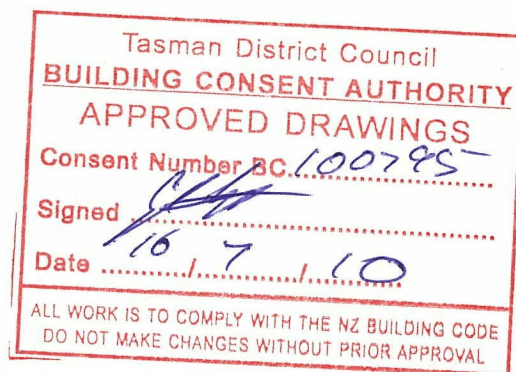


SPECIFICATION

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

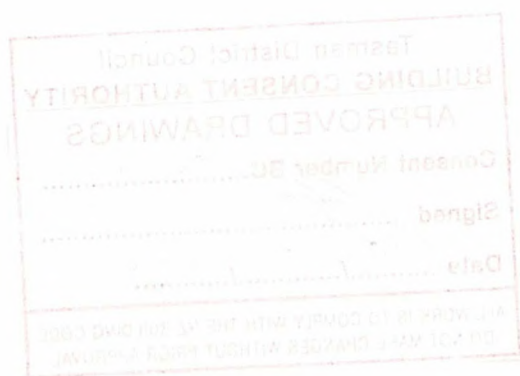
Brown Acres

Villa 15



Date: 28 June 2010

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2201 PREPARATION AND GROUNDWORK

1. GENERAL

This section deals with the clearance, excavation and backfilling of the site area in preparation for footings and floor slabs, and backfilling behind basement retaining walls.

1.1 DOCUMENTS

Documents referred to in this section are:

NZS 3604 Timber framed buildings

OSH Approved code of practice for safety in excavation and shafts for foundations

1.2 SITE SAFETY

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

1.3 ANTIQUITIES AND ITEMS OF VALUE

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

2. PRODUCTS

2.1 EXCAVATED FILL

Material 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.

3. EXECUTION

3.1 EXCAVATION GENERALLY

Carry out excavation to the guidelines set by the OSH publication: Approved code of practice for safety in excavation and shafts for foundations.

3.2 BURNING OF MATERIALS

Burning of materials is not permitted on site.

3.3 PROTECT EXISTING WORK

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

3.4 PROTECT TREES

Protect from damage trees, shrubs, natural site features and existing landscaped areas nominated on the drawings as being retained. Ensure existing levels are undisturbed beneath the dripline of retained trees.

3.5 SURFACE PREPARATION

Comply with NZS 3604, section 3.5, Site preparation. Remove all turf, vegetation, trees, topsoil, stumps and rubbish from the area to be built on.

3.6 UNDERGROUND ELEMENTS AND SERVICES

Break out and remove old foundations, slabs, drainage pipes, manholes, tanks, cables and redundant services. Report for instructions when any unexpected voids, made-up ground or services are encountered. Seal off the ends of drains or remove to territorial authority approval.

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 SHORING AND UNDERPINNING

Carry out shoring and underpinning shown on the drawings and as necessary to prevent subsidence of adjoining public or private property and to ensure the safety of the public and site personnel. Maintain protection throughout the progress of the works, or until foundations and subgrade structures have been completed and the stability of adjoining public and private property secured.

3.9 GENERAL EXCAVATION

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

3.10 ROCK EXCAVATION

If rock is found at any level above the underside of the structural foundations, or above required base levels for site service trenches, immediately notify the owner. Obtain written instructions from the owner on the proposed approach to rock excavation, or consequent alterations to subgrade construction. Confirm any changes with the territorial authority.

3.11 FOUNDATION EXCAVATION

Take foundation excavations to depths shown. Keep trenches plumb and straight, bottoms level and solid, stepped as detailed and clean and free of water.

3.12 INADEQUATE BEARING

If bearing is inadequate then excavate further and backfill with material as follows. Confirm any changes with the territorial authority.

Below slabs on grade:	Hardfill compacted in 150 mm layers
Below footings:	10 MPa concrete
Service trenches:	Hardfill compacted in 150 mm layers

If excavation exceeds the required depths, backfill and compact to the correct level with material as listed.

3.13 GENERAL BACKFILLING

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

3.14 RETAINING WALLS

Backfill behind retaining walls with free draining granular material and compact in 200 mm layers. Ensure any tanking membranes, drain coil and damp-proofing are not damaged.

3.15 SURPLUS MATERIAL

Remove surplus and excavated material from the site.

3101 CONCRETE

1. GENERAL

1.1 DOCUMENTS

Documents referred to in this section are:

AS 1366	Rigid cellular plastics for thermal insulation Part 3 Rigid cellular polystyrene – Moulded (RC/PS – M)
NZS 3101	Concrete structures standard Part 1 The design of concrete structures
NZS 3104	Specification for concrete production
NZS 3109	Concrete construction
NZS 3114	Specification for concrete surface finishes
NZS 3604	Timber framed buildings
AS/NZS 4671	Steel reinforcing materials

2. PRODUCTS

2.1 NORMAL CONCRETE

Normal concrete 20 MPa grade, maximum aggregate size 19 mm ready-mixed to NZS 3104. Provide delivery dockets listing mix and despatch details.

2.2 PRESCRIBED MIX CONCRETE

Prescribed mix concrete 17.5 MPa grade minimum strength, using either separate batching of sand and builder's mix or coarse aggregate to NZS 3104: table 3.1 Grading recommendations for combined and uncombined coarse aggregates.

2.3 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 to AS/NZS 4671.

2.4 TYING WIRE

Mild drawn steel wire not less than 1.2 mm diameter.

2.5 SPACERS AND CHAIRS

Precast concrete or purpose made moulded PVC to approval. Use concrete spacer blocks only where the concrete surface is not exposed in the finished work.

2.6 DAMPPROOF MEMBRANE

0.25 mm 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.

- 3.3 INSTALL DAMPPROOF MEMBRANE**
Apply polythene membrane to prepared basecourse with 150 mm laps between sheets. Tape seal laps and penetrations with 50 mm 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. Do not rebend bars without written approval.
- 3.5 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 laid down in NZS 3109: 3.6 Spacing of reinforcement.
- 3.6 LAPPED SPLICES**
Length of laps where not dimensioned on the drawings in accordance with the 4. SCHEDULES. Increase laps of plain round steel by 100%. Tie all lapping bars to each other.
- 3.7 REINFORCEMENT COVER**
Minimum cover to all reinforcing bars, stirrups, ties and spirals, as shown on the drawings. Where cover is not shown on drawings provide minimum cover to NZS 3101: table 5.5 Minimum required cover. Fix chairs for top reinforcement in slabs at 1.0 metre centres or to ensure adequate support. Cover tolerances to NZS 3109: 3.9 Tolerances for reinforcement.
- 3.8 CASTING IN**

Do not use grounds exceeding 100 mm in length. Location and form of conduits to be approved in writing by the owner. Minimum cover 40 mm. Do not encase aluminium items in concrete. Do not paint steel embedded items more than 25 mm 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 allow for expansion. Do not embed pipes for conveying liquids exceeding a temperature of 50°C in concrete.
- 3.9 CONSTRUCTION JOINTS**
Locate and construct as shown on the drawings.
- 3.10 PRE-PLACEMENT INSPECTION**
Do not place concrete until all excavations, boxing and reinforcing have been inspected and passed by the territorial authority inspector.
- 3.11 SURFACE FINISHES**
To NZS 3114: 105 Specification of finishes, as scheduled or as denoted on the drawings.
- 3.12 EXPOSED CONCRETE**
Formwork linings and surface finishes as nominated for both fair face and concealed or exposed surfaces. Unless detailed, obtain written confirmation of the type and pattern of all joints.
- 3.13 CONCRETE SURFACE TOLERANCES**
To NZS 3114: 104 Surface tolerances and 105 Specification of finishes, with the suggested tolerances becoming the required tolerances.

- 3.14 **PUMPING CONCRETE**
Set up and supervise pump operation, placing and compaction of the mix to NZS 3109: 7.4 Handling and placing and 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.
- 3.15 **COMPACTION**
Use power operated vibrators on foundations, vertical constructions and beams.
- 3.16 **RESIDENTIAL FLOOR SLABS**
Construct to NZS 3604: 7.5 Concrete slab-on-ground floors in timber buildings. Lay to true and straight surfaces, screeded, floated and steel (manual or power) trowelled finish. Tolerance on flatness: maximum 3 mm gradual deviation over a 3 metre straight-edge, to NZS 3109: 104 Surface tolerances.
- 3.17 **SAW CUTS**
Cut slabs where indicated on the drawings and as required to control shrinkage cracking. Carry out cutting as soon as possible, without causing tear-out of aggregate and before shrinkage cracking has occurred, generally within 24 hours of pouring. Where saw cuts are made, cut out 100 mm of every second wire of the mesh for a length of 50 mm each side of the saw cut position. Saw cuts: $\frac{1}{3}$ slab depth or 30 mm minimum.
- 3.18 **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.
- 3.19 **CLEAN OUT**
Clean out saw cuts. Fill with cement grout where the floor will be covered with carpet or vinyl.
- 3.20 **REMOVE**
Remove all unused materials and all concrete and reinforcing debris from the site.
- 4. SCHEDULES**
- 4.1 **DAMPPROOF MEMBRANE**
Brand Type Polythene 250mu
- 4.2 **FLOOR SLABS AND PAVEMENTS**
Surface finish class: NZS 3114, table 2

3301 CONCRETE MASONRY

1. GENERAL

This section deals with the supply and laying of concrete masonry, the supply and laying of associated reinforcing steel and the grouting of walls, all to NZS 4229. Modify this section when specific design, Grade C, to NZS 4230 is proposed. The section also deals with the use of self-insulating concrete masonry.

1.1 DOCUMENTS

Documents referred to in this section are:

NZBC B1/AS1	Structure general, 2.0 Masonry
NZS 3103	Sands for mortars and plasters
NZS 3109	Concrete construction
NZS 3604	Timber framed buildings
NZS 4210	Masonry construction: Materials and workmanship
NZS 4229	Concrete masonry buildings not requiring specific engineering design
NZS 4230	Design of reinforced concrete masonry structures
AS/NZS 4455	Masonry units and segmented pavers
AS/NZS 4671	Steel reinforcing materials

1.2 QUALIFICATIONS

Carry out all masonry work with people competent and experienced in this type of work, under the supervision of a registered mason or a suitably qualified tradesperson as required in NZS 4229 and NZS 4210. Blocklayers are to hold a current NZ Masonry Trades Association Certificate.

The registered mason is to certify in writing to the owner that the observation and work has been carried out in accordance with the relevant NZ Standards. Note that some Building Consent Authorities may require a Producer Statement Construction.

1.3 CONSTRUCTION CONTROL

Supervise masonry construction to the requirements of NZS 4230: table 3.1, Observation types, admissible use and nominal strengths.

2. PRODUCTS

2.1 MASONRY UNITS

To AS/NZS 4455.

2.2 REINFORCEMENT

To AS/NZS 4671 and as detailed.

2.3 MORTAR

Sand to NZS 3103. Chloride levels to not exceed 0.04% by dry weight of sand. Mortar to NZS 4210: section 2.2, Mortar. Compressive strength of not less than 12.5 MPa.

2.4 GROUT

To NZS 4210: section 2.3, Grout. Spread value 450 – 530 mm.

2.5 WATER

Clean, fresh and free from excess alkali, salt, silt and organic materials. Water from a local authority water supply is acceptable.

3. EXECUTION

3.1 MASONRY CONSTRUCTION GENERALLY

To NZS 4210 and NZS 4229.

3.2 STORAGE

Store masonry units clear of the ground, under cover and well ventilated until placed in the work.

