 2 metres) |
| 10 days: | Props from under slab spans over 2 metres |
| 18 days: | Beams, soffits and slab spans over 5 metres |

3.24 CLEAN OUT

Clean out saw cuts. Fill with cement grout where the floor will be covered with carpet or vinyl.

3.25 REMOVE

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

4 SELECTIONS**4.1 DAMP-PROOF MEMBRANE**

Brand/type: thermakraft

4.2 REINFORCEMENT LAPS

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

| Bar diameter | Grade 300E deformed |
|--------------|---------------------|
| 10mm | 400mm |
| 12mm | 500mm |
| 16mm | 650mm |

4.3 NORMAL CONCRETE

Normal concrete:

20 MPa: for Foundation and slab

4.4 SURFACE FINISHES FLOOR SLABS

Surface finish class to [NZS 3114](#): table 2, Classes of floor, exterior pavement and invert finishes.

| Finish class | Location |
|--------------|------------|
| U3 | Floor Slab |

4.5 SURFACE FINISHES PAVEMENTS AND DRIVEWAYS

Surface finish class to [NZS 3114](#): table 2, Classes of floor, exterior pavement and invert finishes.

| Finish class | Location |
|-------------------|---------------------|
| Exposed Aggregate | Driveways and Patio |

3820 CARPENTRY

1 GENERAL

This section relates to the supply and erection of timber framing, as a framed structure, or as partitioning. It includes prefabricated timber and engineered wood.

1.1 RELATED WORK

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

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 |
| AS/NZS 1328.1 | Glued laminated structural timber - Performance requirements and minimum production requirements |
| AS/NZS 1604.4 | Specification for preservative treatment - Laminated veneer lumber (LVL) |
| AS/NZS 1604.5 | Specification for preservative treatment - Glue laminated timber products |
| 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 3640 | Chemical preservation of round and sawn timber |
| AS/NZS 4357.0 | Structural laminated veneer lumber - Specification |
| FTMA CoP | Frame and Truss Manufacturers Association Code of Practice |

***A copy of [NZS 3604 Timber-framed buildings](#), must be held on site.**

1.3 QUALIFICATIONS

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

1.4 DIMENSIONS

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

2 PRODUCTS

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 ENGINEERED WOOD

LVL members to [AS/NZS 4357.0](#), to required sizes and lengths and the manufacturer's design properties.
Treatment to [NZS 3640](#) and [AS/NZS 1604.4](#).

2.3 TIMBER TRUSSES

To [FTMA CoP](#). Moisture content 16% at supply.

2.4 EXTERIOR CAVITY WALL BATTENS - PROPRIETARY - NON-STRUCTURAL

Extruded polypropylene battens, size approximately 45mm wide x 18mm thickness. Temporary fix battens before being fixed into the framing with the cladding fixings. To the scope limitations of NZBC E2/AS1, and NZS 3604 Building Wind Zones up to, and including "Extra High".

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 NAIL PLATES

Comply with 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. Plates to the plate manufacturer's design for the particular locations as shown on the drawings.

2.8 CONNECTORS

Comply with 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. Connectors and structural brackets to the connector manufacturer's design for particular locations shown on drawings.

2.9 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).

2.10 DPC

Refer to 4161 UNDERLAYS, FOIL AND DPC section

3 EXECUTION

3.1 EXECUTION GENERALLY

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).

3.2 SEPARATION

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

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

3.3 ATTENDANCE

Provide and fix blocks, nogs, openings and other items as required by other trades.

3.4 MOISTURE CONTENT

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

Framing at erection: 24% maximum

Framing at enclosure: 20% maximum

Framing at lining: 16% maximum

3.5 SET-OUT

Set out framing in accordance with the requirements of [NZS 3604](#) and as required to support sheet linings and claddings.

3.6 FRAMING WALLS

Frame to required loading and bracing complete with lintels, sills and nogs, all fabricated and fastened to [NZS 3604](#), section 8, **Walls**.

3.7 FRAMING ROOFS

Frame to required loading and bracing complete with valley boards, ridge boards and purlins. Design and fit roof trusses complete with anchorage. All fabricated and fastened to [NZS 3604](#), section 9, **Posts** and 10, **Roof framing**.

3.8 FRAMING CEILINGS

Frame to required loading and bracing complete with runners and battens set out to support ceiling lining. All fabricated and fastened to [NZS 3604](#), section 13, **Ceilings**. Trim for openings in ceilings and hatches to [NZS 3604](#) section 13.3, **Openings in ceilings**. Provide blocking for water tanks located in the ceiling space to [NZS 3604](#), section 13.4, **Water tanks in roof space**.

3.9 INSTALLING WALL UNDERLAYS

Refer to 4161 UNDERLAYS, FOIL AND DPC section

3.10 FIT CAVITY BATTENS

Fit and fix 20mm cavity battens over wall underlay or rigid air barrier, fully nail to timber studs to the requirements of the manufacturer or to [NZS 3604](#). Fit and fix related flashings. Fit and fix cavity closers to base of walls, open horizontal (or raking) junctions and over openings (windows, meters etc.).

3.11 DPC TO LOSP TREATED TIMBER

Refer to 4161 UNDERLAYS, FOIL AND DPC section.

3.12 DPC TO TIMBER

Refer to 4161 UNDERLAYS, FOIL AND DPC section.

4 SELECTIONS

4.1 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 |

4.2 CAVITY BATTENS

| Cavity battens | Species | Grade | Treatment |
|--------------------------|--------------|--------------|-----------|
| Timber - Non Structural: | Radiata pine | Merchantable | H3.1 |

4.3 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 |
| Ceiling joists and battens: | Radiata pine | SG8 | H1.2 |
| Valley boards: | Radiata pine | Merchantable | H1.2 |
| Sarking: | Radiata pine | Merchantable | H1.2 |
| Skillion roof framing: | Radiata pine | SG8 | H1.2 |
| Enclosed flat roof framing: | Radiata pine | SG8 | H1.2 |

4.4 INTERIOR FRAMING - RADIATA PINE

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

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 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

1.2 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 |
| 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 |

1.3 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 Covertex™ 407 Fire Retardant Self Supporting Roof Underlay

[BRANZ Appraisal 695](#) - Watergate-Plus Fire Retardant Wall Underlay

[BRANZ Appraisal 743](#) - Thermakraft Covertex 405 Plus fire Retardant Self-Supporting Roof Underlay

[BRANZ Appraisal 867](#) – Thermakraft Steelwrap 290 Wall Underlay

[BRANZ Appraisal 878](#) - Thermakraft Aluband Window Flashing Tape

[BRANZ Appraisal 912](#) – Thermakraft 220 Wall Underlay

[BRANZ Appraisal 917](#) - Thermakraft Covertex 403 Plus Roof Underlay

[BRANZ Appraisal 918](#) - Thermakraft Covertex 403 Plus Wall Underlay

[Code Mark Certificate 30069](#) - Thermakraft Covertex 403 Plus Absorbent Breathable Roof Underlay

[Code Mark Certificate 30030](#) - Thermakraft Covertex 405 Absorbent Breathable Roof Underlay

[Code Mark Certificate 30028](#) - Thermakraft Covertex 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

1.4 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

1.5 NO SUBSTITUTIONS

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

1.6 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

DPC

2.1 EMBOSSED POLYETHYLENE

Supercourse 500™ hi-impact polyethylene film to [AS/NZS 2904](#) and embossed on both sides. Thickness 500 microns minimum, manufactured for use as a damp-proof course and concealed flashings around doors and windows and to [BRANZ Appraisal 329](#). Refer to SELECTIONS for type of jointing tape.

DPM

2.2 DAMP-PROOF MEMBRANE - MEDIUM DUTY, BLACK

Thermathene Black™, a minimum of 250 microns polyethylene film. Complies with [NZS 3604](#), 7.5.4, Damp-proof Membrane, to [NZBC E2/AS1](#). Refer to SELECTIONS for type of jointing tape.

Wall underlays

2.3 SYNTHETIC BREATHER TYPE FILM COATED WALL UNDERLAY

Watergate-Plus™ 295, absorbent breathable spun bonded non-woven polyolefin type building membrane, coated with a water resistant vapour permeable film. A fire retardant membrane, with Flammability Index of ≤ 5 , when tested to AS 1530.2. The product has a BRANZ Appraisal 695.

Roofing underlays

2.4 BITUMINOUS HEAVY WEIGHT UNDERLAY

Thermakraft 213™, bituminous heavy weight underlay to [NZS 2295](#).

2.5 BITUMINOUS SELF-SUPPORTING ROOFING UNDERLAY

Thermakraft 215™, bituminous self-supporting roofing underlay to [NZS 2295](#).

Accessories

2.6 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. Refer to Thermakraft Data Sheet for installation details and [BRANZ Appraisal 878](#).

2.7 STUD STRAPS - POLYETHYLENE

Thermastrap 201, 19mm wide polyethylene straps.

2.8 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.

2.9 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 Foil Tape 150
- Thermakraft Window Sealing Tapes, used to repair damaged bituminous underlays

2.10 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 DPC

3.4 DPC TO LOSP/CCA TREATED TIMBER

Lay Supercourse 500™ DPC under LOSP or CCA treated bottom plate of all timber framed walls on concrete, in a single layer with 50mm overlaps at joints to provide a waterproof barrier.

3.5 DPC TO TIMBER / STEEL

Lay DPC under the bottom plate of all timber / steel framed walls on concrete, in a single layer with 50mm overlaps at joints to provide a waterproof barrier. Refer to SELECTIONS for type.

3.6 DPC TO MASONRY AND BRICK VENEER

Lay DPC along based of cavity and fix top edge to studs with galvanized clouts. Turn DPC out over concrete rebate under bottom course of veneer.

Application - DPM

3.7 DPM TO CONCRETE FLOOR

Lay DPM under concrete floor substrate over sand blinding, in a single layer with 150mm overlaps at joints to provide a waterproof barrier. Refer to SELECTIONS for type. Tape all joints and penetrations with Thermakraft White GP underlay tape.

Application - wall underlay

3.8 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.

3.9 INSTALL STUD STRAPS

Over underlay, install 19mm wide polyethylene straps horizontally at 300mm centres, draw taut and fix to studs with stainless steel staples.

3.10 METAL CLADDING ON TIMBER CAVITY BATTENS

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

Application - roofing underlay**3.11 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.

3.12 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.

Completion**3.13 CLEAN UP**

Clean up as the work proceeds.

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

Damp Proof Course

- 4.1 THERMAKRAFT - SUPERCOURSE 500™ DPC
 Type: Supercourse 500™ DPC
 Jointing tape: Thermakraft window sill tape 75mm Aluband™

Damp Proof Membrane

- 4.2 THERMATHENE BLACK™
 Type: Thermathene Black™
 Jointing tape: Thermakraft "White General Purpose Underlay Tape"

Wall Underlays

- 4.3 THERMAKRAFT WATERGATE-PLUS™ 295
 Type: Thermakraft Watergate-Plus™ 295

Roofing Underlays

- 4.4 THERMAKRAFT ROOFING UNDERLAYS
 Type: Thermakraft 210

Window / Door Sealing System

- 4.5 THERMAKRAFT - ALUBAND™
 Type: Thermakraft window sill tape 75mm Aluband™

Stud Straps

- 4.6 THERMASTRAP
 Type: Thermastrap , 19mm blue polypropylene tape

4231HL JAMES HARDIE® LINEA™ CLADDING

1 GENERAL

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

- James Hardie® Linea™ Weatherboard cladding

1.1 RELATED WORK

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® Technical Supplement - James Hardie® Claddings Installation to Steel Framing

James Hardie® Fire and Acoustic Design Manual

James Hardie® Bracing Design 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™ [GM-CM30018](#) James Hardie® Linea™ Weatherboard Direct fixed and Cavity Cladding

CodeMark™ [GM-CM30059](#) James Hardie® Linea™ Oblique™ Weatherboard Cavity Cladding

Manufacturer/supplier contact details

Company: James Hardie New Zealand Limited

Web: www.jameshardie.co.nz

Email: info@jameshardie.co.nz

Telephone: Ask James Hardie™ on 0800 808 868

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

CodeMark™ Certificate is available at www.building.govt.nz

Warranties

1.4 WARRANTY - MANUFACTURER/SUPPLIER - LINEA™ WEATHERBOARD

Provide a material manufacturer/supplier warranty:

- 25 years: For Linea™ 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.

Requirements**1.5 QUALIFICATIONS - NON-CODEMARK INSTALLATION**

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

1.6 NO SUBSTITUTIONS

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

1.7 SAFE WORKING

To James Hardie® requirements for safe working practices with James Hardie® products, particularly with regards to cutting and drilling.

1.8 INFORMATION FOR OPERATION AND MAINTENANCE

Provide relevant James Hardie® maintenance requirements at completion of the work. Refer to the general section 1239 OPERATION & MAINTENANCE for provision of the information.

Requirements - Linea™ Weatherboard**1.9 LINEA™ WEATHERBOARD INSTALLATION INFORMATION**

Installer to comply with all the relevant information in;

- Linea™ Weatherboard Technical Specification; and,
- [BRANZ Appraisal 446](#) or [BRANZ Appraisal 447](#)

Performance**1.10 PERFORMANCE, WIND**

The design wind zones are to [NZS 3604](#), up to and including Extra High Wind Zone. James Hardie® Technical Specifications are suitable for these conditions.

2 PRODUCTS**Materials****2.1 LINEA™ WEATHERBOARDS**

James Hardie® Linea™ Weatherboards, bevel back, 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.

- 2.2 WALL UNDERLAY
For flexible wall underlays and rigid wall underlays, refer to the appropriate separate section(s).
- 2.3 EXTERIOR CAVITY BATTENS
Radiata pine battens, minimum 45mm wide x 18mm thick, H3.1 treated, height to match timber framing studs. To [NZS 3602](#), Table 1, reference 1D.10, Requirements for wood-based building components to achieve a 50-year durability performance.