- 3.3 **MOISTURE CONTENT**
Ensure masonry units are air dry prior to laying.
- 3.4 **CHECK BASE CONCRETE**
Ensure the base concrete is true to line and level, requiring a base mortar bed of 10 mm (minimum) to 20 mm (maximum). Ensure that all laitance, loose aggregate, or anything preventing bond is removed prior to laying masonry units.
- 3.5 **STARTER POSITIONS**
Before commencing laying masonry units, check the location of starter reinforcement by measure or by a dry trial lay up of the first course. Do not correct misplacement by cranking bars. Where misplacement exceeds the location tolerance, obtain written direction before proceeding.
- 3.6 **REINFORCEMENT AND GROUTING**
Reinforcement detailed, bent and placed to NZS 4210: section 2.6, Reinforcing details. Refer to drawings for details of reinforcement and extent of grout filling.
- 3.7 **COVER**
Cover to NZS 3109: 3.8 Cover and 3.9 Tolerances for reinforcement. Minimum cover as required for reinforced concrete, with grout and masonry treated as a homogeneous material. Maintain reinforcing bars for retaining walls and bond beams, a minimum of 15 mm and for other masonry a minimum of 9 mm from the masonry work face, with the space filled with grout.
- 3.8 **TOLERANCES**
Construct within the tolerances set out in NZS 4210: clause 2.6.5, Tolerances, and clause 2.7.1, General. Lay masonry units with bedding of consistent thickness throughout.
- 3.9 **PROTECTION**
Protect fair-faced masonry walls, keeping them clear of mortar droppings, grout splashes, or stains of any kind.
- 3.10 **LAY MASONRY UNITS**
Ensure consistent, fully filled and tooled joints. Where walls are reinforced, prevent mortar droppings from entering the cells to be grouted. Provide clean out holes at base of wall, unless "low lift" (NZS 4210) grouting is used. Ensure reinforcement is accurately placed and tied. Lay in regular running bond with all necessary special units and sill units. Cut masonry, if necessary, true and square without chipping.
- 3.11 **MASONRY UNITS JOINTS**
Not exceeding 10 mm thick, or less than 8 mm when the units are bedded in. Joints tooled concave, unless detailed otherwise.
- 3.12 **CONTROL JOINTS**
Locate at major changes of wall height or thickness, at openings, and at not more than 8 metre centres, or, as shown on the drawings. Where reinforcement passes through a control joint, provide for breaking bond using methods detailed on NZS 4210: figure 2, Control joint, unless specifically detailed otherwise.
- 3.13 **BRACING**
Provide sufficient temporary lateral bracing to ensure stability until the final supporting construction is in place.
- 3.14 **PRE-GROUTING INSPECTION**
Inspect walls prior to grouting. Ensure cells are clean and reinforcement is correctly placed. Where "high lift" (to NZS 4210) grouting is used, seal the clean out holes and brace to prevent blow outs.
- 3.15 **GROUTING OF CELLS**
Grout all masonry cells below finished grades, all cells in retaining walls and all cells containing reinforcing.

- 3.16 **GROUT CELLS**
Grout all masonry unit cells.
- 3.17 **GROUTING PROCEDURE**
Use procedures set out in NZS 4210. Methods acceptable on this project are:
- high lift grouting with expansive admixture
- high lift grouting with reduced compaction
- low lift grouting.
- 3.18 **CONSTRUCTION JOINTS**
Form and treat construction joints between grout pours and between masonry walls and hardened concrete work to ensure bonding occurs. Comply with NZS 4210: section 2.16, Horizontal control joints.
- 3.19 **MORTAR IN COMPONENTS**
Mortar in components such as sills, copings, lintels, and steps, as work proceeds.
- 3.20 **BUILD IN**
Build in plugs, bolts, ties, metal flashings, dowels, fastenings and fixings as required by all trades and as shown on the drawings.
- 3.21 **PROGRESSIVE CLEANING**
Clean off mortar splashes and grout spills as they occur, making good any damage at the same time.
- 3.22 **FINAL CLEANING**
Clean down masonry work and remove waste material from adjoining surfaces and floors at completion.
- 3.23 **REMOVE**
Remove from the site materials not used.

3801 CARPENTRY

1. GENERAL

This section deals with the supply and erection of light timber framing, floors, flooring underlays for ceramic tiling and insulation.

1.1 DOCUMENTS

Documents referred to in this section are:

AS/NZS 1748	Mechanically stress-graded timber
AS/NZS 1860.1	Particleboard flooring - Specifications
AS/NZS 2269	Plywood - Structural
AS/NZS 2904	Damp-proof courses and flashings
NZS 3602	Timber and wood-based products for use in building
NZS 3603	Timber structures standard
NZS 3604	Timber framed buildings
NZS 3606	Manufacturer of glue-laminated timber
NZS 3631	New Zealand national timber grading rules
NZS 3640	Chemical preservation of round and sawn timber
AS/NZS 4347	Damp-proof courses and flashings – Methods of test
BRANZ Bulletin 453	Fasteners selection
BRANZ Bulletin 368	Preventing moisture problems in timber framed skillion roofs

1.2 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 and treatment to NZS 3640. Either mechanically stress graded to AS/NZS 1748, or visual grading to NZS 3631.

2.2 TIMBER TRUSSES

Moisture content: 16% at supply

2.3 TIMBER TRUSSES, CHEMICAL FREE

Moisture content: 16% at supply

2.4 PLYWOOD

Structural plywood to AS/NZS 2269 for bracing, bracketing, sarking and floors.

2.5 NAILS

Steel, stainless steel and galvanized steel of pattern to suit the location and to BRANZ Bulletin 453 Fasteners selection.

2.6 BOLTS AND SCREWS

Steel, stainless steel and galvanized steel of pattern to suit the location and to BRANZ Bulletin 453 Fasteners selection.

2.7 NAIL PLATES

Stainless steel and/or galvanized steel toothed or nailed plates to the plate manufacturer's design for the particular locations as shown on the drawings.

2.8 CONNECTORS

Galvanized steel connectors and structural brackets to the connector manufacturer's design for particular locations shown on drawings.

2.9 POLYETHYLENE DPC

Polyethylene film to AS/NZS2904 and embossed on both sides. Thickness 500 microns minimum, manufactured for use as a damp-proof course and concealed flashings to doors and windows.

- 2.10 **BITUMINOUS IMPREGNATED DPC**
Heavy Kraft impregnated with high grade bitumen and coated with higher heat resistant bitumen to AS/NZS 2904 and AS/NZS 4347.
3. **EXECUTION**
- 3.1 **EXECUTION GENERALLY**
To NZS 3603 and 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 6 mm; or
- a 12 mm 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 WRAPS, UNDERLAYS AND SHEET INSULATION PRODUCTS**
Refer to WALL CLADDING and THERMAL INSULATION for the installation of wall wraps, underlays and sheet insulation.
- 3.10 **DPC TO LOSP TREATED TIMBER**
Lay polyethylene DPC under LOSP treated bottom plate of all external timber framed walls on concrete, in a single layer with 50 mm overlaps at joints to provide a waterproof barrier.
- 3.11 **DPC TO TIMBER**
Lay bituminous DPC under the bottom plate of all external timber framed walls on concrete, in a single layer with 50 mm overlaps at joints to provide a waterproof barrier.

4201 WALL CLADDING

1. GENERAL

This section deals with the supply and installation of exterior cladding, including any associated flashings and any timber fascias, barges, trims, beads and facings.

1.1 DOCUMENTS

Documents referred to in this section are:

NZBC E2/AS1	External moisture
	9.0 Wall claddings
	9.1 General
	9.4 Timber weatherboards
AS/NZS 1491	Finger jointed structural timber
AS/NZS 2269	Plywood - Structural
AS/NZS 2908.2	Cellulose-cement products - Flat sheets
NZS 3602	Timber and wood-based products for use in building
NZS 3604	Timber framed buildings
NZS 3617	Profiles of weatherboards fascia boards and flooring
NZS 3631	New Zealand national timber grading rules
BRANZ Bulletin 441	Sealed joints in external claddings - 2. Sealants
BRANZ Bulletin 465	Domestic flashing installation
BRANZ Bulletin 467	Principles of flashing design

1.2 PERFORMANCE

Accept responsibility for the weathertight performance of the completed cladding system, including all penetrations.

2. PRODUCTS

2.1 BUILDING WRAPS AND UNDERLAYS

Thermakraft 215 Bituminous self supporting underlay and building wrap
Breather type, waterproof, to NZBC E2/AS1, table 23: Properties of roof underlays and building wraps.

2.2 STRUCTURAL PLYWOOD

Structural plywood to AS/NZS 2269.

2.3 TIMBER WEATHERBOARD

Dressing grade to NZS 3631, to NZS 3617 for profile and treated to NZS 3602, table 2, reference 2.A1, Requirements for wood-based building components to achieve a 15-year durability performance. 200mm rusticated Cedar band sawn No 1 timber.

2.4 FIBRE-CEMENT SOFFIT LINING

Cellulose cement autoclaved sheets to AS/NZS 2908.2.

2.5 TIMBER FASCIAS AND BARGE BOARDS

Dressing grade to NZS 3631 and treated to NZS 3602, table 2, reference 2A.3, Requirements for wood-based building components to achieve a 15-year durability performance. Finger jointed timber to AS/NZS 1491.

2.6 PVC JOINTERS

To suit sheet thickness.

2.7 NAILS, SCREWS AND FASTENINGS

Metal, size and pattern, to cladding manufacturer's requirements and complying with the relevant aspects of NZS 3604, section 4: Durability.

2.8 FLASHINGS

Material, grade and colour as detailed and scheduled. Ensure that materials used for flashings are compatible with the window frame materials and fixings and cladding materials and fixings.

3. EXECUTION

3.1 MOISTURE CONTENT

Maximum allowable moisture content to NZS 3602 for:
Equilibrium moisture content (EMC)

- Framing: 20% at closing in
- Weatherboards: 14% at time of fixing
- Exterior joinery and trim: 14%

3.2 EXECUTION METHODS AND PRACTICES

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).

3.3 FIX WRAPS AND UNDERLAYS

Fix to framing, with laps and fixing to the cladding manufacturer's requirements.

3.4 PENETRATIONS

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

3.5 INSTALL PLYWOOD

Install to the plywood manufacturer's requirements. Refer to the plywood manufacturer's literature for fixing details and NZS 3604 for fixings durability requirements for specific provisions.

3.6 INSTALL TIMBER WEATHERBOARDS

Install level, true to line and face, to NZBC E2/AS1: 9.4 Timber weatherboards, and to NZS 3604, section 11.5.2, timber weatherboards. Refer to NZS 3604 for fixings durability requirements for specific provisions.

3.7 INSTALL FIBRE CEMENT SOFFITS WITH JOINTERS AND CAPPING MOULDS

Cut sheets dry and scribe fit to fully support all edges and joints. Nail and drill for and insert fasteners to the sheet manufacturer's requirements. Fit complete with jointers and capping moulds. Refer to the cladding manufacturer's literature for fixing details and NZS 3604 for fixings durability requirements for specific provisions.

3.8 INSTALL EXTERIOR TIMBER FINISHINGS

Install timber fascias, barge boards, facings, beads, trim and enclosures level, true to line and face, with all end grain sealed and joints mitred.

3.9 INSTALL FLASHINGS

Install flashings, covers and soakers as detailed on the drawings and to BRANZ Bulletins 467 Principles of flashing design and 465 Domestic flashing installation.

3.10 USE OF SEALANTS

Selection and use of sealants to follow BRANZ Bulletin 441 Sealed joints in external claddings - 2. Sealants.

3.11 COMPLETE

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

3.12 REPLACE

Replace damaged or marked elements. Remove unused materials from the site.

4203 BRICK VENEER CLADDING

1. GENERAL

1.1 DOCUMENTS

Documents referred to in this section are:

NZBC B1/AS3	Small chimneys
AS/NZS 2699	Built in components for masonry construction 2699.1 Wall ties
NZS 3103	Sands for mortars and plasters
NZS 3117	Specification for pigments for Portland cement and Portland cement products
NZS 3604	Timber framed buildings
NZS 4210	Masonry construction: Materials and workmanship
AS/NZS 4455	Masonry units and segmental pavers

BRANZ Bulletin 436: Masonry veneer construction

1.2 QUALIFICATIONS

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

2. PRODUCTS

2.1 BRICKS

To AS/NZS 4455.

2.2 SILL TILES

Bricks To AS/NZS 4455..

2.3 VENEER TIES

To AS/NZS 2669.1, as modified by NZBC B1/AS1.

2.4 SAND FOR MORTAR

Sand to comply with NZS 3103. Chloride levels to not exceed 0.04% by dry weight of sand.

2.5 MORTAR

Composed of Portland cement, sand and water with an admixture to the provisions of NZS 4210, clause 2.2. Obtain written approval of admixture to be used. Also obtain written approval if intending to use cement mortar as a damp proof course and where, or if intending to use hydrated lime in the mortar.

2.6 MORTAR COLOUR

Add mineral oxide pigment conforming to NZS 3117 and to requirements of NZS 4210, clause 2.2.2.2(f).

2.7 WATER

Clean, fresh and free from excess alkali, salt, silt and organic materials. Water from a local authority water supply is acceptable.

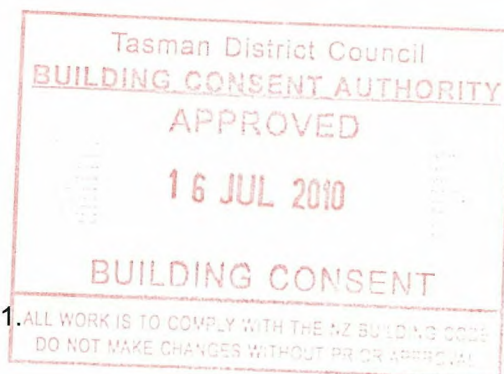
3. EXECUTION

3.1 VENEER WORK

To NZS 3604, section 11.7, NZS 4210, section 2.9 and BRANZ Bulletin 436.

3.2 DETAILING

Where not otherwise detailed on the drawings or covered in the documents listed, carry out veneer construction to the details required by BRANZ Bulletin 436.



- 3.3 **STORAGE**
Store bricks and other materials clear of the ground, under cover and well ventilated until placed in the work.
- 3.4 **LAY BRICKS**
To NZS 4210. Ensure bricks are dry when laid. Use bricks equally off all pallets as work proceeds. Distribute facing bricks of varying colour randomly throughout so no patches or striping appears.
- 3.5 **BOND**
Stretcher bond, single width unless detailed or stated otherwise.
- 3.6 **INSTALLING VENEER WALL TIES**
Fix to face of studs without otherwise piercing or damaging the building paper. Ties placed and spaced to NZS 4210, section 2.9.7, as modified by NZBC B1/AS1. Install to NZS 3604, clause 11.7.5.3.
- 3.7 **MORTAR**
To maximum practical density. Mortar fully laid, firmly placed, correctly cured and not re-tempered. Discard any mortar not used within 1½ hours of mixing.
Joint thickness: 10 mm ±1 mm.
- 3.8 **RAKE OUT**
Rake out joints as work proceeds, for pointing as detailed. Maximum depth of rake.
- 3.9 **WEEPHOLES**
Weep holes to NZS 3604, clause 11.7.4.3 and to BRANZ Bulletin 436.
- 3.10 **CO-ORDINATE**
Co-ordinate the building-in of all exterior joinery and items required to be fitted as the work proceeds. Rake out for or build in flashings as required.
- 3.11 **KEEP CAVITY AND TIES CLEAR**
Keep cavity and ties clear of mortar droppings and clean the brickwork face of any marking as the work proceeds. Repair damage to building paper immediately it occurs.
- 3.12 **CLEAN DOWN**
Clean down brickwork to remove stains. Remove efflorescence with a stiff bristle broom, blot with a damp sponge and wash walls with a plentiful supply of clean water during fine weather.
- 3.13 **TAKE AWAY**
Remove from the site materials not used.

4. SCHEDULES

- | | | |
|-----|--|---|
| 4.1 | BRICKS
Brand Type
Size | Austral Bricks 70 series
70mm x 230mm x 75mm |
| 4.2 | SILL TILES
Brand Type | Austral Bricks 70 series |
| 4.3 | VENEER TIES
Brand Type
Size | Lumerlock
Galvanised 80mm screw tie |

4302 TILE ROOFING

1. GENERAL

1.1 DOCUMENTS

Documents referred to in this section are:

NZBC E2/AS1	External moisture
	4.0 Flashings
	5.0 Roof/wall junctions
	8.0 Roof claddings
	8.1 General
	8.3 Pressed metal tiles

NZS 3602	Timber and wood-base products for use in building
NZS 3604	Timber framed buildings
NZS 4217	Pressed metal tile roofs

1.2 QUALIFICATIONS

Carry out roofing work using experienced, competent roofers familiar with the materials and techniques specified.

1.3 WIND AND EARTHQUAKE LOADINGS

Use fixings and methods capable of sustaining the loads appropriate to the area as set out in NZS 3604, section 5.

1.4 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.

1.5 PERFORMANCE

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

2. PRODUCTS

2.1 TILE BATTENS

Douglas fir, or No 1 framing radiata pine to NZS 3602, table 1E. Size to NZS 3604, section 10.

2.2 UNDERLAY

Self Supporting Breather type kraft paper laminates.

2.3 METAL ROOFING TILES

Pressed steel sheet galvanised to NZS 3403, aluminium/zinc coated to AS 1397. Finish as specified. Accessories, cappings, flashings, and fixings to match and to the roofing manufacturer's requirements.

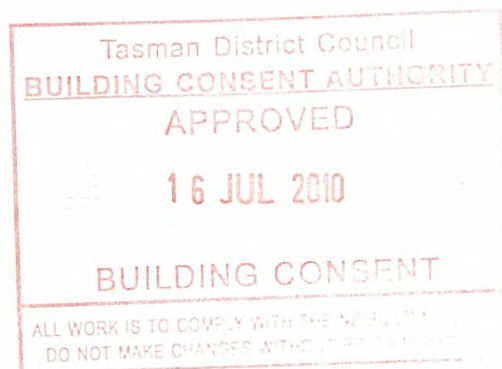
2.4 NAILS, SCREWS AND FASTENINGS

Metal, size and pattern, to roofing manufacturer's requirements and complying with the relevant aspects of NZS 3604, section 4: Durability.

3. EXECUTION

3.1 STORAGE

Stack roofing and accessories on clean, level areas of the site and protect from damage and from weather until ready to fix in place. Avoid overloading roof structure when roofing materials are placed on the roof area prior to installation.



- 3.2 **LAY ROOF UNDERLAY**
Lay and fix to NZBC E2/AS1: 8.1.5 Underlays, NZS 3604, section 11.2.2 and the roofing manufacturer's requirements.
- 3.3 **LAY ROOFING, GENERALLY**
Take care to avoid damaging pre-finished roofing both during and after fixing. Wear only soft-soled shoes on the finished surface.
- 3.4 **INSTALL TILE BATTENS**
Install the tile battens to the roofing manufacturer's requirements and with all joints fully supported and staggered.
- 3.5 **CUT METAL TILES**
Cut with tools specified by the roofing manufacturer. Fold ends and seal cut edges of tiles and accessories without damaging their integrity or finish, all to the roofing manufacturer's requirements.
- 3.6 **LAP METAL TILES**
Lap metal tiles and fix complete with matching accessories, flashed to roof features and penetrations; all to the roofing manufacturer's requirements and NZS 4217.
- 3.7 **FIXINGS**
Refer to the roofing manufacturer's literature for fixing details and to NZS 3604 for fixings durability requirements.
- 3.8 **INSTALL COVERS AND FLASHINGS**
Install and fix as detailed and to the roofing manufacturer's details and to comply with NZBC E2/AS1: 4.0 Flashings, 5.0 Roof/wall junctions and 6.0 Parapets.
- 3.9 **PENETRATIONS**
Flash and overflash all penetrations through the roof.
- 3.10 **PENETRATIONS AND JUNCTIONS**
Check that adjoining walls and parapets are prepared ready for the installation of the roofing. Confirm that openings have been prepared ready for the installation of skylights and other penetrations through the roof. Required work includes the following:
- underlay turned up at wall and parapet lines
 - underlay finished and dressed off to all openings, ready for the installation of skylights and other penetrations
 - roofing installation neatly finished to all sides of openings and to all wall and parapet junctions
 - installation of flashings (those required to be installed prior to installation of penetrating elements and/or wall linings).
- 3.11 **USE OF SEALANTS**
Select and use sealants only as recommended by the roofing manufacturer.
- 3.12 **COMPLETE**
Ensure the work is complete with all flashings, undercloaks, valleys, ridges and hips properly installed so the finished roof is completely weathertight.
- 3.13 **REMOVE FILINGS**
Remove metal filings from roofing surfaces at least daily.

4502 ALUMINIUM WINDOWS AND DOORS

1. GENERAL

This section deals with the manufacture, supply and installation of aluminium windows and doors and associated flashings.

1.1 RELATED SECTIONS

Refer to GLAZING for glazing for type and thickness.

1.2 DOCUMENTS

Documents referred to in this section are:

NZS 3604	Timber framed buildings
AS 3715	Metal finishing - Thermoset powder coatings for architectural applications
NZS 4223	Code of practice for glazing in buildings - Human impact safety requirements
WANZ	Aluminium Window Handbook
WANZ	Specification for powder coatings on architectural aluminium products
WANZ	Installation code for aluminium joinery products
WANZ	Window installation system: An Alternative Solution for the installation of Windows and doors
BRANZ Bulletin 349	Finishes for aluminium

1.3 QUALIFICATIONS

Fabrication by a member of WANZ.

1.7 PERFORMANCE

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

2. PRODUCTS

2.1 WINDOW AND DOOR SECTIONS

Form all aluminium members from extruded sections. Folded sections are restricted to flashings and concealed members only.

2.2 FLASHINGS GENERALLY

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 direct fix systems

2.3 SILL PAN FLASHING

Flashing for direct fix claddings to collect and drain water that may penetrate through the window or door unit. Size to extend from the inner most point of the aluminium frame out over the external face of the cladding.

Components – for cavity systems

2.4 WANZ SUPPORT BAR

Extruded aluminium support bar with built in drainage and ventilation to NZBC E2, to provide continuous support to the window unit.

2.5 WANZ SUPPORT ANGLE

Support angle for use with the sill pan for deeper claddings to transfer the weight of the window back to the frame.

Components

- 2.6 **WINDOW HARDWARE**
Fasteners, stays, locks, vents and other hardware as scheduled. Refer to SELECTIONS for type and finish. Where hardware is not scheduled, use hardware from window manufacturer's standard range. Key alike all lockable window hardware able to be keyed alike.
- 2.7 **DOOR HARDWARE**
Locks, bolts, door rollers, door restrictors, hinges and other hardware as scheduled. Refer to SELECTIONS for type and finish. Where hardware is not scheduled, use hardware from door manufacturer's standard range. Key alike all door locks able to be keyed alike.
- 2.8 **SAFETY STAYS**
Stainless steel non releasable restrictors to limit window opening to NZBC F4/AS1, Table 2, Acceptable opening sizes for barriers.
- 2.9 **FABRICATION SEALANT**
To the window manufacturer's requirements.
- 2.10 **GLAZING TAPE AND GASKETS**
To the window manufacturer's requirements.
- 2.11 **FIXINGS**
Ensure all fixings and bracketing are compatible with aluminium. Do not use electroplated zinc fasteners or brass fastenings.

Finishes

- 2.12 **POWDER COATING FINISH**
To AS 3715 and WANZ Specification for powder coatings on architectural aluminium products. All finished surfaces to show uniformity of gloss and colour (to match approved sample) free of all coating defects.
- 2.13 **ANODISING**
To BRANZ Bulletin 349 "Finishes for aluminium".

3. EXECUTION

- 3.1 **CONFIRM**
Confirm all framing openings on site for dimension, plumb and straightness prior to fabrication or ordering of aluminium joinery.
- 3.2 **EXECUTION GENERALLY**
Execute all fabrication and installation work in accordance with the requirements of NZS 4211, WANZ Aluminium window handbook and WANZ Installation code for aluminium joinery products.
- 3.3 **HARDWARE GENERALLY**
Factory fit all required and scheduled hardware. Account for all keys and deliver separately to the site manager.
- 3.4 **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.
- 3.5 **HANDLING**
Avoid distortion of elements during transit, handling and storage. Prevent pre-finished surfaces from rubbing together. Prevent contact with mud, plaster and cement. Do not deliver to site any elements which cannot be immediately unloaded into suitable conditions of storage.

3.6 CORROSION PROTECTION

Seal or suitably coat cut ends and holes drilled in aluminium before the frames are installed. Before fixing, apply bituminous coatings, slips or underlays between dissimilar metals in contact, or aluminium in contact with concrete.

3.7 CONFIRM PREPARATION OF WALL OPENINGS

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

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
- claddings neatly finished off to all sides of openings
- interior linings neatly trimmed ready for installation of jamb liners and completion of air seals to all sides of openings
- installation of flashings (those which are required to be installed prior to frames).

3.8 FIX FRAMES

Fix frames rigidly in place without distortion, to the window manufacturers and WANZ Aluminium window handbook requirements, plumb, true to line and face, weathertight and with all openings operating freely.

3.9 DRAINAGE

Provide anti-condensation channels to all sills. Sills to sashes and fixed lights to incorporate positive drainage to the exterior.

3.10 INSTALLATION GENERALLY

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

3.11 INSTALLATION DIRECT FIX

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

3.12 INSTALLATION CAVITY CONSTRUCTION

Install to WANZ Installation System details and drawings including WANZ cavity closers, support bars and support angles

Flashings and air seals

3.13 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 jamb facings by 15 mm at each end.

3.14 COMPLETE AIR SEAL

Form an air-tight seal by means of proprietary expanding foam, compressible foam strips, or sealants used with backing rods, applied deep within the reveal to completely fill the gap between joinery and structural framing. Ensure that in combination with the internal linings a complete air seal is created.

Completion items

- 3.15 **SEAL FRAMES ON SITE**
Seal frames to each other and to adjoining structure and finishes, all as required by the window manufacturer and to make the installation weathertight. Do not seal the junction between the sill member and the cladding or sill flashing which must remain open.
- 3.16 **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.
- 3.17 **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.
- 3.18 **MANIFESTATIONS**
To NZS 4223.3, 303.1: Manifestation (making glass visible).
- 3.19 **TRADE CLEAN**
Clean off or remove safety indicators at completion of the building.
- 3.20 **CLEAN FRAMES**
On completion clean down both sides of window and door frames using the methods required by the window and door manufacturer.
- 3.21 **CONFIRM**
Confirm the proper operation of hardware and operating systems on completion of the installation and again at completion of the contract works.
- 4. SELECTIONS**
- 4.1 **WIND ZONE**
Building wind zone: ~ (as determined from table 5.1 of NZS 3604)

4601 GLAZING

1. GENERAL

This section deals with the supply and glazing of glass into external and internal joinery on or off site, and other specialty glasswork (e.g. shower and bath screens, glass balustrade panels and mirrors).