Components - Linea™ Weatherboards

- 2.4 BOX CORNER "Z" FLASHING
uPVC profiled 'Z' flashing.
- 2.5 INTERNAL "W" MOULD 90
Etched primed aluminium extrusion.
- 2.6 INTERNAL "W" MOULD 135
Etched primed aluminium extrusion.
- 2.7 EXTERIOR CAVITY CLOSER/VERMIN-PROOFING
Perforated PVC, with upstands.
- 2.8 JH CORNER UNDER FLASHING
50 x 50mm PVC moulding.
- 2.9 AXENT™ TRIM
16mm thick pre-primed fibre cement trim.
- 2.10 CANT STRIP
Cant strip, uPVC profiled strip.
- 2.11 FILL
ADOS CRC Builders fill, two part exterior grade fill to finish over jolt head nails.
- 2.12 FLEXIBLE SEALANT
Bostik Seal N Flex-1 or Sikaflex AT Facade or Sikaflex MS sealant for tongue and groove joint at ends of Linea™ Weatherboards.

2.13 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. For fastener type refer to following clause(s).

2.14 GALV STEEL FACE NAILING OVER BATTENS & FLEXIBLE UNDERLAY

Hot-dipped galvanized, 75 x 3.15mm jolt head nails for Linea™ Weatherboard face nailing (with pre-drilling) over cavity battens over flexible underlay into timber stud.

2.15 NAILING FOR AXENT™ TRIM OVER DIRECT FIX LINEA™ WEATHERBOARD

75 x 3.15mm jolt head nails at 400mm centres staggered nailing (with pre-drilling).

2.16 NAILING FOR AXENT™ TRIM OVER CAVITY FIX LINEA™ WEATHERBOARD

90 x 4.00mm jolt head nails at 400mm centres staggered nailing (with pre-drilling).

Accessories**2.17 SEALANT**

Silaflex AT-Facade sealant.

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 cover to keep dry until fixed.

3.2 HANDLING

Avoid distortion and contact with potentially damaging surfaces. Carry weatherboards on edge. Do not drag weatherboards across each other, or across other materials. Protect edges, corners and surface finish from damage.

3.3 SUBSTRATE - TIMBER FRAMING

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 - generally**3.4 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.

3.5 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.
- Required holes in cladding accurately formed and cut to James Hardie® requirements, ensure (if required) services penetration grommets/sleeves/seals/tapes are in place prior to cladding installation.
- Claddings neatly finished off to all sides of openings
- Installation of flashings (those required to be installed prior to installation of penetrating elements).

3.6 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 flexible sealant to tongue and groove joints as required.

3.7 INSTALL FLASHINGS

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

Completion**3.8 REPLACE**

Replace all damaged or marked elements.

3.9 LEAVE

Leave work to the standard required for following procedures.

3.10 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.

- 4.1 CAVITY BATTENS
Timber species: Radiata pine
Treatment: H3.1

Finishing

- 4.2 PAINTING
Refer to painting section(s) for details.

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4261 BRICK VENEER CLADDING

1 GENERAL

This section relates to clay brickwork as a veneer cladding. It includes:

- Standard brick veneer cladding
- Proprietary two storey brick veneer system

1.1 ABBREVIATIONS AND DEFINITIONS

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

The following definitions apply specifically to this section:

Proprietary Two Storey Brick Veneer System Proprietary system for two storey clay brick veneer construction as contained in [BRANZ Appraisal 690](#) - Two Storey Brick Veneer System.

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 B1/AS3 | Structure |
| NZS 1170.5 | Structural design actions - Earthquake actions - New Zealand |
| AS/NZS 2699.1 | Built-in components for masonry construction - Wall ties |
| AS/NZS 2699.3 | Built-in components for masonry construction - Lintels and shelf angles (durability requirements) |
| AS/NZS 2918:2001 | Domestic solid fuel burning appliances - Installation |
| NZS 3103 | Sands for mortars and plasters |
| NZS 3604 | Timber-framed buildings |
| NZS 4210 | Masonry construction: materials and workmanship |
| SNZ HB 4236 | Masonry veneer wall cladding |
| AS/NZS 4455.1 | Masonry units, pavers, flags and segmental retaining wall units - Masonry units |
| BRANZ Appraisal 690 | Two Storey Brick Veneer System |
| BRANZ | Good practice guide: Masonry veneer |

Requirements

1.3 QUALIFICATIONS

Bricklayers to be experienced, competent and familiar with the materials and the techniques specified.

All work to be installed or supervised by a Registered Mason or licensed building practitioner (LBP): Licensed for Bricklaying and Blocklaying 1: Brick/masonry Veneer. RBW must be supervised by an LBP.

1.4 NO SUBSTITUTIONS

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

Compliance information

1.5 INFORMATION REQUIRED FOR CODE COMPLIANCE

Provide the following compliance documentation:

- Producer Statement - Construction from the installer of Two Storey Brick Veneer System.
- Other information required by the BCA in the Building Consent Approval documents.

Performance

1.6 DESIGN PARAMETERS - NON SPECIFIC DESIGN

Design the installation to the seismic parameters of [NZS 4210](#) Masonry construction: materials and workmanship.
Refer to SELECTIONS for details.

1.7 COMPLIANCE

Brickwork to comply with [SNZ HB 4236](#) Masonry veneer wall cladding.

2 PRODUCTS

Materials

2.1 CLAY BRICKS

To [AS/NZS 4455.1](#).

2.2 STEEL LINTELS

To [AS/NZS 2699.3](#).

2.3 VERMIN STOP

Galvanized hexagon 10mm mesh of 1mm diameter steel wire 100mm wide, complete with galvanized steel staples.

2.4 DAMP-PROOF MEMBRANE

Heavy kraft, strip laminates saturated and coated with bitumen, butyl rubber sheet with adhesive, or equivalent.

2.5 DAMP-PROOF COURSE

Polyethylene based strip used as a damp-proof course and flashing, also for slip joints between brick courses.

Components - standard brick veneer

2.6 WALL TIES

To [AS/NZS 2699.1](#). Veneer ties screw fixed to framing.

2.7 REINFORCEMENT

Galvanised wire joint reinforcement

Accessories

2.8 SAND FOR MORTAR
To [NZS 3103](#). Chloride levels to not exceed 0.04% by dry weight of sand.

2.9 MORTAR
Composed of Portland cement, sand and water with an admixture to the provisions of [NZS 4210](#): 2.2 Mortar. Obtain written approval of admixture being used. Obtain written approval if intending to use hydrated lime in the mortar.

2.10 ADMIXTURES
To [NZS 4210](#).

2.11 WATER
Clean, fresh and free from excess alkali, salt, silt and organic materials.

3 EXECUTION

Conditions

3.1 TOLERANCES
To [NZS 4210](#), table 2.2 Maximum tolerances.

3.2 HANDLING AND STORAGE OF MATERIALS
To [NZS 4210](#) for aggregates, cement, bricks and reinforcement.

3.3 CONCRETE BASE
Check vertical and horizontal alignment. Any discrepancies exceeding the permitted tolerances shall be corrected before units are laid.

3.4 TIMBER FRAMING
Check timber framing stud spacing is in accordance with [NZS 3604](#).

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

- brick veneer wall underlay to openings finished and dressed off ready for the installation of window and door frames and other penetrations
- brick veneer neatly finished off to all sides of openings
- installation of flashings (those required to be installed prior to installation of penetrating elements).

3.6 MEASURE MATERIALS
Measure materials for mortar accurately by weight or volume using suitably calibrated equipment.

3.7 WET WEATHER
Keep bricks dry at all times prior to laying. Protect the top row of uncompleted brick walls. Protect freshly laid brickwork during interruption through rain and at completion of each day's work. Protect brickwork for a minimum of 6 hours.

3.8 COLD WEATHER CONSTRUCTION
When air temperature is below 5°C take the precautions required by [NZS 4210](#): 2.18 Cold weather construction.

3.9 HOT WEATHER CONSTRUCTION

When air temperature is above 25°C or there is a drying wind, or lower temperatures, take the precautions required by [NZS 4210: 2.19](#) Hot weather construction.

3.10 KEEP FACE WORK CLEAN

Keep clean during erection and until completion of the contract works. Turn back scaffold boards at night and during heavy rain. Do not rub face work to remove stains.

Installation - general

3.11 COLOUR MIXING

Check all bricks delivered to site for colour variation, prior to commencing work. Ensure bricks are thoroughly blended from several pallets to ensure an even colour spread throughout the work.

3.12 UNIFORMITY

Carry up work with no portion more than 1500mm above another at any time, raking back between levels.

3.13 BONDING

Lay bricks to the required bonding in the various locations. Refer to SELECTIONS/drawings.

3.14 PROVIDE WEEPHOLES

Provide weepholes at the bottom of cavities and cells to [SNZ HB 4236](#) and [NZBC E2/AS1, 9.2.6, Cavities](#), and as necessary to drain moisture to the outside air. Provide vent gap at the top of the veneer.

3.15 INSTALL VERMIN STOP

Fold and staple one edge of the mesh to the substrate and with the mesh sloping outwards, set the other edge half the thickness of the veneer or 50mm, whichever is less, into the mortar joint.

3.16 CAVITY VENTILATION

Ventilate to outside air with top and bottom openings to the requirements of [SNZ HB 4236](#) and [NZBC E2/AS1, 9.2.6, Cavities](#). Seal cavity off from roof space.

3.17 CAVITY BRICKWORK BELOW GROUND

Fill all cavities below finished grade with concrete. Place a continuous damp-proof course within the first three mortar joints above ground. Seal the face of all brickwork below ground.

3.18 FORM OPENINGS

Unless detailed otherwise form openings to typical details from BRANZ Masonry veneer - Good practice guide.

3.19 SEPARATION JOINTS

Provide for wall movements of veneer with control joints to [NZS 4210: 2.10](#) Methods of controlling wall movements. Weatherproof as necessary.

3.20 FORM REVEALS

Form lintels, jambs and sills as detailed complete with flashings and all ready for following work.

3.21 HEAD FLASHINGS

Provide a flexible flashing extending 200mm beyond ends of the opening and sloping to weepholes over all openings in cavity walls, in accordance with E2/AS1, 9.2.4, **Flashings**.

3.22 JAMB FLASHINGS

Provide a flexible flashing to jambs of openings in cavity walls, fully lapped with horizontal damp-proof courses at head and sill, in accordance with E2/AS1, 9.2.4, **Flashings**.

3.23 SILL FLASHINGS

Provide a flexible flashing under jointed sills, turned up at back and ends, in accordance with E2/AS1, 9.2.4, **Flashings**.

3.24 REBATE DAMP PROOFING

Provide damp-proof course to stepped rebates supporting brick veneer in accordance with E2/AS1, 9.2.5, **Foundation support and damp-proofing**.

Installation - standard brick veneer

3.25 INSTALL LINTELS

Fit angle lintels to openings, sized to [NZBC E2/AS1, 9.2.9, Openings in masonry veneer](#) Table 18E and placed to [NZBC E2/AS1, 9.2.9, Openings in masonry veneer](#).

3.26 CAVITY WIDTH

No cavity width less than 40mm or more than 75mm.

3.27 PLACE TIES

Place ties to: -

- [NZS 4210: 2.9.5](#) Tie anchorage, cover and fixing; and
- [NZS 4210: 2.9.6](#) Placing of ties
- [NZS 4210: 2.9.7](#) Tie classification and spacing
- [NZBC E2/AS1, 9.2.7, Wall ties](#), for requirements, spacing, embedment, placement and materials

At unsupported edges and at all openings through veneered walls or non-grouted cavity walls, wall ties to be provided:

At the top and bottom of the opening:

- Not more than 300mm or 2 courses, whichever is the smaller

At the sides of the opening or at an unsupported edge:

- Not more than 300mm
- Where the veneer wall continues above or is interrupted by a damp-proof course or waterproof membrane, wall ties shall be provided in each of the first two courses above the membrane.

Installation - ancillary work

3.28 BUILD IN FIXINGS

Build in necessary fixing bricks or blocks for trims.

3.29 **BUILD IN ELEMENTS**
Build in sills, copings, lintels, steps and other elements using mortar similar to that in adjacent walls.

3.30 **BUILD IN DOORS AND WINDOWS**
Build in door and window frames as the work proceeds and bed in mortar similar to that in adjacent work.

Completion

3.31 **ROUTINE CLEANING**
Carry out routine trade cleaning of this part of the work including periodic removal all debris, unused and temporary materials and elements from the site.

3.32 **EFFLORESCENCE, WATER CLEANING**
To remove deposits, brush with a stiff-bristle broom and take away brushings from the locality. Remove remaining deposit with a damp sponge. Wash wall thoroughly with a plentiful supply of clean water. Repeat this process every 4 weeks from appearance through to the completion of the contract works.

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. Leave work to the standard required for following procedures.

4 SELECTIONS

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

Performance - seismic

4.1 **DESIGN PARAMETERS - NON SPECIFIC DESIGN**
Building seismic zone: ~ (refer to [NZS 4210](#))

Materials - standard brick veneer

4.2 **CLAY BRICKS FOR STANDARD BRICK VENEER SYSTEM**
Laying pattern: stretcher bond

4311 PROFILED METAL ROOFING

1 GENERAL

This section relates to the supply and fixing of proprietary overlap rigid sheet metal profiled roofing complete with accessories.

1.1 RELATED WORK

Refer to 7411 RAINWATER SPOUTING SYSTEMS for rainwater disposal

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:

| | |
|-------|---|
| BMT | Base metal thickness |
| NZMRM | New Zealand Metal Roofing Manufacturers Inc |
| MS | Modified silyl |

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 |
| AS/NZS 4534 | Zinc and zinc/aluminium-alloy coatings on steel wire |
| NZMRM CoP | NZ metal roof and wall cladding Code of Practice |

Warranties

1.4 WARRANTY - INSTALLER/APPLICATOR

Warrant this work under normal environmental and use conditions against weatherproofing failure.

| | |
|----------|---|
| 5 years: | from the date of completion of the roof |
| Form: | Roofing installers standard form |

Include a copy of the roofing manufacturers' maintenance requirements with the warranty.