1.1 DOCUMENTS

Documents referred to in this section are:

NZBC B1/AS1	Structure, 7.0 Glazing
NZBC F2/AS1	Hazardous building materials, 1.0 Glazing
NZBC F4/AS1	Safety from falling, 1.0 Barriers in buildings
NZS 3604	Timber framed buildings
NZS 4223.1	Glazing in buildings - The selection and installation of glass in buildings
NZS 4223.3	Glazing in buildings - Human impact safety requirements
NZS 4223.4	Glazing in buildings - Dead, wind and snow loading
AS/NZS 2208	Safety glazing materials in building
AS/NZS 4666	Insulating glass units
AS/NZS 4667	Quality requirements for cut-to-size and processed glass

2. PRODUCTS

2.1 GLASS

Processed glass to AS/NZS 4667, thickness to NZS 4223 parts 1, 3 and 4 unless otherwise specified:

Clear float glass: Clear annealed transparent float glass

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

Laminated glass: Grade A safety glazing material to AS/NZS 2208 with PVB or CIP resin interlayer.

Toughened glass: Grade A safety glazing material to AS/NZS 2208.

Tinted float glass: Body tinted float glass

Special glass, thickness to NZS 4223 parts 1, 3 and 4 unless otherwise specified:

Solar float glass: Coated glass and low-E glass made from float glass

Insulating glass units (IGU's): To AS/NZS 4666 and IGU Manufacturer's Association (IGUMA) requirements.

Components, aluminium glazing

2.2 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.

2.3 SETTING BLOCKS

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

Components, mirrors

2.4 MIRROR ADHESIVE

Adhesive mirror-mastic and double-sided adhesive tape.

3. EXECUTION

3.1 GLAZING GENERALLY

To NZS 4223.1 and for human impact safety glazing to NZS 4223.3.

To AS/NZS 4666 for IGU's.

Application aluminium

3.2 INSTALL GLASS TO ALUMINIUM FRAMES

Install glass to NZS 4223.1.

- Bead glaze to 105.9 Glazing with beads.
- Channel glaze to 105.10 Glazing in grooves

3.3 INSTALL SAFETY GLASS

To NZS 4223.3, as modified by NZBC F2/AS1.

Application mirrors

3.4 MIRRORS, SCREW FIXED

Fix with proprietary countersunk-head screws, fitted with black neoprene washers with fine-threaded upstands to receive chrome plated dome screw covers.

3.5 MIRRORS, CHANNEL MOUNTED

Fix with proprietary mounting channels, to the channel manufacturer's requirements.

3.6 MIRRORS, ADHESIVE FIXED

Fix with adhesive mirror-mastic and double-sided adhesive tape.

Application miscellaneous

3.7 INSTALL GLASS BALUSTRADES

Confirm/design and carry out installation to requirements of NZBC B1/AS1: 7.0 Glazing, NZBC F2/AS1: Glazing and NZBC F4/AS1: Safety from falling: 1.0 Barriers in buildings.

3.8 INSTALL GLASS SCREENS

Install shower and bath screens and doors to manufacturer's requirements. Fix wall channel with silicone sealant.

Finishing

3.9 SAFETY

After glazing indicate the presence of transparent glasses, with whiting, tape or signs compatible with the glass type.

3.10 MANIFESTATIONS

To comply with NZS 4223.3, 303.1. Manifestations (making glass visible)

3.11 TRADE CLEAN

Clean off or remove safety indicators and any temporary protection film at completion of the building.

4701 THERMAL INSULATION

4. GENERAL

This section deals with materials installed, laid, hung or fitted as thermal insulation.

4.1 RELATED SECTIONS

Refer to CONCRETE for insulation under concrete slabs.
Refer to WRAPS, UNDERLAYS AND DPC for building wraps and roofing underlays.
Refer to ROOFING sections for roofing underlays.

4.2 DOCUMENTS

Documents referred to in this section are:

AS 1366.3	Rigid cellular plastic sheets for thermal insulation - Rigid cellular polystyrene - Moulded (RC/PS - M)
NZS 3602	Timber and wood-based products for use in building
NZS 4218	Energy efficiency – Small building envelope

5. PRODUCTS

5.1 POLYTHENE FILM

Single layer polyethylene film complete with adhesive pressure-sensitive tape required by the polythene film manufacturer.

5.2 GLASS FIBRE THERMAL INSULATING PADS

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

2.8 BUILDINGS WRAPS AND UNDERLAYS

Bitumac 860 self supporting.

5.3 NAILS, SUB-SHEATHING

Galvanized 30 mm x 2.5 mm flat head nails to the board manufacturer's requirements.

5.4 ADHESIVE TAPE

Pressure sensitive adhesive tape.

6. EXECUTION

6.1 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.

6.2 HANDLING

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

6.3 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, building papers and vapour barriers are in place.

6.4 INSTALL INSULATION

Lay, install, fit and fix to NZBC H1/AS1: 2.0 and to the insulation manufacturer's requirements. Install in housing to NZS 4218.

6.5 LAY FOIL ROOF INSULATION

Lay horizontally starting at the gutter line with succeeding sheets in true alignment and lapping 150 mm. Carefully scribe around and fit neatly to all penetrations. Keep dry and clean until covered in.

6.6 LAY ROOF INSULATION AS VAPOUR BARRIER

Lay horizontally starting at the gutter line with succeeding sheets in true alignment and lapping 150 mm. Carefully scribe around and fit neatly to all penetrations. Fully seal all laps and all penetrations with adhesive tape. Keep dry and clean until covered.

8.10 INSTALL WALL WRAP

Fix horizontally to outside face of substrate in true alignment, with succeeding sheets overlapping 150mm. Fix to the building paper manufacturers requirements. Scribe neatly around penetrations and openings to leave no gaps. Keep clean, undamaged and without visible weather deterioration until closed in.

6.7 FIX POLYTHENE FILM VAPOUR BARRIER

Fit and fix between insulation and lining with joints lapped and sealed with pressure-sensitive tape.

6.8 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 leave a 150 mm gap around recessed light fittings and metal flues.

- 6.9 **CLEAN UP**
Clean up as the work proceeds, so no spare offcuts or any other matter or item remain behind claddings or linings.
- 6.10 **CHECK FOILS**
Ensure foils are dry, clean, bright, undamaged and free of debris before being covered.
- 6.11 **CHECK WALL WRAPS AND ROOF UNDERLAYS**
Ensure these are dry, clean, undamaged and free of debris before being covered.
- 6.12 **CHECK VAPOUR BARRIERS**
Ensure these form one homogeneous sheet vapour barrier and remain as such throughout the ensuing construction process.
- 6.13 **LEAVE**
Leave work to the standard required by following procedures.
- 6.14 **REMOVE**
Remove debris, unused materials and elements from the site.

4710 INSULATION

1. GENERAL

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

1.1 DOCUMENTS REFERRED TO

Documents referred to in this section are:

NZBC H1/AS1	Energy efficiency
NZS 4218:2004	Energy efficiency – Small building envelope
NZS 4246	Energy efficiency – Installing insulation in residential buildings
AS/NZS 4534	Zinc and zinc/aluminium-alloy coatings on steel wire
HSE Act	Health and Safety in Employment Act

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.

1.2 MANUFACTURER'S DOCUMENTS

Manufacturer's and supplier's documents relating to work in this section are:
Thermakraft Industries (NZ) Ltd

Copies of the above literature are available from:
Email: www.thermakraft.co.nz
Telephone: 0800 806-595

Requirements

1.3 QUALIFICATIONS

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

2. PRODUCTS

Materials

2.1 GLASS FIBRE INSULATION

R3.6 to ceilings
R2.6 to exterior wall cavities

2.2 VAPOUR BARRIER – ROOF UNDERLAY & BUILDING WRAP

Thermakraft 215 Bituminous self supporting roof underlay and building wrap.

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 product.

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 MANAGEMENT

Comply with HSE Act and take all safety precautions necessary to reduce potential hazards.

Application

- 3.5 **INSTALL INSULATION – GENERAL**
Lay, install, fit and fix to NZBC H1/AS1: Energy efficiency, 2.0 Building thermal envelope, and to the insulation manufacturer's requirements. Install in housing to NZS 4218 and NZS 4246.
- 3.6 **FIX WRAPS**
See 4201 3.3

Completion

- 3.7 **CHECK VAPOUR BARRIERS**
Ensure there form one homogeneous sheet vapour barrier and remain as such throughout the ensuring construction process.
- 3.8 **LEAVE**
Leave work to the standard required by following procedures.
- 3.9 **REMOVE**
Remove debris, unused materials and elements from the site.

5101G GIB® PLASTERBOARD LININGS

1. GENERAL

This section deals with the supply, fixing and jointing of GIB® plasterboard linings and accessories to timber and steel framed walls and ceilings to form standard, bracing, fire-rated, wet area, impact resistant and sound insulation systems.

Documents

1.1 DOCUMENTS REFERRED TO

Documents referred to in this section are:

AS/NZS 2588	Gypsum plasterboard
AS/NZS 2589	Gypsum linings - Application and finishing
NZS 3604	Timber framed buildings

BRANZ technical paper P21: A wall bracing test and evaluation procedure

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.

1.2 ABBREVIATIONS

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

FRR	Fire resistance rating
IIC	Impact insulation class
STC	Sound transmission class

1.3 MANUFACTURER'S DOCUMENTS

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

General:	GIB® Site Guide (May 2006)
Wet areas:	GIB Aqualine® Wet Area Systems (October 2002 v2)
Bracing:	GIB® Bracing Systems (March 2006)
Fire:	GIB® Fire Rated Systems (January 2006)

Copies of the above literature are available at

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:

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 FIRE RATING REQUIREMENTS

Provide the GIB® fire rated wall systems. Refer to SELECTIONS for system/FRR.

- 1.8 **BRACING REQUIREMENTS**
Provide braced wall systems using bracing rated plasterboard sheet to meet the requirements of NZS 3604 when tested to BRANZ technical Paper P21: A wall bracing test and evaluation procedure. 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 Fyrelite® fire resistant plasterboard
GIB Braceline® wall bracing plasterboard
GIB Aqualine® wet area plasterboard

- 2.2 **CORNICE**
GIB-Cove® plasterboard cornice.

Components

- 2.3 **SCREWS**
GIB® Grabber® drywall screws.

- 2.4 **NAILS**
GIB® Nails (gold passivated).
Size: 30 mm, 40 mm

- 2.5 **METAL ANGLE TRIMS**
GIB® galvanized steel slim angle trims.

- 2.6 **TAPE ON TRIMS AND EDGES**
GIB® Goldline™ tape-on paper tape and galvanized steel trims and edges or GIB® UltraFlex high impact corner mould.

Accessories

- 2.7 **ADHESIVE**
Timber frame: GIBFix® Wood Bond wallboard adhesive.
Timber frame LOSP treated: GIBFix® All-Bond wallboard adhesive.
Steel frame: GIBFix® All-Bond wallboard adhesive.
- 2.8 **JOINTING COMPOUND**
Bedding compound: GIB Tradeset®, GIB Lite Blue®, GIB Promix® All Purpose, GIB® AquaMix, GIB Plus 4®
Finishing compound: GIB ProMix® All Purpose GIB ProMix® Lite, GIB® All Purpose and GIB Plus 4®, GIB® Topcoat
Cove: GIB-Cove® Bond
- 2.9 **JOINTING TAPE**
GIB® paper jointing tape.