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

1.5 WARRANTY - MANUFACTURER/SUPPLIER

Warrant this work under normal environmental and use conditions against materials failure.

| | |
|----------|---|
| 15 years | For failure of coating adhesion |
| 15 years | For weatherproofing by material penetration |
| Form: | Roofing manufacturers standard form |

Requirements**1.6 QUALIFICATIONS**

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**1.7 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.

1.8 PERFORMANCE

Accept responsibility for the weather-tight performance of the completed roofing system, including penetrations through the roof and junctions with walls and parapets.

1.9 FIXINGS, WIND

Design and use the fixings appropriate for the design loads of this site; refer to general section 1220 PROJECT for details of wind zone. Allow for specific loadings at corners and the periphery of the roof, where localised pressure factors apply.

Performance - Wind (design by contractor)**1.10 DESIGN PARAMETERS - NON SPECIFIC DESIGN**

Design the installation to the wind zone parameters of [NZS 3604](#), table 5.4. Refer to general section 1220 PROJECT for details.

2 PRODUCTS**Materials****2.1 WIRE NETTING AND SAFETY MESH**

Refer to 4161 UNDERLAYS, FOIL AND DPC.

2.2 UNDERLAY AND REFLECTIVE FOIL

Refer to 4161 UNDERLAYS, FOIL AND DPC.

2.3 INSULATION

Refer to appropriate insulation section.

2.4 PRE-FINISHED HOT-DIPPED ALUMINIUM/ZINC COATED STEEL

Formability G550 steel sheet coated to AS 1397.

Components

2.5 FLASHINGS GENERALLY

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

Formable grade 0.55mm BMT for galvanized, aluminium/zinc-coated and pre-painted steel, and 0.9mm for aluminium (or 0.7mm for small aluminium flashings) 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.

Fixings

2.8 FASTENERS GENERALLY

Minimum Class 4 and durability not less than the roofing material being fixed. Screw fasteners to be head stamped identifying the manufacturer and class.

2.9 FIXING SCREWS

To AS 3566. Screws appropriate to the roofing material and the supporting structure, as required by the roofing manufacturer and with a minimum Class 4 durability and not less than the material being fixed. Screws into timber to penetrate by minimum 30mm.

2.10 RIVETS

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

Accessories

2.11 SEALANT

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

2.12 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 adversely affect 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

Take delivery of 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 soled shoes when fixing and for all other work on the roof.

3.5 SEPARATION

Place isolators between dissimilar metals, also separate roofing from treated timber and cement based materials. Do not use unpainted lead sheet or copper in contact with or allow water run-off onto galvanized or Zinalume® materials.

Application

3.6 SET-OUT

Carefully set out with consideration of the position of side laps to take account of the 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.

3.7 END LAPS

End laps are not permitted, except where specifically detailed.

3.8 MOVEMENT JOINTS

Fixing and jointing to conform with the roofing manufacturer's requirements for thermal movement.

Over timber framing, transverse flashings (those running long continuous framing members) to have expansion joints at maximum 12 centres.

3.9 FIXING GENERALLY

Install and fix in accordance with the [NZMRM CoP](#) requirements, and to roofing manufacturer's recommendations. Paint colour matched fixings and accessories before installation.

3.10 MARKING AND CUTTING

Cut only by shearing tools. Do not use black lead pencils for marking aluminium/zinc coated products.

3.11 FIX SHEETS

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

3.12 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 purpose made tools.

3.13 FLASHINGS

Flash roof to parapets, walls and penetrations to detail. Where no detail is provided flash to NZMRM CoP recommendations and the roofing manufacturer's requirements. Cut accurately and fix using sealant and rivets to detail and to the roofing manufacturer's requirements to form a weatherproof cover. For highly visible flashings, plan joints/junction to take account of the aesthetic requirements.

3.14 USE OF SEALANTS

Select and use sealants only as recommended by the roofing manufacturer. Apply sealant in two narrow beads transversely across flashing intersections, close to the two edges. Avoid exposing sealant on outside surfaces.

3.15 FLASHING PENETRATIONS

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

3.16 INSTALL RIDGING

Install ridging by fastening to the purlins through the leading edge of the roofing to manufacturer's requirements.

Completion**3.17 REPLACE**

Replace damaged or marked elements.

3.18 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.

3.19 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 spoutings, gutters and rainwater pipes on completion of the roof. Remove debris, unused materials and elements from the site.

4 SELECTIONS**Roofing****4.1 PROFILED METAL ROOFING PRE-FINISHED HOT-DIPPED ALUMINIUM/ZINC COATED STEEL**

Brand/profile: Colorsteel Steel Corrugate
BMT: 0.40mm

Accessories

4.2

FLASHING

Material/thickness: 0.55mm

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4521AR APL RESIDENTIAL ALUMINIUM WINDOWS AND 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 ABBREVIATIONS AND TERMS

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

Documents

1.2 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 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) |

1.3 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@apl.nz
Telephone: 09 309 3251
Facsimile: 09 309 3298

Warranties

1.4 WARRANTY - MANUFACTURER/FABRICATOR

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.

1.5 WARRANTY - INSTALLER

Provide an installer warranty:
2 years: For installation

- Provide this warranty in the installer standard form.

Requirements

1.6 NO SUBSTITUTIONS

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

1.7 QUALIFICATIONS

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

1.8 COMPLIANCE

Windows and doors to be manufactured and installed to [NZBC E2/AS1](#).

1.9 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

1.10 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.

1.11 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)**1.12 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**1.13 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 - cavity systems

2.9 STANDARD CAVITY CLOSER

A device constructed from either aluminium or PVC to close the cavity above the window or door unit, between the cladding and head flashing, to provide ventilation in accordance with [NZBC E2/AS1](#) to the spaces above the window or door.

2.10 WANZ SUPPORT BAR

Extruded aluminium support bar with built in drainage and ventilation to [NZBC E2/AS1](#), and support bar location bracket, to provide continuous support to the window unit. Size to suit cladding type.

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 ($\pm 25\%$ 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.

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 CAVITY CONSTRUCTION

Install to [WANZ Installation Guide](#) details and drawings including WANZ sill support bars.

For thresholds with support bars fixed through membranes, pre-fill support bar screw holes with silicone sealant to [NZBC E2/AS1](#), figure 62(d).

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 scribe 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.

Performance**4.1 THERMAL PERFORMANCE**

R-value: R0.26 (as determined from [NZBC H1/VM1](#) or [H1/AS1](#))

Performance - Wind (design by contractor)**4.2 DESIGN PARAMETERS - NON SPECIFIC DESIGN**

Building wind zone High (44m/s) (refer to [NZS 3604](#), table 5.1)

Finishes

4.3 DURALLOY - POWDER COATING FINISH

Type: Polyester organic powder coating
 System integrity: Minimum 10 years film integrity, 7 years colour integrity
 Thickness: Average of 80 microns with a minimum of 50 microns
 Colour: TBA

Glazing

4.4 GLASS

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

Hardware

4.5 WINDOW HARDWARE

Window fastener: Standard

4.6 DOOR HARDWARE

Locks & handles: Standard

4.7 HARDWARE FINISH

Finish: Powder coat
 Colour: Black

Flashings and Sealant

4.8 FLASHINGS

Material/type: Colorsteel ZR8 0.75
 Pattern: Formed to suit details provided

4.9 WEATHERING SEALANT

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

Reveals

4.10 TIMBER JAMB REVEALS

Timber species: Radiata
 Grade/treatment: H3
 Thickness: 19mm
 Reveals: Grooved
 Finish: Paint

4610 GLAZING RESIDENTIAL

1 GENERAL

This section relates to the supply and fixing of glass products for external and internal joinery in residential type buildings and includes:

- windows and doors
- frameless shower and bath screens
- splashbacks, wall linings
- balustrade systems, pool fences
- mirrors and mirror frames

1.1 RELATED WORK

Refer to 4521AR ALUMINIUM WINDOWS AND DOORS

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 B1/AS1 | Structure |
| NZBC F2/AS1 | Hazardous building materials |
| NZBC F4/AS1 | Safety from falling |
| NZBC H1/AS1 | Energy Efficiency |
| 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.Supp1 | Glazing in buildings - Supplement 1 to NZS 4223.1:2008 and NZS 4223.4:2008 |
| NZS 4223.3 | Glazing in buildings - Human impact safety requirements |
| NZS 4223.4 | Glazing in buildings - Wind, dead, snow and live action |
| AS/NZS 2208 | Safety glazing materials in buildings |
| AS/NZS 4666 | Insulating glass units |
| BRANZ BU 337 | Protecting window glass from damage |

Warranties

1.4 MANUFACTURERS WARRANTY

Warrant glass under normal environmental and use conditions against failure of materials.

| | |
|-----------|----------------------------|
| 10 years: | for insulating glass units |
| 10 years: | for laminated glass |
| 10 years: | for toughened glass |

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

Performance

1.5 ENERGY EFFICIENCY

Provide glazing to meet the energy requirements of [NZS 4218](#) and [NZBC H1/AS1](#) for housing small buildings.
Refer to SELECTIONS and schedules for location and type of glazing.

2 PRODUCTS

Materials

2.1 CLEAR FLOAT GLASS

Clear ordinary annealed transparent float glass for general window glazing.
Thickness to [NZS 4223.1](#) and [NZS 4223](#). Supp 1.

2.2 LAMINATED GLASS

Grade A Safety Glass to [AS/NZS 2208](#) with PVB or CIP resin interlayer.

2.3 TOUGHENED GLASS

Grade A Safety Glass to [AS/NZS 2208](#).

2.4 INSULATING GLASS UNITS (IGU'S)

To [AS/NZS 4666](#) and the IGU Manufacturers Association (IGUMA) requirements.

Materials, mirrors

2.5 MIRROR GLASS

Clear annealed mirror float glass, including silver, activation, passivation and two protective coats.

Materials, screens

2.6 GLASS SCREENS

Proprietary shower / bath screens, formed to shape before toughening, complete with matching hardware.

Components, aluminium and uPVC glazing

2.7 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.

2.8 SETTING BLOCKS

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

Components, wall mounted glass (mirrors and splashbacks)**2.9 GLASS ADHESIVE**

Adhesive mirror-mastic and double-sided adhesive tape.

2.10 MIRROR DE-MISTER

Refer to BATHROOM AND TOILET FIXTURES for type.

3 EXECUTION**Conditions****3.1 GENERAL REQUIREMENTS**

To [NZS 4223.1](#), [NZS 4223.3](#), [NZS 4223.4](#) and [NZBC B1/AS1](#), 7.0 **Glazing**. 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.

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](#), [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.

3.6 JOINTING, PUTTY AND SEALING MATERIAL COMPATIBILITY

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

Conditions - human impact safety requirements**3.7 SAFETY GLAZING, GENERAL REQUIREMENTS**

Glazing of doors, side panels, low level and window seat glazing, shower doors and screens, bath enclosures, stairwell landings and similar locations, to [NZS 4223.3](#) and [NZBC B1/AS1](#), 7.0 **Glazing**, in respect of, thickness, maximum areas of panel Grade A Safety Glass.

3.8 SAFETY GLAZING MATERIAL

Use only materials from [NZS 4223.3](#), Appendix 3.A Schedule of safety glazing materials 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](#), clause 303.7 Identification of safety glazing materials.

3.9 CONTAINMENT

Edge cover to comply with [NZS 4223.1](#), Section 4 Glazing, table 5. Otherwise to [NZS 4223.3](#), clause 303.2 Containment.

Assembly

3.10 WORKING OF GLASS

All working of glass as required in [NZS 4223.1](#).

3.11 EDGE WORK AND BEVELLING

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

3.12 SURFACE TREATMENT

Refer to SELECTIONS/drawings for finish.

3.13 SURFACE CUTTING

Refer to SELECTIONS/drawings for finish.

3.14 INSTALL SAFETY GLASS

To [NZS 4223.3](#), as modified by [NZBC F2/AS1](#) and [NZBC B1/AS1](#), 7.0 **Glazing**.

Application aluminium

3.15 INSTALL GLASS TO ALUMINIUM FRAMES

Install glass to NZS4223.1.

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

Application - wall mounted glass (mirrors and splashbacks)

3.16 WALL MOUNTED GLASS, ADHESIVE FIXED

For mirrors and splashbacks, fix with adhesive mirror-mastic and double-sided adhesive tape. Adhesive mastic area 0.25 m² per 1 m² of mirror.

Application miscellaneous

3.17 INSTALL GLASS SCREENS

Install shower and bath screens and doors to manufacturer's requirements.

Finishing

3.18 SAFETY

Indicate the presence of transparent glass for the remainder of the construction period, with whitening, tape or signs compatible with the glass type.

Completion

3.19 TRADE CLEAN
Clean off or remove safety indicators at completion of the building.

3.20 REPLACE
Replace damaged, cracked or marked glass.

3.21 LEAVE
Leave work to the standard required by following procedures.

3.22 REMOVE
Remove debris, unused materials and elements from the site.

4 SELECTIONS

Performance - wind

4.1 WIND ZONE - NON-SPECIFIC DESIGN
Building wind zone: High (44 m/s) (as determined from [NZS 3604](#), [NZS 4223](#))

Glass screens / balustrades and pool fences

4710 INSULATION

1 GENERAL

This section relates to materials installed, laid, hung or fitted as thermal and/or acoustic insulation.

1.1 RELATED WORK

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

Refer to roofing sections for roofing underlays.

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 |
| EPS | Expanded polystyrene sheets |

Documents

1.3 DOCUMENTS

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

| | |
|---------------------------------------|--|
| NZBC H1/AS1 | Energy efficiency |
| AS/NZS 3000 | Electrical installations |
| NZS 4218 | Thermal insulation - Housing and small buildings |
| NZS 4246 | Energy efficiency - Installing bulk thermal 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 |

[Health and Safety at Work Act 2015](#)

Requirements

1.4 QUALIFICATIONS

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

2 PRODUCTS

Materials

2.1 GLASS FIBRE THERMAL INSULATING PADS

Glass fibres bonded with a thermosetting resin to form a rectangular insulating pad.

NOTE: When insulation abutting or covering recessed downlights is intended to be in contact with IC, CA 80, CA 135 luminaires the insulation must withstand a 30s Needle Flame test to [AS/NZS 60695.11.5](#).

Components

- 2.2 NAILS
Galvanized steel clouts, 25mm gauge.
- 2.3 STAPLES
Stainless steel gauge and length to suit application and to manufacturer's requirements.
- 2.4 STRAPPING TAPES
Proprietary plastic strapping tape, stapled over framing to retain insulation in unlined wall, ceiling and underfloor locations.
- 2.5 ADHESIVE TAPE
Adhesive tapes to compliment the underlay. Pressure sensitive aluminium foil tapes for joining foil insulation and vapour barriers.

3 EXECUTION

- 3.1 DELIVERY
Keep insulation dry in transit. Take delivery of insulation dry and undamaged and store in a location that protects them from the weather and damage.
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 HAZARD & RISK MANAGEMENT
To [Health and Safety at Work Act 2015](#) and take all safety precautions necessary to reduce potential hazards and risks.
- 3.5 INSPECTION
Before starting installation of blankets and pads, check that the location and framing are free from moisture, that the cavities are not interconnected and that mesh, wall underlay and vapour barriers are in place.

Application - general

- 3.6 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. Allow a clear gap around metal flues as recommended by the fireplace manufacturer. Lift up electrical wires, lighting transformers/controllers and lay the insulation underneath.

3.7 RECESSED LIGHT FITTINGS - CLEARANCE

Non-residential 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 clearances 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.

3.8 CLEARANCE TO ROOFING UNDERLAY

Ensure a minimum 25mm clearance is maintained between the insulation and any non-rigid roofing underlay.

3.9

INSULATION CLEARANCES GENERALLY

Insulation may need to have a gap to some mechanical and electrical services and equipment, including ducts and chimneys. The gaps should be to the [NZS 4246](#) based tables below or to the equipment manufacturers requirements if they require larger gaps. Smaller gaps to manufacturers requirements can be used for equipment specifically manufactured with heat shielding or similar (excludes light fittings). Installed gap not to be more than 50mm bigger than the required gap.

The following tables are subject to:

- The requirements of [NZS 4246](#)
- The insulation is exposed to the source of heat or equipment etc.
- Insulation, has passed the needle flame test to [AS/NZS 60695.11.5](#) and/or is non-combustible
- Gaps to hot surfaces may have to be increased with non-compliant insulation and plastic/polymeric type insulation (EPS, XPS, PIR, etc), check with insulation manufacturer
- Gaps to hot surfaces may be able to be reduced with non-combustible insulation, check with equipment manufacturer
- "Secure insulation" if required means, glue, mechanical fix, or provide fixed barriers at gap edge of insulation to hold in place. Rigid or semi rigid insulation may only need a firm friction fit (secure loose pieces).
- Loose fill insulation will require fixed barriers to [NZS 4246](#) to maintain gaps

LIGHT FITTINGS

| Type of fitting | Minimum insulation clearance | Comments |
|--|--|--|
| Unmarked recessed | 100mm | New or old unmarked & unknown fittings and/or insulation. Secure insulation. |
| CA 80, CA 90 or CA 135 recessed | Abut in residential. 100mm in others | Do NOT cover the fittings |
| IC, IC-F or IC-4 recessed | Abut in residential. 100mm in others | Cover in residential only. Do NOT cover in others |
| Independent control gear | Place on top of insulation & 50mm from fitting | If not on top allow 50mm clearance to insulation, do not cover. Includes, transformers, ballasts & drivers etc. |
| Surface fittings not exposed to insulation | Nil | Where surface fittings are isolated from insulation by appropriate linings. Excludes high heat fittings. |
| Surface fittings & exposed insulation | 200mm | This is exposed insulation to any part of the exposed fitting & bulb/tube (e.g. exposed light in an unlined basement). Secure insulation. |

INBUILT RECESSED HOT APPLIANCES

| Appliance | Minimum insulation clearance | Comments |
|--------------------------------|------------------------------|--|
| Electrical heaters | 100mm | Clearance may be able to be reduced with non-combustible insulation. Secure insulation. |
| Gas appliance exposed flame | 200mm | Clearance may be able to be reduced with non-combustible insulation or with specific details from the appliance manufacturer. Excludes uncommon appliances, refer NZS 4246 . |
| Gas appliance flues | 75mm | Clearance may be able to be reduced with non-combustible insulation. Secure insulation. Excludes uncommon appliances refer NZS 4246 . |
| Oil-fired appliances and flues | 230mm | Clearance may be able to be reduced with non-combustible insulation or with specific details from the appliance manufacturer. Secure insulation. |
| Open fireplace opening | 200mm | Clearance may be able to be reduced with non-combustible insulation. Secure insulation. |
| Brick masonry chimneys | 50mm | Clearance may be able to be reduced with non-combustible insulation. Secure insulation. |
| Metal chimneys & flues | 75mm | Clearance may be able to be reduced with non-combustible insulation or with specific details from the appliance manufacturer. Secure insulation. |
| Solid fuel appliance | 600mm | Clearance may be able to be reduced with non-combustible insulation or with specific details from the appliance manufacturer. Secure insulation. |
| Solid fuel appliance flue | 600mm | Clearance may be able to be reduced with non-combustible insulation or with specific details from the appliance manufacturer. Secure insulation. |

EXTRACTS, VENTS, PIPES & ROOF UNDERLAY

| Application | Minimum insulation clearance | Comments |
|--|------------------------------|---|
| Ducted fan motors | 50mm | Includes ducted rangehoods, extractors etc. Applies to the motor unit and electrical enclosures (not the ducts) |
| Ducted fan ducts | Abut | Excludes motor unit and electrical enclosures. |
| Unducted fan motors usually discharging to ceiling space | 200mm | Includes unducted, rangehoods, extractors etc, discharging into roof space. To prevent debris falling into motor. Clearance may be able to be reduced, by providing a fixed barrier around the vent. |
| Passive vents (still in use) | 200mm | To prevent debris falling through. Clearance may be able to be reduced, with more cohesive insulation, like some of the rigid plastic types or providing a fixed barrier around the vent. |
| Plumbing penetrations through floors | 100mm | Keep gap between pipe penetration and floor insulation in case of leaks. |
| Roofing material/underlay | 25mm | From underside of roofing or flexible roofing underlay, to prevent wicking |

3.10 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.

3.11 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.

3.12 FIT GLASS FIBRE THERMAL INSULATING PADS

Friction fit insulating pads in place to completely fill the whole of the cavities. Carefully scribe cut insulating pads slightly oversize to maintain friction fit to each other, to smaller spaces and around penetrations. Leave no gaps between, and maintain full thickness of the insulating pads over the whole of the installation. Do not cover vents and cut around metal flues to the safety requirements of the fireplace manufacturer.

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 CHECK WALL WRAPS AND ROOF UNDERLAYS

Ensure these are dry, clean, undamaged and free of debris before being covered.

3.15 LEAVE

Leave work to the standard required by following procedures.

3.16 REMOVE

Remove debris, unused materials and elements from the site.

4 SELECTIONS

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

4.1 GLASS FIBRE INSULATION

Location: Wall and Ceiling Cavity
R Value: R2.6 to walls and R3.6 to ceilings
Thickness: 90mm walls and 185mm ceilings

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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
- superior finish quality systems
- bracing systems
- fire rated garage boundary wall systems
- wet area systems

1.1 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

1.2 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 AS 1397 | External moisture 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 |

1.3 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 Fyrelite®(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

1.4 NO SUBSTITUTIONS

Substitutions are not permitted to any specified GIB® systems, GIB® system components, GIB® plasterboard, associated GIB® products or GIB® accessories.

1.5 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

1.6 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.

1.7 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.

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 Wideline® plasterboard

GIB Ultraline® and/or GIB® Ultraline PLUS high quality surface plasterboard

GIB Fyreline® fire resistant plasterboard

GIB Braceline® & GIB® Noiseline® dual purpose wall bracing & noise control plasterboard

GIB Aqualine® wet area plasterboard

GIB Toughline®

GIB Superline®

Components

2.2 SCREWS

GIB® Grabber® drywall screws.

2.3 NAILS

GIB® Nails (gold passivated).

Size: 30mm, 40mm

2.4 TAPE ON TRIMS AND EDGES

GIB® Goldline™ tape-on trims

GIB® UltraFlex® high impact corner mould

GIB® Levelline® Tape on Trim

2.5 METAL ANGLE TRIMS

GIB® galvanized steel slim angle trims.

2.6 CONTROL JOINTS

GIB® Rondo® P35 control joints.

GIB® Goldline™ tape-on trims

Accessories

2.7 ADHESIVE

Timber frame and/or steel frame:

GIBFix® One ultra low VOC water based wallboard adhesive

GIBFix® All-Bond solvent based wallboard adhesive

2.8 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 |

2.9 JOINTING TAPE

GIB® paper jointing tape.

2.10 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 |
|----------|---|-----------|--------------|
| Typical | GIB® Standard plasterboard | 10mm | |

4.2 GIB® WATER RESISTANT SYSTEMS WALLS

| Location | Plasterboard type / Lining requirements | Thickness | Finish Level |
|-----------|---|-----------|--------------|
| Wet Areas | GIB Aqualine® plasterboard | 10mm | |

4.3 GIB® STANDARD SYSTEMS CEILINGS

| Location | Plasterboard type / Lining requirements | Thickness | Finish Level |
|----------|---|-----------|--------------|
| Typical | GIB® Standard plasterboard | 13mm | |

4.4 GIB® WATER RESISTANT SYSTEMS CEILINGS

| Location | Plasterboard type / Lining requirements | Thickness | Finish Level |
|-----------|---|-----------|--------------|
| Wet Areas | GIB Aqualine® plasterboard | 13mm | |

4.5 GIB® BRACING SYSTEMS

Refer to GIB® Ezybrace® Systems. For bracing element location refer to drawn documentation.

Accessories

4.6 GIB® RONDO® CEILING BATTENS

Brand/type: GIB® Rondo® Ceiling battens

4.7 GIB® TAPE ON EDGE OR CORNER TRIMS

Brand/type: ~

4.8 GIB® EDGE PROFILES

Brand/type: ~

5230 INTERIOR DOORS

1 GENERAL

This section relates to the supply and installation of interior doors.

1.1 RELATED SECTIONS

Refer to glazing section/s for glass type and thickness.

1.2 DOCUMENTS

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

[NZS 3602](#) Timber and wood-based products for use in building
[NZS 3610](#) Specification form profiles of mouldings and joinery

2 PRODUCTS

2.1 TIMBER

To [NZS 3602](#).

2.2 PROFILES, FACINGS, SCRIBERS AND ARCHITRAVES

Traditional profiles to [NZS 3610](#). Proprietary profiles and special profiles as detailed. Pencil radius corners of profiled schedules for paint finish.

2.3 DOORS, PAINTED

Doors as shown on drawings.

2.4 CAVITY SLIDERS

Doors hung within a proprietary cavity slider frame and complete with brand-matched sliding door gear.

2.5 DOOR HINGES

Size and gauge to carry door. 3 hinges per door.

3 EXECUTION

3.1 SITE MEASURE

Confirm framed openings on site for dimension, plumb and straightness prior to fabrication or ordering of timber joinery. Confirm lintel head and sill deflection for sliding or bi-fold door systems is within the manufacturer's specified tolerances. Provide not less than 10mm unless otherwise required.

3.2 EXECUTION GENERALLY

Manufacture to the 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 FACTORY FIT HARDWARE

Factory fit the following where specified: -

- Hinges

3.4 FACTORY FINISHING

Before delivery to site: -

- 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.

Internal doors**3.5 INTERNAL JOINERY FRAMES**

Fabricate as detailed. Wedge and rigidly fix in place without distortion, plumb, and true to line and face. Pre drill for fixings through frame. Countersink and plug frames scheduled for clear finish.

3.6 DOOR FRAMES, SOLID REBATED

Fabricate as detailed. Hang doors to operate freely on hinges, sliding, or bi-fold gear and to the door manufacturer's requirements. Pre drill for fixings through frame. Countersink and plug frames scheduled for clear finish. Fit hardware.

3.7 DOOR LINERS

Heads and jambs finished minimum 18mm, with 10mm planted door stops. Width to match width of lined walls. Hang doors on hinges, sliding, or sliding-folding gear to the door manufacturer's requirements and to operate freely. Countersink and plug frames scheduled for clear finish. Fit hardware.

3.8 DOOR LINERS, EXTENDED

Heads and jambs finished 30mm, rebated for wall linings and extended a minimum of 10mm. 10mm planted door stops. Hang doors on hinges, sliding and bi-fold gear to the door manufacturer's requirements and to operate freely. Countersink and plug frames scheduled for clear finish. Fit hardware.

3.9 CAVITY SLIDERS

Install in accordance with the door manufacturer's requirements, allowing for removal of top trim for maintenance.

Completion**3.10 CHECK**

Check and adjust operation of all sashes, doors, hardware and furniture.

3.11 TEMPORARY PROTECTION

On completion remove any temporary protection and leave ready for following work.

4 SELECTIONS**4.1 HOLLOW CORE DOOR, PAINT FINISH**

| | |
|--------------|-----------------|
| Door facing: | Flush |
| Glazing: | NIL |
| Finish: | Painted, spray. |
| Hardware: | TBA |

4.2 CAVITY SLIDER DOOR

Brand/type: CS
 Door size: Refer drawings
 Finish: Painted, spray
 Hardware: Finger pull

Accessories

4.3 DOOR HINGES

Interior doors

| | |
|-----------|-----------------------------|
| Type: | Loose pin |
| Size: | 89mm |
| Material: | Zinc-plated steel |
| Pin: | Loose-pin zinc-plated steel |

6700 PAINTING GENERAL

1 GENERAL

This section relates to the general matters related to painting work

1.1 RELATED WORK

Refer to 6711 PAINTING EXTERIOR for exterior paint systems.
Refer to 6721 PAINTING INTERIOR for interior paint systems.