Finishes

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 (May 2006).
- 3.2 **LEVELS OF PLASTERBOARD FINISH**
Provide the selected plasterboard surfaces to the pre decorative levels of finish specified in AS/NZS 2589. Refer to GIB® Site Guide (May 2006).
- 3.3 **CONFIRM LEVELS OF PLASTERBOARD FINISH ACCEPTANCE**
Before commencing work, agree in writing upon the surface finish assessment procedure necessary to ensure that the levels of finish specified, along with the effect of the type and/or angle of illumination on them, are obtained and are acceptable.
- Do not apply decorative treatment until it is agreed in writing by the contractor, subcontractors and decorator that the required 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 GIB® Site Guide (May 2006).
- 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 (May 2006).
- 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 GIB® Site Guide (May 2006).
- 3.6 **METAL FRAMING**
Metal framing, to which gypsum lining is fixed, shall comply with AS 1397, AS 3623 or AS/NZS 4600, as applicable. Where adhesion of gypsum linings is required, surfaces shall be free of oil, grease, dust and other foreign materials. Refer to the metal framing manufacturers specifications where high density gypsum linings (>800 kg/m³) such as GIB® Noiseline are specified for fixing to light gauge steel framing.
- 3.7 **PROTECTION**
Protect surfaces; cabinetwork, fittings, equipment and finishes already in place from the possibility of water staining and stopping damage. Refer to GIB® Site Guide (May 2006).
- Application**
- 3.8 **LINING WALLS AND CEILINGS GENERALLY**
Form to GIB® Site Guide (May 2006). Ensure bulk insulation thickness shall not exceed that of the wall framing.
- 3.9 **FORM WET AREA SYSTEMS**
Form to GIB Aqualine® Wet Area Systems (October 2002 v2).
- 3.10 **FORM BRACING SYSTEMS**
Form to GIB® Bracing Systems (March 2006).
- 3.11 **FORM FIRE RATED SYSTEMS**
Form to GIB® Fire Rated Systems (January 2006) and Penetrations in GIB® Fire Rated Systems (August 2003).
- 3.12 **INSTALL COVES**
Install to GIB-Cove® literature using GIB-Cove® Bond.

- 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 (May 2006) 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.

5101GR GIB LIVING SOLUTIONS®

1. GIB LIVING SOLUTIONS® TECHNICAL GUIDE

1.1 GIB DRY ZONE®

To apply in the areas shown on the drawings or as scheduled. Refer to **GIB Aqualine® Wet Area Systems book (October 2002 v2)**

Wall lining - painted areas

Wall lining: 1 layer 10 mm GIB Aqualine®
Fixing: 25 mm GIB® Grabber™ screws
Adhesive: GIBFix® Wood Bond or GIB Fix® All Bond adhesive

Wall lining - tiled shower areas

Lining: 10 mm GIB Aqualine®
Fix horizontally where weight of tiles does not exceed 32 kg/m².
Fixing: 32 mm GIB® Grabber™ screws (No adhesive fixing)
Note: Wall Tile adhesive **over** waterproofing membrane including splash areas

Waterproof membrane systems - tiled areas

Meet the requirements of AS/NZS 4858.

Skirtings

Floor coverings coved minimum 75 mm high

Laundry drier/kitchen range hood

Vented to exterior

Paint systems

Walls

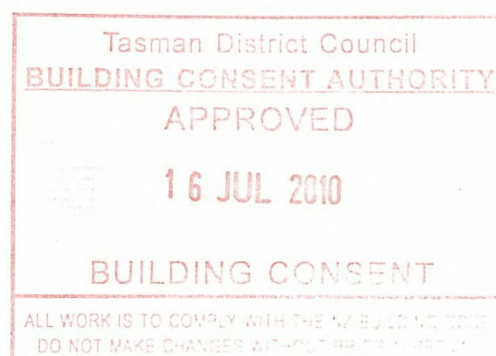
1st coat: Resene Sureseal alkyd primer
2nd coat: Resene Lustacryl water-based enamel (semi-gloss)
3rd coat: Resene Lustacryl water-based enamel (semi-gloss)

Ceilings

1st coat: Resene Sureseal alkyd primer
2nd coat: Resene Lustacryl water-based enamel (semi-gloss)
3rd coat: Resene Lustacryl water-based enamel (semi-gloss)

Trims

1st coat: Resene Sureseal alkyd primer
2nd coat: Resene Lustacryl water-based enamel (semi-gloss)
3rd coat: Resene Lustacryl water-based enamel (semi-gloss)



5201 INTERIOR DOORS

1. GENERAL

This section deals with the supply and installation of interior doors.

1.1 RELATED SECTIONS

Refer to GLAZING for glass type and thickness

1.2 DOCUMENTS

Documents referred to in this section are:

NZS 3602	Timber and wood-based products for use in building
NZS 3604	Timber framed buildings
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 INTERIOR DOORS, TIMBER VENEER

Solid/hollow core doors as scheduled complete with matching 6 mm clashing strip to both sides and to the exposed edge of cavity slider doors.

2.4 INTERIOR CAVITY SLIDER

Solid/hollow core door 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.

2.6 INTERIOR SLIDING DOOR GEAR

To suit door/sash size and glazed weight and as detailed.

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 10 mm 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 INTERNAL 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 INTERNAL DOOR LINERS

Heads and jambs finished minimum 18 mm, with 10 mm 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 INTERNAL DOOR LINERS, EXTENDED

Heads and jambs finished 30 mm, rebated for wall linings and extended a minimum of 10 mm. 10 mm 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 INTERNAL 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.

5502 JOINERY FIXTURES

1. GENERAL

This section deals with fabrication, including off site finishing and installation of cabinetwork and joinery items, fitting out of specialty spaces and cupboards and fabrication and installation of timber staircases.

1.1 DOCUMENTS

Documents referred to in this section are:

NZBC D1/AS1	Access routes, 4.0 Stairways
AS/NZS 1859.2	Reconstituted wood based panels - Dry processed fibreboard
AS/NZS 1860.1	Particleboard flooring - Specifications
NZS 3602	Timber and wood-based products for use in building

2. PRODUCTS

2.1 TIMBER BOARDS AND FRAMES

Carefully sawn to minimise the inherent warping, twisting and bowing of the selected species and to give a finish suitable for clear finishing.

2.2 MEDIUM DENSITY FIBRE BOARD, MELAMINE

Urea-formaldehyde resin bonded wood fibre sheet to AS/NZS 1859.2 overlaid both sides with melamine resin impregnated sheet.

2.3 BACKING BOARD

Urea-formaldehyde resin bonded very fine wood fibre sheet to AS/NZS 1859.2.

2.4 PRE-FINISHED BACKING BOARD

Urea-formaldehyde resin bonded fine wood fibre sheet to AS/NZS 1859.2, veneered one side with melamine sheet.

2.5 BENCHTOPS

As detailed on the drawings and as required for specified fittings and appliances.

2.6 CARCASE CONNECTORS

One-piece steel, straight deep-cut thread, fibre board screws with press fit plastic trim cap or tight joint connectors.

2.7 CARCASE FASTENERS

Knock down type centric sphere zinc alloy connectors with connecting bolts, sleeves and dowels, to suit each particular fastening location.

2.8 BUTT HINGES

Butt, broad butt, flush butt or overlay, steel, zinc-plated steel, stainless steel, or brass, to suit the location, or as detailed.

2.9 CONCEALED HINGES

All-metal zinc alloy with automatic spring and screw-fixed. Plastic button door stops.

2.10 DRAWER RUNNERS

Single action under mounted or side mounted powder coated runners or groove mounting type, precision running ball-mounted single-stage extension, bright steel finish system.

2.11 GLUES AND ADHESIVES

As approved by the manufacturer for the timber, timber product, or pre-finished timber product joint being used.

2.12 MEDIUM DUTY COATING SYSTEM

Two pack, clear or pigmented acid catalysed coating.

3. EXECUTION

3.1 JOINERY FIXTURES GENERALLY

Execution to include those methods, practices and processes contained in the current syllabus for the National Certificate in Carpentry and the National Certificate in Joinery (cabinetry, exterior joinery, stairs). Take responsibility for the completed joinery fixtures including fittings included within fixtures and the on site installation.

3.2 SITE MEASURE

Site check and confirm dimensions after wall linings have been fixed. Verify positions of electric power outlets, wiring to light fittings included in joinery fixtures, water supplies and waste pipe locations.

3.3 FABRICATION QUALITY

Carry out machining within the practices required for the particular timber, wood product or pre-finished wood product being used. Machine drill and cut holes and recesses and form joints to the componentry manufacturer's requirements. Ensure work is accurate, square and true to line and face.

3.4 FABRICATE JOINERY FIXTURES

Carry out jointing, dowelling and other operations necessary for the proper assembly of the fittings as detailed, with fixings concealed unless otherwise detailed. Use glue joints where provision for shrinkage is not required, with contact surfaces, glueing and pressure all applied to the glue manufacturer's requirements. Locate and drive connectors and fasteners to the bolt manufacturer's requirements. Scribe fit adjustable shelves with 4 shelf pins and locate force fit pin holes at 50 mm maximum centres in solid cheeks. Hang doors on concealed hinges.

3.5 MAKE CUT OUTS FOR APPLIANCES AND FITTINGS

Obtain fitting templates from the appliances and other fittings to be installed within joinery fixtures and bench tops. Ensure appliances and fittings can be installed with the required tolerances and clearances. Where bench tops are being provided under other work sections, provide templates and confirm dimensions to others.

3.6 FABRICATE DRAWERS

Construct drawers as detailed, using proprietary metal section drawer runners. Fit drawers with 3 mm clearance into the drawer space.

3.7 TRANSIT AND DELIVERY

Load, transport and unload fittings without distortion or damage and keep covered to protect from the weather. Do not deliver fittings until floor, wall and ceiling surfaces are in place and the fittings can be placed in their final location.

3.8 INSTALL JOINERY FIXTURES

Scribe fit on site and install level, square, plumb and true to line and face.

3.9 WARDROBE AND COAT CUPBOARD

Fit out with 300mm or 250mm wide plastic coated wardrobe system.

3.10 STORAGE CUPBOARD

Fit out with 400mm wide plastic coated system.

3.11 LINEN CUPBOARD

Fit out with 500mm wide plastic coated system.

5503 BATHROOM AND TOILET FIXTURES

1. GENERAL

1.1 RELATED SECTIONS

Refer to 4601 GLAZING for mirrors and frameless shower and bath screens.

2. PRODUCTS

Refer to drawings.

3. EXECUTION

3.1 RETAIN

Retain fixtures, fittings and hardware in the manufacturer's original packaging and ensure that units are complete with associated fixings and installation instructions.

3.2 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.

3.3 LOCATE

Locate units at heights and/or locations shown on the drawings, or as required to comply with relevant Codes and Standards. For any dimension not shown or known, request direction before proceeding.

3.4 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.

3.5 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.

3.6 ADJUST

Adjust and check each operating unit for correct and smooth functioning. Replace those units that cannot be adjusted if they do not function correctly. Clean units and adjoining surfaces upon completing their installation.

3.7 REPLACE

Replace damaged or marked elements.

3.8 LEAVE

Leave work with parts fully and freely working and to the standard required by following procedures.

3.9 PROTECT

Protect units from damage or marking.

3.10 FINAL ADJUSTMENT

Where units are installed more than a month prior to project completion, return and make a final check and adjustment of units just prior to hand over, to ensure that they are operating correctly, fitted properly and are undamaged.

6201 TILING

1. GENERAL

This section deals with the supply and setting of ceramic tiles to walls and floors, over concrete, masonry and lined timber substrates.

1.1 DOCUMENTS

Documents referred to in this section are:

AS 2358 Adhesives - For fixing ceramic tiles
AS 3740 Waterproofing of wet areas within residential buildings
AS 3958.1 Ceramic tiles, 3958 - Guide to the installation of ceramic tiles
BS 6431 Ceramic floor and wall tiles
BRANZ Good practice guide Tiling

1.2 QUALIFICATIONS

Carry out tiling work using competent tilers, experienced with the materials and techniques specified.

1.3 ADHESIVES COMPATIBILITY

Adhesives selected for use on proprietary substrates or waterproof membranes to have documented compatibility approval from the respective manufacturers.

1.4 SAMPLES

Submit samples of the tiles specified, sufficient to show the pattern and the range of colour finish.

2. PRODUCTS

2.1 TILES

To BS 6431, parts 1 to 23 inclusive. Refer to SELECTIONS for type and location.

2.2 RIGID SHEET UNDERLAYS

Refer to CARPENTRY.

2.3 LIQUID WATERPROOFING MEMBRANE

To AS 3740.

2.4 CEMENT BASED SCREED

Mix of 3:1 Portland cement, wash-mix sand, gauged with liquid polymer additive to the tile manufacturer's requirements.

2.5 TILE ADHESIVE

To AS 2358.

2.6 GROUT

Cement based, compressible and to suit the particular location and use.

2.7 MOVEMENT CONTROL JOINT SEALANT

To BRANZ Good practice guide: Tiling, section 5.0, Detailing.

3. EXECUTION

3.1 HANDLING AND STORAGE

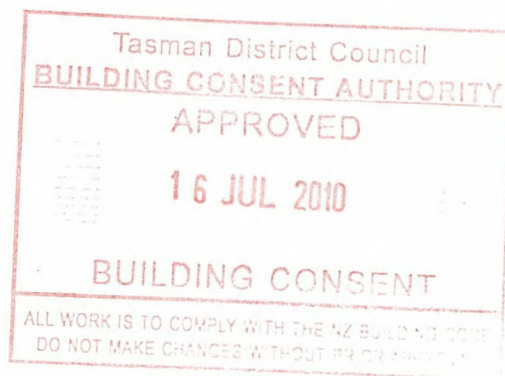
Take delivery of packets of tiles undamaged and dry. Handle tiles with care to avoid chipping, soiling and damage. Store on hard level standings in non-traffic, non work areas that are enclosed, clean and dry.