1.2 ABBREVIATIONS

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

| | |
|-------|--|
| APAS | Australian Paint Approval Scheme |
| MPNZA | Master Painters New Zealand Association Inc. |
| VOC | Volatile organic compound |

Documents

1.3 DOCUMENTS

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

| | |
|---------------------------------|---|
| NZBC | Protection from fire |
| C/AS1-AS7 | |
| AS/NZS 2311 | Guide to the painting of buildings |
| AS/NZS 2312.1 | Guide to the protection of structural steel against exterior atmospheric corrosion by the use of protective coatings - Paint Coatings |
| AS/NZS ISO 9001 | Quality management systems - requirements |
| WorkSafe NZ | Guidelines for the provision of facilities and general safety in the construction industry |
| WorkSafe NZ | Guidelines for the management of lead-based paint |
| MPNZA | Specification manual |
| MPNZA | Painters hazard handbook |
| | Health and Safety in Employment Act 1992 |

Requirements

1.4 NO SUBSTITUTIONS

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

1.5 QUALIFICATIONS

Painters to be a member of MPNZA and experienced competent workers, familiar with the materials and the techniques specified.

1.6 HEALTH AND SAFETY

Refer to the requirements of the Health and Safety in Employment Act and WorkSafe NZ: [Guidelines for the provision of facilities and general safety in the construction industry](#). If the elimination or isolation of potential hazards is not possible then minimise hazards in this work on site by using the proper equipment and techniques as required in the MPNZA Painters hazard handbook. Supply protective clothing and equipment. Inform employees and others on site of the hazards and put in place procedures for dealing with emergencies.

Refer to WorkSafe NZ: [Guidelines for the management of lead-based paint](#) for the required procedures and precautions when:

- treating/removing lead-based paint
- burning off paint
- sanding off paint
- using solvent based paint removers.

1.7 MATERIAL SAFETY DATA SHEET

Obtain from each paint manufacturer the material safety sheet for each product used. Keep sheets on site and comply with the required safety procedures.

Warranties

1.8 WARRANTY

Warrant this work under normal environmental and use conditions against failure.

2 years: Warranty period

Performance

1.9 MANUFACTURER'S INSPECTION

Allow the paint manufacturers to inspect the work in progress and to take samples of their products from site if requested.

1.10 INSPECTION OF WORK

Inspection of the whole of the work at each of the stages scheduled may be made. Agree a programme that will facilitate such inspection, including notification when each part and stage of the work is ready for inspection.

2 PRODUCTS

Materials

2.1 PAINT TYPES

Use the manufacturer's complete system and only the products specified.

2.2 MATERIALS GENERALLY

Use only the Manufacturer's products which are guaranteed for their consistency and performance under [AS/NZS ISO 9001](#) and APAS approval, prepared, mixed and applied as directed in the Manufacturer's specification sheets, specification manuals and product data sheets.

2.3 THINNERS AND ADDITIVES

Only use thinners or additives within the stated limits for the particular situations specified.

Accessories

2.4 FILLERS

For recommendations on; fillers, stopping, paint strippers, cleaning agents, etching solutions, mould inhibitors, rust inhibitors, knotting and other commodities used for the surface preparation, refer to the manufacturer of the specified coating.

3 EXECUTION**Conditions**

3.1 EXECUTION

To conform to manufacturer's requirements and those methods, practices and techniques contained in [AS/NZS 2311](#), the MPNZA Specification manual, and WorkSafe NZ: [Guidelines for the provision of facilities and general safety in the construction industry](#).

3.2 PREPARE

Prepare surfaces to the coating manufacturer's requirements.

3.3 COATED SURFACES

Ensure that substrate surfaces are able to achieve the specified finish.

3.4 PRE-PRIMED SURFACES

Sand down any breakdown or damage of the primer to a sound surface and immediately re-prime.

3.5 BRUSH DOWN

Brush down surfaces immediately before application, to remove dust, dirt and loose material.

3.6 COMPATIBILITY

Check that materials are as required by the paint manufacturers for the particular surface and conditions of exposure, and that they are compatible with each other. Use paint from the same manufacturer for each paint system. If not compatible, obtain instructions before proceeding.

3.7 TREATED SURFACES

Where surfaces have been treated with preservatives or fire retardants, check with the treatment manufacturer that coating materials are compatible with the treatment and do not inhibit its performance. If they are not compatible, obtain instructions before proceeding.

3.8 ANCILLARY SURFACES

The coatings listed in schedules and elsewhere are of necessity simplified. Coat ancillary exposed surfaces to match similar or adjacent materials or areas, except where a fair-faced natural finish is required or items are completely prefinished. In cases of doubt obtain instructions before proceeding.

3.9 HARDWARE

Do not paint hinges or hardware that cannot be removed. If items can be removed, carefully remove hardware, fixtures and fittings before commencing work. Set aside where they cannot be damaged or misplaced and replace on completion.

3.10 PROTECTION

Use dropsheets, coverings and masking necessary to protect adjoining fixtures, fittings and spaces from paint drops, spots, spray and damage.

Preparation - unpainted and pre-primed timber and wood based products

3.11 MOISTURE CONTENT

Ensure moisture content at the time of application is near to the equilibrium moisture content pertaining to the particular locality in which the timber is used, without any excessive moisture content gradient between core and surface.

3.12 PREPARING DRESSED TIMBER

Ensure dressed timber is smooth, free from raised or woolly grain, planing burrs or other machining defects. Slightly round or ease sharp edges to ensure they can be properly coated. Sand timber to bring up to a smooth finish along the direction of the grain. Sand timber back to new condition timber that has been weathered.

3.13 PREPARING ROUGH SAWN TIMBER

Thoroughly brush along the direction of the grain to remove dust and dirt.

3.14 PREPARING PRE-PRIMED TIMBER

Check pre-prime coat for damage, powdering, weathering or loss of adhesion. Where primer is sound, thoroughly brush along the direction of the grain to remove dust and dirt. If there is doubt, sand back and re-prime.

3.15 TIMBER SPECIES

Check that the preparation and paint system is suitable for the timber species.

3.16 PREPARING DAMAGE AND DEFECTS

Scrape clean loose or soft material holes, depressions, resin or gum pockets, knot holes, surface splits, checks, or any localised decay. Apply primer and/or sealer specified and fill these areas with linseed oil putty or other appropriate filler.

3.17 FIXINGS

Take timber fixings below the painted or clear finished surface. Leave corrosion resistant timber fixings flush with clear finished surfaces.

3.18 CLEANING

Remove grease and oil by wiping down with solvent or water-based degreasing agent. Remove resin by wiping down with solvent or water-based degreasing agent or heating and scraping. Remove sanding dust. Bad staining may be untreatable and require replacement of timber, discuss with paint manufacturer and main contractor.

Preparation - painted surfaces generally

3.19 SURFACE PREPARATION

Refer to the Manufacturer's specification sheets and product data sheets. Carry out the preparatory work required by them for each of the substrates.

For interior surfaces such as paper faced plasterboard use the Manufacturer's recommended finishing compound as an aid to achieving a Level 4 finish.

3.20 MOULD

Sterilise surface mould by washing or sponging the whole surface with a one part sodium hypochlorite household bleach to three parts clean water solution. Allow bleach to act for 30 minutes and wash off with clean water. Wash cloths and sponges regularly in clean water. Reapplication may be necessary. Treat with anti-mould solution to the treatment manufacturer's requirements.

3.21 GAP FILLING

Fill cracks, holes, indented and damaged surfaces with putty, plaster filler, wood filler, or plastic wood, as appropriate and in accordance with the paint manufacturer's requirements. Allow to dry or set before sanding back level with the surface. Prime coat or seal the timber before using putty. Wet cement or gypsum base plasters before applying filler. Use only Portland cement base types, or water-insoluble organic-based gap fillers in exterior or wet areas.

Application - before applying final coatings

3.22 OFF-SITE WORK

Carry out off-site preparation and coating under cover, in a suitable environment and with adequate lighting. Store items both before and after coating in a clean, dry area, protected from the weather and mechanical damage, properly stacked and spaced to permit air circulation and to prevent sticking of surfaces.

3.23 PRIMING JOINERY

Before priming preservative treated timber ensure that any cut surfaces have been retreated. Liberally coat end grain, allow to soak in and then recoat. Ensure LOSP. treated joinery has dried sufficiently to lose odour.

3.24 CONCEALED JOINERY SURFACES

Apply off-site coatings to all surfaces including those which will be concealed when incorporated into the building.

3.25 CONCEALED METAL SURFACES

Apply primer to suit the coating system to all metal surfaces which will be concealed when incorporated into the building.

3.26 DOORS

Prime or seal and paint all six faces of doors before hanging.

3.27 BEAD GLAZING

Before glazing apply the first two coats, or the primer and one undercoat, to rebates of stained, varnished or painted joinery and beads.

3.28 PUTTY GLAZING

Follow putty manufacturers recommendations for application, drying, and painting. Ensure that the putty is fully protected by the coating system as soon as it is sufficiently hard.

Application - generally

3.29 PAINTING GENERALLY

Comply with the paint manufacturer's requirements and any additional requirements in this specification.

3.30 MIXING

Thoroughly mix paints. Lift any settled pigment and ensure the paint is homogenous.

3.31 ENVIRONMENT

Paint exterior surfaces only in favourable weather conditions:

- warm dry days without frost or heavy dews
- avoid painting in direct sunlight any surfaces that absorb heat excessively
- as far as possible apply paint in the temperature range 15°C to 25°C
- do not paint if temperatures fall outside the range of 10°C and 35°C unless paints with the necessary temperature tolerance have been specified
- do not apply solvent borne paint if moisture is present on the surface

3.32 SEQUENCE OF OPERATIONS

Painting work to generally follow the following sequences:

- complete surface preparation before commencing painting
- apply paint in the specified sequence using the specified paint
- allow full drying time between coats to the paint manufacturer's requirements
- do not expose primers, undercoats and intermediate coats beyond manufacturers stated instructions before applying the next coat
- finish broad areas before painting trim
- ensure batch numbers of tins are matched for whole areas
- internally, paint ceilings before walls and walls before joinery, trim and other items

3.33 PAINT APPLICATIONS

Select brush, roller, or pad and apply paint to the requirements of the paint manufacturer and to obtain a smooth even coating of correct thickness, uniform gloss and colour.

3.34 DRYING TIME

Before handling or applying the next coat of paint, give each coat the full drying time as required by the paint manufacturer. Ensure that surfaces are dry and that condensation does not occur before the paint reaches surface-dry condition.

3.35 LIGHTLY SAND

Lightly sand primers, sealers, undercoats and intermediate coats to remove dust pick-up, protruding fibres and coarse particles. Remove dust immediately before applying the next coat.

3.36 DEFECTIVE WORK

Correct defective work immediately and re-coat as required, following precisely the paint system specified.

3.37 EACH COAT

Each coat of paint and the completed paint system to have the following qualities and properties:

- uniform finish, colour, texture, sheen and hiding power
- the specified number of coats applied
- no blemishes such as runs, sags, crinkling, fat edges, entrained paint skins, hairs, dust, bare or starved patches, cracks, brush marks, ladder marks and blistering
- proper covering of corners, crannies, thin edges, cracks, end grain and other difficult places of application

Completion

3.38 CLEAN

Clean adjoining surfaces, glass and fittings of any paint contamination. Clean off glass indicators at completion of the building works. Clean glass inside and out to a shining finish.

3.39 CLEAN EQUIPMENT

Use the Manufacturer's environmental wash system for the cleaning of water-based paint and plasters from brushes, rollers, plastering or spray equipment to separate the solids from the water component for safe disposal.

3.40 LEAVE

Leave the whole of this work uniform in gloss and colour, of correct thickness, free from painting defects, clean and unmarked and to the standard required by following procedures.

3.41 REMOVE

Remove dropsheets, coverings and masking to leave surrounding surfaces and areas clean, tidy and undamaged. Remove debris, unused materials and elements from the site.

3.42 REPLACE HARDWARE

Replace hardware without damage to it or the adjoining surface. Leave properly fitted and in working order.

4 SELECTIONS

4.1 SELECTIONS

Refer to 6711 PAINTING EXTERIOR and 6721 PAINTING INTERIOR for selections.

6711 PAINTING EXTERIOR

1 GENERAL

This section relates to the preparation of exterior unpainted and pre-painted surfaces, and the application of exterior:

- decorative paint coatings
- protective paint coatings
- sealers
- stains
- clear finishes

Related work

1.1 RELATED SECTIONS

Refer to 6700 PAINTING GENERAL for general painting matters.
Refer to 6721 PAINTING INTERIOR for interior paint systems.

Documents

Warranties

1.2 WARRANTY

Warrant this work under normal environmental and use conditions against failure.

2 years: Warranty period

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

2 PRODUCTS

2.1 PRODUCTS

Refer to 6700 PAINTING GENERAL for product clauses.

3 EXECUTION

3.1 EXECUTION

Refer to 6700 PAINTING GENERAL for execution clauses.

4 SELECTIONS

Paint systems

4.1 CONCRETE / BLOCKWORK / FIBRE CEMENT / CEMENT PLASTER

| | |
|---------------|----------------------------|
| Brand: | Resene |
| Coating type: | Paint |
| System: | Lumbersider |
| Preparation: | Resene D83 Cement surfaces |
| 1st coat: | Lumbersider |
| 2nd coat: | Lumbersider |
| 3rd coat: | Lumbersider |

6721 PAINTING INTERIOR

1 GENERAL

This section relates to the preparation of interior unpainted and pre-painted surfaces, and the application of interior:

- decorative paint coatings
- protective paint coatings
- sealers
- stains
- clear finishes

Related work

1.1 RELATED SECTIONS

Refer to 6700 PAINTING GENERAL for general painting matters.
Refer to 6711 PAINTING EXTERIOR for exterior paint systems.

Documents

Warranties

1.2 WARRANTY

Warrant this work under normal environmental and use conditions against failure.

2 years: Warranty period

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

2 PRODUCTS

2.1 PRODUCTS

Refer to 6700 PAINTING GENERAL for product clauses.

3 EXECUTION

3.1 EXECUTION

Refer to 6700 PAINTING GENERAL for execution clauses.

4 SELECTIONS

Paint systems

4.1 PLASTERBOARD

| | |
|---------------|--------------------------------------|
| Brand: | Resene |
| Coating type: | Paint |
| Preparation: | Resene D84 and D85 |
| 1st coat: | Resene Sureseal D42 |
| 2nd coat: | Resene acrylic Undercoat D404 |
| 3rd coat: | Resene Zylone Low sheen Acrylic D302 |

4.2 PLASTERBOARD - WET AREA

Brand: resene
Coating type: Paint
Preparation: Resene D84 and D85
1st coat: Resene Sureseal D42
2nd coat: Resene acrylic Undercoat D404
3rd coat: Resene Lustacryl- Semi Gloss Waterborne Enamel D310

4.3 TIMBER TRIM / DOORS / FRAMES

Brand: Resene
Coating type: Paint
Preparation: Resene D82 timber surfaces
1st coat: Resene quick dry acrylic undercoat D45
2nd coat: Resene Acrylic undercoat general purpose D404
3rd coat: Resene Lustacryl - Semi Gloss Waterborne Enamel D310

7120 HOT AND COLD WATER SYSTEM

1 GENERAL

This section relates to piped potable water supply systems from the network utility supply authority water main to designated points and appliances, the installation of hot water heating appliances, distributing piped hot water to other appliances, and the installation of valves.

1.1 RELATED WORK

Refer to 7151 SANITARY FIXTURES, TAPWARE & ACCESSORIES for sanitary fixtures and tapware selections.

Documents

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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 C/AS1-AS7 | Protection from fire |
| NZBC G4/AS1 | Ventilation |
| NZBC G12/VM1 | Water supplies |
| NZBC G12/AS1 | Water supplies |
| NZBC H1/AS1 | Energy Efficiency |
| AS 1432 | Copper tubes for plumbing, gasfitting and drainage applications |
| AS/NZS 2492 | Cross Linked Polyethylene (PE-X) pipe for pressure applications |
| AS/NZS 2537.2 | Mechanical joining fittings for use with crosslinked Polyethylene (PE-X) for pressure applications - Plastics piping systems for hot and cold water installations - Crosslinked Polyethylene (PE-X) - Fittings |
| AS/NZS 2642.1 | Polybutylene pipe systems - Polybutylene (PB) pipe extrusion compounds |
| AS/NZS 2642.2 | Polybutylene pipe systems - Polybutylene (PB) pipe for hot and cold water applications |
| AS/NZS 2642.3 | Polybutylene pipe systems - Mechanical joining fittings for use with polybutylene (PB) pipes for hot and cold water applications |
| AS/NZS 2845.1 | Water supply - Backflow prevention devices - Materials, design and performance requirements |
| AS 2845.3 | Water supply - Backflow prevention devices - Field testing and maintenance |
| AS/NZS 3500.1:2003 | Plumbing and drainage - Water services |
| AS/NZS 3500.4 | Plumbing and drainage - Heated water services |
| AS/NZS 3500.5 | Plumbing and drainage - Housing installations |
| NZS 3501 | Specification for copper tubes for water, gas and sanitation |
| AS 3688 | Water supply - Metallic fittings and end connectors |
| AS/NZS 4130 | Polyethylene (PE) pipes for pressure applications |
| NZS 4305 | Energy efficiency domestic type hot water systems |
| NZS 4602 | Low pressure copper thermal storage electric water heaters |
| NZS 4607 | Installation of thermal storage electric water heaters: valve-vented systems |
| NZS 4617 | Tempering (3-port mixing) valves |
| AS/NZS 5601.1:2010 | Gas installations - general installations |
| DIN 8077 | Polypropylene (PP) Pipes - PP-H, PP-B, PP-R, PP-RCT - Dimensions |
| DIN 8078 | Polypropylene (PP) Pipes - PP-H, PP-B, PP-R, PP-RCT - General quality requirements and testing. |
| Gas (Safety and Measurement) Regulations 2010 | |
| Plumbers, Gasfitters and Drainlayers Act 2006 | |
| NZ Backflow Testing Standard: | NZ Backflow Testing Standard 2011, Field testing of backflow prevention devices and verification of air gaps |

Requirements

1.3 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](#).

Warranties

1.4 WARRANTY

Provide warranty for:

2 years: For the supply and installation of the plumbing system and fixtures

- 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.

Performance

1.5 TESTING - TO NZBC G12/AS1

Test to [NZBC G12/AS1](#), 7.5, **Watertightness**, for hot and cold water.

- Test to a pressure of 1500 kpa for period not less than 15 minutes.

Confirm the timing before carrying out any tests. Supply potable water and the apparatus needed.

Slowly fill service pipes with water to exclude air. Test and ensure there is no measurable loss of pressure for the minimum period. Slowly fill distribution pipes with water to exclude air. Ensure that with draw-off taps closed the system must remain water-tight.

2 PRODUCTS

2.1 POLYETHYLENE PIPE

To [AS/NZS 4130](#) Series 1 complete with fittings and accessories brand matched to the pipe manufacturer's requirements with durability to [NZBC B2/AS1](#), table 1 and [NZBC G12/AS1](#), table1.

2.2 POLYPROPYLENE RANDOM WATER PIPE

PP-R Polypropylene pipes to DIN 8077 and DIN 8078 complete with fusion welded fittings and accessories brand-matched to the pipe manufacturer's requirements with durability to [NZBC B2/AS1](#), table 1 and [NZBC G12/VM1](#).

2.3 WATER METER

To the requirements of the network utility operator.

2.4 VALVES

Pressure reducing or limiting valve, filter, non-return valve, cold water expansion valve, pressure relief or temperature valve, pressure relief valve and isolating valves to [NZBC G12/AS1](#).

2.5 TEMPERING VALVE

Tempering valve to [NZS 4617](#) to [NZBC G12/AS1](#).

Materials - Hot water heating appliances

2.6 ELECTRIC HOT WATER CYLINDER, MAINS PRESSURE

To [NZS 4305](#), ceramic-coated steel thermal storage cylinder, insulated and complete with required fittings.

Components**2.7 INSULATION**

Pre-formed pipe sections complete with bends and fittings, with fixing tape to the manufacturer's requirements and to [NZBC H1/AS1](#).

2.8 PROTECTIVE TAPE

Plasticised PVC tape system with primer, mastic fixing and outer coating.

Fire stopping accessories**2.9 FIRE STOPPING SYSTEMS**

For sealing around pipe penetration through fire walls and floors use a combination of the following:

- Gunnable inorganic or silicone elastomer sealant, packed to maintain the specified fire resistance rating of the floor or wall.
- Two-part silicone foam elastomer sealant, packed to maintain the specified fire resistance rating of the floor or wall.
- Fire wrap containing intumescent material used in conjunction with the selected sealer.
- Fire collar with intumescent packing to maintain the specified fire resistant rating of the floor or wall.

3 EXECUTION**3.1 EXECUTION GENERALLY**

Generally carry out the whole of this work and tests to [NZBC G12/VM1](#) or [NZBC G12/AS1](#).

3.2 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.

Store tapware in a shelved, dry and securely locked area. Retain tapware in the manufacturer's original packaging, complete with all fixings and installation instructions. Label each unit separately with its space/fixture number to match.

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 pipework.

3.4 CONCEAL

Conceal pipework within the fabric of the building unless detailed otherwise. Satin finish chrome plate exposed work, complete with matching ferrule at the surface penetration.

3.5 CORROSION

Separate all 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.

3.6 THERMAL MOVEMENT

Accommodate movement in pipes resulting from temperature change by the layout of the pipe runs, by expansion joints and by sleeving through penetrations.

3.7 PIPE SIZE

Flow rates to each outlet to be no less than those given in [NZBC G12/VM1](#) or [NZBC G12/AS1](#), table 3, Acceptable flow rates to sanitary fixtures. Pipe size as determined in [NZBC G12/AS1](#), table 4, Tempering valve and nominal pipe diameters.

3.8 ELECTROLYTIC ACTION

Avoid electrolytic action by eliminating contact or continuity of water between dissimilar metals.

3.9 EXCAVATE

Excavate for the water main to a firm, even trench base in straight runs. Allow to backfill.

Application - Jointing

3.10 JOINTING POLYETHYLENE PIPE

Seal ring compression joints and electrofusion to [NZBC G12/AS1](#).

3.11 JOINTING POLYPROPYLENE PIPE

Fusion weld joints to manufacturer's requirements.

Application - Pipework installation

3.12 WATER SUPPLY CONNECTION

Arrange with the network utility operator for a connection to the water main and from there through a water meter and gate valve. Provide back flow prevention to [NZBC G12/AS1](#).

3.13 POTABLE WATER SUPPLY PIPEWORK INSTALLATION

From connection point, run pipes complete with all fittings, support and fixing, joins and install to manufacturers specifications. Size the pipes and branches in straight runs to deliver the acceptable flow rate to [NZBC G12/VM1](#) or [NZBC G12/AS1](#), table 3, Acceptable flow rates to sanitary fixtures at each outlet.

Allow for the expected concurrent use of adjoining fixtures and size the piping layout to eliminate loss of pressure at any point by simultaneous draw-off.

Pipework support spacing to be firmly fixed and buffered to eliminate noise and hammer, with preformed tee-connection take-offs and branches, with machine made 3 diameter bends, complete with necessary valves and fittings. Conceal pipework and pressure test before the wall linings are fixed.

3.14 HOT WATER PIPEWORK

Use a take-off spigot to give separate branches to each fitting, lay out pipes with support spacing to [NZBC G12/VM1](#) or [NZBC G12/AS1](#), table 7 Water supply pipework support spacing. Fix firmly and buffer to eliminate noise and hammer, with preformed tee-connection take-offs and branches, and preformed 3 diameter bends, complete with all necessary valves and fittings

Lag all pipes with rigid insulation to the manufacturer's requirements and [G12/VM1](#) or [G12/AS1](#).

3.15 EQUIPOTENTIAL BONDING

Earth metallic water supply pipe and metallic sanitary fixtures to [NZBC G12/AS1, 9.0.](#)

3.16 IN-LINE FILTER

Install an in-line filter immediately adjacent to the main isolating valve at the point of entry to the building, in an accessible position to allow for easy cleaning.

Application - Hot water systems

3.17 HOT WATER CYLINDER INSTALLATION GENERALLY

Install hot water cylinders complete to the manufacturer's requirements and to [NZBC G12/AS1, 6. 11, Water heater installation. Valve-vented systems to NZS 4607.](#)

3.18 SEISMIC RESTRAINTS - NON-GAS WATER HEATING APPLIANCES

Non-gas (electric, wet-back, solar etc) water heating appliances to be restrained to manufacturer's requirements and [NZBC G12/AS1, 6.11, Water Heater Installation.](#)

3.19 INSTALLING HOT WATER PIPE INSULATION

Insulate all hot water pipes to [NZBC H1/AS1, AS/NZS 3500.5, 3.33 Water and Energy Efficiency](#), and to the insulation manufacturer's instructions. Cut insulation sections tight between timber framing and tight between the webs of steel studs.

3.20 INSTALL ELECTRIC HOT WATER CYLINDERS AND BOILING CYLINDERS

Install where shown complete with all the necessary fittings to the cylinder manufacturer's requirements and in accordance with [NZBC G12/AS1: 6.11. Valve-vented systems to NZS 4607.](#)

3.21 INSTALL HOT WATER CYLINDER OVERFLOW TRAY

Install drained overflow tray to hot water cylinder to [NZBC G12/AS1.](#)

3.22 INSTALL TEMPERING VALVE

Install 1 metre minimum from outlet of hot water cylinder and to manufacturer's instructions. Install copper pipework for 1 metre minimum downstream of tempering valve prior to connection of non-metallic pipework.

3.23 PENETRATIONS

Provide and fit collars and escutcheon plates to match the pipework at all penetrations through constructions.

Application - Fire resistant work

3.24 FIRE STOPPING WORK

Prepare pipe penetration and install fire stopping system around pipes to manufacturer's installation instructions.

Installation - Valves

3.25 INSTALLING BELOW GROUND ISOLATING VALVE

Install all below ground items such as main isolating valves and water meters in preformed concrete pits or approved equivalent.

- 3.26 **INSTALLING APPLIANCE ISOLATING VALVES - CONCEALED**
Install isolating valves for appliances in accessible positions. Locate in adjacent cupboards and position to allow for easy connection and operation.

Completion

- 3.27 **LABEL**
Label all pipework with permanent adhesive markers at 3 metre minimum intervals.
- 3.28 **CLEAN IN-LINE FILTER**
Clean all in-line filters on completion of works.
- 3.29 **REPLACE**
Replace damaged or marked elements.
- 3.30 **LEAVE**
Leave work to the standard required by following procedures.
- 3.31 **REMOVE**
Remove debris, unused materials and elements from the site.

4 SELECTIONS

Water main

- 4.1 **POLYETHYLENE WATER MAIN**
Size: 25mm outside diameter (i.e. DN 25 in [AS/NZS 4130](#))

Pipework

Hot water systems

- 4.2 **ELECTRIC HOT WATER CYLINDER, MAINS PRESSURE**
Brand: Rheem
Model size: 250Lt

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 7123 HOT AND COLD WATER SYSTEM for hot water cylinders.
Refer to 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 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.

Requirements

1.3 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](#).

1.4 SUPPLIER

A specialist in the supply of tapware, and employing experienced architectural representatives available to assist during the course of the installation.