3.2 CHECK TILES

Check tiles to ensure that they are as specified, from the same batch, of a consistent colour and pattern and sufficient to complete the work. Reject tiles that vary widely in colour or pattern. Reject tiles that are damaged.

- 3.3 **CONFIRM LAYOUT**
Before commencing work confirm the proposed layout of tiles and expansion joints and other visual considerations of the finished work.
- 3.4 **SETTING OUT**
Before commencing the setting out confirm the number and location of cut tiles. Minimise in number with no cut tiles less than half size and only at the perimeter of the work.
- 3.5 **SUBSTRATE**
Ensure that all services and accessories are in place and located to suit the tile layout, with the substrate required for tiling work. Commencement of the work means the substrate and environment are accepted by the tile layer as satisfactory.
- 3.6 **TEMPERATURE**
Do not carry out tiling where the ambient temperature is below 5°C, or onto a substrate with a temperature higher than 40°C.
- 3.7 **TILING GENERALLY**
Prepare surfaces and carry out the tiling work in accordance with AS 3958, part 1, as modified by BRANZ Good practice guide: Tiling.
- 3.8 **CONCRETE FLOORS PREPARATION**
Remove from the surfaces all contaminants such as paints, oils, release and curing compounds. Remove all projections, unevenness and loose material to leave a clean, dust and dirt-free surface.
- Remove all existing finishes down to the concrete. If the exposed concrete finish is not suitable then scabble the surface to expose the coarse aggregate.
- 3.9 **APPLYING LIQUID WATERPROOFING MEMBRANE**
Apply the selected liquid waterproof membrane system to the membrane manufacturer's requirements and in accordance with AS 3740 and to BRANZ Good tiling practice, 7.0 Waterproofing interior wet areas.
- 3.10 **INSTALL WATERPROOFING MEMBRANE**
Install waterproofing membrane between the tile adhesive and the substrate. Reinforce all junctions of the waterproofing membrane to BRANZ Good tiling practice; 7.0 Waterproofing interior wet areas. Unless otherwise specified or shown on the drawings, install waterproof membranes as follows: -
- Unenclosed shower cubicle
To 1800 mm above floor and 300 mm above shower rose.
To at least 1500 mm from shower rose.
To the floor within 1500mm of the shower rose.
- Bath
To 150 mm minimum around the sides and along walls horizontally 150 mm minimum.
- 3.11 **LAYING CEMENT SCREED**
Apply a proprietary cement slurry bond coat over the whole of the floor to the tile manufacturer's requirements. Mix and place a 40 mm thick mortar bed over the bond coat and firmly tamp, screed and compact to the required level. Form screeds with a deviation from plane of not more than 5 mm over 3 metres.
- In waterproofed areas where the cement screed has been laid over the waterproofing membrane, prepare the screed surface by applying a further waterproof coating before laying tiles.

- 3.12 **FALLS**
Form screeds in areas where water is used in significant amounts with a deviation from plane of not more than 5 mm over 3 metres. Unless otherwise specified form screeds with the following falls:
- 1 : 40 minimum For shower bases
- 3.13 **TILE FIXING GENERALLY**
Apply adhesive, prepare and fix tiles by the method required by the adhesive manufacturer and tap them firmly into place.
- 3.14 **TILE FIXING, CONCRETE, CEMENT-BASED ADHESIVE, THICK BED**
Apply and float thick bed cement-based adhesive to a maximum 6 mm bed thickness to the tile manufacturer's requirements. Rib surface with a notched trowel, press tiles and beat it into place with 3 mm joints, and to obtain required coverage of adhesive on the back of each tile.
- 3.15 **GROUTING**
Remove spacers. Prepare joints, mix and apply proprietary grout and finish off to the grout manufacturer's requirements. Grout to finish uniform in colour, smooth and without voids, pinholes or low spots.
- 3.16 **MOVEMENT CONTROL JOINTS**
Minimum width of 6 mm, carried through tile and bedding. Where substantial movement is anticipated, carry through the rigid sheet to the structure. Install joints over expansion joints in structure, at junctions between different backgrounds, where abutting other materials, at storey heights horizontally and 3.0 metres vertically, at internal corners and at junctions with floors and columns.
- Ensure joints are clean, formed, filled, and the sealant inserted to the sealant manufacturer's requirements.
- 3.17 **CLEAN**
Upon completion of setting and grouting, thoroughly sponge and wash the tiles to leave clean and free of blemish. Finally polish tiles with a clean dry cloth.
- 3.18 **REMOVE**
Remove unused materials from the site.
- 3.19 **PROTECTION**



6401 VINYL SURFACING

1. GENERAL

This section deals with floor preparation (thin sheet underlays and floor levelling compound) and the supply and installation of PVC sheet, PVC tiles, to floors and PVC sheet to wall surfaces, complete with skirtings, covings, trims and edgings.

1.1 DOCUMENTS

Documents referred to in this section are:

AS/NZS 1859.2 Reconstituted wood-based panels - Dry processed fibreboard

AS/NZS 1859.4 Reconstituted wood-based panels - Hardboard

NZS/AS 1884 Floor coverings - resilient sheet and tiles - laying and maintenance practices.

BRANZ Bulletin 330 Thin flooring materials - 2 preparation and laying

1.2 QUALIFICATIONS

Carry out work using competent, experienced layers, familiar with the materials and techniques specified.

1.3 SAMPLES

Submit samples of sheet, tile and accessories to the owner, sufficient to show the pattern and the range of colour finish.

2. PRODUCTS

Floors

2.1 VINYL SHEET AND TILES

High vinyl content homogeneous monolayer flexible PVC sheet/tile flooring.

2.2 VINYL COVINGS

Commercial coving: pencil cove method, with butterfly mitres to all external and internal corners. Domestic coving: pencil cove or fillet cove method.

2.3 WALL AND FLOOR VINYL JOINING STRIP

White PVC floor to wall finishing strip.

2.4 THERMO-WELDING

Manufacturer supplied colour matched weld rod.

3. EXECUTION

Preparing substrate

3.1 NEW CONCRETE

Clear substrate of debris, clean off surface contamination and carry out surface repairs using a proprietary levelling compound. Carefully feather out at perimeters of repaired areas. Grind level, then vacuum to remove all dust. Check for moisture content by hygrometer to BRANZ Bulletin 330 and do not commence laying vinyl until readings for the whole area show 75% relative humidity or less.

General

3.2 STORAGE

Maintain rolls of sheet, packages of tiles and accessories undamaged and dry. Store rolls upright with other material on level surfaces in non-traffic, non-work areas that are enclosed, clean and dry.

3.3 HANDLING

Avoid distortion, stretching, marking and damage to edges while shifting, unrolling and handling sheet, tiles and accessories. Inspect for any faulty material. Do not use faulty or damaged material.

- 3.4 **BEFORE COMMENCING WORK**
Ensure that the building is enclosed, wet work complete, doors hung and lockable, finishes and trim complete, and good lighting available, before starting work.
- 3.5 **INSPECT**
Inspect the substrate to ensure it is of the standard required for work in this section.
- 3.6 **LAYING**
Carry out the whole of the work to NZS/AS 1884, BRANZ Bulletin 330 "Thin flooring materials - 2 preparation and laying" and to the flooring manufacturer's requirements.
- 3.7 **LAYOUT**
Before beginning the installation confirm the proposed layout of material, location of seams and other visual considerations of the finished work.

Vinyl floor laying

- 3.8 **PREPARATION**
Check that each colour supplied is from the same batch. Follow the vinyl manufacturer's requirements for conditioning of rolls and the working temperatures and conditions before, during and after laying. Protect work from solar heat gain and switch off under-floor heating during and for 48 hours either side, of the work period.
- 3.9 **ADHESIVE APPLICATION**
Apply approved adhesive as required by the vinyl manufacturer and without trowel marks after setting. Follow requirements for open time, taking note of substrate porosity, ambient temperature and relative humidity. Remove excess adhesive as the work proceeds using required techniques.
- 3.10 **LAYING VINYL SHEET**
Roll out, cut, leave to condition and install sheet vinyl to the vinyl manufacturer's requirements. Ensure there are no air bubbles or twisting, that the seams are kept clear of adhesive, and immediately the sheet is adhered roll with a 68 kg roller.
- 3.11 **THERMO-WELDING VINYL SHEET**
Machine groove and thermo-weld all seams in specified areas, heating the sheet and weld rod to a sufficient temperature to melt and fuse them together into a single mass. Trim the weld to leave a smooth, flush surface with the sheet.
- 3.12 **CROSS JOINS**
Plan and allow cuts to avoid cross joins. Obtain written approval of the owner before proceeding if cross joins are unavoidable. Cross joins are not acceptable in wet areas.
- 3.13 **COVE VINYL**
Pencil cove flooring to the specified height and finish off as detailed.
- 3.14 **MITRES**
Perform butterfly method to internal and external mitres. Thermo-weld mitres.
- 3.15 **FIT VINYL EDGING**
Fit tapered vinyl edging to all borders, except where abutting carpet.
- 3.16 **CLEAN**
Leave vinyl flooring surfaces free of adhesive, dirt and debris. Vacuum off, damp mop with a low foam neutral detergent, with a pH level of 7 to 8. Allow to dry and finally buff with a rotary machine using suitable pads at 300 rpm. Polymer polishes to be used only where approved by the vinyl manufacturer and accepted by the owner.

Completion

- 3.17 **ACCEPTANCE**
Arrange for a final inspection of the completed work by the owner. Protect all surfaces until the completion of the works.
- 3.18 **REMOVE**
Remove unused materials from the site.

6701 PAINTING AND PAPERHANGING

1. GENERAL

This section deals with decorative coating and sealing work on prepared surfaces and with the supply and application of paper-backed wallpaper.

1.1 DOCUMENTS

Documents referred to in this section are:

OSH Guidelines for the management and removal of asbestos

Health and Safety in Employment Act 1992

1.2 MANUFACTURER'S MANUALS

Refer to the paint manufacturer's manuals and follow their preparation, sequence and application requirements applying to each system. Ensure all paint coats in any system are supplied by the same manufacturer.

1.3 QUALIFICATIONS

Carry out work using competent and experienced painters and paperhangers.

1.4 HEALTH AND SAFETY

Refer to the requirements of the Health and Safety in Employment Act 1992 and if elimination or isolation is not possible, then minimise the hazards in this work.

Minimise hazards when carrying out the following:

- Treating or removing lead based paint.
- Burning off paint.
- Sanding off paint.
- Using solvent based paint removers.

1.5 CONTROL SAMPLES

Prepare samples of the finished work as scheduled, including preparation and colour as specified. Obtain approval of the appearance before proceeding. Refer to SELECTIONS for requirements.

2. PRODUCTS

2.1 PAINT

To the paint manufacturer's standards for exterior and/or interior primers, undercoats, sealers, stains, clear coatings, solvent-borne and water-borne paints.

2.2 GAP FILLERS

Linseed oil, putty, plastic wood, wood filler or plastic filler, to suit and to match the surface being prepared.

3. EXECUTION

3.1 INSPECT

Inspect surfaces for painting and report to the owner any that will not, after the preparatory work laid down by the paint manufacturer, allow work of the required standard. Confirm that all areas have adequate lighting and are sufficiently free of other construction activities to enable painting and/or paperhanging work to proceed.

3.2 PROTECT

Cover up adjoining surfaces and areas liable to damage or over-painting.

3.3 REMOVE HARDWARE

Remove hardware and door/window furniture and replace on completion. Do not paint over permanently attached hinges, or any hardware items which cannot be removed. Refer to SELECTIONS for type and location.

- 3.4 **PRIMING AND SEALING**
Ensure that priming and sealing work needed before or during construction is carried out when required.
- 3.5 **ENVIRONMENTAL CONDITIONS**
Carry out work within acceptable temperature and humidity limits, with timber dry, all to the requirements of the paint manufacturer.
- 3.6 **SELECTIONS**
Confirm all selections, colours and finishes for both paint and wallpaper with the owner, before commencing work.
- 3.7 **ASBESTOS**
Removal of coatings containing asbestos: conform with the requirements set out in the OSH Guidelines for the management and removal of asbestos.
- Preparation and painting of surface materials containing asbestos: conform with the recommendations and requirements of the paint manufacturer.
- 3.8 **SHARP EDGES, CRACKS AND HOLES**
Repair as required by the paint manufacturer.
- 3.9 **PREPARE SURFACES**
Prepare surfaces to be coated as required by the paint manufacturer. Make good all damage and defects.
- 3.10 **PAINT APPLICATION**
Apply paint by brush and/or roller to suit the location of the coating and to the paint manufacturer's requirements. Do not spray on site without express permission.
- 3.11 **DEFECTIVE WORK**
Correct defective work immediately. Recoating to follow the selected paint system's requirements.
- 3.12 **SCUFF BETWEEN COATS**
Scuff between all coats to remove any dust pick-up, protruding fibres and coarse particles.
- 3.13 **FINISHED PAINT SURFACES**
Finished paint surfaces to show uniformity of gloss and colour, with the correct thickness for each coat, and freedom from painting defects. Ensure finished work is clean and free of any disfigurement.
- 3.14 **CONFIRM WALLPAPER**
Confirm that all rolls of each pattern are from the same batch.
- 3.15 **WALLPAPER INSTALLATION**
Seal or size walls. Use only full length drops, completely glued, pattern matched and hung vertically without bubbles or visible butt joints. Scribe cut paper onto surrounding trim.
- 3.16 **CLEAN**
Clean adjoining surfaces, glass and fittings of any paint contamination.
- 3.17 **REPLACE**
Replace hardware without damage to the hardware or the adjoining surfaces.
- 3.18 **TAKE AWAY**
Take away from the site unused painting materials and equipment.

7101 HOT AND COLD WATER SYSTEM

1. GENERAL

This section deals with the potable water supply connection to the project, and the installation of hot and cold water supply pipework, hot and cold water fixtures and tapware throughout.

1.1 DOCUMENTS

Documents referred to in this section are:

NZBC B2/AS1	Durability
NZBC G12/AS1	Water supplies
NZBC H1/AS1	Energy Efficiency
AS/NZS 2642.2	Polybutylene pipe fittings Polybutylene pipe systems - Polybutylene (PB) pipe for hot and cold water applications
AS/NZS 2642.3	Polybutylene pipe systems - Mechanical jointing fittings for use with polybutylene pipes for hot and cold water applications
AS/NZS 3500.5	National plumbing and drainage – Domestic installations
NZS 3501	Specification for copper tubes for water, gas and sanitation
NZS 4606.3	Storage water heaters - Specific requirements for water heaters with composite shells
NZS 4607	Installation of thermal storage electric water heaters: valve-vented systems
NZS 4617	Tempering (3-port mixing) valves

Plumbers, Gasfitters and Drainlayers Act 1976

1.2 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 plumber registered under the Plumbers, Gasfitters and Drainlayers Act 1976.

2. PRODUCTS

2.1 COPPER PIPE

To NZS 3501 complete with copper-alloy compression fittings or crox type joints and seal ring compression joints complete with fittings and accessories brand matched to the pipe manufacturer's requirements with durability to NZBC/AS1 Durability, Table 1 and NZBC G12/AS1 Water supplies Table 1.

2.2 POLYBUTYLENE PIPE

Polybutylene tubing to AS/NZS 2642.1, AS/NZS 2642.2 and AS/NZS 2642.3 complete with fittings and accessories brand-matched with durability to NZBC B2/AS1 Durability, table 1 and NZBC G12/AS1 Water supplies table1.

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: Water supplies.

2.5 TEMPERING VALVE

Tempering valve to NZS 4617 to NZBC G12/AS1: Water supplies.

Materials - hot water heating appliances

2.6 ELECTRIC HOT WATER CYLINDER, MAINS PRESSURE

To NZS 4606.3, ceramic-coated steel thermal storage cylinder, insulated and complete with fittings required for installation by the manufacturer.

Components

- 2.7 **INSULATION**
Pre-formed pipe sections complete with bends and fittings, with fixing tape to the manufacturer's requirements.
- 2.8 **PROTECTIVE TAPE**
Plasticised PVC tape system with primer, mastic fixing and outer coating.
3. **EXECUTION**
- 3.1 **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.
- 3.2 **EXECUTION GENERALLY**
Generally carry out the whole of this work and tests to NZBC G12/AS1: Water supplies.
- 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/AS1: Water supplies, table 3, Acceptable flow rates to sanitary fixtures. Pipe size as determined in 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 POLYBUTYLENE PIPE**
Aluminium clamped, seal ring compression or push fit "O" ring seal jointing to pipe system manufacturer's requirements.

Application – pipework installation

- 3.11 **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: Water supplies.
- 3.12 **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/AS1: Water supplies, 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.
- 3.13 **HOT WATER PIPEWORK**
Use a take-off spigot to give separate branches to each fitting, lay out pipes with support spacing to NZBC G12/AS1: Water supplies, 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.
- 3.14 **EQUIPOTENTIAL BONDING**
Earth metallic water supply pipe and metallic sanitary fixtures to NZBC G12/AS1: Water supplies: 9.0.

Application - hot water systems

- 3.15 **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: 6.10. Valve-vented systems to NZS 4607.
- 3.16 **INSTALL TEMPERING VALVE**
Install 1 metre minimum from outlet of hot water cylinder and to manufacturer's instructions.
- 3.17 **PENETRATIONS**
Provide and fit collars and escutcheon plates to match the pipework at all penetrations through constructions.

Installation – tapware

- 3.18 **INSTALLING TAPWARE**
Install tapware supplied under SANITARY FIXTURES, TAPWARE AND ACCESSORIES. Install in accordance with the manufacturer's requirements.
- 3.20 **INSTALL HOT WATER CYLINDER OVERFLOW TRAY**
Install drained overflow tray to hot water cylinder to NZBC G12/AS1: Energy Efficiency.

Completion

- 3.21 **LABEL**
Label all pipework with permanent adhesive markers at 3 metre minimum intervals.
- 3.22 **REPLACE**
Replace damaged or marked elements.
- 3.23 **LEAVE**
Leave work to the standard required by following procedures.

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

4. SCHEDULES

4.1 WATER PIPE
Brand Type Dux Secura
Material Polybutylene
Nominal Bore 20mm & 15mm

4.2 HOT WATER PIPES
Brand Type Polybutylene & Dux Secura
Inside Diameter 15mm & 20mm

7401 RAINWATER SYSTEMS

1. GENERAL

1.1 DOCUMENTS

Documents referred to in this section are: -

AS 1397 Steel sheet and strip - hot-dipped, zinc-coated or aluminium/zinc-coated

BRANZ Bulletin 304: Flashing design.
BRANZ Bulletin 448: Domestic flashing installation.

1.2 QUALIFICATIONS

Workers to be either competent craftsman plumbers, or registered plumbers working under the direction of a craftsman plumber, or roofers, familiar with the materials and techniques specified.

2. PRODUCTS

Galvanised Steel

2.1 GALV SPOUTING

Profile, jointing, brackets and fittings brand matched and complete to the spouting manufacturer's specifications.

2.2 uPVC DOWNPIPES

Tubes, stand-off brackets and fittings brand matched and complete to the manufacturers specifications.

General

2.3 RAINWATER HEADS, DROPPERS, OVERFLOWS

Fabricate and install as detailed.

2.4 FLASHINGS GENERALLY

0.55 mm sheet steel galvanised to AS 1397, aluminium/zinc coated to AS 1397, 1.8 mm (20 kg/m²) copperised pure lead, 0.5 mm half hard copper sheet, or proprietary rubberised perforated aluminium strip, all to location, compatibility and design requirements of BRANZ Bulletin 304 Flashing design.

2.5 DOMES

Wire mesh in round form with legs to clip inside the outlet opening to the downpipe.

3. EXECUTION

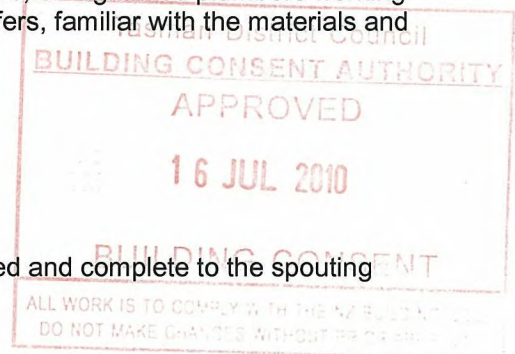
3.1 ELECTROLYTIC ACTION

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

Check compatibility of metals used for rainwater goods, against the materials used for roofing and flashings. Notify any incompatibility to the owner and obtain written approval for amendments to selections.

3.2 LIAISON

Ensure liaison with associated installations to confirm material selections are compatible and required flashing work is completed.



- 3.3 **INSTALLATION GENERALLY**
Install and fix spouting and downpipes to the manufacturers requirements. Install system to properly drain water from the roof area and so that water will not enter the building under overflow conditions.

GALV

- 3.4 **FIT GALV SPOUTING**
Fit brackets at maximum 500 mm centres and fix with galvanised screw. Set to fall to outlets. Ensure welded jointed spouting sections are complete with all fittings to the spouting manufacturer's requirements. Allow for expansion.
- 3.5 **FIT uPVC DOWNPIPES**
Fit stand-off brackets or clips at maximum 1 metre centres and fix with round head galvanised screws. Set pipes plumb and clear of the wall. Solvent weld joints. Discharge into stormwater drain.

General

- 3.6 **FLASHINGS**
Scribe fit, fold, lap, seam, or run solder as required by the metal, to flash all roof penetrations, roofing and exterior joinery to prevent weather penetration. Except at expansion joints, allow for 2 rows of rivets to overlapping sheet joints. Install and fix flashings and flashing joints to the criteria stated in BRANZ Bulletins 304 Flashing design and 448 Domestic flashing installation.
- 3.7 **INSTALL DOMES**
Install wire mesh domes at the top of downpipes.
- 3.8 **INSTALL SPOUTING MESH**
Install mesh into spoutings, strictly in accordance with the mesh manufacturer's requirements.
- 3.9 **LEAVE**
Leave rainwater services in proper working order and all flashing work completed to keep the building weathertight.
- 3.10 **CLEAN UP**
Wash out gutter daily and on completion to remove swarf. Take away from the site unused materials and elements.

7402 SANITARY PLUMBING SYSTEM

1. GENERAL

This section deals with the supply and fitting of waste disposal pipework, sanitary fixtures and accessories.

1.1 DOCUMENTS

Documents referred to in this section are:

NZBC G1/AS1	Personal hygiene, 2.0 Fixture construction and installation 3.0 Location of sanitary fixtures
NZBC G13/AS1	Foul water - sanitary plumbing
AS/NZS 1260	PVC pipes and fittings for drain, waste and vent applications
AS/NZS 3500.2	Plumbing and drainage - Sanitary plumbing and drainage
NZS 7641	Unplasticised PVC waste and ventilating pipe, fittings and accessories, 32 mm, 40 mm and 50 mm

Plumbers, Gasfitters and Drainlayers Act 1976

1.2 QUALIFICATIONS

Carry out work by or under the direct supervision of a person registered under the Plumbers, Gasfitters and Drainlayers Act 1976.

2. PRODUCTS

2.1 uPVC WASTE, SOIL AND VENT PIPES

uPVC pipe to NZS 7641 and AS/NZS 1260 complete with fittings brand-matched to the pipe manufacturer's requirements.

2.2 EXPOSED PIPES AND TRAPS

White polybutylene or PVC, including all associated fittings.

2.3 SEALANT, SANITARY FIXTURES

For between sanitary fixtures and accessories and adjacent floor or wall surfaces.

1-part, silicone, containing mildew resistant agents.

Colour: White

3. EXECUTION

3.1 EXECUTION GENERALLY

Carry out this work and complete all tests to AS/NZS 3500.2.

Carry out this work and complete all tests to NZBC G1/AS1: 2.0, 3.0 and G13/AS1.

3.2 ELECTROLYTIC ACTION

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

3.3 INSTALL SANITARY FIXTURES

Fit and install sanitary fixtures and associated screens, elements and hardware, plumb, true to line and rigid, to the fixture manufacturer's requirements. Supply standard chrome plated brass wastes and plastic plugs on chrome plated chains with all basins, tubs and baths.

3.4 INSTALL TRAPS, WASTE AND VENT PIPES

Connect waste outlets to traps and run waste pipes and back vents concealed, sized and fixed to AS/NZS 3500.2 /NZBC G13/AS1. 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.

3.5 PENETRATIONS

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

- 3.6 **INSTALL SANITARY ACCESSORIES**
Install sanitary accessories as selected.
- 3.7 **TEST**
Test soil and waste disposal systems to ensure no leakage exists and leave in proper working order.
- 3.8 **CLEAN UP**
Remove labels and clean fittings. Remove unused materials from the site.

7403 DRAINAGE

1. GENERAL

This section deals with the supply and laying of foul water, stormwater and field drains.