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 NZBC G13/AS1
Installation work to comply with [NZBC G1/AS1](#), [NZBC G12/VM1](#), [NZBC G12/AS1](#), [NZBC G13/AS1](#) 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 NZBC G13/AS1
Install to [NZBC G1/AS1](#), [NZBC G12/VM1](#), [NZBC G12/AS1](#), [NZBC G13/AS1](#), [NZBC E3/AS1](#) 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](#).

3.19 INSTALLING SHOWER ENCLOSURES AND WALL LININGS

Install in accordance with [NZBC E3/AS1](#). Sit tray firmly in place as detailed, to levels shown and connect to drainage service, ready for following work. Fit screen and door unit to manufacturer's details. Lining materials and finishes to comply with [NZBC E3/AS1](#).

3.20 INSTALLING SHOWER DOOR AND SCREEN

Install to [NZBC F2/AS1](#) and [NZS 4223.3](#) and to the product manufacturer's requirements. Set units level, plumb and true to line and required location, with moving parts and actions freely and easily operating.

Installation - Baths

3.21 INSTALLING BATHS

Install to [NZBC G1/AS1](#). Set firmly in cradle with required points fully supported, level and flush. Connect to supply and drainage services.

Installation - Sinks

3.22 INSTALLING SINK BENCHES

Install in accordance with manufacturer's/supplier's requirements. Connect to supply and drainage services.

3.23 INSTALLING CLEANERS SINKS AND TUB UNITS

Install in accordance with manufacturer's requirements. Connect to supply and drainage services.

Installation - Miscellaneous

3.24 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.

Application - tapware

3.25 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

3.26 INSTALLING ACCESSORIES

Fit specified fittings firmly in place at required dimensions relative to floor and adjoining sanitaryware fittings, all plumb and level.

3.27 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.

3.28 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.

3.29 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

3.30 REPLACE

Replace damaged or marked elements.

3.31 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.

3.32 REMOVE

Remove debris, unused materials and elements from the site.

4 SELECTIONS

7411D DIMOND RAINWATER SPOUTING SYSTEMS

1 GENERAL

This section relates to Dimond rainwater disposal systems including spouting and downpipes, in metal.

1.1 RELATED SECTIONS

Refer to 4311D DIMOND PROFILED METAL ROOFING for roofing.

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 |

Documents

1.3 DOCUMENTS

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

[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: **Dimond**, Roofing and Cladding Systems Design Manual, (web based Manual with dated update pages)

Copies of the above literature are available from:

Web: www.dimond.co.nz

Warranties

1.5 MANUFACTURER'S WARRANTY

Warrant this work under normal environmental and use conditions against:

Failure of coating adhesion: 5 year manufacturer's standard warranty

Weatherproofing by material penetration: 5 year manufacturer's standard warranty

Weatherproofing by substandard workmanship: 3 years

From: Date of completion of installation

Refer to the general section 1237 WARRANTIES for details of when completed warranty must be submitted.

Requirements

1.6 NO SUBSTITUTIONS

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

1.7 QUALIFICATIONS

Installers to be experienced competent gutter installers, familiar with the **Dimond** materials and the techniques specified.

1.8 MAINTENANCE INSTRUCTIONS

Provide one bound copy of all relevant **Dimond** maintenance information on completion of the roofing work.

Performance**1.9 TEST**

Test the completed rainwater disposal system with water to ensure spoutings are laid to correct falls, that both spouting and downpipes are unobstructed and that no ponding occurs in spoutings.

2 PRODUCTS**Materials****2.1 SPOUTING**

Complete with matching brackets to suit the spouting and screws. Refer to SELECTIONS for type.

2.2 DOWNPIPES

Complete with stand-off brackets, galvanized screw fixed. Refer to SELECTIONS for type.

Components**2.3 DROPPERS**

Steel or plastic droppers, sized to fit inside the downpipe.

3 EXECUTION**Conditions****3.1 HANDLE AND STORE**

Handle and store 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. Avoid exposure to sunlight if strippable film is still on the product.

3.2 SUBSTRATE

Check that fascia, barge 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 fixing and jointing of the spouting for thermal movement in the length of the spouting. Provide an expansion joint in spouting over 12 metres in length for steel gutter.

3.4 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.

Check compatibility of metals used for rainwater goods, against the materials being used for roofing and flashings.

Application - metal

3.5 INSTALL METAL SPOUTING

Establish minimum falls necessary (minimum 1:500) to outlets to prevent ponding and screw fix brackets true-to-line at 900mm centres maximum or 600mm centres maximum when using profile option Box 300. In areas where snow fall is possible and or high wind areas, the centres should be reduced to 450mm. Lap spouting joints in direction of flow, a minimum of 40mm to seal between and over the top of joint and seal with silicone sealant and fix with rivets. Ensure the joint is fixed over its full girth. Cut out neatly for and fit the pre-formed downpipe dropper and rivet and seal around the joint. All installation to **Dimond** details and [NZMRM CoP](#) NZ metal roof and wall cladding Code of Practice recommendations.

3.6 INSTALL METAL DOWNPIPES

Form downpipes complete with cast zinc 115 degree angle bends as needed with all joints lapped and silicone sealed and fixed with 2-4mm diameter aluminium blind rivets. Galvanize screw fix with galvanized steel pipe clips to rigidly stand 40mm off the wall plumb and discharging into stormwater gully or inlet pipe. All installation to **Dimond** details and [NZMRM CoP](#) NZ metal roof and wall cladding Code of Practice recommendations.

Completion

3.7 REPLACE

Replace damaged or marked elements.

3.8 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.

3.9 REMOVE

Remove debris, unused materials and elements from the site.

4 SELECTIONS

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

4.1 DIMOND SPOUTING

Profile: Quad SI
 Base material: Colorsteel
 BMT: 0.55mm
 Coating system: Colorsteel ZR8
Dimond colour: TBA

4.2 DIMOND DOWNPIPES

Profile: Round
Size: 75mm
Base material: Colorsteel
BMT: 0.55mm
Coating system: Colorsteel ZR8
Dimond colour: TBA

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7420 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 tapware and accessories.

Refer to 7430 DRAINAGE for underground drains.

1.2 DOCUMENTS

Documents referred to in this section are:

- [NZBC G1/AS1](#) Personal hygiene
- [NZBC G13/AS1](#) Foul water - Sanitary plumbing
- [NZBC G13/AS3](#) 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
- [Plumbers, Gasfitters and Drainlayers Act 2006](#)

1.3 QUALIFICATIONS

Carry out all work under the direct supervision of a certifying plumber under the [Plumbers, Gasfitters and Drainlayers Act 2006](#).

2 PRODUCTS

2.1 PVC-U WASTE, DISCHARGE AND VENT PIPES

PVC-U pipe to [AS/NZS 1260](#) complete with fittings brand-matched to the pipe manufacturer's requirements.

2.2 EXPOSED PIPES AND TRAPS

Chrome plate on copper pipes and associated copper and brass fittings. White polybutylene or PVC, including all associated fittings.

3 EXECUTION

3.1 EXECUTION GENERALLY - NZBC G13/AS1

Carry out this work and complete all tests to [NZBC G1/AS1](#): 2.0, 3.0 and [NZBC G13/AS1](#).

3.2 ELECTROLYTIC ACTION

Avoid electrolytic action by eliminating actual contact or continuity of water between dissimilar metals.

3.3 INSTALL TRAPS, WASTE AND VENT PIPES - NZBC G13/AS1

Connect waste outlets to traps and run waste pipes and back vents concealed, sized and fixed to [NZBC G13/AS1](#) and [AS/NZS 2032](#). Discharge wastes into the drainage system stack, soil pipe, or gully trap as shown. Bird proof mesh to all roof vents and vermin proof mesh to all untrapped waste pipes.

3.4 PENETRATIONS

At penetrations through constructions provide and fit collars and escutcheon plates to match pipework.

3.5 TEST

Test soil and waste disposal systems to ensure no leakage exists and leave in proper working order.

3.6 CLEAN UP

Remove labels and clean fittings. Remove unused materials from the site.

4 SELECTIONS

7430 DRAINAGE

1 GENERAL

This section relates to the supply and laying of gravity foul water (sewage), stormwater and field drains.

1.1 DOCUMENTS REFERRED TO

Documents referred to in this section are:

| | |
|---|---|
| NZBC B1/AS1 | Structure |
| NZBC E1/AS1 | Surface water |
| NZBC G13/AS2 | Foul Water |
| NZBC G13/AS3 | Plumbing and Drainage |
| AS/NZS 1254 | PVC-U pipes and fittings for Stormwater and Surface Water applications |
| AS/NZS 1260 | PVC-U pipes and fittings for drain, waste and vent applications |
| AS/NZS 2032 | Installation of PVC pipe systems |
| AS/NZS 2033 | Installation of Polyethylene pipe systems |
| AS 2439.1 | Perforated Plastics Drainage and Effluent Pipes and Fittings - Perforated drainage pipe and associated fittings |
| AS/NZS 2566.1 | Buried Flexible Pipelines - Structural Design |
| AS/NZS 2566.2 | Buried Flexible Pipelines - Installation |
| NZS 3104 | Specification for concrete production |
| AS/NZS 3500.2:2003 | Plumbing and drainage - Sanitary plumbing and drainage |
| NZS 3604 | Timber-framed buildings |
| NZS 4229 | Concrete masonry buildings not requiring specific engineering design |
| AS/NZS 4671 | Steel reinforcing materials |
| AS/NZS 5065 | Polyethylene and polypropylene pipes and fittings for drainage and sewerage applications |
| Plumbers, Gasfitters and Drainlayers Act 2006 | |

1.2 AS-BUILT DRAWINGS

Supply a 1:100 scale as-built drawing of drains and fittings to the territorial authority and to the owner on completion.

1.3 QUALIFICATIONS

Drainlayers to be experienced, competent and familiar with the materials and techniques specified. Carry out all work under the direct supervision of a certifying drainlayer under the [Plumbers, Gasfitters and Drainlayers Act 2006](#).

2 PRODUCTS

2.1 CONCRETE

17.5 MPa prescribed mix to [NZS 3104](#).

2.2 REINFORCEMENT

Plain round and/or deformed steel bars, Grade 300 to [AS/NZS 4671](#).

2.3 PVC-U PIPES

PVC-U pipes bends, junctions, fittings and joints to [AS/NZS 1254](#) and [AS/NZS 1260](#).

Underground PVC-U pipe to be Classified as follows:

| Classification | Use |
|----------------|---|
| SN4 - SN6 | Domestic & light load areas |
| SN8 - SN10 | Commercial & Industrial medium load areas |
| SN16 | Public roads & high load areas |

2.4 GULLY TRAPS - NZBC G13/AS2

To [NZBC G13/AS2](#): 3.3 Gully traps, complete with grating.

2.5 DRAINAGE 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; excluding topsoil. |
| Ordinary: | Top soil or other excavated materials. |

3 EXECUTION

3.1 EXCAVATE

Excavate for drains to a firm even base with correct gradients set in straight runs.

Trenches running parallel, below and close to foundations of buildings to [NZS 3604](#) or [NZS 4229](#) to be separated to:

- [NZBC E1/AS1](#), 3.9.7, **Proximity of Trench to Building**, for stormwater and subsoil drains.
- [NZBC G13/AS2](#), 5.6, **Proximity of Trench to Building**, for foul water drains.

3.2 MANUFACTURER'S REQUIREMENTS

All drainage installations to the pipe and fitting manufacturer's requirements.

3.3 DRAINAGE GENERALLY - NZBC G13/AS2 & NZBC E1/AS1

Carry out drainage work and tests to [NZBC G13/AS2](#) (foul water), [NZBC E1/AS1](#) (stormwater). Lay uPVC pipe systems to relevant sections of [AS/NZS 2032](#), NZS 2566.1 and [AS/NZS 2566.2](#). Lay polyethylene pipes and fittings to relevant sections of [AS/NZS 2033](#) and NZS 2566.1.

3.4 LAY FOUL WATER DRAINS

Lay drains in straight runs to correct gradients, to discharge into the network utility operator's sewer. Set inspection fittings on a concrete base.

3.5 INSTALL GULLY TRAPS

Set on concrete 50mm above the surrounding ground or paving and brought up to protect the top of the fitting. Trowel off.

3.6 LAY STORMWATER DRAINS

Confirm the required location of downpipes and finished ground levels before commencing pipework. Set downpipe bends in concrete with the concrete brought up to protect the top of the bend from damage. Lay drains in straight runs to correct gradients to discharge into the network utility operator's stormwater system.

3.7 CONCRETE ENCASEMENT

Concrete encase shallow drains and drains under driveways, on a 100mm deep 17.5 MPa concrete bed reinforced with three 10mm mild steel bars.

Surround pipes with a polythene membrane to allow movement and encase in 100mm 17.5 MPa concrete.

3.8 FIELD TEST

Field test drains for watertightness (PVC-U to [AS/NZS 2032](#) or AS/NZS 2566. 2 Appendix N) to the satisfaction of the territorial authority inspector.

3.9 BACKFILL

Backfill drain lines in 150mm layers, well tamped but without disturbing the drains. Finish off with 150mm of topsoil, slightly mounded above the finished ground line.