1.1 DOCUMENTS

Documents referred to in this section are:

NZBC B1/AS1	Structure – general, 6.0 Drains
NZBC E1/AS1	Surface water
	3.0 Drainage system materials and construction
NZBC G13/AS2	Foul Water – drainage
AS/NZS 1254	PVC pipes and fittings for storm and surface water applications
AS/NZS 1260	PVC pipes and fittings for drain, waste and vent applications
AS/NZS 1546.1	On-site domestic wastewater treatment units - Septic tanks
AS/NZS 1547	On site domestic wastewater management
AS/NZS 4130	Polyethylene pressure pipes (PE)
AS/NZS 4671	Steel reinforcing materials
NZS 3107	Precast concrete drainage and pressure pipes
NZS 3104	Specification for concrete production
AS/NZS 3500.2	Plumbing and drainage - Sanitary plumbing and drainage
AS/NZS 3500.3	Plumbing and drainage - Stormwater drainage
NZS 7643	Installation of unplasticised PVC pipe systems

Plumbers, Gasfitters and Drainlayers Act 1976

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 hold a current licence within the terms of the Plumbers Gasfitters & Drainlayers Act 1976 and be experienced, competent and familiar with the materials and techniques specified.

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 uPVC PIPES

uPVC Pipes bends, junctions, fittings and joints to AS/NZS 1254 and AS/NZS 1260.

2.4 GULLY TRAPS

To NZBC G13/AS2: 3.3, complete with grating.

2.5 SURFACE WATER SUMP GRATINGS

Cast iron frame with lift-up grating.

2.6 STRIP DRAIN CHANNEL

Proprietary, modular, variable invert, PVC or precast concrete drainage channel sections and drainage sump, embedded in site concrete and fitted with selected metal gratings.

2.7 INSPECTION COVERS

Cast iron frame with screw-down cover.

2.8 DRAINAGE AND FILLING MATERIALS

Granular: Clean gravel or crushed stone or a blend of these. Particle size from minimum 7 mm to maximum 20 mm.

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.

3.2 MANUFACTURER'S REQUIREMENTS

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

3.3 DRAINAGE GENERALLY

Carry out drainage work and tests to AS/NZS 3500 Part 2 (sanitary drainage) AS/NZS 3500 Part 3 (stormwater drainage) as modified by NZBC B1/AS1: 6.0. Lay uPVC pipe systems to relevant sections of NZS 7643.

3.4 LAY FOUL WATER DRAINS

Lay drains in straight runs to correct gradients, to discharge into the network utility operator's sewer.

3.5 INSTALL GULLY TRAPS

Set on concrete 50 mm 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 LAY SUBSOIL DRAINS

Lay perforated piping firmly in a granular bed in straight runs to correct gradients, discharging into a cesspit. Carry the granular bed up over the pipes without disturbing them to a total depth of 300 mm and cover with geotextile fabric to the pipe manufacturer's requirements. Carry the high end of all lines up to the surface to allow for flushing out and finish with a protected removable cap.

3.8 INSTALL STRIP DRAIN CHANNEL

Excavate trench and form site concrete base to fall. Set interlocking channel sections, sumps and accessories in place, all in accordance with the channel manufacturer's requirements. Check falls and install gratings and covers.

3.9 SOAKHOLES OR TRENCHES

Dispose of stormwater on site as shown on the drawings, by soakage, to suit local geology and soil structure; all as directed by the territorial authority.

3.10 CONCRETE ENCASEMENT

Concrete encase shallow drains and drains under driveways, on a 100 mm deep 17.5 MPa concrete bed reinforced with three 10 mm mild steel bars. Surround pipes with a polythene membrane to allow movement and encase in 100 mm 17.5 MPa concrete.

3.11 FIELD TEST

Field test drains for watertightness (UPVC to NZS 7643 section 11) to the satisfaction of the territorial authority inspector.

3.12 BACKFILL

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

7701 ELECTRICAL

1. GENERAL

This section deals with the connection to the electrical authority's supply and the wiring for power and lighting, complete with componentry and electrical and electrically-powered fittings, for domestic and small scale commercial installations.

1.1 DOCUMENTS

Documents referred to in this section are:

NZBC F7/AS1 Warning systems, 3.1 Domestic smoke alarms
NZBC F8/AS1 Signs
AS/NZS 3000 Electrical regulations - Buildings, structures and premises
AS/NZS 3008.1.2 Electrical installations - Selection of cables - Typical New Zealand installation conditions
AS 3786 Smoke alarms
NZS 6401 PVC-insulated cables for electric power and lighting
Electricity Regulations 1997
New Zealand electrical codes of practice (ECP)

1.2 COMPLY

Comply with the Electricity Regulations 1997, AS/NZS 3000, AS/NZS 3008.1.2 and the New Zealand electrical codes 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.

1.3 QUALIFICATIONS

Carry out work by or under the direct supervision of a holder of a practising licence under the Electricity Regulations 1997.

1.4 CERTIFICATE OF COMPLIANCE

Supply a certificate of compliance to the owner, as required by the Electricity Regulations 1997, and in particular, clauses 16, 34 and 35. Allow the network utility operator to view before the meter installation, listed work inspection, polarity check and livening of supply.

2. PRODUCTS

2.1 MAINS SUPPLY, SINGLE PHASE

Tough plastic sheathed neutral screened cable to NZS 6401 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 NZS 6401, stranded above 1.0 mm², 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 connected load, or produce an excessive voltage drop.

Lighting circuits:	Domestic: 1.0 mm ² on 10 amp MCBs
Lighting circuits:	Commercial: 1.5 mm ² on 16 amp MCBs
Power circuits:	1.5 mm ² on 16 amp MCBs for domestic and unenclosed or unfilled cavity construction
	2.5 mm ² on 16 amp MCBs for domestic insulated construction, or filled cavity
	2.5 mm ² on 20 amp MCBs for unenclosed or unfilled cavity construction
	2.5 mm ² on 16 amp MCBs for insulated construction, or filled cavity, or lengths over 30 metres
Range circuits:	Single phase: 6 mm ² on 32 amp MCBs

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

- 2.3 **DATA WIRING**
To AS/NZS 3086.
- 2.4 **METER BOX**
Proprietary manufactured, zinc plated powder coated metal case, or ABS plastic, with glazed panel door, weatherproof if mounted outdoors, and complete with meter mounting, main switch and fuse.
- 2.5 **DISTRIBUTION BOARD**
Proprietary manufactured, zinc plated powder coated, or heavy duty plastic, fire resistant enclosed construction, complete with neutral and earth busbars, MCBs, 30 mA RCDs and 60 amp main switch, complete with 20% spare capacity to AS/NZS 3000. Include 2 spare MCBs labelled as "spare". All protective devices: 6kA MCBs of the appropriate rating.
- 2.6 **MINIATURE CIRCUIT BREAKERS**
Miniature moulded case circuit breakers
- 2.7 **WALL BOXES**
Standard size in plastic, with 2 or more gang size in metal, all screw fixed.
- 2.8 **SWITCH UNITS**
Sixteen amp minimum rated, 230 volt polycarbonate flushplate units. Refer to drawings/schedules for number of switches per unit, dimmer units, neon (indicator or toggle) units, locator units and 2 way units
- 2.9 **HOT WATER SYSTEM SWITCH**
One way 20 amp switch complete with cable clamp for flexible PVC conduit to element enclosure.
- 2.10 **SWITCHED SOCKET UNITS**
Ten amp, 230 volt polycarbonate flushplate 3 pin flat NZS combination switch units, single or multi gang as detailed.
- 2.11 **SMOKE ALARMS**
To AS 3786. A wired 230 volt ionised smoke detector type ESD275H ELTO
- 2.12 **TV AERIAL**
Antenna, co-axial cable and outlets, suitable for both VHF and UHF reception of all local free-to-air broadcast channels.
- 2.13 **GARAGE DOOR CONTROLLERS**
Refer to 4503 COMPOSITE WINDOWS, DOORS AND SKYLIGHTS. Provide single switched socket outlet for the door controller to plug into.
- 3. EXECUTION**
- 3.1 **MAIN SUPPLY**
Lay underground mains to the network utility operator's requirements. Excavate trench, install cable and marker tape and backfill.
- 3.2 **METER BOX**
Fit to meter box manufacturer's and network utility operator's requirements where detailed. Recess into external wall and flash to weatherproof. Arrange for meter installation and connection.
- 3.3 **DISTRIBUTION BOARD**
Fit to board manufacturer's requirements where detailed. Recess into wall and ensure fire containment properties of the enclosure are maintained.
- 3.4 **CIRCUIT PROTECTION**
Install MCBs to protect each final sub circuit sized for circuit maximum loading.

3.5 EARTH LEAKAGE PROTECTION
RCD protection to AS/NZS 3000

Domestic

Install RCD protection at the switchboard of final sub circuits controlling socket outlets except for:

- Fixed cooking equipment
- Lighting

3.6 SET-OUT

Unless specifically detailed, the position of outlets and equipment shown on drawings is indicative of requirements. Study documents and site conditions to ensure no conflict with other services or features will arise. 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.

3.7 CABLING

Install with a maximum of 10 light outlet units or 6 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. 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.

3.8 WALL BOXES

Flush mounted in cavity construction. Fix vertically mounted wall boxes to studs. Fix horizontally mounted switched socket outlet wall boxes to solid blocking or nogs. Fix switch panel wall boxes to solid blocking.

3.9 SWITCH AND SOCKET UNITS

Fit all single and double switch units and socket at the following heights (to the centre of the unit) unless shown otherwise on the drawings.

Switch Units:	1000 mm
Socket Units:	150 mm above work benches
	400 mm elsewhere

Mount light switches and switch socket outlets vertically and socket units horizontally.

Label all switch units that control electrical equipment or special lighting circuits by colour filled engraving on the switch.

3.10 ISOLATING SWITCHES

Locate isolating switches in agreed positions when not specifically shown on the drawings.

3.11 LIGHT FITTINGS

Install light fittings in locations and at heights detailed, and in accordance with the fitting manufacturer's requirements.

3.12 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 HOT AND COLD WATER SYSTEM.

- 3.13 **EARTH BONDS**
Bond together and to earth all plumbing fittings not adequately isolated, to AS/NZS 3000; the Electricity Regulations 1997 and the fitting manufacturer's requirements.
- 3.14 **TELEPHONE WIRING**
Install telephone cable to telephone outlet positions shown on the drawings. Install in conduit for outlets on masonry surface. Fix and connect BT jack point outlets to NZ Telecom requirements and terminate wiring at incoming terminal block.
- 3.15 **TELEPHONE DRAW WIRES**
Supply draw wires from accessible positions for the telephone outlets shown on the drawings. Install in conduit for outlets on masonry surface.
- 3.16 **DATA WIRING**
Install data wiring to outlet positions shown on the drawings. Install in conduit for outlets on masonry surface.
- 3.17 **TV AERIAL**
Fit antenna, run cabling concealed below the roof and fit outlets where shown on the electrical drawings. Ensure the system is suitable for high quality reception of all VHF and UHF channels - Sky TV installation practices minimum.
- 3.18 **SMOKE ALARMS**
Install smoke alarms to NZBC F7/AS1 and to the alarm manufacturer's requirements, fitted neatly and without damage to the surrounding finish.
- 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 electrical fixtures specified in other parts of this specification. Connect the following bathroom and toilet electrical items: -
- Heated towel rails: Install to manufacturers requirements.
- 3.21 **MAIN EARTH**
Provide a plastic toby box or UPVC tube to contain and protect the earth pin. Fix the connecting earth wiring closely and securely against wall surfaces.
- 3.22 **LABELLING**
Complete all labelling in clear machine printed permanent manner. 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.
- 3.23 **COMPLETION**
Leave work operating correctly, with equipment clean and all lamps operational.

BROWN ACRES MOTUEKA SCHEDULE OF MATERIALS

Foundation and Floor:	20MPA Concrete
Exterior:	Roof: Gerard Tuff Coat Colour steel tiles Spouting: Gerard Klass external fascia Cladding: Austral 70 series Clay brick and Linea weatherboard Joinery: Powder coated aluminum Front Door: Aluminum with glass panels Windows: Double glazed
Interior:	Walls: Gibraltar board paint finish Ceilings: Gibraltar board paint finish Internal Doors: Plain MDF paint finish Flooring: 100% wool carpet and cushion vinyl in service areas Electrical: Downlights in all areas Television and telephone cabling Heating: 2.4 kw wall mounted fan heater HWC: Rheem135ltr Mains pressure
Kitchen:	Range: Fisher & Paykel 610mm white free standing electric range Optional Extra: Fisher & Paykel electric cook top & wall oven Optional Extra: Robinhood Rangehood ducted thru soffit Fridge: 240ltr white fridge/freezer Units: Formica laminated bench, melteca/melamine doors Sink: Stainless steel sink and drainboard
Bathroom:	Shower: Englefield White Corner 900mm x 900mm Unit with glass door and return Vanity: Englefield Sapphire 900mm (white) single bowl – 3 drawer with 2 doors Heated Towel Rail 900mm x 900mm mirror Tapware: Methven Strata Chrome single lever mixers WC: Vencia Close coupled toilet suite
Laundry:	Laundry Tub: Robinhood ST3100 Supertub (white)
Garage:	Sectional Door with automatic door opener

NOTE - Items may be substituted depending on availability