4 SELECTIONS

4.1 PVC-U PIPES

Brand/type: 100mm uPVC

7701 ELECTRICAL BASIC

1 GENERAL

This section relates to the wiring for domestic installations, including:

- power
- lighting

1.1 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:

| | |
|------|--|
| CFL | compact fluorescent lamp |
| ELV | extra low voltage |
| GLS | general lighting service |
| IP | international (ingress) protection classification |
| LCD | liquid crystal display |
| LED | light emitting diode |
| MCB | miniature circuit breaker |
| NUO | Network Utility Operator |
| PCB | printed circuit board |
| PIR | passive infrared |
| RCBO | residual current-operated circuit breaker with over current protection |
| RCCB | residual current-operated circuit breakers |
| RCD | residual current device |
| SIA | security integration architecture |
| TPS | tough plastic sheathed |
| TCF | Telecommunications Carriers' Forum |

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 F6/AS1 | Visibility in escape routes |
| NZBC F7/AS1 | Warning systems |
| NZBC G4/AS1 | Ventilation |
| NZBC G9/AS1 | Electricity |
| AS/NZS 1125 | Conductors in insulated electric cables and flexible cord |
| AS/NZS 1768 | Lightning protection |
| AS/NZS 2201.1 | Intruder alarm systems - Client's premises - Design, installation, commissioning and maintenance |
| AS 2293.1 | Emergency escape lighting and exit signs for buildings - System design, installation and operation |
| AS 2293.3 | Emergency escape lighting and exit signs for buildings - Emergency escape luminaires and exit signs |
| AS/NZS 3000 | Electrical installations (known as the Australian/New Zealand Wiring Rules) |
| AS/NZS 3008.1.2 | Electrical installations - Selection of cables - Cables for alternating voltages up to and including 0.6/1 kV - Typical New Zealand installation conditions |
| AS/NZS 3100 | Approval and test specification-general requirements for electrical equipment |
| AS/NZS 3112 | Approval and test specification - Plugs and socket-outlets |
| AS/NZS 3113 | Approval and test specification - Ceiling roses |
| AS/NZS 3190 | Approval and test specification - Residual current devices (current-operated earth-leakage devices) |
| AS/NZS 3350.1 | Safety of household and similar electrical appliances - General requirements |
| AS/NZS 3439.3 | Low-voltage switchgear and controlgear assemblies - Particular requirements for low-voltage switchgear and controlgear assemblies intended to be installed in places where unskilled persons have access for their use - Distribution boards |
| AS 3786 | Smoke alarms |
| NZS 4514 | Interconnected smoke alarms for houses |
| AS/NZS 5000.2 | Electric cables - Polymeric insulated - for working voltages up to and including 450/750v |
| AS/NZS 60598.2.2 | Luminaires - Particular requirements - Recessed luminaires |
| IEC 61643 | Components for low voltage surge protection devices |
| | Electricity (Safety) Regulations 2010 |
| | TCF Premises Wiring Code of Practice 2011 |

Warranties

1.3 WARRANTY

Warrant the complete electrical installation under normal environmental and use conditions against failure of materials and execution.

1 year: Warranty period

Requirements

1.4 COMPLY

Comply with the Electricity (Safety) Regulations 2010, [AS/NZS 3000](#), [AS/NZS 3008.1.2](#) and [TCF](#) Premises Wiring Code of Practice for listed and prescribed work and with the utility network operator's requirements. Apply for the service connection. Arrange for the required inspections of listed work. Pay all fees.

1.5 QUALIFICATIONS

Carry out work under the supervision of an electrical licensed supervisor.

1.6 SAFETY OF INSTALLATION - DESIGN BY ELECTRICAL ENGINEER

Before installation work commences obtain from the electrical engineer a declaration of conformity. The declaration of conformity is to comply with the Electrical (Safety) Regulations (2010), regulations 57 and 58.

1.7 SAFETY OF INSTALLATION - DESIGN BY ELECTRICIAN

Before installation work commences provide a declaration of conformity. The declaration of conformity is to comply with the Electrical (Safety) Regulations (2010), regulations 57 and 58. It must be signed by the designer of the installation.

1.8 ELECTRICAL CERTIFICATE OF COMPLIANCE

Supply a certificate of compliance (CoC) to the owner, and if required the NUO, as required by the Electricity (Safety) Regulations (2010), prior to connection.

- Arrange for the NUO to inspect before the meter installation, listed work inspection, polarity check and supply becoming live.
- Arrange for an inspector to inspect as required by regulation 70.

1.9 ELECTRICAL SAFETY CERTIFICATE

Provide an Electrical Safety Certificate (ESC), as required by the Electricity (Safety) Regulations 2010, to the owner and when required the BCA. To be provided at completion of the work, prior to Practical Completion.

2 PRODUCTS**2.1 MAINS SUPPLY, SINGLE PHASE**

Tough plastic sheathed neutral screened cable to [AS/NZS 4961](#) and [AS/NZS 3008.1.2](#), with a minimum rating of 60 amps per phase. Include pilot cable where required by network utility company.

2.2 CABLES

Tough plastic sheathed copper conductors to [AS/NZS 5000.2](#), stranded above 1.0mm², and to [AS/NZS 3008.1.2](#). Minimum sizes as below. Increase sizes if the method of installation, thermal insulation, cable length or load will reduce the cable rating below that of the MCB rating, or produce an excessive voltage drop.

Lighting circuits: Domestic: 1.5mm² on 10 amp MCBs

Lighting circuits: Commercial: 1.5mm² on 16 amp MCBs

Power circuits: 2.5mm² on 16 amp MCBs for domestic and unenclosed or unfilled cavity construction
 2.5mm² on 16 amp MCBs for domestic insulated construction, or filled cavity
 2.5mm² on 20 amp MCBs for unenclosed or unfilled cavity construction
 2.5mm² on 16 amp MCBs for insulated construction, or filled cavity, or lengths over 30 metres

Hot water cylinder circuits: Single phase: 2.5mm² on 20 amp MCBs

Range/oven/hob circuits: Single phase: 6mm² on 32 amp MCBs

Heat resistant cable for final connections to all heated appliances, and high temperature cable in ambient conditions that may be above 35°C.

2.3 METER BOX

Proprietary manufactured, zinc plated powder coated metal case, weatherproof where mounted outdoors, and complete with meter mounting, main switch and fuse.

2.4 DISTRIBUTION BOARD

Flush surface mount boards manufactured to [AS/NZS 3439.3](#) and installed in accordance with [AS/NZS 3000](#). Manufactured from engineering grade resin with a glow wire rating of 850°C, complete with neutral and earth busbars, and insulated comb phase bar. Distribution boards to have 20% spare capacity for future additions and alterations.

2.5 CIRCUIT PROTECTION

General requirements including main switch 63A or 100A. Residual current protection 30mA, ensure RCCBs' meet Type A and comply with [AS/NZS 3190](#). MCBs to 4.5kA or 6kA rated.

2.6 WALL BOXES

Standard grid size or equivalent to be manufactured from plastic or metal, with 2 or more gang size to be metal with steel inserts for accessory securing screws. Screw fixed.

2.7 SWITCH UNITS

Single pole switches to be 16 amp minimum rated, double pole or intermediate to be 16 amp minimum rated. All switches to be 230 volt a.c. polycarbonate flushplate units. Refer to drawings/schedules for number of switches per unit, dimmer units, neon (indicator or toggle) units and 2 way units.

2.8 HOT WATER SYSTEM SWITCH

One way 20 amp switch complete with cable clamp for flexible PVC conduit to element enclosure.

2.9 SWITCHED SOCKET UNITS

10 amp, 230 volt flat 3 pin socket outlets fitted with safety shutters and manufactured to [AS/NZS 3100](#), [AS/NZS 3112](#) and [AS/NZS 3113](#), single or multi gang as detailed.

2.10 SMOKE ALARMS

Type 1 domestic smoke alarm to [NZBC F7/AS1](#). 1.2 **Descriptions of alarm systems**. Alarm to AS 3786. A wired 230 volt ionised smoke detector type.

2.11 SURGE PROTECTION

Protection for the homes appliances with IEC 61643 Class II surge protection devices fitted to the switchboard. For variable electronic equipment fit IEC 61643 Class III surge protection to switched socket outlets.

2.12 DOOR BELL SYSTEM

Complete with transformer for mounting on distribution board.

2.13 LIGHT FITTINGS

Fluorescent and High Intensity Discharge fittings with low loss control gear and power factor corrected to 0.95 minimum. Control gear suitable for dimming if this is required. All fittings complete with lamps; Incandescent GLS lamps pearl, coiled-coil 230v rated, bayonet cap; Fluorescent triphosphor 2700K; CFL; halogen ELV 12v dichroic reflector with cover glass unless detailed otherwise.

2.14 RESIDENTIAL RECESSED LIGHT FITTINGS

Residential recessed luminaires to [AS/NZS 60598.2.2](#), types IC-F, IC, CA-80 or CA-135 only.

2.15 EXHAUST FANS

Ceiling, wall or duct mounted exhaust fans for ventilation to [NZBC G4/AS1](#), and compliant with [AS/NZS 3350.1](#).

2.16 HEATED TOWEL RAILS

Fixed wired heated towel warmers, double insulated, IPX4 splash-proof, compliant with [AS/NZS 3350.1](#), scratch resistant powdercoated or chrome finish.

3 EXECUTION**3.1 MAIN SUPPLY**

Lay underground mains to the NUO requirements. Excavate trench, install cable and marker tape and backfill.

3.2 METER BOX

Fit to meter box manufacturer's and Electricity Retailer's requirements. Recess into external wall in sheltered area and flash to weatherproof to [NZBC E2/AS1](#) fig 69. Arrange for meter installation and connection.

3.3 DISTRIBUTION BOARD

Fit to [AS/NZS 3000](#) and board manufacturer's requirements. Recess into wall or surface mount and ensure fire containment properties of the enclosure are maintained.

3.4 CIRCUIT PROTECTION

Install MCBs at distribution board to AS/NZS3000 to protect each final sub circuit.

3.5 EARTH BONDS

Bond together and to earth all plumbing fittings not adequately isolated, to [AS/NZS 3000](#), the Electricity (Safety) Regulations 2010 and the fitting manufacturer's requirements.

3.6 MAIN EARTH

Provide a plastic toby box to contain and protect the earth electrode. Fix the connecting earth wiring closely and securely against wall surfaces.

3.7 EARTH LEAKAGE PROTECTION

Install RCD protection to [AS/NZS 3000](#).

3.8 DOMESTIC INSTALLATIONS

Install 30mA RCD protection at the distribution board for all final sub circuits to control socket outlets and lighting except for fixed or stationary cooking equipment, to [AS/NZS 3000](#).

3.9 HIGH RISK AREA INSTALLATIONS

Install 30mA RCDs at the distribution board for areas not covered in Domestic installations, or using fixed wired RCD protected socket outlets in areas that may represent increased risk of electric shock to the user:

- Wet areas: bathrooms, laundries, kitchens.
- Near pools and water features.
- Where intended for use with cleaning equipment.
- Hand-held tools subject to movement in use, i.e. work-shops, garages.

3.10 SET-OUT

The position of outlets and equipment shown on drawings is indicative of requirements. Confirm documents and site conditions are not in conflict with other services or features. Resolve conflicts and discrepancies before proceeding with work affected. Confirm on site the exact location, disposition and mounting heights of all outlets, fittings, equipment, penetrations, and use of exposed wiring. Fix outlet items level, plumb and in line.

3.11 CABLING

Install wiring systems to [AS/NZS 3000](#). All cabling run concealed. No TPS cable laid directly in concrete. Locate holes in timber framing for the passage of cables at the centre line of the timber member. Install cable in conduits where required to pass through concrete or underground. In walls run cabling horizontally and vertically in straight lines. In ceilings either run cabling along ceiling framing or attached to catenary wires. Clip cabling to ceiling framing/catenary wires.

3.12 CABLING CIRCUITS

Install all circuits with the appropriately rated cable and circuit protection. Install with a maximum of 8 light switch units or 4 double or single switched socket units on any circuit. Minimum 2 lighting circuits per floor. Separate circuits for all electric heating appliances. Kitchen sockets to be on at least two different circuits.

3.13 LIGHT FITTINGS

Install light fittings in locations and at heights specified and confirmed by the owner, in accordance with the fitting manufacturer's requirements.

3.14 EXTRA LOW VOLTAGE LIGHTING

Use electronic transformers for ELV lamps, one transformer per lamp. Locate to manufacturer's requirements and as close as practicable to the lamp.

Ensure transformers and rear of light fittings are adequately ventilated and clear of any thermal insulation, to [AS/NZS 3000](#).

3.15 RECESSED LIGHT FITTINGS - CLEARANCE TO INSULATION

Non-residential applications;

The clearance between insulation and recessed downlights;

- Leave 100mm gap to [AS/NZS 3000](#), figure 4.9
- Provide larger gaps where required by the downlight 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 gaps where required by the light manufacturer
- In a retrofit situation where the insulation is non-approved or unknown, ensure 100mm clearance from the insulation to [AS/NZS 3000](#), figure 4.9.

3.16 ELECTRIC HOT WATER SYSTEM

Wire as a separate circuit through a wall-mounted isolating switch, with the cable from switch to element encased in flexible PVC conduit, clamp fixed at each end. Hot water cylinders, thermostats and 3000 watt element supplied and fitted under the hot and cold water system section.

3.17 SMOKE ALARMS

Install Type 1 domestic smoke alarm system to [NZBC F7/AS1 3.0 Domestic smoke alarms](#), NZS 4514 and to the alarm manufacturer's requirements. Fit neatly and without damage to the surrounding finish.

3.18 SURGE PROTECTION

Install surge protection devices to manufacturer's requirements and in accordance with [AS/NZS 3000](#) and AS/NZS 1768. When fitting IEC 61643 Class II protection at the switchboard, protect the device by a dedicated MCB.

3.19 ELECTRIC POWERED FITTINGS AND EQUIPMENT

Install and wire fittings and equipment to individual fittings and equipment manufacturer's requirements. Refer to the drawings for required layouts and locations for equipment. Refer to SELECTIONS for schedules of fittings.

3.20 BATHROOM ELECTRICAL FIXTURES

Install all electrical fixtures. Connect the following bathroom and toilet electrical items:

- Heated towel rails: Install to manufacturers requirements and installed in accordance with [AS/NZS 3000](#) and the [NZBC G9/AS1](#)
- Mirror demisters: Locate centrally above the wash hand basin(s). Connect wiring to room lighting unless specified otherwise.
- Exhaust fans: Install exhaust fans to manufacturer requirements. Installed in accordance with [AS/NZS 3000](#) and [NZBC G4/AS1](#).

3.21 LABELLING

Include label under each controller, switch and circuit breaker on distribution boards. Include a warning notice if light dimmers are used in the installation. List the rating of each circuit.

Completion

3.22 COMPLETION

Leave installation operating correctly, with equipment clean and operational.

4 SELECTIONS

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